CHILD MALTREATMENT AMONG YOUNGER AND OLDER ADOLESCENT PARENTS: UNDERSTANDING CHILD MALTREATMENT FROM A WHOLISTIC, PERSON-CENTERED PERSPECTIVE

Holly Nichole Colon

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Approved by:

Rune J. Simeonsson

Jon Hussey

Jill Hamm

Steve Knotek

Sandra B. Evarrs

ABSTRACT

HOLLY NICHOLE COLON: Child Maltreatment Among Younger and Older Adolescent and Young Adult
Parents: Understanding Child Maltreatment from a Person-Centered Perspective
(Under the direction of Rune Simeonsson, Ph.D.)

Much literature documents factors associated with child maltreatment among adult parents. Previous research often cites factors such as the intergenerational transmission of abuse, depressive symptoms, and attachment relationships as important factors in child maltreatment among the adult as well as general population of parents. It is also often reported that adolescent parents are more likely to engage in child maltreatment than their older counterparts. Much less is known however, about child maltreatment among younger and older adolescent parents and whether factors associated with child maltreatment among young adults are applicable to parents at different stages in their social, emotional, and intellectual development. Thus, the purpose of this study was to investigate four different types of child maltreatment; supervision neglect, physical neglect, physical assault, and total child maltreatment, among younger and older adolescent, and young adult parents. The study drew on data from the National Longitudinal Study of Adolescent Health (Add Health). Data for this study included self-report measures of intrapersonal and interpersonal current contextual and historical factors for 4,150 adolescents who reported having a least one child prior to the Add Health Wave III interview. The data was nationally representative of parents less than 26-years old in the years 2001 to 2002. Four different sets of analyses were conducted in order to provide a comprehensive and wholistic understanding of child maltreatment among parents at different stages in their development. Using cluster analyses, evidence for the existence of subgroups of parents was identified primarily based on experiences with assault, followed by emotional closeness, and depressive symptoms. Cluster solutions primarily differed from one another based on how experiences with assault were structured as organizing variables. Several clusters were also found to vary in terms of total child maltreatment within their respective cluster solutions. Descriptive analyses and comparisons amongst parent age groups revealed that the youngest subpopulations of parents were most vulnerable to factors commonly associated with risk. Lastly, a series of regression analyses illustrated that

factors predictive of child maltreatment often function differently among parents at different developmental

stages as well as maltreatment type.

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Add Health	National Longitudinal Study of Adolescent Health
AHPVT	Add Health Picture Vocabulary Test
CES-D Scale	Center for Epidemiologic Studies Depression Scale
Coeff.	Coefficent
CI	Confidence Interval
EC	Emotional Closeness
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition
N	Population Size
OR	Odds Ratio
PA	Physical Assault
P	P-value
RSES	Rosenberg's Self-Esteem Scale
SA	Sexual Assault
SD	Standard Deviation
SE	Standard Error
VA	Verbal Assault
χ2	Chi-square
α	Cronbach's Alpha
%	Percent

CHAPTER 1

Introduction and Review of the Literature

Among adult parents, child maltreatment is widely studied and researchers have found that this outcome cannot be attributed to one factor alone. Instead, child maltreatment a product of multiple factors found in the external ecology surrounding parents and children as well as factors internal to both parties. Child maltreatment is more common among adolescent parents, yet the predisposing factors are less well understood. It is widely recognized that adolescent parenting presents unique challenges, contributing to the adolescent parent's ability to nurture and foster the positive development of the typically unexpected child. Several of the factors which commonly underscore child maltreatment among adult parents are thought to also play an important role in child maltreatment among adolescent parents. Parallels in dimensions of parenting specific to child maltreatment cannot be assumed across these diverse periods of development, however. Adolescent parents must cope with their own, often turbulent, period if development as well as that of their young infant and/or child. Even within the period of adolescence, aspects of development can vary significantly. Thus, the study of relationships between and interactions among factors frequently associated child maltreatment necessitates an ecological-transactional model of development. It is important to be sensitive to personal and environmental distinctions that may give rise to different child maltreatment outcomes.

Examining parental child maltreatment from a developmental perspective allows for the selection and examination of factors often salient in the lives of adolescents in addition to those more frequently associated with dimensions of parenting among adult parents. The care that an adolescent parent provides for their infant or child may, for example, be dependent upon developmentally situated current contextual factors, such as the support provided by family and peers, and this further differentiated by a number of demographic or other pertinent variables. From a historical standpoint, early relationships with caregivers are found to be pertinent to both adult parenting and to positive adolescent development. It is unclear whether parent-child relationship factors, that are relevant to successful adolescent development, also contribute to dimensions of parenting. Thus, adolescent attachment relationships are important to consider as well as subtle and explicit events (i.e.

overt maltreatment) that may interact with parent age to predict child maltreatment. Conversely, among adolescent parents that have themselves been subject to assault by a caregiver, it is essential to identify intervening factors associated with positive parenting.

Attachment relationships with maternal figures are frequently analyzed, but potentially represent only a partial picture of how parent-child relationships contribute to subsequent caregiving. Emotional closeness a range of other caregivers deserves attention as well. In addition, the status of current caregiving relationships may be more relevant to child maltreatment than previous measures of this dimension. Similarly, endorsement of depressive symptomatology, thought to play an important role in parenting among adults, may be more or less relevant to child maltreatment among adolescent parents. The effects of many different factors thought to be pertinent to the child maltreatment may vary by parent age.

Adolescent parenting is a critical area of study due to the poorer infant, child, and adolescent development outcomes associated with parenting during this very vulnerable period of development. Child maltreatment is among these outcomes. A confluence of current and historical factors likely contributes to dimensions of parenting among adolescent parents. Thus, the aims of this study are to better understand the perpetration of various forms of child maltreatment, conceptualized as a developmental outcome, among younger (14-16 years) and older (17-19 years) adolescent parents, and young adult (20 or more years) parents using a person-centered approach. The study will examine patterns of personal characteristics and family ecology associated with variations in outcome. Further, this study will identify which variables at multiple levels of ecology surrounding and internal to the parent, such as parents' receipt of caregiving during their adolescence as well as current contextual variables, and whether child characteristics differentially predict the aforementioned outcomes.

Review of Literature

The review of the literature that follows will provide an analysis and synthesis of the relevant theories, models, and prior research that shed light on the psychosocial functioning of adolescent parents and child maltreatment (i.e., parent self-reports of supervision neglect, physical neglect, and physical assault). First, a broad conceptual framework for examining developmental outcomes from a person-centered perspective, incorporating multiple variables surrounding and internal to the ecology of the parent, will be presented. This sets the stage for pursuing a person-centered approach and the exploration of a breadth of ecological factors.

The review then addresses the incidence of teen pregnancy in the United States and provides a brief overview of general outcomes associated with adolescent parenting, including a heightened incidence of both depressive symptomatology and child maltreatment, ultimately resulting in poorer child development outcomes. Next, normative aspects of adolescent development, such as the shifting roles of parents, peers, and levels of support are reviewed as they relate to parenting adolescents. Models of adult parenting are presented, which lay the foundation for a discussion of attachment theory and the development of internal working models which persist into adolescence and, potentially, parenthood. This will be followed by a review of research on the role of attachment in adolescence and the relationship between caregiving history and psychopathology among adolescent mothers. The fifth section of the literature review is focused specifically on child maltreatment, including its incidence, etiology, and sequelae. An exploration of factors, both distal and proximal, that promote resilience among children with a history of maltreatment is presented as a framework for understanding factors that may promote adaptive parenting. Literature addressing the relationship between child characteristics, such as infant and child disability and premature birth, and forms of child maltreatment will be reviewed as well as literature discussing the relationship between these specific child characteristics and the quality of mother-infant interactions and attachment. The effects of child maltreatment on attachment and the intergenerational transmission of abuse will also be addressed. Lastly, the limited research on the examination of adolescent parenting from a cultural perspective, or an alternative demographic lens, will be identified and the need for further research proposed.

Key concepts relevant to the study and to the literature are driven, in part, by the necessity to examine adolescent parenting from a developmental perspective. Thus, it is important to define the period of adolescence and to differentiate between older and younger adolescents as well as young adults. In this study, younger adolescents range in age from 14- to 16-years-old, while older adolescents range in age from 17- to 19-years-old. Young adulthood or adulthood begins at age 20. Many of the studies reviewed failed to distinguish between younger and older adolescents, instead focusing on adolescent parents as one group, comparing age group differences within the adolescent population, or comparing all adolescents to young adults. Such gaps underscore the need to investigate potential differences between these groups.

Few studies have examined the relationship between culture and ethnicity, age, and outcomes associated with adolescent and young adult parenting. Previous research has primarily focused on outcomes

associated with adolescent parenting within groups or failed to systematically examine ethnic group differences, combining African American and Latina adolescents, for example. Thus, for the purposes of this study, it will be important to explore whether there are differences between parent age groups after controlling for race/ethnicity. Further, it will be important to examine whether there are ethnic group differences on clusters defined by different patterns of parent characteristics. Clusters may be differentiated by other characteristics or demographic variables as well. Thus, in addition to race and ethnicity, the age at which the respondent began parenting, level of educational attainment, socio-economic status, family economics, and gender will be examined as socio-demographic variables that may serve as potentially significant organizing variables. Gender is an important variable to include and this study will incorporate the experiences of adolescent fathers. This study will also consider adolescent parents' relationships with multiple caregivers as the majority of previous studies focus on the child maltreatment among mothers, examining maltreating mothers' attachment to their own mothers and the quality of their interactions.

The dependent variables in this study are three different types of child maltreatment and one total child maltreatment measure that is the sum of all three. For the purpose of this study, measures of the child maltreatment will consist of parent self-reports of child neglect (supervision and physical) and physical assault. Multiple measures of child maltreatment allow for an assessment of the cumulative child maltreatment as well as for differentiation between specific forms of child maltreatment.

Independent variables will include interpersonal and intrapersonal current contextual and historical factors, as well as child characteristics that may bear on the adolescent or young adult's ability to parent. Current interpersonal contextual variables include family level factors such as financial support provided by family members; the quality of adolescent and young adult parent's current relationships with caregivers; and place of residence, including co-habitation with a significant other. Intrapersonal variables include depressive symptomatology, self-esteem, alcohol dependency, and anxiety. Characteristics associated with the infant or child (i.e., birth weight, age, and number of children) will also be measured.

Historical variables include adolescent and young adult parents' endorsement of being victims of child maltreatment as well as the quality of early relationships with early primary caregivers; perceptions of friendship; depressive symptomatology; self-esteem; ADHD; family structure; and school connectedness.

Endorsement of depressive symptoms is a unique independent variable in that it will encompass depressive symtomatology measured at two time points during a seven year period. Depression among pregnant and parenting adolescents and its effects on parent-infant interactions and aspects of infant and toddler development is frequently studied. Fewer studies however, examine the relationship between symptoms of depressive symptomatology measured longitudinally and child maltreatment among parents at different developmental stages in conjunction with the potentially moderating effects of other proximal and distal ecological variables among a large, ethnically diverse population of adolescents and young adult parents. Depressive symtomatology in this study will be defined as symptoms relating to depression that can be used among the general population without a clinical diagnosis of depression (Radloff, 1977).

The literature included in this review spans from seminal work published as early as 1969 to the most recent publications in 2009. In summary, it contains a review of literature that bear on normative adolescent development, infant and adolescent attachment, adolescent parenting practices and child rearing attitudes, and the mental health of pregnant and parenting adolescents. Finally, an in depth examination of factors associated with child maltreatment is presented. It is primarily focused on the interpersonal, intrapersonal, and more distal factors that may impact child maltreatment. This review does not contain information about adolescent parents' receipt of prenatal care, factors associated with abortion and adoption, or adolescent risk-taking behaviors.

Section 1: Broad Theoretical Foundations for Investigating Adolescent and Young Adult Dimensions of Parenting: General Systems Theory

In the attempt to predict almost any developmental outcome, it is essential to examine more than simply perceived cause and effect. For example, researchers cannot state unequivocally that children who are abused will go on to abuse their own children, as if this alone is the sole determinant of functioning later in development. Rather, a variable acquires its predictive value only in the context of the network of variables in which it is embedded (Mahoney, 2000). Magnusson and Cairns (1996) state "The common goal is to understand how the multiple systems that influence individual development…become integrated over time to promote healthy, adaptive functioning or its converse" (p. 9). This approach to studying human development is grounded in general systems theory (GST) (von Bertalanffy, 1969), which is further explicated for the purposes of developmental science by subsequent authors and validated by empirical research. This section will examine the theoretical groundwork and empirical basis for a person-oriented approach to studying the functional relationship between individuals and their environment.

Organisms, including humans, are situated in a hierarchy of nested systems, which mutually influence one another and are thus subject to constant fluctuation. Systems such as these are referred to as "open systems" (von Bertalanffy, 1969). The multiplicity of internal and external influences to which an organism is subject yields an exponentially larger array of potential outcomes. This variability is, in part, a result of the cybernetic feedback loop, proposed by von Bertalanffy as a metaphor for human development. The purpose of a cybernetic feedback loop is to take information from the environment and react in a manner that maintains its internal steady-state, thus functioning as a thermostat. The tendency toward hierarchical organization, or negative entropy, stems from the organism's continual redefinition, as it is the product of both its environment and its internal mechanisms. The resulting tendency in a closed system, in contrast, is toward maximum disorder. In other words, the seemingly paradoxical organization of the organism is necessarily constrained by the multitudinous environments in which they interact. This is the concept of equifinality, or the idea that despite the indeterminable influx of developmental determinants, some outcomes are more likely than others.

General systems theory functions as the basis for debunking predetermined epigenesis, the belief that there is a direct causal relationship from genetic property to development (Gariepy, 2007). Lewontin (1985) rejects both Lamarkian and Darwinian conceptions of evolution and begins to elucidate an understanding of development more consistent with GST. With the concept of "norm of reaction" (p. 90), the developing organism's phenotypic response to its environment, Lewontin brings the environment to the fore of development. Further, Lewontin stresses the concept of developmental contingency, maintaining that development understood as a force or conceived of as something that simply unfolds, is meaningless in the absence of a landscape to unfold onto. Thus, in evolution and as well as development, the unit of selection is not the gene, but the gene-environment relationship as it is the environment that determines which genes become epistatic. This portrayal of development is still biased, however. Not only is the development of an organism contingent upon its environment, it is also active in creating it. Lewontin (1985) maintains that a niche, the organism's environment, is "defined in practice by the organisms in the process of their activities" (p. 98). Neither the organism nor the environment is constructed prior to the existence of the other.

The departure from previously held assumptions regarding not only genetic predetermination but also mechanistic, or additive explanations of human developmental outcomes, is perhaps most notably rationalized by Gottlieb (1991) who posits that a naked gene does not exist and cannot be divorced from its context; the two

function as a system. Gottlieb instead propagates "probabilistic epigenesis," stating that "activity at each level, from the genes to neural structures and the behaviors they support is always contingent upon the state of organization and activity of the system as a whole" (cited in Gariepy, 2007, p. 186). Gottlieb (1991) gives new meaning to the concept of "norm of reaction," arguing that it is "essentially nonpredictive because it utilizes the developmental systems view, in which each new environment is expected to have a different influence on developmental outcomes that cannot be stated in advance of actual empirical investigation" (p. 5). For this Fogel and Thelen (1987) criticize probabilistic epigenesis, arguing that it lacks a causal mechanism and results in an infinite number of dimensional outcomes.

Indeed, despite the seemingly endless wealth of developmental possibilities, there are many documented instances in which children grow up to perpetuate the relationship experiences they had as children. Gottlieb (1991) also adopts the view that causal mechanisms of development can be identified in a nonteleological manner, generally referred to as canalization. Although canalization was initially intended to depict the phenotypic expression of genes with regard to an organism's relationship with the environment, this concept is also applicable to more overt social and emotional human behaviors that are of interest to developmental scientists. Gottlieb (1991) depicts canalization as a process of carving out "developmental pathways," or "creods," which "represent the biases the organism has toward acquiring some rather than other forms of behavior" (p. 5). Perhaps most importantly, Gottlieb suggests that experience can also have a canalizing effect on development.

The current conceptualization is that behavior is organized at multiple levels in the ecology surrounding and internal to the organism. These levels are bi-directional. Higher levels can influence lower levels and vice versa. Pruning of developmental outcomes imposed by co-action among various levels of ecology are referred to by Magnusson and Cairns (1996) as "correlated constraints," "a network of associations between social, environmental, and biological forces" (p. 20). The paradigm is similar to niche construction theory (Lewontin, 1985; Laland, Odling-Smee, & Gilbert, 2008), in which the organism is equally influential in determining its evolution by virtue of the niche it creates and vice versa. Thus, individual factors in the network of correlated constraints are inseparable and gather meaning only in the context of the company they occupy.

Communication among levels of ecology and the effects of co-action, are validated by empirical studies documenting the relationship between experience and physiology in animals and humans. Meaney and

Szyf (2005) demonstrate that early experiences can have long-term biological consequences in rat pups handled shortly after birth. The systemic interaction, handling, changed the physiology of the hypothalamic-pituitary-adrenal (HPA) axis. Pups that were handled demonstrated adult functions in the HPA axis earlier and were better organized. The fear they experienced earlier in their development primed them for future experiences.

The effects of early experience on physiology were paralleled among children in Propper et al.'s (2008) study on Respiratory Sinus Arrhythmia (RSA), genes, and parenting. RSA is a measure of the regulation of arousal state and reactivity related to underlying individual differences in emotions, behavior, and personality. Vagal tone is a measure of RSA; the vagal break allowing the heart beat to slow down when environmental stressors are not present. Propper et al.'s examination of the relationship between RSA and the specific alleles involved in dopaminergic activity as well as the correspondence between RSA and parenting, demonstrated that maternal sensitivity can change physiology and the organization of the dopaminergic system even among 12-month-old infants genetically predisposed to RSA activity. These findings suggest that environmental influences, such as the sensitivity of maternal care over the course of development, may alter the expression of RSA, a biologically based phenomenon.

At yet another level of systemic interaction, one more obviously pertinent to social scientists, parent-infant interactions are manifest in observable behaviors later in development. Magnusson and Cairns (1996) provide a framework for understanding overt social and emotional behavior that is a product of the interaction between internal processes and the external environment over time, a feature that distinguishes dynamic systems theory (Fogel & Thelen, 1987) from GST. The temporal dimension allows for intervening variables to thwart the early course of development set in motion by the infants' needs for external regulation, or, conversely, to reinforce and compound early developmental proclivities through the organisms' evocative effect on the environment.

This reciprocal determinism underscores the long-term outcomes associated with the affective communication system (Tronick, 1989), as well as attachment theory, grandfathered by Bowlby and widely researched by others as well. The extent to which the caregiver engages in "interactive repair," thereby shaping the transformation of external regulation into internal regulation, prepares the infant for the environment in which she must later thrive. This type of environmentally contingent development can be construed as "experience-adaptive" (Rutter & O'Connor, 2004, p. 83), whereby development is optimized for functioning in

a specific environment, thus potentially appearing deviant or abnormal in another context. Experience-adaptive development may occur in the absence of certain kinds of recurring stimulation, referred to as "experience-expectant development" (Rutter & O'Connor, 2004, p. 83).

The co-actional nature of organisms and their environmental subsystems and the inability to hold any of these variables constant, qualify assumptions of independence and reduce the viability of causal inferences. How then are developmental scientists to predict developmental outcomes? In an attempt to escape the limitations of mechanistic and reductionist models, scientists instead look to dynamic interactions to explain variance. The value of a factor thought to be a determinant of behavior is meaningless without examining its correlated constraints. The assumption of the fluidity of the correlated constraints internal to organisms and in which they reside is rooted in a systems approach. This approach ultimately suggests that organisms inherit the capacity for change in concert with their environment, thus warranting the use of methods that account for this vital feature of organismic and human development.

Section 2: The Demography of Adolescent Pregnancy in the United States and Associated Outcomes

Although adolescent pregnancy rates have declined in recent years, an estimated 10% of adolescent girls still become pregnant each year in the United States (Coleman, 2006). According to Coleman approximately 75%-86% of adolescent pregnancies are unintended. The majority of these adolescents, 60%-65%, choose to give birth (Coleman). Furthermore, Feldman (2007) reports that the rates of abortion declined from 43% in 1980 to 24% in 2000 among adolescents 15- to 19-years-old. While adolescent pregnancy does not preclude any particular population, it is more common among young women with low socio-economic backgrounds, minority ethnic status, and low educational attainment (Deal & Holt, 1998).

Using data from the National Longitudinal Study of Adolescent Health (Add Health), Coleman (2006) found that pregnant adolescents that choose to have abortions are more likely to experience anxiety, depression, sleep disturbance, and substance abuse/use following the procedure. Pregnant youth who choose to give birth are also at risk for mental health problems, however. In addition, young women who become mothers as adolescents achieve lower levels of educational, occupational, and economic attainment (Easterbrooks, Chaudhuri, and Gestdottir, 2005). When compared to older mothers, they are more likely to be single parents and impoverished. The nature of the relationship between these factors and adolescent pregnancy is uncertain, however. It is likely that at least some of these circumstances contribute to a higher likelihood of becoming

pregnant as an adolescent and that adolescent pregnancy subsequently helps to maintain them. Regardless of the direction of causality, these circumstances may further exacerbate the stress of an unplanned pregnancy (Deal & Holt, 1998) and prime younger adolescent mothers for "compromised maternal health" (Coleman, 2006, p. 903), poorer parenting practices, and child development outcomes.

Results of the 1988 National Maternal and Infant Health Survey conducted by the National Center for Health Statistics found, among a sample of parenting African American and Caucasian adolescents and young adult women between the ages of 15 and 34 years, a higher prevalence of depressive symptoms within two adolescent age groups (Deal & Holt, 1998). In this study, women were categorized in three different age groups: younger teens (15 to 17 year), older teens (18 to 19 years), and adults (25 to 34 years). Deal and Holt (1998) found that adolescent mothers, regardless of race, had an overwhelmingly higher incidence of depression (Deal & Holt, 1998, p. 267). Depressive symptoms among adolescent parents were, however, more frequently associated with being of African American, unmarried, less well educated, and receiving government assistance (Deal & Holt, 1998, p. 269). Depressive symptoms in both ethnic groups declined when controlled for by socio-economic and marital status. The results of Deal and Holt's analyses suggest that it is unclear whether depression among pregnant and parenting adolescents is best accounted for by demographic variables such as socio-economic status (SES), age, level of educational attainment, marital status, or a combination of these variables.

Transient or episodic depression is prevalent among adolescents in the general population. Despite the normative elevation of depression in adolescents, Easterbrooks et al. (2005) found that rates of moderate to severe depressive symptoms among adolescent mothers ranged from 30% to 60% and were continuously elevated during the first few years after childbirth, despite evidencing a decline in depressive symptoms in the first year following childbirth. Thus, the depression experienced by adolescent mothers may not be adequately accounted for by the transient developmental crises experienced and more easily resolved by many non-parenting teens.

In an attempt to account for the psychosocial stressors most significantly related to depression and, more generally, maladjustment among adolescent mothers, Prodromidis and Abrams (1994) conducted interviews with adolescent mothers in a hospital serving a large low SES population, shortly after giving birth. Prodromidis and Abrams investigated differences in the psychosocial characteristics, such as family relations,

peer relations, and social skills of depressed and nondepressed adolescent mothers while controlling for socio-demographic factors such as low SES. Their findings indicated that depressed adolescent mothers endorsed impairment in functioning in the following areas: physical health, mental health, peer relations, family relations, vocational status, and social skills (Prodromidis & Abrams, 1994). Prodromidis and Abrams conclude that many of the tasks of adolescence are still prominent in the psychosocial functioning of adolescent mothers and account for their poorer mental health.

Although Abrams and Prodromidis' (1994) study enabled them to focus on a population of adolescent mothers similar on a number of socio-demographic variables, and thereby provide a better understanding of stressors occurring within that population, this constellation of stressors may not be as central to the adjustment of adolescent mothers that differ on one or more of these socio-demographic variables (Prodromis & Abrams). Thus, it is necessary to conduct not only within group analyses, such as that conducted by Abrams and Prodromidis, but to also make comparisons between groups in a socio-demographically broad population of parents. This type of analysis would provide a better understanding of the extent to which stressors vary between groups.

The effects of maternal depression in multiple domains of child development are widely studied. Mother-infant interactions are less positive, physical and motor development is often delayed, and children of depressed mothers frequently have more behavior problems (Deal & Holt, 1998). A study conducted by Easterbrooks et al. (2005) found similar outcomes even after controlling for the effects of socio-demographic factors such as lower socio-economic status, marital status, and level of educational attainment. Easterbrooks et al.'s study demonstrates that maternal depressive symptomatology is predictive of multiple developmental outcomes above and beyond the effects of socio-demographic factors. It is unclear, however, whether factors underlying maternal depression, such as those identified by Prodromidis and Abrams (1994), better account for those developmental outcomes.

Poorer child developmental outcomes are not exclusive to infants whose mothers have experienced depressive episodes. Among a sample of adolescent mothers not screened for depression, Miller et al. (1996) found that over fifty percent of children at young as three-years-old evidenced intellectual and/or emotional difficulties (cited in O'Callaghan et al., 1999). In general, adolescent mothers have been described as "less verbal in their interactions with their children, more controlling, less responsive, and less sensitive" (Applegate

& Shapiro, 2005, p. 95). Adolescent mothers often underestimate the cognitive and linguistic abilities of their infants and have low expectations for them, although they frequently possess unusually high expectations of psychomotor development (Applegate & Shapiro). Maternal age is also positively associated with measures of child readiness to learn, which is predictive of academic success in the primary grades (Applegate & Shapiro, 2005).

In addition maternal mental health problems and poorer child development outcomes, Lounds, Borkowski, Whitman, and Weed (2005) contend that adolescent mothers are at an elevated risk for child maltreatment. These outcomes may be related to one another. That is, maternal mental health problems, or circumstances directly related to their onset, may increase the likelihood of child maltreatment, and subsequently result in poorer child developmental outcomes. The relationship between parental depressive symptomatology and child maltreatment among adolescent mothers and fathers, in particular, is unknown, however. Banyard, Williams, & Siegel (2003) assert that further examination of the relationship between maternal depression and various forms of child maltreatment is warranted given the substantial evidence linking "maternal depression and decreased parenting efficacy, including higher maternal hostility, coercion, and less positive parent-child interactions" (p. 336).

The relationship between parental depressive symptomatology and child maltreatment may not be straightforward, however. Just as developmental outcomes associated with maternal depression may be more aptly attributable to underlying factors of depression identified by Prodromidis and Abrams (1994), so too might these underlying factors better account for child maltreatment. Outcomes associated with adolescent parenting were not addressed in their study, however, nor were potential mediators and moderators of this relationship identified. Findings from Easterbrooks et al.'s study suggest that maternal mental health is in fact a significant predictive factor, above and beyond socio-demographic factors, for several parenting outcomes. Again, child maltreatment was not addressed in this study. Thus, it is uncertain whether child maltreatment is primarily and uniquely dependent upon maternal mental health or better accounted for by other, or additional, historic, contextual, and demographic variables.

Parents abused in childhood are also more likely to suffer from depression and research further suggests that approximately 30% of parents abused in childhood perpetuate the cycle of abuse (Banyard et al., 2003). Among adults with a mean age of approximately 31 years, Banyard et al. (2003) found that maternal

depression mediated the relationship between overall trauma exposure and parental satisfaction. Trauma was directly related to specific forms of maltreatment perpetuation, however. That is, experiences with or being the victim of differing forms of child maltreatment may not result in uniform outcomes. As a result, further investigation of effects of different forms of child maltreatment on subsequent parenting is warranted. Researchers have also examined other potential mediators of child maltreatment among adult parents exposed to maltreatment during childhood, including low marital relationship quality, low income, large family size, and mothers' age. Whether these factors serve as mediators among younger and older adolescent and young adult parents remains uncertain. Several of these factors are included in models of adult parenting, addressed later in the literature review. Models of adult parenting, however, may not adequately describe adolescent parenting. Clearly it is essential to understand the impact of parental mental health as well as experiences with child maltreatment on child maltreatment among parents at different developmental stages.

In summary, a host of adverse outcomes are associated with adolescent parenting, not limited to maternal mental health problems, a higher incidence of child maltreatment, and poorer child development outcomes. Although the heightened incidence of maternal mental health problems and child maltreatment among parenting adolescents as a whole is documented, what is still ambiguous is how the interaction between current contextual and historical factors, or combination of them, and parent development (i.e. age) effect child maltreatment when controlling for other demographic variables deemed pertinent. These questions remain: can child maltreatment among adolescent parents be attributed to parental mental health problems? Alternatively, is maltreatment within this population better explained by factors that precipitate or coincide with these mental health problems, exacerbating them in the context of the ongoing stresses of parenting? It also stands to reason that child maltreatment is best understood as an outcome unrelated to mental health among adolescent parents, similar instead on a cluster of variables less commonly examined. Furthermore, variables that explain child maltreatment may vary not only by age, but perhaps by other demographic variables more appropriate, such as socio-economic status, or culture and ethnicity. Conversely, the question can also be asked: what explains resilient and adaptive adolescent and young adult parenting, particularly among parents with a history of adverse caregiving experiences?

In addition, few studies have considered infant and child characteristics frequently associated with child maltreatment such as child age and low birth weight, among adolescent parents and how these factors are

mediated by others previously discussed. Lastly, although adolescent mothers are often responsible for primary caregiving, they are not the sole perpetrators of child maltreatment. It is unknown whether caregiving history, mental health, and other factors commonly associated with the child maltreatment among mothers, are similarly related to child maltreatment among adolescent fathers.

Section 3: Adolescent Development in the Context of Parenting

       Adolescent Developmental Characteristics and Their Relationship with Parenting. Adolescence represents a unique transition in development in several important ways. Despite the undeniable importance of early relationships with caregivers in adolescent psychosocial functioning, extensive social and emotional shifts are evidenced in relationships with peers and parents during the transition to adolescence (Davis, 2002). Davis (2002) describes this transitional period as a "transformation" (p. 492) in parent-child relationships. Younger adolescents, between ages 11 and 13, and middle adolescents, between ages 14 and 16, receive more support from caregivers than older adolescents, between ages 17 and 19 (Davis, 2002). These normative differences among older and younger adolescents may impact parenting adolescents' perception of parental support. Younger adolescent parents may need to rely on their parents for support to a greater extent than older adolescent parents. A lack of parental support among younger adolescent parents may, in turn, pose a greater detriment to their adjustment to parenting and have a more significant effect on maltreatment, than a comparable level of parental support provided among older adolescent parents (Ward & Carlson, 1995; Shapiro & Mangelsdorf, 1994). In contrast, adolescent parenting may thwart the course of normative adolescent development such that parental support becomes essential to the positive adjustment of even older adolescent parents, thereby reducing the normative differences between older and younger parenting adolescents.

       Resolution of normative developmental crises or tasks, akin to those described by Erikson (1958), is a foundation for competent parenting. Failure to resolve these conflicts may result in significant problems in the parent-child relationship (Benedek, 1959; Fraiberg, 1980; & Lieberman & Pawl, 1990; Sameroff & Fiese, 1990). As a result, it is essential to understand adolescent parenting from a developmental perspective, as previously discussed, and to explore issues characteristic of adolescence that might interfere with various dimensions of parenting.

       Adolescence is underscored by three integral developmental processes. They include the second separation and individuation (Blos, 1967), the first occurring in the toddler years when the child is initiating

exploration his or her world with more autonomy; identity formation (Erikson, 1958); and changes in cognition as adolescents achieve formal operational thought (Piaget & Inhelder, 1969, 2000) and, eventually, a decline in adolescent egocentrism (Elkind & Bowen, 1979). These processes are not mutually exclusive however, and they may each either facilitate or serve as an obstacle to the emergence of the other.

The drive for greater autonomy and independence, characteristic of adolescence and the essence of separation and individuation, necessitates "(1) continued psychological change with regard to primary relationships, (2) adaptation to increased maturational demands, and (3) temporary vulnerability" (Applegate & Shapiro, 2005, p. 101) as adolescents learn to accomplish new tasks with less assistance from caregivers. In addition, the negotiation of rules for greater autonomy may result in increased conflict between parents and adolescents, though there is currently less support for the notorious characterization of adolescence as a period of "storm and stress." Successful separation and individuation is underscored by adolescent ego-identity development (the process of identity formation) and vice versa. Ego-identity development requires adolescents to consolidate their life experiences and to integrate them with unfamiliar roles and opportunities. Some roles will remain a permanent fixture in the adolescent's identity, while others are merely experimental. Throughout this process, the adolescent's early developmental experiences serve as a foundation and point of reference for the evolution of the adolescent's emergent personality. Thus, the process of separation and individuation as well as ego-identity development is typically one in which adolescents develop greater autonomy from their caregivers as well as a unique sense of self, without completing disparaging their upbringing and associated relationships (Ketterlinus et al., 1991, p. 436).

Adolescents emerge from this period of tremendous uncertainty increasingly reliant on internalized representations of others, rather than physical proximity, in order to feel secure. This supports a more stable self-concept and the ability to self-regulate emotions. When the process of separation and individuation is thwarted or delayed, "ego functions that normally become solidified in adolescence, such as reality testing and the regulation of self-esteem, may remain overly dependent on the external sources and thus prone to regression under stress" (Applegate & Shapiro, 2005, p. 101). Thus, separation and individuation and subsequent ego-identity development may be viewed as intrapersonal resources essential to the ability to successfully manage adversity later in life.

Adolescent pregnancy may represent an event that impedes normal adolescent separation and individuation and ego-identity development. For the pregnant adolescent, development takes place in the midst of "the physical and emotional demands of pregnancy, the assumption of her role as a mother, and the ambivalent struggle for closeness and separation from her own mother at a time when she is cognitively unprepared to parent" (Feldman, 2007, p. 213). Applegate and Shapiro (2005) also describe adolescent pregnancy and parenting as a "dual developmental crisis" (p. 99) in which typical adolescent development is often irrevocably altered. Whereas adolescence is often a phase in which different identities are explored, the role of parenting is usually a permanent one (Elkind & Bowen, 1979). In addition, adolescents may mistakenly believe that parenting will bring them greater independence and are subsequently forced to cope with the reality of being even more dependent upon caregivers. The realization of greater dependency may result in negative feelings, including depression (Applegate & Shapiro, 2005).

Successful separation and individuation among adolescent parents, despite the non-normative plight of parenting, is influenced by the stage in adolescent development in which parenting begins, the adolescent's preparation to parent, and the adolescent's family's ability to support the adolescent's role as a parent and as a teenager (Applegate & Shapiro, 2005). The factors underlying separation and individuation appear age-related and suggest that an adolescent's own development is more likely to be resolved favorably when parenthood occurs later in adolescence; when skills such as problem-solving are well developed; and when protective factors, such as positive relationships with caregivers, are in place.

The development of formal operational thought in adolescence is also relevant to dimensions of parenting. Adolescents with the capacity for formal operational thought can reflect on their thoughts and actions. As a result, they are more likely to learn from their parenting mistakes. Adolescent thinking is often described as 'egocentric,' meaning that adolescents assume that others share their same thoughts and feelings and perceive the world as they do (Elkind & Bowen, 1979). Thus, adolescents are often described as less capable of taking others' perspectives. As adolescent thinking becomes less centered, they are able to recognize that others have thoughts, beliefs, and opinions distinct from their own. Adolescent parents with only concrete operational cognitive abilities may not be as capable of examining all possible solutions and alternatives and to think abstractly about their future from multiple points of view (Piaget & Inhelder, 1969, 2000). This puts them

at a disadvantage in terms of problem-solving around the numerous stresses of parents and effectively managing this stress as well as in their ability to assume an empathetic point of view when it comes to caregiving.

The skills involved in formal operational thought enable adolescent parents to more accurately interpret infant cues. These capabilities result in more effective parenting and, subsequently, greater sense of self-efficacy and belief in one's ability to parent competently. Studies illustrate the greater difficulty adolescent parents often have interpreting the needs of their infants and children. For example, Easterbrooks et al. (2005) found that clusters of infant-adolescent parent dyads, with different patterns of emotional availability, were also frequently differentiated by their ability to competently structure activities. Mothers who lacked emotional availability were also more likely to struggle to strike a balance between structured and free play (Easterbrooks et al., p. 320). Adolescent parents' deficits in being attuned to, interpreting and appropriately responding to child cues may stem, in part, from immature cognitive development.

Literature detailing the tasks of normative adolescent development and overlaid with adolescent parenting suggest that it is, as previously discussed, essential to examine it within the context of both age and maturity as well as within the current contextual environment provided by the adolescent's support network (i.e., caregivers, peers, etc.). It will be essential to develop a more thorough understanding of potential sources of support that may influence the child maltreatment among younger and older adolescent and young adult parents.

Conceptualizing Support in Adolescence and for Adolescent Parents. The majority of non-pregnant adolescents live with their families. Parenting adolescents frequently continue to live with their parents or other extended family members following childbirth as well. There are some drawbacks to this type of living arrangement however, despite the copious familial support that this living arrangement appears to provide. Understandably, financial support from family members and assistance with caregiving is a protective factor in some respects, but it may be detrimental to the adolescent parent's assumption of their role as primary caregiver and ultimately thwart the quality of the attachment bond. Support provided by grandmothers or other extended family members is positive when it facilitates the mother's eventual independence and does not supplant the mother's role as primary caregiver.

An adolescent parent's co-residence with her mother may not only result in the latent development of her 'mothering' role, but the quality of her parenting may suffer as well. For example, adolescent mothers who

live with their mothers may be more likely to continue with their education, but also have more arguments with them, thus creating a more hostile child rearing environment and compromising the quality of mothers' interactions with infants and children (Lounds et al., 2005). Similarly, the quality of grandmother-child interactions are also reduced (Coley & Chase-Lansdale, 1998). Voight, Hans, and Bernstein (1996) found that while the quality of caregiving was best when grandmothers provided copious support, mothers' experience of parenting was negatively related to such support. Easterbrooks et al. (2005) offer similar assessment of the multigenerational living arrangement, "If coresidence between the young mother and her own family results in crowding (Elder, Caspi, & Burton, 1990; Chase-Lansdale et al., 1994) or lack of clarity about who fills the maternal role, for example, stress may result" (p. 312). The situation is perhaps more extreme among younger adolescent parents. Younger adolescent parents are more likely to experience both conflict and support from the same source and are less capable of escaping the negative environment as a result of their greater dependence upon caregivers compared to older adolescent mothers. The benefits of co-residence may be particularly negligible, if not deleterious, when the adolescent parent has been subject to maltreatment by the caregiver with whom he/she currently resides. Co-residence may be more favorable among younger adolescent parents when conflict is minimal, given potential differences in the trajectory of separation and individuation previously discussed.

Voight et al. (1996) contend that the results of studies on the relationship between co-residence and the quality of adolescent parenting likely differ as a result of demographic disparities in populations studied, variations in outcomes assessed, and variations in definitions of what constitutes social support. Other researchers have found social support does not contribute to parenting outcomes or mothers' perception of child characteristics (O'Callaghan et al., 1999). Outcomes were not measured postnatally however, when social support may prove to be more salient among adolescent parents. Researchers also contend that social support is not comparable among adolescent and adult parents as it is "a more complex and less predictable construct among adolescent parents than among adult parents" (O'Callaghan et al., 1999, p. 220). Behavioral differences between adolescent and adult parents are most evident among younger adolescent mothers. Such differences are said to be mediated by socio-demographic factors, psychosocial maturity, mental health, positive and negative life experiences, and the provision of social support (Shapiro & Applegate, 2005). Thus, it is important to not only explicitly distinguish between and contrast younger and older adolescent parents, but also

examine contextual and historical factors that may more readily account for child maltreatment outcomes through their interactions with parenting age (Ketterlinus et al., 1991).

In the aforementioned studies, Voight et al. (1996) criticizes the narrow parameters by which social support is defined. Voight et al contend that the majority of studies examine maternal support (i.e., grandmothers), excluding romantic partners, peers, as well as support provided by other family members, such as parenting adolescents' fathers. Although grandmother support was most pertinent in Voight et al.'s study, other female family members, adolescent fathers (or romantic partners), and peers were also critical sources of social support to adolescent mothers. In addition, research studies primarily address social supports available to mothers, while forms of social support available to adolescent fathers and their effect on child maltreatment is virtually absent in the literature.

As adolescents make their transition to adulthood, peers play an increasingly important role and parents become less influential. Peers begin to fulfill roles of companionship and intimacy (Hunter & Youniss, 1992). They may also provide more emotional support than parents. Among nonpregnant and nonparenting adolescents, positive peer relationships are related to good self-esteem and to well-being (Davis, 2002). Thus, these sources of social support may also prove to be essential to the wellbeing of adolescent parents.

It is unclear whether the normative transition from predominant reliance on parents to peers for emotional support during adolescence is consistent with what occurs among pregnant and parenting teens. Previous studies have yielded contradictory results due to their failure to distinguish between older versus younger adolescents (Davis, 2002). For example, research shows that maternal support is primary among African American adolescent mothers, but, historically, has failed to compare older versus younger adolescents. In addition, Davis maintains that as well as the independent influence maternal and peer support may have on mental health among adolescent mothers, an interaction may also occur between the two.

Davis (2002) studied "African American adolescent mothers' relationships with their mothers and an important female peer, including the ways in which these relationships varied as a function of the ages of the adolescent mothers" (p. 494). The study revealed that pregnant adolescents in both age groups received both emotional and socializing support from their peers. No differences were found in the amount of maternal support received by younger and older adolescent mothers, suggesting that adolescent parenting at any age may thwart the normative transfer of reliance from parents to peers (Davis, 2002). These results suggest, as

previously stated, that adolescent parenting alters the course of adolescent development, prolonging dependency and delaying the process of separation and individuation.

In the absence of maternal support, Davis (2002) found that peer support had a negative impact on depressive symptoms among younger adolescents. This was not true among older adolescent mothers, however. Compared to pregnant and parenting older adolescents' friends, pregnant and parenting younger adolescents' peers might not be as capable of meeting the needs of their parenting friends or be as reliable, thus disappointing them or leaving them feeling helpless and without alternative support systems. Perhaps older peers are more capable of providing both pragmatic and emotional support. In context of a lack of maternal support, differences found in the impact of peer support within the two age groups further suggest the need to differentiate between older and younger adolescent parents when investigating factors that contribute to child maltreatment.

In contrast to Davis' (2002) findings that lack of maternal support was related to depressive symptoms among younger adolescents, but consistent with her findings among older adolescents, Feldman (2007) found that maternal relationship quality did not influence adolescent parents' prenatal attachments. However, the study revealed that among pregnant adolescents, isolation from current friends had a negative impact on prenatal attachment. Feldman (2007) concluded with surprise that "these pregnant adolescents were similar to non-pregnant adolescent populations in that the peer group is of central importance" (p. 227).

Voight et al. (1996) also found that peer support, in the form of social outlets and sources of "positive feedback and advice" (p. 69), were predictive of parenting behavior. Support provided by peers differs from that provided by parents and significant others as it is not usually accompanied by strict standards and criticisms that often characterize parental, and sometimes sibling and partner relationships (Voight et al.). Friendships may allow adolescent parents to experience aspects of relationships that will benefit their parenting style, such as sensitivity. It is important to keep in mind however, that peers may not necessarily act as the primary cause of better parenting practices as adolescents generally play an equal role in selecting their peer groups. Adolescent parents' already developed social skills and competencies may be mirrored in interactions with their infants or children. Again, Voight et al.'s study was conducted among pregnant adolescents, thus it is possible that these preferences and predilections for support may shift postnatally, when the pragmatic support more likely to be provided by family members is indispensable.

Although Davis (2002) and Feldman (2007) examine different stages in the course of adolescent childbearing and associated outcomes, their results are still comparable in some ways. Whereas Davis' found that maternal support was critical to both younger and older adolescents, Feldman's results suggest that adolescent mothers' relationships with maternal figures were negligible, at least prior to giving birth. Like Davis, Feldman's findings highlighted the emotional and social quality of the support provided by peers. Given the conflicting pattern of results, it is essential to better understand the role of peer relationships among adolescent parents and their effects on child maltreatment. In addition, neither of these studies investigated the influence of peers, romantic partners, and broadly construed familial support on child maltreatment, nor did they address the trajectory of these outcomes longitudinally.

The role of adolescent or adult romantic partners as a source of social support for the adolescent parent is also relatively unexplored. In studies in which African American adolescent mothers received assistance with caregiving duties from babies' fathers, mothers were described as more constructive in their maternal role, they displayed less negative affect, and were more effective disciplinarians (Voight et al., 1996). Romantic partners' provision of paternal support was not related to increases in mothers' positive experiences with parenting, however. Thus, although objective observations indicated positive correlations between parenting behavior and paternal involvement, mothers' subjective experiences were not consistent with this.

Gaps in the literature remain on adolescent fathers' on child maltreatment in addition to the effects of support provided by paternal figures to parenting sons and daughters. The majority of the literature addresses the relationship between mothers and their parenting daughters. Voight et al. (1996) suggest that "Further investigation, with larger samples, will be needed that focus on other issues concerning male support providers, including residential patterns, age of fathers, marital status, differences between biological fathers and current boyfriends, and features specific to particular ethnic groups" (p. 69).

The aforementioned studies on various sources of dependency and social support for the parenting adolescent highlight the need to systematically evaluate whether there are significant variations in its provision within and between populations. Many of the studies discussed were conducted among African American samples, thus the results of these studies may not be generalizable among other ethnic groups. There is an additional need to examine how diversity in adolescent developmental experiences contributes to adaptive and maladaptive adolescent parenting. The studies reviewed maintain the need to carefully define and examine

sources of social support, as measures of dependency. Maternal support and co-residency are discussed in the literature, but warrant further examination due to the contradictory results obtained. Authors acknowledge the limitations of studies with restricted population samples, inconsistencies in outcome variables assessed, and the typically narrow conceptualization of social support used. Differences in and effects of additional support provided by romantic partners and peer support as well as that provided by other family members (i.e. paternal caregivers) necessitate further examination.

A Framework for Understanding Adolescent Parenting Practices. In addition to demographic variables such as socio-economic status, marital status, age, and level of educational attainment, models of parenting are used to predict and explain outcomes associated with both adult and adolescent parenting. Adolescent parenting is, in part, a function of the developmental hallmarks of adolescence previously discussed, and yet models of parenting fail to incorporate several of these components. Belsky's (1984) model of parenting explains influences on dimensions of parenting among adults (cited in O'Callaghan et al., 1999). Influences on dimensions of adult parenting include the following components: "(a) parent's psychological resources, (b) characteristics of the child, (c) sources of social support, and (d) work and marital status" (O'Callaghan et al., 1999, p. 203).

Psychological resources stem from parents' experiences over the course of development as well as their personality characteristics (O'Callaghan et al., 1999). Subsumed within an individual's psychological resources are factors that enable an individual to adjust well in the face of adversity. Potential "personal adjustment" factors include "self-esteem, ego strength, and level of depression" (O'Callaghan et al., 1999, p. 204). Belsky's (1984) personal adjustment factors are reflective of some of the tasks pertinent to adolescent development and subsequently pertinent to adolescent parent and child outcomes described by Applegate and Shapiro (2005). Child characteristics, such as temperament, also bear on dimensions of parenting. For example, children who are not easy to soothe, often labeled as temperamentally 'difficult,' may decrease parents' confidence in their ability to parent.

The third component in Belsky's (1984) model of adult parenting is the social support a parent receives. O'Callaghan et al. (1999) defines social support as "partners, peers, family, and professionals," (p. 204) which, as previously elaborated upon, clearly has an important, albeit different role in adolescent parenting. While personal adjustment factors and characteristics of the child may function similarly in

adolescent and adult parenting, social support among these two groups is likely to look completely different. It is not clear what social supports are available to parenting adolescents and how these social supports change over the course of the development of both the adolescent and the child (O'Callaghan et al., 1999). Adolescent parents have fewer and less stable sources of social support than do adult parents and, in the face of comparatively less support, are likely to experience more stress. Lastly, work and marital status, the last components in Belsky's (1984) model of adult parenting, are most inapplicable to adolescent parents. Work and marital status are less likely to bear on dimensions of adolescent parenting as the majority of younger adolescent parents are unmarried and few are prepared to enter the work force and assume financial independence. As a result of these discrepancies, O'Callaghan et al. (1999) question the validity of Belsky's (1984) model of adult parenting among adolescent parents. Applegate and Shapiro (2005) similarly argue that "few studies have empirically examined the models of adult parenthood in terms of their utility in predicting patterns of risk and resilience among adolescent mothers" (p. 94).

O'Callaghan et al. (1999) posit that several additional factors are likely to influence adolescent parents on dimensions of parenting. Adolescent parents are more variable in their 'readiness to parent' than are adult parents. That is, adolescent mothers may have limited experience with and knowledge of child development. Adolescent readiness to parent is a product of "formal education and informal education gained from experiences as well as her cognitive ability to assimilate and utilize both types of information within an organized parenting schema" (Lounds et al., 2005, p. 109).

Lack of cognitive readiness may stem from inadequate knowledge of child development, rendering adolescent parents comparatively less capable of meeting the developmental needs of their children as older parents (Applegate & Shapiro, 2005). Cognitive readiness is associated with adolescent parents' interpretation of child temperament and behavior (O'Callaghan et al., 1999). For example, adolescent mothers frequently characterize negative affectivity as a trait rather than a state. They are often described as being "out of sync" with their infants, eliciting, in turn, a pattern of negative infant responses that are attempts to communicate that the parent needs to change their behavior. The child's response communicates to the mother whether she is an effective parent and, over time, this pattern of response shapes the parent's pervasive sense of self-efficaciousness. Feeling effective is important for all parents, but even more so for adolescent parents "whose sense of parental role identification is least supported societally and potentially most at risk" (Applegate &

Shapiro, 2005, p. 96). Thus, adolescent parents' inadequacy in this role may be further compounded by negative feedback from the infant or child. As a result of this cycle of misinterpretation and negative reinforcement, less cognitively prepared parents experience more frequent and heighted levels of stress.

An examination of the contribution of cognitive readiness and maternal intelligence to the model proposed by Belsky (1984) revealed that maternal personal adjustment (i.e. personality characteristics and parenting caregiving histories) and intelligence were indeed related to parenting (O'Callaghan et al., 1999). The relationship was indirect however, as personal adjustment and intelligence had an effect on cognitive readiness. Cognitive readiness, in turn, which figured prominently in parenting, including perceptions of infant temperament and behavior (O'Callaghan et al., 1999).

O'Callaghan et al.'s (1999) study on parenting practices calls attention to the inappropriateness of adult models of parenting for adolescent parents and research synthesized by Applegate and Shapiro (2005) lend further credence to the distinctions between adolescent and adult parenting. Thus, evaluation of the factors pertinent to adolescent parenting and adult parenting among a large demographically diverse sample population is necessary. A better understanding of adolescent parenting will foster a more accurate understanding of the child maltreatment among this population.

Section 4: Historical Factors: The Caregiving History of the Adolescent Parent

Attachment & the Development of Internal Working Models. Belsky's (1984) model posits that a "parent's psychological resources" (O'Callaghan, 1999, p. 204) such as developmental history and personality characteristics, influence dimensions of parenting among adult parents. O' Callaghan takes Belsky's model one step further with the finding that that these factors operate through cognitive readiness to parent among adolescent as well as adult parents. Psychological resources may, to some degree, stem from parents' prior caregiving histories. Thus, parents' experiences with their own caregivers may inform the parenting practices and nature of the relationships parents have with their own children. As a result, adolescent caregiving practices may also be understood from an attachment theory framework.

Bretherton's 1964 article describes the evolution of attachment theory, beginning with the shortcomings of psychoanalytic theory from which it stemmed. John Bowlby, a British psychoanalyst, originated attachment theory, combining emotional and cognitive development (Karen, 1990). This was a very controversial view at the time, with both Anna Freud and Melanie Klein criticizing the theory as ignoring

trauma, medical and temperamental factors. Winnicott, a pediatrician and psychoanalyst, predated Bowlby by focusing on the importance of the mother-child bond and the quality of "good enough mothering." In the 1950s, Rene Spitz documented how infants in orphanages without handling or loving attention suffered from anaclitic depression and often died. Harry Harlow, inspired by Spitz, studied mother-infant bond in rhesus monkeys raised with a wire mother or soft terry cloth mother, each with a feeding nipple. Preference was shown for the terry cloth mother, the monkeys cuddling and running to it as a base for exploration even when the nipple was removed. These findings suggested to Bowlby that "love of mother" (Bretherton, 1964, p. 762) is not completely accounted for by the blissful satisfaction of physiological needs nor the dependency drive described by primarily social learning theorists (Ainsworth, 1969).

According to Bretherton (1964) "Bowlby proposed that 12-month-olds' unmistakable attachment behavior is made up of a number of component instinctual responses that have the function of binding the infant to the mother and the mother to the infant" (p. 762). This primitive and instinctual phenomenon, as Bowlby viewed it, is necessary for the survival of infant primates and mammals. Bowlby was drawn to Lorenz' concept of imprinting in geese which demonstrated that geese are born with the capacity to form an attachment to the first moving object they set eyes on (not limited to mother). The instinctual capacity to elicit proximity from a moving object helps to increase fitness, measured as the number of offspring a parent can bring to reproductive maturity.   Thus, attachment is technically defined as a biologically based urge toward proximity with preferred care giving others present from birth (Nelson, 2007).

Proximity seeking behavior not only offers protection from predators and the elements, it also prevents infants from being overwhelmed by negative arousal and distress such as fear, pain, hunger, thirst, and cold (Nelson, 2007). Bowlby used embryology as a metaphor for the organizing role of the mother; directing the rest of development, particularly early in infancy when a mother's response should be unconditional (Bretherton, 1964). The notion that mothers should be attentive to their babies, to help them organize and regulate themselves, was contradictory to what had been popularized by learning theorists of the era. Learning theorists proposed that dependency was unhealthy and the adult children of mothers who responded to them consistently would grow up seeking inappropriate attention and proximity from others.

With the caregiver cast as an 'organizer,' subsequent interactions between mother and child contribute to an attachment bond. The attachment bond is a biologically based process between infant and caregiver

during cycles of negative arousal (distress) and positive arousal (pleasure) followed by an attuned response from caregivers leading to affect regulation (Nelson, 2007). This interaction is similarly described by Tronick (1989) as 'interactive repair' in the process of affective communication, wherein the infant engages in other-directed behavior as a means of communicating that the parent needs to either alter their behavior or the environment, at least until the infant is capable of self-soothing and self-regulation.

From infancy, primary caregivers are also sought out as a secure base from which infants explore, play, and engage in other social interactions (Bretherton & Munholland, 1999, p. 89). When infants feel threatened, they return to the secure base, namely caregivers, for protection. Just as the child seeks out physical and psychological protection, the caregiver must avail herself to the child's needs. Thus, this interaction is contingent upon the caregiver's response to the child's proximity seeking and need for nurturance.

Three different categories of attachment relationships stem from the pattern of infant-caregiver interaction first described by Ainsworth et al. (1978). They include: secure, insecure-avoidant, and insecure-ambivalent. A fourth category, disorganized, was conceptualized years later by Main and Solomon (Bernier & Meins, 2008). The securely attached infant may protest at separation from the mother, first operationalized with the Strange Situation Task, but greets her warmly when she returns. The insecure-avoidant infant does not protest at the mother's departure in an unfamiliar setting and instead focuses attention on other toys and objects in the room. The insecure-ambivalent infant is characterized by distress at the mother's absence and seeks contact with her upon return, but with mixed anger, resistance, and an inability to feel comforted by her (Crockenberg & Leerkes, 2002).

The conceptualization of disorganized attachment represented a new dimension to understanding attachment (Bernier & Meins, 2008). This fourth category of attachment was identified due to the large number of children that did not fit into the original categories. Disorganized attachment is characterized by lack of a coherent, organized behavioral strategy for dealing with stresses. For example, infants with a disorganized attachment style display "puzzling behaviors (such as disoriented movements, dazed expressions, brief gestures of fearfulness, prolonged stilling, and stereotypies) that repeatedly and unaccountably intrude into the more familiar reunion patterns" (Bretherton & Munholland, 1999, p. 101). Disorganized infants may fear their caregiver's unpredictable behaviors. Bernier and Meins (2008) maintain that organization is "one of the most meaningful factors" (p. 969) for later maladjustment.

Essential to the concept of attachment security is maternal sensitivity. Lounds et al. (2005) define maternal sensitivity as "alertness to infant signals, appropriate interpretation of response, promptness of response, flexibility of attention, and behavior, appropriate level of control, and negotiation of conflicting levels" (p. 93). Caregivers must be very attentive and patient for the infant to believe her needs will be met, which is at the core of a secure working model of attachment (Crockenberg & Leerkes, 2000). Researchers have found that infants prone to distress are more likely to develop insecure attachments if their mothers have rigid personalities (Crockenberg & Leerkes, 2000). In a meta-analysis of studies, Lounds et al. (2005) documented the relationship between sensitivity and attachment security, reporting "significant but moderate correlations" (p. 93). This effect was less prominent among a sample of low SES dyads, however. In addition, attachment is more likely to be unstable among adolescent mother-child dyads, perhaps as a result of the tenuousness of maternal sensitivity in this population.

Early caregiving responses help infants form a working model of attachment that will serve as the basis for future interactions and attachment relationships. Bretherton and Munholland (1999) define internal working models "as 'operable' models of self and attachment partner, based on their joint relationship history" (p. 89). Internal working models subsequently help infants, and later in development, children, adolescents, and adults, "evaluate the probable outcome of alternative behaviors," especially when constructing "self-other representations" (Bretherton & Munholland, 1999, p. 91). Thus, the internal working model not only elucidates for the child his or her attachment figures, but also how the child is perceived by her attachment figures.

Working models of attachment develop in tandem with Piaget's concept of object permanence (Bretherton & Munholland, 1999). The infant's understanding that objects do not disappear when out of sight is transferred and applied to caregivers, their whereabouts, and the actions and emotional reciprocity they and others will provide now and in the future. Thus, the development of a secure attachment and an internal working model based on this attachment fosters infant security when attachment figures are absent as well as present. A child's internal working model of attachment is consolidated through maturation, development, and learned experiences, however. In other words, once conscious and fresh thoughts, reactions, and other mannerisms become unconscious and automatic over time (Bretherton & Munholland, 1999).

Parents have their own working models of attachment which they strive to unconsciously maintain in their relationships with their children (Crockenberg & Leerkes, 2000). In general, Bretherton and Munholland

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(1999) maintain that parent self-competence is evidenced in a "working model of [their own] parents as emotionally available, but also supportive of exploratory activities" (p. 91), which is consistent with a secure attachment style. In contrast, feelings of parent incompetence stem from "a working model of [their own] parents as rejecting or ignoring of attachment behavior and/or interfering with exploration" (Bretherton & Munholland, 1999, p. 91). In accordance, children attempt to regulate their emotions in specific ways in a conscious effort to help the parent maintain her own state of mind in relation to the attachment (Crockenberg & Leerkes, 2000). The intergenerational transmission of parenting will be discussed in greater detail in the sections that follow.

Attachment: Continuity and Change. Bretherton and Munholland (1999) state: "Attachment theory underscores the role of relationships in human development from the cradle to the grave" (p. 89), but whether early attachments are enduring is still the subject of much debate. Studies documenting continuity and change in attachment patterns longitudinally reveal that attachment representations are stable across time and yet open to change when life events result in changes in caregiver behavior (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). Thompson, in contrast, maintains that there is less continuity in attachment security, arguing that investigations of the stability of attachment classifications given after the Strange Situation Task found that approximately 50% of infants' classifications change within 6- to 7-months of first completing the task. As a result of this inconsistency, attachment theorists agree that later experience can be transformative. Thus, both historical and current contextual factors are relevant to developmental outcomes. The importance of each may vary over the course of development, however, and also assume varying levels of importance amongst individuals (Thompson, 2000). As a result of contradictions in this research, Thompson (2000) further concludes "attachment has much stronger contemporaneous associations with socioemotional adaptation than it does predictive relations" (p. 146).

Contributing to adaptations in attachment security over time are changes in the quality of parental care. For adolescent parents this is encompassed in the quality of caregiving received during childhood and in ongoing caregiving during adolescence. A caregivers's ability to cope with change is essential, especially that which results in the renegotiation of the parent-child relationship. The parent-child dyad is not the only source of change in attachment security, however. Broader family changes "may have direct influences on children by demanding emotion regulation and adaptive coping that can influence attachment security" (Thompson, 2000,

p. 147). For example, marital discord and the hostility of spousal interactions may disrupt the attachment of the observant child who must cope with these perhaps frightening and shocking parental behaviors. A third variable related to consistency of attachment security is the quality of the child's attachment relationships with other caregivers, who also share the capacity to shape attachment over the course of childhood, adolescence and even young adulthood (Thompson, 2000; Feldman, 2007).

The consistency of attachment over time is also mediated by the child's own internal working model. Children may unconsciously have an evocative effect on their environment and individuals within it, reinforcing their internal working models, and representations of self and others (Thompson, 2000). The development of the internal working model is related to the development of autobiographical memory, which is said to occur at approximately three years of age, when children "begin creating a coherent, enduring self-narrative— integrating current and past events into developing self understanding" (Thompson, 2000, p. 148). Stable attachments might not begin to form until children are capable of forming such memories. Thus, attachment security at this age, rather than in infancy, may have better predictive value in terms of later outcomes.

Parent-child discourse is an important contributor to autobiographical memory and the subsequent development of working models in children of preschool age. Internal working models are not only based on child interpretations and representations of parental sensitivity, but also representation that develops through verbal mediations. Conflict negotiation is a representation that develops via parent-child interactions and serves as the foundation for "understanding emotion, morality, self, and other constituents of the internal working models associated with attachment security" (Thompson, 2000, p. 150). Parents that engage their children and use inductive reasoning in their discipline foster not only memories, but also the development of an internal working model that may be revealed in their ability to negotiate conflict in future relationships.

Additional considerations in attachment consistency include how the internal working model is interfaced with the development of self-esteem, locus of control, and attributional biases (Thompson, 2000). Children and adolescents are also developing representations of their relationships with teachers, friends, neighbors and other individuals with whom they interact. Thus, there is an array of other interpersonal and intrapersonal factors to take into consideration, rendering attachment security less static and one-dimensional than commonly thought.

The Intergenerational Transmission of Parenting. Bretherton and Munholland (1999) describe the transmission of secure and insecure attachment relations from generation to generation as the "nonverbal and verbal communication patterns" (p. 94) of the internal working model. Essentially, these patterns communicate to the infant whether she "is or is not worth responding to" (Bretherton & Munholland, 1999, p. 92). As a result, children "approach new situations with certain preconceptions, behavioral biases, and interpretive tendencies" (Sroufe, Carlson, Levy, and Egeland, 1999, p. 5) that convey their representation of self and others. Sroufe et al. (1999) maintain that the first "experiences of emotional closeness" are formative in future relationships (p. 5). Children whose parents are empathetic, responsive, and sensitive respond in kind to the distress of their own children (Bretherton & Munholland). Milan et al. (2007) maintain that "when a caretaker is harsh, unavailable, or inconsistent" (p. 242) children must develop experience-adaptive coping mechanisms. Patterns and strategies that were adaptive in a threatening environment may be passed from one generation to another as stressors arise in adolescence, young adulthood, and throughout life.

Fraiberg (1980), using a psychodynamic theoretical orientation, maintains that in every nursery there are 'ghosts,' the relics of parents' attachment styles and relationships with their own parents. According to Fraiberg, 'ghosts' may be banished as the infant makes her claim on the parents; they make appear transiently according to their own historical or topical agenda; or they may possess the nursery, claiming ownership over the infant-parent relationship. Fraiberg contends that several factors predict whether the parent's past will be repeated with the child. Repression and isolation of the affect associated with childhood suffering contribute to the intergenerational transmission of attachment and parenting styles. In contrast, remembrance saves parents from repeating their past and also allows the parent to identify with the child rather than the aggressor (Fraiberg, 1980).

The intergenerational transmission of parenting occurs through two processes; projective identification and maternal attributions. Ogden (1988) describes three phases of parental projective identification with an aggressor, beginning during childhood and later surfacing in their own parenting. The first phase, 'Projection,' consists of defensive psychological action to rid the self of painful or incompatible aspects of emotional experience. The second phase, 'Pressure to Comply,' involves pressure felt by the recipient of the projection to behave in a way that is consistent with the projection. The third phase, 'Identification,' is when the recipient complies and behaves according to the projection, taking the projection into her developing personality (Ogden,

1988). Maternal attributions are a parent's fixed beliefs about the child's existential core. The parent typically considers his or her beliefs to be objective. Parent beliefs may be the product of fantasies, including fears, conflicts, and wishes about the child, however. Maternal attributions reflect the parent's own internal working models. Attributions possessed by the parent result in selective attunement to the child's states. Selective attunement enables the parent to project their fantasies and desires onto the child, restricting the child's sense of what she is or is not permitted to feel. The child subsequently internalizes the parent's attribution (Lieberman, 1997; 1999).

Not all parents replicate their own experiences with caregivers, however. Rather, Bretherton and Munholland (1999) assert that research conducted using the Adult Attachment Interview (AAI), described by Sroufe et al. (1999) as an "assessment of the coherence of discourse concerning attachment" (p. 4), demonstrated that it was the "overall organization of the parents' narratives about these experiences [(and by inference the organization of their internal working models)] that predicted infant-parent attachment in the next generation" (p. 100). Main and Goldwyn (1984) examined the attachment history of adults using the AAI and used it to predict the quality of participants' attachments to their own infants. Significant relationships were found between adult attachment, as identified on the AAI, and infant attachment (cited in Morton & Browne, 1998). In particular, Morton and Browne (1998) point out that "a significant relationship has been found between a mother's self reported feelings of rejection by her own mother and her rejection and avoidance of her own infant, in nonmaltreated dyads" (p. 1099). Interestingly, many of these mothers did not have distinct memories of their childhood. This suggests that current caregiving patterns and behaviors are the product of unconscious internal representations of self and others.

A longitudinal study conducted by Main et al. (1985) examined parents' attachments styles on the AAI and found that parents who avoided directly answering questions, or were characterized as "dismissive" (cited in Bretherton & Munholland, 1999, pp. 100-101), based on their depiction of their own caregiving histories, had infants who avoided proximity in the strange situation task. Relatively few parents in this study were categorized as "preoccupied."   Their responses however, were characterized by "conflictual/angry attachment memories…, interspersed with some positive ones" (Bretherton & Munholland, 1999, p. 101). What is noteworthy is that these parents' infants often exhibited ambivalent behavior on the strange situation task. Some parents' responses on the AAI were classified as "unresolved" as a result of the "repeated representational

lapses that disrupted the narrative flow during discussions of a parent's death or other traumatic events" (Bretherton & Munholland, 1999, p. 101). Their infants were more likely to exhibit disorganized behavior on the Strange Situation Task. The results of Main et al.'s study demonstrate the extent to which parents' caregiving histories and attachment security as adults is often reflected in their interactions and in the subsequent attachment styles of their own children.

Parents who have experienced abuse or have a history of poor parental caregiving may be capable of being self-reflective, of empathizing with their infant, taking their perspective, and responding sensitively to their needs. They are described as having "earned" attachment security. Despite having earned security, these parents are still more likely to experience depression than parents with more organized and secure attachment histories.

Caregiving history is commonly thought to influence parenting with one's own children, although research demonstrates that a host of intervening variables may significantly alter this pattern. Adolescent parents are unique however, in that their caregiving experiences are more contemporaneous and they have had less time to accumulate additional experiences that may potentially to alter this trajectory. Furthermore, adolescent parents are likely operating on a somewhat greater continuum of dependency on their primary caregivers as they negotiate the process of separation and individuation. These factors may make younger adolescent parents more sensitive to the intergenerational transmission of parenting than older adolescent parents and adolescent parents in general, more vulnerable than young adult and adult parents.

The Role of Internal Working Models of Attachment in Adolescence & in Adolescent Parenting. Adolescence is a developmental period characterized by increasing autonomy and independence, but attachment to caregivers and caregiving history is still critical to adolescent development. Adolescent attachment styles may be contingent upon early caregiving histories. In a study conducted by Freeman (1997) using a measure similar to the AAI to classify attachment among adolescents, caregivers continued to be primary attachment figures among securely attached individuals from preadolescence through early adulthood (cited in Bretherton & Munholland, 1999). In contrast, adolescents categorized as dismissing and preoccupied selected siblings and best friends, followed by parents as primary attachment figures (cited in Bretherton & Munholland, 1999). These findings suggest that attachment in adolescence is at least partially related to the quality of their early caregiving experiences.

Stressful events such as the transition to adolescence may evoke adolescents' internal working models, which are established in infancy and reinforced throughout childhood. The activation of the internal working model during adolescence is exemplified by the adolescent's ability to manage life's daily hassles as well as when faced with more extreme adversity. For example, Bretherton and Munholland (1999) contend that adolescents classified with secure attachments are capable of discussing difficult issues with maternal figures and in a more constructive manner than adolescents classified as insecurely attached. Securely attached adolescents are better able to concentrate on "problem-solving rather than avoiding engagement or extensively dwelling on relationship problems" (Bretherton & Munholland, 1999, p. 103). Additional qualities of securely attached adolescents include the ability to "explore her environment and yet have the comfort of her mother when she feels she needs it" (Feldman, 2007, p. 213) as well as the ability to be appropriately expressive and assertive. Insecurely attached adolescents are more likely to react defensively to feedback and to perceive it as criticism. Attachment style may, therefore, play a role in the successful resolution of conflicts typical of adolescence and differentiate resilient adolescents from those who adapt less successfully.

A poor history of attachment in infancy predisposes adolescents to depression later in life, particularly when the stress of pregnancy or parenting triggers the activation of the attachment system and the internal working model (Milan et al., 2007). Parenting induces "normative changes in close relationships and [an] increased focus on caregiving experiences" (Milan et al., 2007, p. 242). Feeney, Alexander, and Noller (2003) found that insecure attachments were significantly associated with increased negative affectivity and mental health problems only within a sample of pregnant adolescents (cited in Milan et al., 2007, p. 242). Their non-child bearing counterparts that reported similar caregiving histories were largely exempt from this degree of pathology. Thus, the confluence of stresses associated with adolescent parenting and poor caregiving recollections may make adolescent parents especially vulnerable to the conscious and unconscious replication of previous caregiving experiences.

Milan et al. (2007) examined the relationship between low SES ethnic minority adolescent and young adult mothers' experiences with discrete and varied negative caregiving behaviors during their infancy and childhood, such as rejection and unavailable parenting versus inconsistent and erratic parenting, and prenatal depression. These more subtle differences in negative caregiving experiences are consistent with attachment categories such as insecure avoidant and disorganized/disoriented, respectively. Milan et al. found that

inconsistency and unavailability had a different effect on prenatal depression in the two age groups. Among adolescent parents, maternal unavailability was predictive of depressive symptomatology, while inconsistency was not (Milan et al., 2007). Among young adults, in contrast, inconsistency was predictive of depressive symptomatology, while the effects of unavailability were insignificant.

Developmental differences among young adults and adolescents might account for the diverse effects of maternal inconsistency and unavailability on prenatal depression experienced by mothers within the two age groups (Milan et al., 2007). Adolescents, for example, may not yet be as distraught by maternal inconsistency as their older counterparts. A history of inconsistency is likely to prolong adolescent emotional attachment, the effects of which are compounded over time for young adult parents. In addition, young women may, by the time they have reached young adulthood, have developed mechanisms and psychological defenses to cope with caregiving characterized as rejecting or unavailable. That is, they have learned to not seek out assistance from those that have rejected them or to shore up other sources of support. Adolescents on the other hand, may have not yet experienced sufficient disappointment to alter their maternal expectations.

Milan et al.'s (2007) findings are consistent with previous research on the relationship between attachment history and depression in general. Unique to this study however, developmental differences in the effects of varied caregiving behaviors are evidenced. Milan et al. (2007) maintain that "in situations in which a parent is often inconsistent in how they treat their child, that child must deal with uncertainty about whether the parent will provide comfort during times of stress," resulting in greater preoccupation and anxiousness about relationships, "and they may develop a sense of self-worth that is contingent on the current standing of relationships" (p. 249). In a study conducted with African American adolescent mothers and young women, Davis (2002) found, in contrast, that a history of general maternal problems was equally detrimental among younger and older adolescents and predictive of prenatal depressive symptoms. Davis did not however, distinguish between maternal behavior characterized as rejecting or inconsistent.

Recognizing that other caregivers exist in the ecology of the adolescent parent, Milan et al. (2007) also examined the relationship between paternal caregiving history and prenatal depressive symptomatology among adolescent and young adult mothers. Maternal and paternal caregiving histories were independently predictive of depressive symptoms within both age groups. Women, in both age groups, whose paternal caregivers were characterized as hostile or unavailable, experienced greater depression. These results suggest that paternal as

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well as maternal caregiving is relevant to adolescent prenatal depression. While Milan et al. made an important contribution to the literature by examining less commonly studied aspects of caregiving history and incorporating adolescents' relationships with paternal caregivers, the study did not examine long-term postnatal outcomes associated with these predictors, such as child maltreatment. In addition, this study did not distinguish between older and younger adolescent parents.

Feldman (2007) studied contributions to prenatal attachment. The following three factors were considered contributors to attachment security: "(a) support expectations, (b) lower levels of stress, and (c) self-esteem" (Feldman, 2007, p. 214). Support expectations consist of "the individual's perception that support from close persons in one's network will be available during times of need" (Feldman, 2007, p. 214). Support expectations are developed in a manner similar to the internal working model and may be intergenerationally transmitted, but might also include sources of support such as extended family. As hypothesized, stress was inversely related to attachment, while self-esteem and support expectations were positively related to attachment. Like Milan et al. (2007), Feldman's study focused on prenatal aspects of adolescent parenting. Factors examined by Feldman, such as support expectations, stress, and self-esteem, may also contribute to postnatal dimensions of parenting, however.

Easterbrooks et al. (2005) examined "patterns of emotional availability among 80 young mothers (under 21 years at their child's birth) and their infants," attempting to "identify contextual individual factors associated with different patterns of emotional availability" (p. 309). The study, consistent with Sroufe et al.'s (1999) transactional conceptualization of attachment, considered current contextual variables as well as caregiving history to examine differing patterns of emotional availability in adolescent mother-infant dyads. Emotional availability was defined as the extent to which caregivers successfully interpret and respond to the emotions and actions of their infants and children and is similar to the concept of maternal sensitivity described by Lounds et al. (2005).

Easterbrooks et al. (2005) found four differing patterns of mother-infant emotional availability and discovered that "mothers on different clusters differed on outcomes such as depressive symptomatology, social support, and relationships with their own mothers" (p. 309). Mothers in two clusters demonstrated relatively positive personal outcomes. They had positive caregiving histories and engaged in few risk-taking behaviors overall. Despite positive personal functioning however, one group of mothers-infant dyads were not well

connected with their infants. In this group, maternal grandmothers were primary caregivers and adolescent mothers were often more consumed with their own development. Parental caregiving history figured prominently in the group with the highest level of emotional availability as "mothers reported the highest nurturing care from their own mothers during childhood" (Easterbrooks et al., 2005, p. 321). This was the only group of adolescent mothers that were married and in which grandmothers were least likely to be involved. Easterbrooks et al. (2005) hypothesized that "these mothers had both emotional support for parenting, a positive and secure internal working model for parenting, and primary focus on the role of motherhood" (p. 321). Interestingly however, this group of adolescent mothers had higher levels of depressive symptoms compared to the cluster focused on their own development.

Mother-infant dyads categorized as low-functioning and average were described as having "few signs of positive development" (Easterbrooks et al., 2005, p. 322). Their patterns of emotional availability differed from one another, however. Mothers in low-functioning dyads had negative caregiving histories, were less likely to experience pleasurable interactions with their infants, and to feel that they had missed out on the adolescent experience. Mothers in the average functioning dyads appeared to have struck a balance between their roles as mothers and adolescents, despite their engagement in some risk-taking behaviors and lack of positive development overall.

These findings demonstrate the variability associated with adolescent parenting, contingent upon numerous current and past contextual factors. Easterbrooks et al. (2005) cite several limitations in their study, including a need for "further examination of the roles of grandmothers, socio-economic stressors, and aspects of child temperament" (p. 323). This study also failed to explore differences between older and younger adolescent mothers and neglected to incorporate adolescent mothers' relationships with other potential caregivers.

Given the importance of internal working models, attachment security, and early caregiving history to successful adolescent development, it stands to reason that these factors are equally, if not more significant for adolescent parents and their successful adaptation than for young adult parents. The relationship between caregiving history and dimensions of parenting among adolescent parents in general, may be less significant for older adolescent parents compared to younger adolescent parents, however, and the discrepancy even greater for young adult parents when compared to both groups of adolescent parents. It is necessary to determine, what, if

any, factors signify this distinction. Many studies have documented the association between these predictors and prenatal depressive symptomatology and the quality of parent-child relationships in early infancy. Potential differences in other longitudinal outcomes such as child maltreatment, among older and younger adolescents as well as young adults, have not been thoroughly investigated. In addition, few studies have incorporated adolescent parents and young adult parents' relationships with other caregivers, as additional predictors, or potential moderators, of parenting outcomes.

Section 5: Child Maltreatment and Adolescent Parenting

Child Maltreatment. Gilbert et al. (2009) define child maltreatment as "any acts of commission or omission by a parent or other caregiver that result in harm, potential for harm, or threat of harm to a child (usually interpreted as up to 18 years of age), even if harm is not the intended result" (pp. 68-69). Physical abuse, sexual abuse, psychological abuse, and neglect are all considered forms of maltreatment. A multitude of studies document the etiology, incidence, and sequelae of physical abuse and sexual abuse. Fewer studies however, have addressed factors associated with child neglect and psychological abuse. In addition, child maltreatment is rarely an isolated event and children are often exposed to multiple forms of maltreatment. The majority of research studies on child maltreatment and neglect fail to document the chronicity and, often associated, severity of child maltreatment. Few research studies reviewed address the incidence of child maltreatment specifically among adolescent parents, although Lounds et al. (2005) attest that adolescent mothers are particularly at risk for engaging in abusive behavior. The majority of child maltreatment studies reported by Gilbert et al. (2009) were gathered among parents of all ages.

Studies on the incidence of maltreatment vary significantly. Within the United States, 4.78% of cases were reported to agencies and 1.21% of those cases were substantiated in 2006. Neglect was the most common form of abuse reported to agencies (60%), followed by physical abuse (10%), multiple forms of abuse (10%), psychological abuse/unknown (11%), and sexual abuse (7%). An average of child self-reports and parent reports of perpetration of physical abuse among six countries, including the United States, ranged from 3.7% to 16.3%. Self and parent reports of psychological abuse, including "verbal abuse by adults or told not wanted" (Gilbert et al., 2009, p. 70) were estimated to be 10.3%, while an estimate of severe emotional abuse among three countries including the United States ranged between 4% and 9%. The cumulative prevalence of any sexual abuse in four countries including the United States was 15-30% for girls and 5-15% for boys. Within the

United States and the United Kingdom, the incidence of self and maternal reports of neglect was between 1.4% and 15.4% while cumulative childhood prevalence was between 6% and 11.8%. Clearly there are significant discrepancies in the incidence of child maltreatment estimated among agencies and those indicated in self and parental reports. Agencies' reports are likely an underestimate of the actual prevalence of child maltreatment. Despite the seemingly high incidence of abuse in the United States and several other countries around the world in 2006, reports of child abuse have significantly declined (an estimated 50%) since the mid-1990s (Gilbert et al., 2009).

Children frequently experience multiple forms of maltreatment, but abuse reports typically only reflect one form of abuse and often neglect to document exposure over time (Gilbert et al., 2009). Gilbert et al. also report that 22% of maltreatment cases are reported on multiple occasions. Risk factors for re-reporting include "ongoing risk factors in the child (e.g., disability or chronic medical disorders), in the parent (e.g., alcohol misuse), indices of social adversity (e.g., low income, contact with services), and multiple or chronic maltreatment, particularly neglect" (Gilbert et al., 2009, p. 71). The severity of maltreatment is positively correlated with exposure. Thus, for some children, abuse may be more commonplace than what is inferred from isolated reports filed.

While a substantial amount of research has been conducted on physical and sexual abuse, the most overt forms of maltreatment, there is a need to better understand factors and outcomes associated with children who are neglected. In addition, attention needs to be paid to potential gender differences in the effects of maltreatment. While boys are more frequently identified by their externalizing behavior, "research shows that maltreatment doubles a girl's risk of being arrested for a violent crime and increases risk for subsequent alcohol and drug problems, with implications for her children" (Gilbert et al., 2009, p. 77). Thus, it is necessary to examine potential differences in forms of abuse experienced by male and female adolescent parents as well as the ways in which their experiences with abuse impact their parenting roles.

Adolescent Parents as Perpetrators: The Etiology of Child Maltreatment. Investigation of the etiology of child maltreatment and identification of the characteristics of caregiving perpetrators has proven challenging as many factors are linked in such a way that they cannot be easily isolated. Gilbert et al. (2009) lists "[P]overty, mental-health problems, low educational achievement, alcohol and drug misuse, and exposure to maltreatment as a child" (p. 72) as factors that are likely to predispose parents to engage in maltreatment. It is

difficult to determine the extent to which each of these factors affects subsequent child maltreatment, due to the existence of several different forms of maltreatment which may be associated with more specific caregiver characteristics. Cicchetti (2004) similarly describes the limitations inherent in examining single risk factors, including "parental psychopathology, a history of maltreatment in one's own childhood, poverty, and temperamentally difficult children" (Cicchetti, 2004, p. 732). Main effects/linear models do not adequately explain child maltreatment. Belsky (1993) also points to inconsistent results in studies documenting the relationship between maternal depression, anxiety, and self-esteem and child maltreatment. Furthermore, Belsky (1993) argues that "what etiological studies seek to identify are contributing rather than determining agents" (p. 418).

Child maltreatment is best understood from an ecological point of view as it is "multiply determined by forces at work in the individual, in the family, and in the community and culture" (Gilbert et al., 2009, p. 72). Factors at the individual, family, and community and cultural level interact and moderate each other (Cicchetti, 2009). Cicchetti's (2004) description of the ecological transactional model examines risk and protective factors at each of these levels, all of which contribute to an increased or decreased risk of child maltreatment. This 'ratio' of protective factors to vulnerabilities also conveys the likelihood of negative developmental or resilient outcomes among children that have experienced maltreatment. When risk factors are more prevalent than protective factors, maladjustment is likely to result. Zielinski and Bradshaw (2006) describe the "accumulation of risk model (Rutter, 1989)," which posits that "almost all children are capable of coping with low levels of risk until the accumulation exceeds a developmentally determined individual threshold" (p. 51). Among adolescent parents exposed to maltreatment as in childhood, the perpetration of maltreatment may be considered a maladaptive outcome when this critical individual threshold has been exceeded by multiple risk factors not limited to personal own experiences with child maltreatment.

In light of the ecological-transactional model proposed by Bronfenbrenner (1979) and also in keeping with general systems theory (Von Bertalanffy, 1969), Cicchetti (2004) acknowledges that distal and proximal factors are likely to differ in their degrees of influence, with the level of ecology closest to the child being most influential. In childhood, proximal influences include the child's own temperamental disposition and the family, while peers, the school, and the community are increasingly distal influences on child development. The hierarchy within which these levels are organized is not static, however. Once distal factors in the lives of

infants and children may begin to assume greater prominence later in the course of development. For example, school, peers, and the community may become more proximal influences in adolescence and in the transition to adulthood (Zielinski and Bradshaw, 2006). The ecological transactional view assumes that the child is situated in all ecological levels however, and according to Cicchetti (2009):

> An increased presence of the risk factors associated with different forms of maltreatment at any or all ecological levels represents a deviation from the conditions that promote normal development and makes the successful resolution of stage-salient developmental issues problematic for children. (p. 733)

Furthermore, a systems perspective assumes that the levels of ecology interact and influence one another. Thus, "coactions," or interactions, among all the levels of ecology may thwart what is expected to unfold over the course of normal development (Cicchetti, 2009). Isolated factors should not be construed as unimportant contributors to the etiology of child maltreatment, but their salience is most appropriately interpreted when examined in context or in relation to other variables (Belsky, 1993).

There are however, factors within the individual, parents, community, and culture with which child maltreatment is more directly associated, parental income and level of educational attainment among them. The relationship between predisposing factors and maltreatment also varies depending upon the type of maltreatment to which a child is exposed. There is a strong correlation between socio-economic deprivation and deaths that stem from child abuse, for example. In addition, ethnic differences in the overall risk of child maltreatment are accounted for by other socio-demographic characteristics, such as SES (Gilbert et al., 2009). Substance abuse is a risk factor for child maltreatment, but it is unclear what role this factor plays among different demographic populations. A review conducted by Yanagida and Ching (1993) listed the following characteristics of maltreating parents: "impulsivity, irresponsible and immature behaviors, poor judgment, and impaired interpersonal relationships" (cited in Wilson et al., 2005, p. 986). Research specific to mothers revealed the following problems: "lowered impulse control, problems with interpersonal relations, lower confidence, and lessened verbal disclosure" (Wilson et al., 2005, p. 986). Additional studies cited by Wilson et al. (2005) document similar maternal problems with self-concept, interpersonal relationships, and impulsivity.

Sequelae Associated with Child Maltreatment: Adolescent Parents with a History of Victimization. Just as the causes of child maltreatment appear to be multi-determined and not easily isolated, so too are the diverse sequelae. Organizational models examining outcomes associated with child maltreatment postulate that future development is predicated upon the ability to master or adapt to previous developmental tasks (Haskett,

Nears, Ward, & McPherson, 2006). According to this model, subsequent development is restricted or confined to the foundation set by early experience. Events and opportunities that unfold over the course of development may alter this seemingly narrow range of predicted outcomes, however. Thus, the sequelae associated with child maltreatment are not uniform. Heterogeneous outcomes are a product of differences associated with the form of maltreatment, its severity, and when it occurs in the course of child development. Characteristics of the child and the perpetrator are important factors to consider as well. Veltman and Browne (2001) cite protective factors that may subvert predicted outcomes, including;

> the maltreating parent's loving investment in the child at other times, the opportunity for a loving relationship with the other parent or another caring adult, the experience of an early nonabusive period with maltreatment starting at a later time in the child's development, the child's own characteristics, and the general level of disruption and chaos in the child's life. (p. 219)

Furthermore, Zielinksi and Bradshaw (2006) contend that approximately one fourth of children who experience child abuse do not manifest long-term negative outcomes. Some consistent developmental outcomes have been associated with various forms of child maltreatment, however.

An analysis of multiple prospective and retrospective studies, found that child maltreatment has long-term consequences related to "education, mental health, physical health, and violence or criminal behavior" (Gilbert et al., 2009, p. 74). With regard to education, children that are maltreated are more likely to receive special education than children that have not been maltreated. Declines in school attendance were also correlated with the onset of maltreatment. A longitudinal study conducted in New Zealand found that 6-10% of children that had been abused obtained a college degree while 28% of non-abused children obtained college degrees, although it is possible that this discrepancy is better explained by socio-demographic characteristics and/or other characteristics of children and their parents (Gilbert et al., 2009). As adults, individuals exposed to child maltreatment were significantly more likely to be in less skilled occupations and to be unable to maintain consistent employment over a documented period of five years (Gilbert et al., 2009).

Child maltreatment also impacts child and adolescent mental health and well-being. Children exposed to maltreatment are more likely to have internalizing and externalizing behavior problems (Cicchetti & Kim, 2004; Gilbert et al., 2009). Early experiences with child maltreatment contribute to childhood behavior problems while behavior problems exhibited in adolescence are most likely associated with contemporaneous experiences with maltreatment. Gilbert et al. (2009) contend however, that child maltreatment may have a "cumulative effect" (p. 75), such that greater exposure to maltreatment, same or different forms, may result in

more deleterious outcomes. There is an increased risk of depression among adolescents and adults with a history of maltreatment. Nearly one-quarter to one-third of these individuals meet DSM-IV criteria for major depressive disorder by the time they reach their late 20s (Gilbert et al., 2009). Consistent with a cumulative effect of child maltreatment, depression may be positively correlated with its severity or harshness. In addition, family context is an important contributor to this moderately elevated risk for depression.

Maltreated children are also more likely to develop post-traumatic stress disorder (PTSD). Although PTSD develops in the wake of a traumatizing event, it may be intermittently or continually experienced years after the event occurred. Gilbert et al. (2009) found that 23 % of 29-year-old adults who had been abused before the age of 12, continued to meet diagnostic criteria for PTSD, while only 10% of controls presented with this disorder. As with the incidence of depression, other variables, such as "family, individual, and lifestyle variables" (Gilbert et al., 2009, p. 75) contributed to the likelihood of maltreated individuals being diagnosed with PTSD. A review of cross-sectional studies also indicated that the risk for PTSD is cumulative and a dose-response was indicated in a meta-analysis of studies on the effects of sexual abuse.

Veltman and Browne (2001) examined mental health outcomes associated with specific forms of abuse. They found that physically abused children display more aggression toward other children, have greater difficulty in their peer relationships, and have a diminished capacity for empathy (Veltman & Browne, 2001). Physical abuse may also foster "learned helplessness, ineffectiveness, anxiety, depression, worthlessness, internalizing problems, negative self-perceptions, and low self-esteem in the child" (Veltman & Browne, 2001, p. 219). Sexual abuse is less consistently associated with aggression and externalizing behaviors than physical abuse. Sexual abuse is however, associated with "low self-esteem, depression, and anxiety" (Veltman & Browne, 2001, p. 220). Maltreatment, specifically physical and sexual abuse, has been shown to double the risk for attempted suicide.

In terms of physical health outcomes, sexualized behaviors are more frequently reported among children not only exposed to sexual abuse, but also "physical abuse, characteristics of family adversity, coercive parenting, child behavior, and modeling of sexual behavior" (Gilbert et al, 2009, p. 76). Sexual abuse is frequently associated with earlier sexual risk-taking as well as overt sexualized behaviors. Gilbert et al. (2009) reports "[S]mall to moderate effects of childhood sexual abuse on increased rates of teenage pregnancy…, earlier onset of sexual activity, greater numbers of sexual partners, increased rates of abortion, and increased

risks of sexually transmitted disease" (p. 76). These outcomes are also positively correlated with severity and repetition of the abuse, as well as the presence of multiple risk factors.

As a result of the likely diminished relationship quality that maltreated children have with their parents, they are at greater risk for developing negative peer relationships as well. Children that have experienced neglect have greater difficulty developing trust in others, hindering the development of their social skills and subsequently impairing their ability to develop healthy relationships (Veltman & Browne, 2001). A lack of reciprocal and supportive relationships, in turn, is associated with "feelings of helplessness, depression, despair, low self-esteem, and limited motivation" (Veltman & Browne, 2001, p. 220). In general, maltreated children demonstrate less social competence and are less well liked by their peers than nonmaltreated children. They are not as well equipped with prosocial problem-solving skills and are more likely to make hostile attributions, interpreting others actions and intentions as being negative, malicious, and purposefully directed toward them. It is important to note that early experiences with peer relationships are formative as in adolescence and in adulthood, peer relationships are highly correlated with adaptation and positive adjustment (Haskett et al., 2006).

Self-regulation is an integral component to making and maintaining peer relationships. Children exposed to maltreatment early in childhood experience greater difficulty with self-regulation than children who experience maltreatment later in their development. In general, maltreated children are frequently described as more aggressive than nonmaltreated children. Haskett et al. (2006) maintain that "[P]arents shape their children's self-regulatory functions by warm and sensitive care giving and through models of emotion expressivity and affect regulation" (p. 797). Furthermore, the low rate of secure attachment, limited use of inductive reasoning in disciplinary strategies, and higher rates of parental depression and stress, further compound emotional dysregulation in maltreated children. Abused children have greater difficulty reading and interpreting others' emotions and, as a result, they are likely to demonstrate greater difficulty appropriately responding to stress and managing conflict (Haskett et al., 2006). Secure attachment and self-regulation, in contrast, foster characteristics such as "autonomy, intrinsic motivation, and internalization" (Haskett et al., 2006, p. 797).

Counter to the notion that maltreatment alone is responsible for a host of adverse sequalae, research has found that children raised in environments characterized as harsh, unsupportive, and unresponsive above

and beyond their abusiveness, are more likely to experience somatic complaints, depressive symptoms, and suicidal ideation. Gilbert et al. (2009) surmise that these sequelae are better accounted for by "family, individual, and lifestyle variables" (p. 75) such as socio-economic status. In contrast, Cicchetti (2004) maintains that "child maltreatment has consistently been shown to exert negative influences on development over and above the effects of poverty" (p. 734). He argues that nonmaltreated children have better developmental outcomes than maltreated children from similar socio-economic backgrounds, including improved "physiological and affective regulation, the development of a secure attachment of relationship with the primary caregiver, the emergence of an autonomous and coherent self-system, the formation of effective peer relations, and successful adaptation to the school environment" (Cicchetti, 2004, pp. 734-735). A better understanding of the way in which these factors interact with parent age and effect the perpetration subsequent child maltreatment is much needed.

In summary, the effects of maltreatment on long-term mental health and related health and behavior outcomes are significant and are evidenced in a variety of areas. The form of maltreatment, its severity, and when in the course of development it is experienced, are factors pertinent to the manifestation of mental health problems (Gilbert et al., 2009). When maltreatment occurs early in the course of development and is chronic, it is generally thought to be of greater detriment to future development. Although it was not specifically addressed in the literature, adverse sequelae associated with child maltreatment may be relevant to the quality of caregiving that an adolescent parent with a history of maltreatment is capable of providing for their own child, warranting further investigation. As mentioned previously, it is also uncertain whether the mental health outcomes described and other sequelae associated with maltreatment, rather than the maltreatment itself, moderate future child maltreatment.

Child Maltreatment & Resilience: Adolescent parents with a History of Victimization. Some children have positive developmental outcomes despite their experience with maltreatment. These children are described as "resilient." Resilience is defined as "the individual's capacity for adapting successfully and functioning competently despite experiencing chronic stress or adversity, or following exposure to prolonged or severe trauma" (Cicchetti, 2004, p. 735). Just as negative developmental outcomes are the result of the coaction among the levels of ecology, so is resiliency. It is a multi-determined and evolving phenomenon.

Predictors of resilient functioning in maltreated children include: "positive self-esteem, ego-resiliency, and ego overcontrol" (Cicchetti, 2004, p. 735). In other words, self-reliance and self-confidence are factors that promote resilience in maltreated children. Maltreated and nonmaltreated children differ with regard to factors associated with their resilience however, as relationship features are more likely to predict resiliency among nonmaltreated children than among maltreated children. Zielinski and Bradshaw (2006) contend that both biological and psychological factors, such as temperament and mental health status, also contribute to resiliency among maltreated children. Other buffers for maltreatment include the support of close relatives.

Studies examining rates of resiliency in maltreated and nonmaltreated children vary significantly. A study conducted by Kaufman, Cook, Arny, Jones, and Pittinsky (1994) examined resilience among 56 children between ages 7 and 12 (cited in Haskett et al., 2006). Kaufman et al. found that 14% of maltreated children were considered socially competent, 27% presented with low clinical symptoms, and 38% demonstrated satisfactory academic performance. Haskett et al. (2006) reports that 45% of children in this study did not meet criteria for resiliency in any of the three aforementioned domains examined and only 5% of children had a high level of functioning in all domains.

Cicchetti, Rogosch, Lynch, and Holt (1993) examined resilience in maltreated and disadvantaged nonmaltreated children between ages 8 and 13. Indices of prosocial behavior, disruptive-aggressive behavior, withdrawal, depression, internalizing and externalizing problems, and school risk were developed based on reports from several different sources. Cicchetti et al. found that 18% of maltreated children and 22% of nonmaltreated children occupied the high functioning, or more resilient, group, while 43% of maltreated children and 26% of nonmaltreated children occupied the low functioning group. In addition, 22% of maltreated children were not considered high functioning on any of the indices.

A later study conducted by Flores, Cicchetti, and Rogosch (2005) investigated resilience among 76 maltreated and 57 nonmaltreated disadvantaged Latino children. The researchers examined prosocial and cooperative behavior, aggression and fighting, withdrawal, disruptive behavior, shyness, and internalizing and externalizing problems. Flores et al. found that 39.5% of maltreated children and 19.3% of nonmaltreated children were in the low functioning group while only 9.2 % of maltreated children and 17.5% of nonmaltreated children were in the high functioning group.

Cicchetti and Rogosch (1997) examined resilience in maltreated school age children over the course of three years. Indices used in Cicchetti et al.'s (1993) study were used as well as reports of camp counselors' relationships with the children and a scale in which children rated the quality of their relationship with their mothers. Rogosch and Cicchetti (2004) reported that 40.6% of maltreated children and 20% of nonmaltreated children were classified as low functioning, while 10% of nonmaltreated children and 1.5% of maltreated children were classified as high-functioning. A second study conducted by Rogosch and Cicchetti (2004) examined personality traits among maltreated and nonmaltreated children using cluster analysis. Children classified as resilient in other studies were typically described as gregarious and reserved, two of the Big Five personality dimensions. A large number of maltreated children (69.6%) were not represented in these personality clusters, while the majority of nonmaltreated children (65.8%) were members of those clusters.

A longitudinal study using data from the Mother-Child Interaction Project examined developmental tasks such as attachment, autonomy, socialization, and peer relations at various time points. Farber and Egeland (1987) found that maltreated children were less competent than nonmaltreated children on these tasks and that their competence was inconsistent over time (cited in Haskett et al., 2006). That is, no children were considered resilient on all developmental tasks. Inconsistent positive adaptation, or resilience, was also evidenced in a study conducted by Bolger and Patterson (2003). A retrospective study conducted McGloin and Widom (2001) with adults who were maltreated as children found rates of resilience similar to those found in studies conducted by Bolger and Patterson (2003) and Cicchetti et al. (1993).

Collectively, these studies demonstrate variability in rates of resilience. In addition, it is evident that maltreated children exhibit less resilience than even children whose mother's abuse substances, and children in low-income settings. It is essential to keep in mind however, that abuse occurs within a system of correlated constraints. That is, there may be many pervasive factors that maintain the effects of abuse and low rates of resilience may be attributed as much to those factors as the abuse itself. Often cited co-occurring risk factors include "poverty, parental substance abuse, and marital violence" (Haskett et al., 2006, p. 800). Thus, as Belsky (1993), Cicchetti (2004), Gilbert et al. (2009) and other researchers have pointed out, it is often difficult to isolate individual variables associated with child maltreatment and its outcomes. In addition, these studies do not specifically speak to dimensions of parenting as an indicator of resilience. Bolger and Patterson (2003) only describe how this resilience may translate into adulthood, but do not specifically address parenting behaviors.

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Thus, the connection between rates of resilience among maltreated children and future parenting can only be inferred. Further research is needed to establish this potential link.

The sections that follow examine factors at various levels of ecology associated with resilient and maladaptive functioning on dimensions of parenting associated with child maltreatment. Thus, resilient functioning is conceptualized as the absence of maltreatment. The most distal factor, neighborhoods and communities are considered first, followed by the role of peers and schooling. Next, proximal factors are considered, including family contexts, parenting styles, and parental characteristics as well as the unique characteristics of the individual child. These factors may be even more salient to the functioning of adolescent parents and adults with a history of maltreatment, although they do not necessarily precluding adolescent and young adult parents who have not experienced maltreatment.

a.) Neighborhood and Community Contexts Surrounding Adolescent Parents

Neighborhoods and communities have the most distal influences on outcomes associated with child maltreatment. Nonetheless, their influence is important to consider as they are integral to the "infrastructure of family life, and…support parents in being effective caregivers to their children" (Zielinski & Bradshaw, 2006, p. 56). Neighborhood-related risk factors include low income, single-parent households, and a low high school graduation rate. As previously mentioned, adolescent parents are more likely to be unwed, live in poverty, and have a lower level of educational attainment. Neighborhood and community contexts specific to maltreatment among adolescent parents were not found, however. Among parents of all ages, poverty is most significantly related to neglect (Zielinski & Bradshaw, 2006). After taking individual family factors into account, Coulton et al. (1999) found that only two community factors uniquely predict rates of child maltreatment; neighborhood impoverishment and neighborhood child care burden (cited in Zielinski & Bradshaw, 2006). Neighborhood impoverishment indexes "the poverty and unemployment rates and proportion of single-parent households" while neighborhood child care burden is an index of "the ratio of children to adults in the community" (Zielinski & Bradshaw, 2006, p. 57).

The association between neighborhood impoverishment and child care burden, and child maltreatment does not explain how these community characteristics affect caregiving roles and child maltreatment, however. Bradshaw and Zielinski (2006) reference the "social disorganization pathway" and the "quality and availability of resources within the community for supporting parents" (p. 57) as explanatory mechanisms for the

relationship between community level factors and child maltreatment. Social disorganization encompasses a lack of social networks and "collective efficacy" that underlie social control (Zielinski & Bradshaw, 2006, p. 57).

A sense of social isolation is pervasive among maltreating families. Abusive parents often rate their neighbors as less supportive than nonabusive parents and perceive their neighborhoods as less cohesive, even within the same neighborhood as their nonabusive counterparts. Contributing to lack of cohesion, several studies have found that maltreating families are more transient, precluding them from developing supportive social networks. In communities with a higher incidence of child maltreatment, fewer resources are available, including reduced access to medical, mental health, and social services. In addition, maltreating parents are less likely to access the resources available to them. Thus both subjective and objective documentation support the notion that maltreating parents are more likely to be disconnected from the people and resources in their surroundings.

Research conducted on the influence of community level variables on the incidence of child maltreatment suggests that the effects are indirect, but may add to or even interact with the peer group, school environment, and other social support available to parents and families. Thus, community and neighborhood factors may influence other, more proximal, levels of ecology.

b.) The School and Peer Context and Child Maltreatment

School experiences may function as a protective factor for child maltreatment. Schools offer a structured environment that is often lacking in the chaotic home environments of maltreated children. Zielinski and Bradshaw (2006) also posit that positive school experiences increase "children's sense of self-worth and control over their life" (p. 55). These institutions also offer opportunities for students to form relationships with other individuals, such as teachers, coaches, support personnel, and peers, who may positively influence them. Indeed, research demonstrates that the perceived presence of at least one caring adult in the school environment is a strong predictor of resilience.

Peers in the school setting can also be a source of social support. Many maltreated children have greater difficulty forming friendships however, most likely due to the inadequate development of interpersonal and social skills. Zielinksi and Bradshaw (2006) contend that resilient children are more likely to be "well-liked by their classmates, to have one or more best friends, and to maintain their friendships for long periods of

time" (p. 55). Maltreated children with good peer relationships tend to be more intelligent, good-natured, and have stronger interpersonal skills. Not surprisingly, children with these qualities are more likely to attract their peers. Reciprocal peer relationships also moderate the relationship between maltreatment and low self-esteem, but do not have this effect on internalizing or externalizing problems (Haskett et al., 2006). A study conducted by Schwartz, Dodge, Pettit, Bates, and The Conduct Problems Prevention Research Group (2000) also found that peer relationships buffered the effect of harsh parenting (cited in Haskett et al., 2006). Perkins and Jones (2004) however, found friends' attributes central to the extent to which these relationships functioned protectively (cited in Haskett et al., 2006). Deviant peers are unlikely to help increase resilience among maltreated children. Despite the protective benefits offered by peer and school support, they do not rival the protection afforded by nurturing caregiving relationships.

The buffering effects of school and peer relationships on adolescent parents' child maltreatment are less well understood than are more proximal family factors. Zielinski and Bradshaw (2006) call for further research in this area as it is clear that school involvement and the social support that is developed in this context may be significant protective factors for not only maltreated children, but all children in their role as vulnerable parents. Given the need to examine relationships most salient to adolescent and young adult parents in general, it seems that peer relationships may be particularly pertinent to the functioning of adolescent parents. It will be important to examine "the accumulation of risks in the family and peer environments" (Zielinski & Bradshaw, 2006, p. 56).

c.) *Parenting Styles and Child Maltreatment*

Family contexts and parenting practices are commonly identified as proximal influences on child maltreatment and subsequent developmental outcomes. Abusive parenting is characterized by a few distinctive parenting styles. Veltman and Browne (2001) describe four aspects of caretaking that shape the first year of life: "sensitivity versus insensitivity, acceptance versus rejection, cooperation versus interference, and accessibility versus ignoring" (p. 218). These four elements interact to determine parents' warmth and relatedness toward their children and are integral to the attachment relationship. A secure attachment is a protective factor for child maltreatment whereas an insecure attachment may add to a maltreated individual's cumulative risk.

Veltman and Browne discuss Baumrind's (1971) categories of caregiving style and their relationship with child maltreatment after one year of age. Baumrind's categorization of parenting style includes two dimensions: "the degree of parental demandingness and the degree of parental sensitivity/responsiveness" (Veltman & Browne, 2001, p. 218). Parental demandingness is defined as "the amount of control a parent attempts to exert over a child" and parental responsiveness is defined as "the frequency of parenting interactions" (Veltman and Browne, 2001, p. 218). These two dimensions of parenting style yield four styles of parenting: authoritative, authoritarian, indulgent, and neglecting.

Authoritative parents have a high level of demandingness, but are also highly accepting, responsive, and child-centered. Developmental consequences associated with this type of parenting are largely positive. Indulgent parents are neither demanding nor controlling and they are highly accepting, responsive, and child-centered. Like authoritative parents, authoritarian parents are highly demanding, but are also characterized as rejecting, unresponsive, and parent-centered. These parents use less reasoning to discipline their children and they are more likely to discipline indiscriminately without regard for the nature of the misbehavior. Neglecting parents are low on both dimensions; they are neither demanding nor controlling and they are often rejecting, unresponsive, and parent-centered. Neglecting and authoritarian parenting is associated with "a greater extent of parent-child conflict and negative developmental consequences" (Veltman & Browne, 2001, p. 218).

Parenting styles may be examined as correlates of child maltreatment, directly influencing the types and quality of interactions that parents and children share. In the literature on the interactions between children and maltreating parents, a distinction is made between neglect and abuse. Neglectful mothers are less responsive to their infants needs, fail to initiate interactions with them, and do not respond to interactions initiated by their infants. In contrast, abusive parents and their children tend to have more negative interactions. Authoritarian parents are described as using "power-assertive techniques" (Veltman & Browne, 2001, p. 218), more commonly associated with abuse. In addition, when compared to neglectful parents, abusive parents "direct fewer positive behaviors (e.g., instructing, joining play, talking to child, praising) toward their children" (Belsky, 1993, p. 421). Like neglectful parents, they also fail to respond to interactions initiated by their children and display fewer positive emotions.

d.) Resilient Functioning and Correlated Constraints: Child Maltreatment in the Context of Parent-Child Relationships and Child and Adolescent Personal Attributes

Parenting style is often examined as risk factor for child maltreatment, but its impact on the subsequent adjustment of maltreated children is less frequently considered, especially in the maltreated individual's later role as an adolescent or young adult parent. The studies that follow depict how variable experiences with abuse in the context of caregiving relationships and in light of personal attributes, contribute to resilient functioning. In the literature examined, the child maltreatment was not explicitly addressed as a maladaptive outcome associated with child maltreatment victimization and its correlated constraints. The argument can be made however, that the child maltreatment may be regarded as another potential developmental outcome associated with child maltreatment.

Despite documented similarities in the parenting styles of abusive parents, Haskett et al. (2006) describe some heterogeneity among abusive parents. As a result of these differences, Haskett et al. (2006) propose that even among abused children, "parenting behaviors might influence the degree to which maltreated children are successful in achieving developmental tasks" (p. 802). Egeland and Farber (1987) found differences in the behaviors of maltreating mothers whose infants had secure attachments versus the behaviors of maltreating mothers whose infants had insecure attachments (cited in Haskett et al., 2006). The mothers of securely attached maltreated infants were not as hostile and were more sensitive than the mothers of insecurely attached maltreated infants.

Aspects of parenting were also related to outcomes among maltreated children ages 7 to 12 years, with relatedness to mother impacting self-esteem and subsequent outcomes (Kim and Cicchetti, 2004). Data collected in the Lehigh Longitudinal Study differentiated high functioning from low functioning maltreated adolescents on the basis of maternal affection, support, hostility, and control (Haskett et al., 2006). The study found that high functioning maltreated adolescents were less likely to have experienced chronic abuse. A retrospective study conducted by Wind and Silvern (1994) among adult women who had experienced physical or sexual abuse in childhood found that "women's perceptions of parenting support received in childhood were related to current reports of self-esteem and depression" (cited in Haskett et al., 2006, p. 803). Similar results were revealed in a study using the Add Health Survey, which found that among a sample of males with a history of sexual abuse; perception of parental care was one of the best predictors of resilience (cited in Zielinski & Bradshaw, 2006).

Kim and Cicchetti (2004) contend that while there is a strong relationship between parent-child relationship quality and adjustment among children who are maltreated, it is less certain what "mechanisms and processes" (p. 342) account for this relationship. Previous studies demonstrate that self-esteem mediates the relationship between socio-environmental experiences and internalizing behavior problems among adolescents, although self-esteem does not have a significant effect on externalizing behavior problems. In contrast, Shonk and Cicchetti (2001) found that internalizing and externalizing behaviors among maltreated and nonmaltreated children between 5- and 12-years-old "were fully mediated by social competencies" (cited in Kim & Cicchetti, 2004, p. 343). These findings suggest that personal factors are more pertinent to resilience as well as experiences with maltreatment.

In their own study Kim and Cicchetti (2004) examined the relationship between child maltreatment and the quality of parent-child relationships from a risk and resilience perspective. Risks and protective factors were examined as contributors to the outcome, or adjustment. Thus, the outcome was the result of additive, or cumulative, risk and protective factors. The study found that parent-child relationship quality functioned as a risk factor separate from child maltreatment. When child maltreatment took place in the context of a poor parent-child relationship however, there was greater risk for maladjustment than if the child was subject to maltreatment within the context of a more positive parent-child relationship.

The longitudinal analysis conducted by Kim and Cicchetti (2004) is supportive of "the additive model showing that maltreatment and mother-child relationship quality independently contributed to children's internalizing and externalizing symptomatology, directly as well as indirectly through self-esteem and social competence" (p. 350). Consistent with previous studies, maltreated children demonstrated more internalizing and externalizing behavior problems and exhibited less social competency. For both maltreated and nonmaltreated children, relationship insecurity with mother was associated with lower self-esteem and this with internalizing symptomatology over one year later. Parent-child relationship quality was also found to be a moderator of the consequences of child maltreatment. In their discussion, Kim and Cicchetti suggest examining the quality of other relationships in addition to that of the mother as understanding the child from an ecological perspective necessitates considering the influence multiple relationships.

Locus of control is also predictive of resiliency. Maltreated children who had an internal locus of control exhibited fewer internalizing symptoms. Children who experienced maltreatment at a younger age were

less likely to have an internal locus of control, however. A study conducted by Moran and Eckenrode (1992) found that among female victims of sexual abuse between 8- and 12-years-old with good self-esteem and an internal locus of control for positive events, depression was commiserate with participants that were not abused (cited in Haskett et al., 2006). This study also found that abuse among younger children, particularly before the age of 11, was a greater detriment to self-esteem, locus of control, and depression. While an external locus of control is not a protective factor for maltreatment, external attributions specific to abusive events and maltreatment experience(s) may prevent maltreated individuals from engaging in self-blame (McGee, Wolfe, & Wilson, 1997; Brown & Kolko, 1999). Thus, although an internal locus of control is generally considered more adaptive than an external locus of control, the latter may be preferable in terms of contextualizing and attributing blame for the abuse.

There is minimal evidence that intelligence is a protective factor for maltreated children or a predictor of adaptive functioning (Haskett et al., 2006). In studies in which intelligence distinguished high functioning from low functioning maltreated children, SES and parenting behaviors were more powerful predictors. A study conducted by Shonk and Cicchetti (2001) found that components of academic engagement such as academic and cognitive competence "accounted for much of the association between maltreatment and academic maladjustment" (Haskett et al., 2006, p. 801). In this study social competence and ego-resiliency were associated with behavioral maladjustment. Haskett et al. (2006) define ego-resiliency as "children's capacity to adjust their emotional and behavioral responses as a function of demand characteristics of a given situation," and ego-control is defined as the ability to "monitor and modulate one's feelings" (p. 801). Three studies, conducted by Cicchetti and Rogosch (1997), Cicchetti et al. (1993) and Flores et al. (2005) found that both ego-resiliency and ego-control were associated with resiliency in maltreated children. They were mediators of cognitive competence as well as the quality of peer relationships three years later.

The studies reviewed demonstrate that cognitive and social processes contribute to adaptive and maladaptive functioning in children exposed to maltreatment. Pertinent characteristics include "maltreated children's views of self and their self-regulatory processes, including ego-control, ego-resilience, self-esteem, perceptions of control, attributional style, and social problem solving ability" (Haskett et al., 2006, p. 802). Children's beliefs about their experiences had an effect on their resilience even when they had experienced

chronic and severe maltreatment. In addition, the quality of caregiving relationships in the context of maltreatment also influenced subsequent resilience.

None of the studies reviewed specifically address the personal attributes and correlated constraints associated with resilient parenting among adolescents with a history of maltreatment. Social and cognitive factors identified may still be relevant to dimensions of parenting, however. Additional research is needed to identify individual social and cognitive factors as well as correlated constraints associated with maltreated adolescents' and adaptive and maladaptive parenting outcomes.

e.) Parenting Style versus Broader Family Context

Researchers have attempted to compare and contrast the effects of parenting style versus the effects of the broader family context on child maltreatment. Brown and Kolko (1999), in contrast to studies previously described, found that parenting practices were not related to the severity of children's externalizing problems (e.g., monitoring, discipline, and interactional behaviors). The study found however, that the family context, including stressors and relational processes, indirectly effect child outcomes. A study examining resilient functioning among maltreated adolescents found that family support and better parent-adolescent communication were associated with fewer health risk behaviors (Perkins & Jones, 2004).

Family stressors, such as financial insecurity, exact a toll on caregivers and the subsequent caregiving environment they are capable of providing "through increased stress, leaving them more depressed and demoralized than comparison parents" (Zielinski & Bradshaw, 2006, p. 52). Parents subject to this type of stress were described as more hostile and punitive toward their children and less likely to spend time with them. As a result, these children had a higher incidence of adjustment problems. Social support for maltreating caregivers may buffer an environment characterized as stressful, although maltreating caregivers are less likely to seek out supportive relationships.

Broader family support is especially salient when children are younger and more reliant on their parents. Older children and adolescents are more likely to seek social support from peers and other adults. The effects of maltreatment may also be mediated by the formation of a relationship with at least one person who is supportive and provides appropriate discipline. Farber and Egeland (1987) found that grandmothers were an important source of social support among children maltreated by their mothers (cited in Haskett et al., 2006). Child maltreatment is typically inflicted by primary caregivers, precluding the majority of maltreated children

from having a supportive relationship with an appropriate disciplinarian unless the family structure is such that the child lives with extended family or spends a significant amount of time with them (Zielinski & Bradshaw, 2006).

Further research is needed to better understand how social networks within families effect child maltreatment. Family circumstances are important proximal influences on all children, but it is unknown how these circumstances effect diverse populations. Emphasizing the importance of understanding child maltreatment among the broader population, Zielinski and Bradshaw (2006) state that "demographics are related to family size, makeup, and caregiving practices" (p. 54), not simply race and ethnicity.

f.) Characteristics of the Adolescent Parent

Parent characteristics, that is, characteristics of the adolescent parent, are also pertinent to better understanding the child maltreatment. Parental characteristics studied in relation to child maltreatment include parental personality and psychological resources. Parental personality alone however, is not a determinant of child maltreatment. Personality characteristics, such as agreeableness and aggression, may be important contributors rather than determinants of child maltreatment (Belsky, 1993).

A parent's psychological resources, including negative reactivity and attributional style, have also been examined with regard to child maltreatment. Some studies have found that maltreating parents respond with greater negative reactivity to distressing parent-child interactions. Control attributions are also an important psychological resource for parents (Belsky, 1993). Attributional styles characterized by minimal control are likely to result in the interpretation of negative parent-child interactions as threatening, leading to "elevated levels of arousal and negative affect" (Belsky, 1993, p. 419). Thus, parents "who assign high importance to external, unstable events (e.g. luck) and low importance to internal stable factors (e.g. ability) when making causal attributions about success in parenting are particularly reactive to aversive, unresponsive child behavior" (Belsky, 1993, p. 419). A negative affective orientation may further exacerbate this external control orientation, increasing the likelihood of abuse. Parental psychopathology and substance abuse also significantly affect parenting practices and may exacerbate the negative effects of maltreatment.

g.) Child Characteristics and Child Maltreatment

While much focus has been on the factors external to maltreated children thus far, evidence suggests that characteristics of the child may also contribute to child maltreatment. Cicchetti's (2004) discussion of

resiliency brings to the fore child characteristics associated with child maltreatment. Children are active agents and determinants in their adaptation. Thus, it is essential to not only investigate community and family factors associated with child maltreatment, but also the individual child attributes that interact with these more distal levels of influence.

Child age is an important factor to consider as younger children are more likely to experience maltreatment than older children. Younger children are subject to more physical abuse, they are more physically and psychologically dependent on their caregivers, and they are more likely to sustain injuries from abuse. Belsky (1993) posits that "[T]he fact that young children have more difficulty regulating their emotions than older children may also increase the chances that they evoke hostile care from their parents" (p. 419). Abuse is most frequently reported between 3 and 8 years of age, when children are entering schools and preschools (Belsky, 1993). Maltreatment may be underreported among the adolescent population, however.

Inconsistent results are also reported on the relationship between child behavior and child maltreatment. Studies have found that abusive parents report more problematic child behavior. Still, it is difficult to separate cause and effect, as 'bad' behavior may result from child maltreatment. A study conducted by Engfer and Gavranidou (1988) and cited in Belsky (1993) found that:

> Abused children did not differ in irritability or social responsiveness from demographically matched controls as newborns, but by 8 months of age they were more negative in mood and by 33 months they were less cooperative and compliant than comparisons. (p. 420)

These results suggest that maltreatment may induce negative changes in child behavior.

Infant and child temperament and/or personality are often examined in relation to child behavior. Temperament is also related to the age of the child. All infants are born with a predisposed degree of reactivity and ability to self-regulate, factors Rothbart (2007) uses to define 'temperament.' Affective communication, discussed by Tronick (1989), is central to the development of personality because it is a conduit for the expression of temperament. In other words, temperament can be construed as the motivation behind infants' other-directed and self-directed behaviors. Most theorists studying temperament have settled on the notion that temperament is not as inclusive as personality, nor should it be used synonymously. Instead, temperament is best understood as the seed from which personality grows (Rothbart, 2007). This distinction is important as many mistakenly believe that a child's affectivity, or negative reactivity and inability to self-regulate, is representative of their personality over the course of their lifetime. Rather, in infancy, the child's actions are

subordinated to the goal of maintaining homeostatic balance. Infants, at this stage in development, are not acting willfully or consciously, but merely expressing their biological needs. Although the biological drive that manifests in temperament does not alone constitute personality, caregivers' reactions to temperamental dispositions and ensuing interactions are formative.

In some respects, early infancy is akin to a blank biological canvas with which the environment, including caregiver reactions to infants' demands for assistance with biological regulation, interacts. This interaction sets in motion the reactions that the infant will elicit from its environment for years to come. Thus, it is the relationship between temperament and parental reactions to this, also often conceptualized as maternal sensitivity, which shape personality. Again, this occurs through the process of affective communication (Tronick, 1989). From the moment the infant is placed in the mothers arms and she peers down, the affective dialogue begins. Her personality interacts and/or reacts to the child's biological manifestation of outward affectivity. She is capable of thwarting or skewing the child's reactivity and regulation, or improving it. Mothers will need to make more reparations with some infants, for example premature and/or low birth weight infants (described in greater detail in the sections that follow) to counteract the more 'difficult' nature of their temperament. Research suggests that these efforts will yield significant long-term benefits, however. So-called 'difficult' infants whose mothers are dedicated to interactive reparation will develop a stable self-concept of themselves and others, viewing themselves as causal agents in their environments. As the infant develops, others will react to the individual as such, further reinforcing the child's self-concept. Thus, although temperament is an individual child characteristic, it is the parent's perception of temperament and behavior that is of greater predictive value given the integral, Vygotskian type of role played by them.

Thus far, the research reviewed has addressed features of the neighborhood and community, school and peers, parenting styles and family contexts, and characteristics of the individual adolescent or young adult parent. These factors may effect the child maltreatment among adolescent and young adult parents with history of maltreatment and interact with infants' with specific attributes and characteristics. For example, features previously discussed, such as the infant or child's age and parental perception of child temperament and behavior, are salient to parents' interactions with their infants and children. Additional child characteristics, such as disabling conditions and/or health problems associated with prematurity and/or low birth weight, may further exacerbate the difficulties of child rearing for adolescent parents.

The literature is replete with studies that have identified the correlation between developmental disabilities and child maltreatment. Sullivan and Knutson (2002) conducted a study to estimate the prevalence of maltreatment among children with disabilities. In a sample of 50,278 children in Omaha, Nebraska, Sullivan and Knutson (2002) found that "almost one fourth (22%) of children with a history of maltreatment were identified as needing special education, and almost one third (31%) of children in special education had a confirmed history of child maltreatment" (p. 31). Neglect was cited as the most prevalent form of maltreatment, although multiple forms of maltreatment and repeated and ongoing abuse were also more common among children with disabilities. Children with disabilities were more than three times as likely to experience all forms of maltreatment, including emotional abuse, physical abuse, neglect, and sexual abuse, than children without disabilities.

Spencer et al. (2005) contend that the increased risk of child abuse among children with disabilities is largely documented by "extrapolating from these highly selected populations to national populations and comparing disability and abuse rates" (p. 609) and suggest that this methodology is subject to bias. After conducting a whole-population study of the association between disability and child maltreatment, Spencer et al. (2005) concluded that there is no "support for a blanket assumption of vulnerability of all disabled children to abuse" (p. 612). Children with Autism and sensory disorders such as visual and hearing impairments did not have an increased risk of abuse. Children with cerebral palsy were at an increased risk of physical abuse and neglect, however. Children with conduct disorders and moderate or severe learning disabilities were at an increased risk for all forms of abuse, while children with nonconduct psychological disorders and speech and language disorders were at an increased risk for physical and emotional abuse, and neglect. For specific disorders, such as conduct disorders, speech and language disorders, and learning difficulties, it is uncertain whether the abuse is a cause of the disability or happens to occur with greater frequency as a result of having the disability. Sobsey (2002) also reports that children with specific types of disabilities have higher rates of abuse. Children with behavior disorders were most likely to have histories of malreatment (one half) followed by children with speech and language disorders (one third), and mental retardation (one fourth). Children with hearing impairments, learning disabilities, physical disabilities, and visual disabilities were also more likely to have experienced maltreatment than children without disabilities (Sobsey, 2002, p. 31). Population based

studies examining the prevalence of child abuse among adolescent caregivers with disabled and nondisabled children were not found, however.

The increased survival of children born prematurely and/or with low birth weight has also enlarged the incidence of children with disability and developmental delay. Infants born prematurely, or prior to the 37th week of pregnancy, are often born with a very low birth weight (VLBW), which is considered less than 1,500 grams; extremely low birth weight (ELBW), which is less than 1,000 grams; or low birth weight (LBW), which is less than 2,500 grams. Later in their development, many of these infants are diagnosed with developmental disabilities and behavior problems as a result of neurological impairment. Thus, the functioning of children born prematurely may not differ markedly from that of children with disabilities. Literature on the incidence of child maltreatment among infants born prematurely was not specifically addressed in that on child maltreatment among children with disabilities.

Research cited by Goldson (1998) indicates that many low birth weight infants are subject to maltreatment. Studies following premature and low birth weight infants have a significant attrition rate due to placement in foster care, which suggests that many children born prematurely are removed from their homes as a result of maltreatment or neglect. Belsky (1993) reports inconsistent results in studies examining the relationship between prematurity and child maltreatment. A prospective study conducted by Altemeier, O'Connor, Sherrod, and Tucker (1984) indicated that "health difficulties preceded the occurrence of maltreatment" (cited in Belsky, 1993, p. 419). Thus, premature infants with high-risk medical conditions may have a higher incidence of maltreatment. Researchers contend however, that parental factors are more significant to child maltreatment than are child factors, though these too cannot be ignored (Belsky, 1993). Belsky (1993) maintains that from the ecological transactional perspective espoused by Bronfenbrenner (1979) "such an outcome seems most likely to occur when age, health, and behavioral aspects of the child conspire to make some more of a challenge to rear than others" (p. 420). Again, no studies were found specific to adolescent parent populations with infants born prematurely and/or with low birth weight.

Before the relationship between disability and child maltreatment was systematically studied, it was largely accounted for by the "dependency-stress theory" (Sobsey, 2002, p. 30). The dependency-stress theory suggests that the stress of raising a child with disabilities results in child abuse. Empirical support for this theory was unfounded, however. The second initial assumption about the relationship between child

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maltreatment and disability was that child maltreatment causes "cognitive and neurological disabilities" (Sobsey, 2002, p. 30). This explanation is also limited as the several diverse forms of maltreatment do not entirely account for all childhood disability, including "genetic and other congenital disorders, prematurity, prenatal events such as exposure to drugs and infections, perinatal disturbances, and post-natal trauma" (Goldson, 1998, p. 663). Three theories are now thought to account for the link between child maltreatment and disability. Sobsey (2002) maintains some continuity with previous explanations, positing: 1) "Child maltreatment could be an important cause of disability," 2) "The presence of a disability may in some way increase risk for abuse," and 3) "The same primary causal factors that increase risk for disability increase the risk for child abuse" (p. 31).

Sobsey's (2002) first theory, that child maltreatment could be the cause of disability, is supported by research findings that "about one fourth of serious brain injury in children is the result of child abuse" (p. 32) and consistent with previous assumptions. Findings also suggest that injuries from intentional violence are more serious than accidental injuries. The most common forms of violence include battery and shaking. Institutional neglect, first documented by Skeels and Dye in 1939, Spitz in 1949, and more recently in Ames' 1997 studies of children in Romanian orphanages, also causes disability (Sobsey, 2002). Medical neglect can also result in disability. Psychological and emotional abuse can result in PTSD as well as "withdrawal, aggression, sexually inappropriate behavior, depression, sleep disorders, and a damaged self-image" (Sobsey, 2002, p. 33). Maltreatment is also associated with lower cognitive ability. It was previously assumed that overt physical abuse had more severe implications than covert forms of abuse, such as psychological abuse. More recent has research however, has revealed that "chronic and severe psychological trauma during the developmental years can produce long-term physiological and anatomical change in children" (Sobsey, 2002, p. 34) that is perhaps the result of elevated levels of hydrocortisone. With regard to the effect of child maltreatment on the prevalence of disability, Sobsey (2002) concludes that multiple forms of maltreatment are likely to account for as much as one quarter of childhood disability, making it a leading causal factor.

The second theory posited by Sobsey (2002), that disability increases the risk of abuse, is rooted in Bronfenbrenner's (1979) ecological model of child development. Child characteristics and behaviors are the most proximal factors in the model and these vulnerabilities render the children incapable of "escap[ing] from, or resist powerful abusers" (Sobsey, 2002, pp. 35-36). The effects of disability on child maltreatment become

more prominent as typically developing children acquire skills, such as walking or speaking, that reduce their vulnerability over the course of development. In contrast, disabled children may fail to reach the developmental milestones that reduce their dependency and increase their autonomy. Interaction with a larger number of caregivers also increases the likelihood for abuse among children with disabilities.

The common social moors that prevent individuals from being abusive may be diminished among children with disabilities. Poorer quality of treatment and care may be the result of "(a) social distancing or depersonalization, (b) devaluation, and (c) blame" (Sobsey, 2002, p. 36). Social distancing is described as the notion that children with disabilities are "not really 'one of us'" (Sobsey, 2002, p. 36). Perpetrators may believe that children with disabilities do not have same level of conscious awareness as typically developing children and thus rationalize that their suffering is not commensurate. Devaluation is similar to social distancing. Devaluation occurs when perpetrators consider abuse less harmful because the disabled child has a lower quality of life to begin with. Lastly, abuse is justified by or attributed to the stress posed by rearing a child with disabilities. Again, the dependency-stress model was not supported by research, although disabled children are frequently dependent on their caregivers for a greater number of needs, including "safety, nurturing, education, medical, and physical care" (Goldson, 1998, p. 664). Thus, both disability and abuse influence one another as "[A]buse causes disability and disability increases risk for victimization" (Sobsey, 2002, p. 37).

Infants' interactions with their parents and the attachment bond formed between them may predispose them to maltreatment and/or be a consequence of maltreatment. It is important to understand, therefore, prematurity and/or low birth weight, as well as associated disabilities, that may later effect attachment security and the quality of parent-child interactions. Examination of the literature regarding attachment and child maltreatment revealed that children with disabilities are typically addressed as a population distinct from children born prematurely and/or with low birth weight prior to their entry into preschools and schools. Minimal literature specific to parent-child attachment quality in children with disabilities was found, however. Thus, the majority of the literature in the summary that follows specifically pertains to the attachment organization of infants born prematurely and/or with low birth weight.

Reports on the attachment quality of pre-term infants are inconsistent. Some researchers posit that the distribution of attachment security among preterm infants is similar to that of full-term infants, while others have found a significantly higher percentage of insecure attachments among preterm infants. In addition, some

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studies have found that a higher prevalence of insecure attachments among preterm infants is related to severity of medical complications. The diversity of findings has led researchers to contend that patterns of attachment quality among pre-term infants can not yet be readily identified.

Both Brisch et al. (2005) and Coppola, Cassiba, and Costantini (2007) posit that parents of preterm infants may manifest symptoms of post-traumatic stress disorder (PTSD). They may experience "flash backs; intrusions; feelings of anger, guilt, and shame; anxiety; depression; and deterioration in self-esteem and self-confidence" (Brisch et al., 2005, p. 15). These parents may be further distressed by prolonged separations from their infants while they are cared for in Neonatal Intensive Care Units for lengthy periods of time. Thus, preterm infants may develop insecure and disorganized patterns of attachment due to an elevated maternal anxiety that stems from the health problems and developmental risks associated with premature birth.

Mothers of premature infants may interact with their infants differently than mothers of full term infants. They have been characterized as "more active, intrusive, hyper stimulating, and less sensitive with their infants" (Coppola et al., 2007, p. 679) when compared to mothers of full-term infants. Mothers of premature infants were similarly depicted as "less emotionally involved, less contingent and less congruent to the infant's signals" (Coppola et al., 2007, p. 679). Coppola et al. further reports that they "show[ed] less positive expression and enjoy[ed] interacting with the baby less" (p. 679). In summary, mothers of preterm infants were described as less sensitive and responsive in their caregiving than mothers of full-term infants.

Indeed, greater medical risk associated with infant prematurity and/or low birth weight and the heightened anxiety these conditions are likely to elicit in mothers, cannot be discounted when analyzing the quality of their interactions (Schmucker et al., 2005, p. 426). Studies have also demonstrated, however, that mothers of preterm infants are equally capable of meeting infants' needs as mothers of full- term infants and have even been described as more responsive and sensitive caregivers. Brisch et al. (2005) argue that studies should consider not only infant prematurity and the severity of medical complications, but also maternal attachment representations. Maternal attachment representations moderate maternal sensitivity among full-term infants and, given the greater effort likely required to read the cues and determine the needs of preterm infants, it is plausible that they play a more significant role in moderating mother-infant interactions of preterm infants. Singer et al. (2003) further argue that the health characteristics of the infant are secondary to the maternal psychological distress that is associated with lower quality mother-infant interactions. Poehlmann and Fiese

(2001) found that the number of depressive symptoms mothers of preterm infants had was associated with insecure infant attachment. This pattern was not true among full-term infants however, suggesting that infant prematurity and maternal mental health both influence the quality of mother-infant interactions and their subsequent attachment bond.

van IJzendoorn, Goldberg, Kroonenberg, and Frenkel (1992) contend that attachment theory supports the notion that parents play a more critical role in the development of infant attachment than infant behavior and characteristics. van IJzendoorn et al. (1992) conducted a meta-analysis to examine the extent to which maternal problems, such as mental illness, and child problems, such as developmental and physical problems, compromise infant attachment. The meta-analysis tested the hypotheses that both maternal and child problems would decrease the incidence of secure attachment and increase the incidence of disorganized attachment; that maternal problems would have stronger effects than child problems in decreasing secure attachment and that maternal problems would have stronger effects than child problems in increasing disorganized attachment; and, lastly, that the effects of both maternal and child problems on attachment quality would be more evident when the disorganized insecure attachment classification had been used (van IJzendoorn et al., 1998, p. 842).

The study confirmed the hypothesis that maternal problems increase the incidence of insecure and disorganized attachments. Child problems were associated with increased disorganized attachment as well, although disorganized attachments were only significantly overrepresented among a population of children with Downs Syndrome. The findings suggested that children with mothers with mental health problems had greater difficulty compensating for child problems and were subsequently more likely to foster insecure patterns of attachment. Mothers of infants with physical and mental disabilities who did not have mental health problems demonstrated that they were quite capable of fostering secure attachments. Thus, child impairments did not significantly increase disorganized attachment. In response to these findings, van IJzendoorn et al. (1998) conclude that "[L]ogically, the mother's more mature capacities allow her to be guided by infant needs, while infants are not capable of comparable adaptation" (p. 855).

The attachment relationship is inherently asymmetrical, with the parent bearing the burden of making the majority of adjustments in behavior and activity. In addition, measures of maternal behavior typically account for infant behavior, such as those that might be associated with physical and mental atypicalities. van IJzendoorn et al. (1998) caution against generalizing results, or likening the attachment bonds formed by

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children with disabilities to those of typically developing infants and children, stating that "processes that enable mothers to adapt to biological impairments in the child problem samples may not be the same as those that enable mothers to adjust to normal variation in infant behavior" (p. 855).

As mentioned previously, characteristics of the pre-term and/or low birth weight infant are an important consideration. Medical problems may impinge on infant temperament and mood. Preterm infants may have more negative affect, be more passive and less socially responsive, and may make less eye contact than full-term infants. Parents often have difficulty arousing attentiveness in preterm infants. Arousal often quickly escalates to hyper-arousal, ultimately resulting in negative affectivity. These child characteristics may easily challenge the ease with which parents interact with infants born prematurely and/or with low birth weight and the subsequent pleasure that can be shared by the dyad.

Coppola et al. (2005) examined the influence of the severity of infant prematurity and maternal mental state on mother-infant interactions at 3 months of age. Maternal "state of mind" or mental state is defined as "the set of mental representations built upon early attachment experiences that regulates behaviors, expectations, and emotions in new intimate relationships" (Coppola et al., 2007, p. 680). Maternal state of mind is akin to the concept of the internal working model previously described. Coppola et al. found a main effect for mother's mental state and attachment on maternal sensitivity. Infant prematurity did not disrupt this attachment security, but it did interact with the mother's attachment. Thus, secure mothers were able to respond with adequate sensitivity to infant prematurity, but insecure mothers were unable to mount the ideal level of responsiveness. Coppola et al. (2007) conclude that maternal "state of mind" regarding attachment is the strongest predictor of maternal sensitivity in interactions with the infant.

Coppola et al. (2005) contend that the pattern of results found among mothers of preterm infants may be explained by the transactional model of developmental risk, which states that "at any point, new risk conditions may worsen previous ones, at the same time intervening protective conditions may compensate pre-existent disadvantaged conditions" (p. 682). An insecure mother is less capable of responding to the demanding needs of a premature infant because these often exorbitant and draining needs may activate her own painful attachment history. The mother strives to maintain cognitive distortions about her attachment history, which may interfere with sensitive caregiving. In addition, Coppola et al. found that insecure mothers were more

likely to experience infant prematurity as a traumatic event, and suggested that the ability to share and discuss this event with others helped them cope with and adapt to their infants' needs.

Brisch et al. (2007) conducted a similar study and also examined the distribution of attachment security among premature infants, finding it similar to that of term infants. A nearly equal percentage of term and pre-term infants were categorized with disorganized attachments, which suggests that disorganized attachment is unlikely to be the result of brain damage and other neurological risk factors more prevalent in children with disabilities, but rather "specific interactional process in the mother-infant dyad" (Brisch et al. 2007, p. 22). Infant neurological impairment may inhibit secure attachment however, as it was revealed that infants with these impairments were significantly more likely to have insecure attachments. Even among mothers with secure attachment representations, signs of mental retardation or neurological impairment can induce maternal anxiety and increase the likelihood of insecure infant attachment (Brisch et al., 2007). Thus, in contrast to Coppola et al. (2005), Brisch et al. (2007) did not find a significant relationship between maternal attachment representation and the attachment quality of preterm infants.

Schmuker et al. (2005) examined the extent to which degree of premature infants' neurobiological risk and maternal anxiety was associated with the type and quality of mother-infant interactions. Mother-infant interactions of full-term infants were also investigated in order to draw comparisons between the two groups. The study found that mothers of preterm infants were more sensitive than mothers of full-term infants. Within the preterm group however, more anxious mothers were less responsive and sensitive in their interactions than less anxious mothers. It is possible that maternal anxiety and mother-infant interactions reciprocally influence one another. For example, less positive interactions with the infant may result in greater maternal anxiety, which may, in turn, result in fewer positive interactions. Schmuker et al. (2005) also found that by 3 months of age, anxiety experienced by mothers of preterm infants was comparable to that of full-term infants, suggesting that the mothers of full-term infants eventually 'catch-up' to the initially heightened levels of anxiety experienced by mothers of preterm infants. A study conducted by Singer et al. (1999) found that by 3-years-old, the anxiety experienced by mothers of preterm infants had significantly dissipated. The study's findings also support the belief that maternal anxiety is positively correlated with health risk.

Jarvis, Myers, and Creasey (1989) found that maternal behaviors of infants born prematurely with varying degrees of medical risk did not differ significantly, although "mothers of the sickest infants were rated

as less sensitive and less responsive to their infants than mothers in the other two groups" (cited in Singer et al., 2003, p. 234). Between 4 and 8 months, mothers of the most medically at-risk infants declined in interactive responsiveness, mothers of preterm infants at a lower level of medical risk increased their interactive responsiveness, while mother of full term infants remained consistent over time. Smith et al. (1996) found that among a large sample of high- and low-risk preterm infants and full-term infants, there were no differences in measures of maternal sensitivity and interaction (cited in Singer et al., 2003). Schermann et al. (1997) compared mother-infant interactions in high- and low-risk preterm and term infants at two, four, and six months. While mothers of high-risk full-term infants engaged in less sensitive interactions than mother of low risk full-term infants, mothers of preterm infants did not differ significantly from mothers of full-term infants in levels of interactive sensitivity (cited in Singer et al., 2003).

Singer et al. (2003) examined the "relationships of infant risk status and maternal psychological distress symptoms to maternal and infant behaviors during feeding" (p. 234). Shortly after birth, mothers of both high- and low-risk preterm infants were more interactive and socially and cognitively stimulating than mothers of full-term infants. The cognitive and social-emotional growth fostering of mothers of preterm infants was comparable to that of full-term infants at 8 and 12 months, however. Singer et al. maintain that this decrease in social-emotional growth fostering may signify mothers' adaptation to their infants' lower levels of responsiveness. Infants' level of risk was related to maternal psychological distress in the neonatal period, but not in the months that followed. Singer et al. (2003) concluded that "VLBW, in addition to maternal psychological distress, contributed independent variance to the prediction of maternal cognitive growth fostering behaviors" (p. 239).

Discrepancies in the caregiving capacity of mothers of premature infants are evidenced in the aforementioned studies. The nature of this contradiction is captured in the following statement: "mothers of preterm infants have been variously described as both more and less active in their caregiving behaviors, with higher activity also disparately characterized as intrusive or, alternatively, sensitive responsiveness to a less active infant" (Singer et al., 2003, p. 233). The results of studies on infant prematurity, mother-infant interactions and attachment indicate that the insensitive and unresponsive interactions and insecure attachments among premature infants are likely the result of cumulative risk. That is, cumulative risks associated with premature and VLBW infants include high medical risk, financial problems, and potential difficulties with

infant temperament and self-regulation. Parents' own attachment security and mental health problems may further compound negative mother-infant interactions, and may even be more central to quality interactions and attachment than pervasive characteristics of the infant, such as long-term physical and mental disabilities. Further, it remains unclear the extent to which parental attributes, infant prematurity and/or low birth weight and associated disabilities, compromise dimensions of parenting.

Studies reviewed did not address the relationship between and potential interactions among maternal mental health, attachment representations, and infant prematurity and/or low birth weight and mother-infant interactions among adolescent parents. Singer et al. (2003) assert that "higher maternal age, socio-economic status, and education level were related to more cognitive and social stimulation" (p. 240) among mothers of high- and low-risk preterm as well as full-term infants. Further research is needed to determine whether parent-child interaction and attachment operate similarly among adolescent parents with infants born prematurely and/or with disabilities and to determine how these child characteristics are related to child maltreatment.

Child Maltreatment, Attachment, and the Intergenerational Transmission of Abuse. Trauma, such as any form of child maltreatment is likely to have a significant impact on the parent-child relationship. This consequence pertains to both the relationship an adolescent develops with her own parents when she is the victim, as well as that formed with her child when she is the perpetrator. Kim & Cicchetti (2004) maintain that "experiences of poor quality caregiving seem to be related to the development of negative representational models of attachment figures as well as the self (Cicchetti, 1991; Crittenden & Ainsworth, 1989; Oppenheim, Emde, Hasson, & Warren, 1997), which in turn are related to negative behavioral outcomes" (p. 342). Maltreated children are likely to experience the loss of their felt sense of security. They may undergo changes in their views of themselves and others. Individuals' internal working models may change; traumatic expectations may evolve, as well as new negative attributions. Even exposure to violence was found to impact preschoolers' attachment. Lieberman & Van Horn (1998) found that preschoolers who witnessed violence had a loss of the sense of their mother and/or father as reliable protector(s). The capacity to sustain representations of the mother and/or father as a secure base was also diminished. These children had disturbed representations of safe versus dangerous individuals.

Despite the experience of maltreatment, most children develop some type of attachment relationship with their caregiver(s). In a meta-analysis Morton and Browne (1998) found that in 11 out of 13 studies,

maltreated children were significantly more likely to have insecure attachments than control children. They found that 76% of maltreated infants were classified with insecure attachments, while only 34% of controls were classified with insecure attachments (Morton & Browne, 1998, p. 1097). A study conducted by Browne and Saqi (1988) found a disproportionately large number of maltreated infants (30%) were classified as securely attached (cited in Morton & Browne, 1998).

This surprisingly large number of maltreated children with secure attachments is not well explained by attachment theory. Reexamining these infants in the Strange Situation Task led Crittenden (1985) to reclassify these infants with an A-C category of attachment, or a combination of the insecure avoidant and insecure anxious categories (cited in Morton & Browne, 1998). In other words, these infants "showed an unusual combination of high levels of both avoidance and resistance together with proximity seeking and contact maintenance" (Morton & Browne, 1998, p. 1097). While researchers Main and Solomon (1989) observed both A- and C-like behaviors, what they found most prominent was these maltreated infants' disorganized reactions to stress. Also observed were behaviors described as "bizarre" such as "incomplete, undirected, and uninterrupted movements and expressions; stilling, slow movements; and asymmetrical and mistimed movements" (Morton & Browne, 1998, p. 1097). After reclassifying infants with the inclusion of the disorganized category, Carlson et al. (1989) found that 82% of maltreated infants fell in the disorganized category, 4% were classified as insecure, and only 14% remained in the securely attached category (cited in Morton & Browne, 1998). Barnett, Ganiban, and Cicchetti (1999) also found that the vast majority of maltreated children form disorganized attachment relationships with their primary caregivers while nonmaltreated children of comparable socio-economic status are primarily securely attached to their caregivers (cited in Tarabulsy et al., 2008).

Cicchetti, Rogosch, and Toth (2006) conducted a study on the efficacy of two preventive-interventions among 137 maltreated and 52 nonmaltreated infants. The majority of participating mothers were of minority ethnic status and low socio-economic background. As Cicchettti et al. had hypothesized, a very small percentage, (1%) of infants in the maltreating group, were securely attached. A larger percentage (32.7%) of children in the nonmaltreated group was securely attached, although this percentage is smaller than what is found in the general population. A very high percentage of maltreated infants were also classified with

disorganized attachment styles (89.8%), while the percentage of nonmaltreated infants classified as disorganized was less than half of that (42.3%).

The formation of anxious and avoidant attachments among maltreated children may be adaptive in their immediate environment, behooving them to avoid the rejecting and sometimes unpredictable and violent nature of abusive caregivers. The environments in which maltreated children are most likely to develop attachments cannot be discounted either, however, and are often characterized by "conflict, social isolation, and limited resources" (Haskett et al., 2006, p. 797). The insecure, primarily disorganized, attachments formed by maltreated children are the result of "many enduring problem characteristics of the home environments where maltreatment has occurred, such as emotional or physical rejection, aggression or hostile management, threatening affective or verbal assault, or lack of appropriate responsivity" (Cicchetti et al., 2006, p. 623). In Cicchetti et al.'s (2006) study, the incidence of disorganized attachment in the nonmaltreated group was unusually higher than that typically found among nonmaltreated infants. Cicchetti et al. (2006) postulate that even in the absence of maltreatment, "the stresses associated with poverty and other risk factors that commonly accompany membership in the low socio-economic strata increase the probability that strains will be placed on the mother-infant attachment relationship" (p. 642).

The study conducted by Cicchetti et al. (2006) demonstrates that correlated constraints, not simply isolated incidences of maltreatment, contribute to the perpetuation of poorer parent-child relationships, including disorganized attachments. In fact, ongoing hostility that characterizes many of these relationships may even be more influential than isolated instances of abuse and neglect. By comparing observations of interactions between maltreating and nonmaltreating mothers and their children, studies have found "greater levels of maternal negative emotionality; lower levels of engagement in interaction and maternal coercion; and lower levels of direct, reciprocal interaction and face-to-face contact" (Tarabulsy et al., 2008, p. 324) among maltreating mothers. In Cicchetti et al.'s (2006) study blind observers in the study rated mothers in the maltreating group as exhibiting less sensitivity with their infants than nonmaltreating mothers. Thus, it is important to note that instances of abuse and maltreatment often take place in the context of pervasive relational aggression and hostility.

In addition to more subtle relational variables associated with child maltreatment, Cicchetti et al. (2006) also examined historical factors prevalent among maltreating mothers. The study found that mothers

identified as maltreating "reported having experienced more abuse and neglect in their own childhoods" (p. 642). They also had "more negative representations of aspects of their childhood and contemporary relationships with their own mothers" (Cicchetti et al., 2006, p. 642). On a current contextual level, they reported receiving less support from family members, and experiencing higher stress associated with child rearing. These findings led Cicchetti et al. (2006) to conclude that a host of current contextual and historical factors, including "childhood histories of abuse and neglect, negative relationship representations, limited family social support, stressors in multiple domains, and insensitive patterns of relating to her infant" (p. 642) characterize child maltreatment. In addition, these factors are detrimenal to the quality of parent-child attachment.

Cicchetti et al.'s (2006) findings suggest that parents who have been neglected or abused are more likely to subject their children to maltreatment, thereby perpetuating the intergenerational transmission of abuse (Tarabulsy et al., 2008, p. 322). Kaufman and Zigler (1987) maintain that 30% of parents who have experienced abuse subsequently abuse their own children (cited in Belsky, 1993), although rates widely range between 7% and 70%. Belsky cautions that many studies which conclude that abusive parents do not report having experienced abuse in their childhoods, fail to realize that these retrospective reports can be inaccurate due to both under- and over-reporting. The review of the literature on the etiology and sequelae associated with child maltreatment suggest numerous contextual factors within several levels of ecology contribute to the adjustment of maltreated children later in life. More specifically, these factors also contribute to whether parents abused during childhood will replicate the pattern of maltreatment.

Mechanisms posited to underlie the intergenerational transmission of abuse include social learning theories and attachment theory, as previously discussed. Social learning theory suggests that patterns of behavior observed and learned in childhood are activated again in adulthood as a parent. Learning takes place through modeling, direct reinforcement, coercion training, and inconsistency training. Belsky (1993) explains that inconsistency training is observed when parents are inconsistent in their delivery of rewards and punishments; predisposing the dyads to "the escalating cycle of aversive exchanges" (p. 416). Cycles of aversive exchanges are rewarding because, in the absence of consistent discipline, these interactions are predictable. The intergenerational transmission of abuse may also stem from parents' beliefs about discipline as

those who legitimize harsh forms of discipline are likely to have been subject to similar practices during their own childhood.

The internal working model, the concept posited by attachment theorists, is a vehicle by which a childhood history of maltreatment and abuse is repeated, with the once victimized child assuming the role of the perpetrator. Maltreating parents are likely to be insensitive and unresponsive. As a result, maltreated infants "form representation[s] of their caregivers as unresponsive, unavailable, and rejecting, and of themselves as unworthy and unable to elicit the appropriate attention and care from the attachment figure" (Morton & Browne, 1998, p. 1098). This representation of self and others is repeated in future relationships, including the maltreated individual's relationship with their own child. In keeping with the concept of correlated constraints, Morton & Browne (1998) maintain "it is the caregiving relationship that is transmitted across the generations rather than violence per se" (p. 1098). This speaks to the significance of the pervasive ecology surrounding the child and not just the effects isolated incidences of abuse endured.

When a parent has experienced trauma in childhood, such as maltreatment, traumatic expectations may develop. Their personality begins to develop in line with defenses and expectations based on trauma, thereby infiltrating the parental role at a later point in time. The manifestation of this trauma later in life and in the parent's relationship with their own child is dependent on several factors, which include the child at the time of the traumatic event, including their developmental stage and their risk and resiliency; the nature of the stressor or abuse; the environment in which it occurs; and development following the stressor. The child's development after the stressful period or event is shaped by proximal reminders of the trauma, distal reminders, and secondary stresses (Pynoos, Steinberg, & Piancentini, 1999).

The intergenerational transmission of abuse may also be understood in terms of how child maltreatment affects emotion regulation, aggression, and empathy. Early adverse interpersonal experiences may serve as a foundation for "hostile personalities that become a proximate cause of maltreatment" (Belsky, 1993, p. 416), comparable to the concept of the internal working model in attachment theory. A parent's internal representation of his or her past relationship with an abusive caregiver is likely to impinge upon the parent's ability to take the perspective of their own child. Thus, the abused parent's perspective is often described as "adversarial" (Belsky, 1993, p. 416)

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While the intergenerational transmission of abuse is prevalent and difficult to change due to its often unconscious internal representation, not all parents with a history of maltreatment perpetuate this cycle. Studies investigating "lawful discontinuity" in the intergenerational transmission of abuse found that mothers with a history of abuse who did not abuse their children generally "had more extensive social supports, had experienced a nonabusive supportive close relationship with one parent while growing up or were more openly angry and better able to give a detailed coherent account of their earlier abuse than were repeaters" (Belsky, 1993, p. 416). Other studies also found that nonabusive mothers had supportive partners, and, in general, had more satisfying interpersonal relationships. Belsky (1993) found that among women who had not been abused, but exposed to family conflict and institutional rearing, supportive marriages were associated with improved quality of caregiving. Crockenberg (1987) identified similar effects of partner support among teenage mothers rejected by their parents (cited in Belsky, 1993). In each of these studies, it is hypothesized that "emotionally supportive relationship experiences" (Belsky, 1993, p. 417) contribute to the modification of internal working models and subsequent relationship expectations.

Maltreated children are also capable of forming attachment relationships with more than one caregiver. For example, a child may have an insecure attachment with her mother, the aggressor, but a secure attachment to her father or grandmother. Secure attachments to other caregivers may buffer the effects of child maltreatment and provide the opportunity for the maltreated child to form a more positive representation of self and other. The attachment relationship formed with the primary caregiver has the strongest influence on the child's representation of self, however.

Parents who perpetuate the cycle of abuse have difficulty articulating memories about their history of abuse and fail to understand the parallels between their early experiences with abuse and their own parenting. Gara, Rosenberg, and Herzog (1996) found that an ability to articulate childhood memories and to "provide a positive elaboration of self and others" (p. 1099) was associated with secure infant attachment, among both maltreated and nonmaltreated mothers. In other words, mothers who had coherent representations of their experiences were less likely to perpetuate the cycle of abuse. The intergenerational transmission of abuse occurs when experiences and memories of maltreatment are suppressed rather than "integrated into revised working models of relationships" (Belsky, 1993, p. 416). In addition, many nonabusive parents with a history

of maltreatment have sought out therapy, helping to bring these early traumatic experiences to their conscious awareness.

None of the research studies reviewed address factors that thwart the intergenerational transmission of abuse among adolescent and young adult parents. It is unknown whether positive relationship experiences can alter the internal working models of males with a history of abuse. In addition, it is unclear why some women have the opportunity to experience positive interpersonal relationships, while others are repeatedly involved in unsupportive and unhealthy relationships. Some evidence suggests experiences that promote self-efficacy such as academic success or positive experiences in extracurricular activities differentiate the former from the latter.

Section 6: Demographic Factors

The effects of caregiving history and current contextual factors, such as sources of support and normative development, on the child maltreatment among younger and older adolescent parents may also be influenced by other demographic variables, such as culture and ethnicity. Culture and ethnicity, for example, are a part of parenting adolescents' upbringing and may significantly influence caregiving norms as well as the normative age for child-birth, the likelihood and acceptance of co-residence, and the amount of pragmatic support families provide. Thus, what is typical among parenting teens in one culture may have a different impact on teens in another culture. Geronimus (2003), cited in Harden et al. (2007), postulates that:

> Higher rates of teenage pregnancy seen among African American and Latina women versus Caucasian women are driven entirely by cultural differences in perceived 'optimal' fertility timing: Among women experiencing structural constraints to economic success, higher health and mortality risks, and a normative multigenerational family structure, early childbearing may be correctly perceived as advantageous. (p. 679)

Easterbrooks et al. (2005) also contend that parenting, even when examining a homogeneous age group, such as adolescents, is not a "uniform phenomenon" (p. 312), as "factors such as social/cultural context may lead to different patterns of adaptation for mothers and infants" (O'Callaghan et al., 1999, p. 312). Thus, it is plausible that age is a less salient factor on dimensions of parenting and different socio-demographic variables may prove to be more relevant.

Some studies have compared outcomes associated with adolescent parenting among Caucasian and African American populations and suggest that support systems differ within these two groups, while others failed to find any differences. A study conducted by Wasserman, Rauh, Brunelli, and Garcia-Castros (1998) found that within a population of recent African American and Latino mothers of similar socio-economic status

and educational attainment, there were no differences in self-esteem among adult and adolescent mothers. Results such as these lead researchers to conclude that perhaps differences among adolescent mothers of different ethnic backgrounds are better attributed to factors such as socio-economic status and level of educational attainment, rather than age or ethnicity. In addition, Wasserman et al. (1998) found that "Across ethnic groups, teen mothers did not differ from older mothers in child-rearing attitudes" (p. 576). High levels of depressive symptoms were also found across groups. Wasserman et al. controlled for socio-economic and minority group status, as well as educational attainment among adolescent and adult mothers by including participants comparable on these dimensions, and therefore concluded the "absence of special disadvantage among adolescent mothers" (p. 576). This pattern of results suggests that there may also hold true with regard to child maltreatment among adolescent and young adult parents.

Wasserman et al. (1998) did find significant ethnic differences in psychosocial functioning among African Americans and Hispanics as well as within the Hispanic group, which consisted of Dominicans and Puerto Ricans. Ethnicity was associated with differences in family structure. For example, adult and adolescent Hispanics were more likely to live with their families and to be married than African Americans. African Americans were more likely to be retained in school than Hispanics, and Hispanics reported greater social isolation than African Americans. A large percentage of both Hispanic and African American teens planned to continue to reside with their families after leaving the hospital where they were interviewed. The effect of co-residence on dimensions of parenting across age and ethnicity were not investigated in the study, however, nor was child maltreatment examined.

In their discussion, Wasserman et al. (1998) assert that researchers have examined the relationship between factors such as age and ethnicity, and adolescent maternal mental health. Important parenting outcomes, such as child maltreatment, have been neglected, however. Clearly there is a need to better understand the significance of multiple psychosocial and contextual variables among parents at different developmental stages while also controlling for a host of demographic variables that are often thought to account for parenting outcomes. It is also important to ascertain which variables predict child maltreatment among diverse populations of adolescent and young adult parents.

Limitations of Previous Conceptual and Empirical Literature

There are several limitations in studies conducted on adolescent parenting. As mentioned previously, most studies have focused on factors contributing to maternal prenatal depression and the subsequent effects of prenatal and postnatal depression on early infant development, neglecting the relationship between depression and child maltreatment. Depression is likely not the only factor that contributes to child maltreatment among adolescent parents, however. Among adult parents, a history of child maltreatment is also often thought to predict depression as well as the increase the likelihood of the child maltreatment. Again, early experiences with abuse are not solely responsible for the perpetuation of child maltreatment among adolescent and young adult parents and should not be examined in isolation. Studies to date have not clearly identified whether depressive symptomatology and caregiving relationship history, including history of maltreatment, together or in isolation, affect parenting outcomes such as child maltreatment. While each of these factors is thought to play a role in the child maltreatment, it is unclear whether one factor is more important than another. It is also uncertain whether the importance of these more commonly examined factors vary by parent age given that adolescent and young adult parents are at very different stages in their development.

It is also uncertain to what extent family context and the quality of adolescent parents' early caregiving relationships, or more subtle relationship factors, influence subsequent parenting outcomes among maltreated and nonmaltreated adolescent parents. That is, it is unclear whether both childhood maltreatment and poor parent-child relationships/family contexts have a cumulative effect on later parenting outcomes and/or whether one of the two supersedes the other. For example, is possible that indicators of relationship quality more powerfully predict child maltreatment than acknowledgement of having experienced child maltreatment. Or, child maltreatment could have an additive, or cumulative effect, rendering adolescent parents with a history of maltreatment still more likely perpetrators of child maltreatment. There is also minimal research on the extent to which adolescent parents' past versus current relationships with caregivers influence subsequent caregiving practices. In other words, there may be a temporal dimension, with relationship quality at different time points assuming more or less importance. Lastly, the influence of these perhaps competing or even exacerbating factors may not only vary across time, but also by parent age as previously mentioned with regard to the effect of overt relationship factors such as maltreatment as well as depression.

Many studies have documented the relationship between child maltreatment, disorganized and insecure infant attachment styles, and the poorer quality of parent-child relationships. Furthermore, the correlation

between poor parent-child relationships and maladjustment in adolescence and adulthood is recognized. Current research has not revealed whether variables that function as risk and protective factors for the general adjustment and resilience of adolescents exposed to maltreatment are relevant to their more specific role as parents. Among adult parents, studies have identified the variables which intervene in the intergenerational transmission of abuse. As a result, it is also uncertain whether these or other intervening variables best explain the intergenerational transmission of abuse among adolescent parents, especially given the inadequacy of models of adult parenting in predicting outcomes associated with adolescent parenting.

Infant and child characteristics also situated in the levels of ecology surrounding the adolescent and young adult parent likely influence parenting outcomes. Again, in studies conducted among adult parents, child characteristics such as prematurity and/or low birth weight have been examined as risk factors for child maltreatment despite the contention that maternal characteristics are more relevant to the quality of the parent-child relationship. Child characteristics such as these have not been examined in the context of adolescent parenting in particular, however.

Thus, although the literature reviewed indicates adolescent mothers are more likely to engage in child maltreatment than are adult parents, it does not specify which current contextual and historical factors figure most prominently in this parenting outcome and, perhaps most importantly, their relationship with one another. Examining parent and child characteristics and the child rearing environment in isolation are of minimal use as resilience is likely the result of interactions among these factors. Family context is but one variable and it is essential to examine a broad array of ecological variables that may function as risk and protective factors for the caregiving practices of maltreated and nonmaltreated adolescent and young adult parents. As a result of gaps in the literature, it is necessary to identify variables common to nonmaltreating adolescent and young adult parents that have experienced child maltreatment and, conversely, those variables characteristic of nonmaltreated adolescent and young adult parents that maltreat their children.

The need to examine adolescent parenting from a developmental perspective was pointed out in the literature on prenatal depressive symptomatology among adolescent parents. Investigation of other outcomes associated with adolescent parenting, such as child maltreatment, warrant the use of this perspective as well. Adolescence is a period of development typically characterized by simultaneous increases in independence from caregivers and reliance on friends for emotional and sometimes pragmatic support. Separation from the

family is a natural result. Thus, it is necessary to distinguish between younger and older adolescents, who may be at different junctures in the process of separation and individuation. Examination of this pattern among young adult parents also allows for further between group comparisons, as, for example, older adolescents' behaviors may be more similar to those of young adults than younger adolescents.

It is also uncertain to what extent current contextual and historical precipitous factors are similar between and within groups or populations differentiated by age while also accounting for other relevant demographic variables. For example, adolescent and young adult parents' may be differentiated on parenting outcomes by not only their experiences with maltreatment (i.e. having experienced any maltreatment, severity, and form) but other contemporaneous and pervasive variables as well. Studies have identified African American adolescents as particularly vulnerable to depression during the transition to motherhood and have since examined the correlates of depression (caregiving history, peer relationships, and age of pregnancy or birth) primarily among this population or by combining and studying minority students as a single entity (e.g. Latinas and African Americans). Davis (2002) suggests a need to examine culture and ethnicity more closely, positing that "differences exist in the makeup of social networks of adolescent mothers from different ethnic backgrounds" (p. 504). Cultural differences may also belie the relationship between parental caregiving history, correlated constraints associated with this, and the child maltreatment among parenting teens. For example, differences in cultural and familial perceptions of adolescent pregnancy and parenting as well as family cohesiveness, may contribute to the amount of support received by parenting adolescents, depressive symptomatology, and, subsequently, parenting outcomes.   The waxing and waning of parental versus peer relationships may also differentially impact adolescent parents with diverse cultural backgrounds. Age and ethnic and cultural background are only two of many possible demographic variables that may allow researchers to more precisely identify potential factors that predict adaptive and maladaptive parenting outcomes above and beyond the effects of demographic variables.

<center>Rationale and Research Questions</center>

There are a host of negative outcomes associated with adolescent parenting as evidenced by the documented prevalence of mental health problems among adolescent mothers, the often cited poorer developmental outcomes of their offspring, and the higher incidence of child maltreatment. Demographic, historic, and current contextual factors are not well understood within this diverse population. Parenting

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adolescents are typically treated as one group, although it would be beneficial to determine whether this population is differentiated by the child maltreatment, but also by virtue of the characteristics that separate them on these outcomes. Furthermore, it is necessary to better understand which factors best predict parenting outcomes among groups given the potential developmental differences that may further distinguish them. This knowledge will provide policymakers with a more informed basis for decision-making and improve helping professionals' ability to tailor and implement interventions for the specific populations with whom they work.

Gaps in the literature on adolescent parents and child maltreatment and the pertinent need to better understand the complex contexts and interpersonal backgrounds of parents varied on these outcomes, warrant further investigation. Thus, the aims of this study are to expand upon current knowledge on the relationship between adolescent and young adult parents' caregiving history and current contextual and demographic variables, and child maltreatment. Among a large and diverse population of parenting adolescents and young adults, multiple demographic variables may be relevant to specific predictors of parenting dimensions, including race and ethnicity; age at which the participant became a parent; socio-economic status; level of educational attainment; and gender. Other potentially pertinent current contextual and historical predictors and/or mediators include perception of friendships; varied sources of support; child characteristics; aspects of caregiving history not limited to maltreatment and relationships with maternal caregivers; as well as contemporaneous and historical depressive symptoms and other interpersonal psychological factors. Forms of child maltreatment (i.e., neglect, and physical and sexual abuse) will function as outcome variables.

This study will focus on the following four research questions:

1. Are there patterns of current contextual and historical parent characteristics, interpersonal and intrapersonal, on which subgroups of adolescent and young adult parents are differentiated?

2. Are these patterns and subgroups further differentiated by other pertinent ecological and demographic variables and are subgroups differentiated by different forms of child maltreatment?

3. What personal, contextual, historical, and demographic factors characterize younger and older adolescent and young adult parents?

4. What personal, contextual, and historical factors significantly predict child maltreatment among younger adolescent, older adolescent and young adult parents with varying degrees of exposure to multiple forms of child maltreatment?

In concert, analyses conducted to address these questions will shed light on current contextual, historical, demographic, and individual factors associated with child maltreatment among younger adolescent, older adolescent, and young adult parents. Analyses will also reveal whether protective factors and risk factors that predict general resilience and maladaptation among children and adolescents with a history of child maltreatment are relevant to the child maltreatment among parents in different stages of development. It will also be clearer whether factors associated with the intergenerational transmission of abuse among adult parents function similarly among adolescent parents, and whether constellations of ecological variables vary by parent age. It will be important to examine parenting outcomes associated with early as well as contemporaneous experiences.

CHAPTER 2

Method

This study involved two analytical approaches to describing and predicting child maltreatment by young and older adolescent parents and young adult parents. First, for the purpose of describing patterns among variables thought to be pertinent to the prediction of child maltreatment, cluster analyses were conducted. Second, logistic regression analyses and a regression analysis were conducted to examine the interaction effect of parent age and proximal and distal risk and protective factors on different forms of maltreatment as well as a summative index of maltreatment. The comparison of factors across developmental stages of parents as well as across different forms of maltreatment, allowed for a more refined delineation of factors thought to predict child maltreatment. The analytic plan involved: a) identification of items from the National Longitudinal Study of Adolescent Health (Add Health), b) conducting cluster analyses and descriptive follow-up analyses, and c) conducting logistic and regression analyses on several different forms of child maltreatment.

The method chapter is divided into four sections. The first section is an overview and rationale for the use of data from the Add Health study for this study. The section that follows begins with a description of the Add Health study, followed by a description of the study sample. Next, details of the measures used are provided. Finally, the procedure and analyses used to answer the research questions are presented.

Overview and Rationale

This study used data from the National Longitudinal Study of Adolescent Health (Add Health), a large and comprehensive study of adolescent health. The Add Health study was primarily undertaken to examine the effects of diverse social contexts on adolescent behavior. It is a study on "how social environments and behaviors in adolescence are linked to health and achievement outcomes in young adulthood" (http://www.cpc.unc.edu/projects/addhealth). Data security plans were approved by the University of North Carolina at Chapel Hill (Harris, 2008). Study procedures were approved by the University of North Carolina at Chapel Hill Institutional Review Board.

Several features of the Add Health dataset make it appropriate for this study. First, the data are representative of adolescents in grades 7 through 12 in 1995. Many previous studies on outcomes associated with adolescent parenting have been conducted with samples drawn from a particular demographic population or from one clinic or school. In addition, small sample sizes limited comparisons of older and younger adolescent parents and focused on adolescents as one group. Although these studies were well-designed and comprehensive, the generalizability of findings was limited. In addition, Add Health data are recent and representative of U.S. adolescents and young adult males and females and, therefore, findings can be broadly generalized. The inclusion of both males and female parents is unique in that most studies of both adolescent and young adult parenting largely address the mother-child relationship and its surrounding contexts.

Second, although Add Health data were not collected expressly for the purpose of evaluating dimensions of parenting specific to child maltreatment, and thus did not include detailed information on the quality of caregiving parenting individuals received during their infancy and early childhood, retrospective self-reports of experiences with child maltreatment prior to the age of 18 are provided. Add Health also profiles complete data on multiple levels of ecology in the lives of adolescents and young adults, allowing for a rich contextual analysis of the correlated constraints associated with the child maltreatment. Add Health measures several forms of abuse, including neglect, which is commonly ignored in the literature. This collection of measures also allows for the creation of composite variables that assess an individual's cumulative experience with child maltreatment (both as a perpetrator and as a victim). This may be a more valid way to assess child maltreatment given that most children experience multiple forms of maltreatment over time rather than one specific incident or form.

Third, the measure of depressed mood used in Add Health is a modified version of the Center for Epidemiological Studies Depression scale (CES-D Scale, Radloff, 1977), a validated scale that reliably identifies individuals with clinically significant depression (Dierker, Albano, Clarke et al., 2001; Gotlieb & Cane, 1989; Roberts, Lewinsohn, & Seeley, 1991). Researchers have found adolescent mothers are at higher risk for depressive symptomatology and maladaptive child and parenting outcomes associated with maternal depression are widely documented. Thus, improving understanding of the relationship between depressive symptomatology and dimensions of parenting specific to child maltreatment among adolescent and young adult

parents will help to inform interventionists and policymakers in their efforts to provide effective services to adolescent parents.

Fourth, the Add Health data are longitudinal thus allowing for the establishment of a temporal dimension in the association between factors in the ecology of the adolescent, including depressive symptomatology at two time points, and for the detection of long-term effects on the child maltreatment. Studies have found an association between both subtle and overt aspects of caregiving history, maternal depression, the child maltreatment. It is unclear however, whether poor relationships with caregivers and/or being the victim of child maltreatment precipitate or are concomitant with depression and the subsequent child maltreatment. Furthermore, additional or alternative current contextual and historical ecological factors may better account for the variance in maltreatment and nonmaltreatment among adolescent and young adult parents. It is necessary to study the relationships these among factors longitudinally.

Fifth, the Add Health study collected data on pertinent infant and child characteristics, such as infant birth weight, child age, and the number of children respondents have birthed and are rearing. Studies conducted using adult samples have demonstrated that rearing children with a low birth weight and/or who are born prematurely may present unique parenting challenges due to an increased incidence of health, physical, and cognitive impairment. There is also a higher incidence of child maltreatment among children with disabilities. The relationships between these child characteristics, additional correlated constraints such as parental depression, and child maltreatment have not been examined among adolescent and young adult parents, however.

Lastly, the most recent wave of the Add Health study took place between 2007 and 2008. The pregnancy and birth histories collected during this wave are thought to be more thorough and accurate than those gathered during previous waves. Wave IV also includes improved measures of respondents' experiences with maltreatment. Thus, this study has the benefit of using more accurate and detailed information from the most recent wave of data collection, increasing its reliability, validity, and generalizability.

Information Source: The National Longitudinal Study of Adolescent Health

The Add Health study is a nationally representative survey of U.S. adolescents in grades 7 through 12 initiated in 1995 (Resnick, Bearman, Blum, et al., 1997). Add Health is a project of the Carolina Population Center at the University of North Carolina at Chapel Hill funded by the National Institute of Child Health and

Development and other federal agencies. Kathleen Mullan Udry, Bearman, and Mullan Harris (2008) were responsible for the original study design (Harris et al., 2008).

Included in the sampling frame for Add Health were all high schools in the United States that had at least 30 students in the school and an 11th grade (N=26,666). Schools were sorted by size, school type, region, urbanization, and racial composition. The resulting stratified random sample included 80 schools. Seventy-one percent of the schools (n = 52) agreed to participate. Those that declined were replaced by high schools comparable on size, type, level of urbanization, percentage white, percentage black, grade span, and census region and division. For each school, a "feeder" school that sent its graduates to the high school was identified for the inclusion of seventh and eighth graders. Some high schools spanned Grades 7 to 12, functioning as their own feeder school. Overall, 145 schools were included.

There were 119,233 students in grades 7 through 12 eligible to participate and 90,118 (76%) completed the 45-minute in-school questionnaire. The in-school questionnaire was administered during the first year of data collection (between September 1994 and April 1995). It collected information about student and family demographics, school activities, school habits, general health, and health related activities (Harris et al., 2003). The majority of the participants were between 13 and 18 years old, although the age range was 11-21 years. A core sample of 15,243 participants, stratified by sex and grade were then selected from the school rosters to participate in in-home interviews. In total, the questionnaire was administered to 12,105 adolescents, which provided nationally representative estimates and assigned sample weights. Several oversamples were recruited to permit analyses of group differences among African Americans with college educated parents (n = 1,547); Latinos, including Cuban American (n = 538) and Puerto Rican adolescents (n = 633) (Mexican American adolescents were not oversampled because they occur with sufficient frequency naturally); and Chinese adolescents (n = 406). Students with genetic conditions and disabilities were also included as samples. In total, 8,640 participants comprised the ethnic, genetic, and disabled samples. In total there were 20,745 nationally selected participants who completed the first in-home interview (Wave I).

The administration time for the in-home interview was between one and two hours, with data recorded on laptop computers to preserve confidentiality. It included topics such as history of romantic relationships, health status, and peer networks (Harris et al., 2008). The interviewer read the questions and entered the respondents' answers for less sensitive topics. For sensitive topics, respondents listened to pre-recorded

questions through earphones and entered their own answers. One parent (usually the resident mother) of each adolescent interviewed in Wave I completed an interviewer-assisted questionnaire designed to tap into a variety of topics relevant to both their own lives and the lives of their adolescents.

Wave II data were gathered one year after the completion of Wave I and excluded graduated seniors. As a result, Wave II data will not be included in this analysis. The interview was similar to that which was administered in Wave I. A total of 14,748 adolescents (88.2% response rate) participated in the Wave II interview.

The respondents interviewed during Wave I, including seniors that had participated in in-home interviews, were interviewed again 5 five years after Wave II, between August 2001 and April 2002. The main purpose of the third wave of data collection was to investigate the relationship between adolescence and young adulthood. Thus, all participants were between 18 and 26-years-old. Written consent was required for participation. As an incentive to participate in the study, all participants received $20. There were 15,170 Wave III respondents (77.4% response rate). The questionnaire was modified to address issues and collect information pertinent to young adulthood. As with Wave I and II in-home interviews, responses were recorded on laptop computers. For sensitive questions, respondents entered the responses into the computer on their own. To assist respondents in remembering important events, an Event History Calendar was made available to respondents as needed. The Add Health Picture Vocabulary Test (AHPVT), a computerized test of listening vocabulary, was also administered.

Wave IV data, with participants now aged 24-32 years, was collected between 2007 and 2008. The follow-up in-home interviews were conducted for 15,701 original Wave I respondents. A description of Wave IV states "The scientific purpose of Wave IV is to study developmental and health trajectories across the life course of adolescence into young adulthood using an integrative approach that combines social, behavioral, and biomedical sciences in its research objectives, design, data collection, and analyses" (http://www.cpc.unc.edu/projects/addhealth/design/wave4).

The majority of variables used for this study were derived from Waves I and III as the child maltreatment was measured at Wave III. Full pregnancy and birth histories were collected for both men and women at Wave IV and judged to be more replete and superior to those collected at Wave III. In addition, Wave IV measures of maltreatment victimization prior to age 18 were used in this study.

Participants

The study sample is comprised of parenting male and female respondents who participated in Waves I, III, and IV in-home interviews. Participants parenting at the time of Wave I data collection will be identified by their responses to questions regarding pregnancy and parenting history during the in-home interview. If respondents indicated that they were pregnant prior to Wave I (females) or the partner of someone who was pregnant prior to Wave I (males), they were then asked how this pregnancy ended. If the pregnancy ended in a live birth, they were then asked whether the baby was given up for adoption. They were also asked whether the infant or child was still living. Participants who indicated that the pregnancy ended in a live birth, that the baby was not given up for adoption, and that the infant or child was still living were retained in study sample. Participants who were pregnant or the partner of someone who was pregnant during the Wave I interview, were followed up at Waves, II, III, and IV regarding their pregnancy history. The same procedures used to identify parenting adolescents at Wave I, was used to identify parenting respondents who were either pregnant or the partner of someone who was pregnant during Wave I as well as participants parenting at least one child between Waves I and III. This subpopulation consists of 4,466 cases. Following the deletion of cases with missing values of weights, the subpopulation contained 4,150 cases.

Procedure

Phase I: Selection of Items

Items were selected based on their similarity to factors identified in the existing literature associated with the child maltreatment. In order to examine correlated constraints from a developmental perspective, both distal and proximal factors in the surrounding ecology were selected as well as those internal to the respondent (i.e., psychological variables). Also taken into consideration, were variables that allow for the modeling of the effects of overt maltreatment victimization as well as more subtle aspects of caregiving relationships, such as perceived closeness. Furthermore, variables were selected that could model developmental differences among parents at different developmental stages. Thus, the variables selected were sorted into one of five modeling groups: maltreatment variables, parental closeness variables, mental health variables, family structure/residential living status variables, child variables, school and friendship variables, and financial support variables. For the cluster analyses, variables were selected that have been previously identified in the literature as having a significant impact on the child maltreatment and not typically differentiated by parent

developmental stage. These factors include specific forms of overt maltreatment victimization prior to age 18, a summary index of maltreatment victimization, emotional closeness with caregivers at Waves I and III, and depressive symptomatology at Waves I and III.

Phase II: Data Preparation

 Measures. Some of the measures on the Add Health Survey used at Waves I and III were combined to create a set of composites that will be used as independent and dependent variables. To determine the internal consistency of composites derived from Add Health Survey, Morgan, Gliner, and Harmon (2006) suggest that "Alpha can be used when one has data from several items that are combined to make a composite score" (p. 47). Morgan et al. maintain that Alpha, "is typically used when the researcher has several Likert-type items (ratings from strongly disagree to strongly agree) that are summed or averaged to make a composite score or summated scale" (p. 247). An Alpha correlation coefficient of .40 is a moderate indicator that the question is a reasonable component of the composite. Thus, prior to conducting the analyses, Cronbach's alpha was calculated to ensure that the composite measures were internally consistent for all those not previously tested in the existing literature. When possible, missing values for composite variables were recoded to values that could be calculated in composite variables. All other missing values were imputed, with the exception of missing values on the outcome measures that could not be validly imputed.

 Dependent Measures. All dependent measures were gathered during Wave III.

 Child Maltreatment. Adolescent and young adult child maltreatment at Wave III was measured with several questions which address different forms of maltreatment; neglect (supervision and physical), and physical abuse. Thus, three outcome variables address the perpetration of three separate forms of child maltreatment. These three variables are described in the paragraphs that follow.

 Two measures were related to two different forms of neglect, supervision neglect and physical neglect. Each measure of neglect will be used separately. The questions in the survey from which the data were drawn were:

1. How often have you left your child/children home alone when an adult should have been with him/her/them?

2. How often have you not taken care of your child/children's basic needs, such as keeping you clean or providing food or clothing?

Response options were on an ordinal scale, with 0 being "This has never happened," 1 being "one time," 2 being "two times," 3 being "three to five times," 4 being "six to ten times," and 5 being "more than 10 times." For this study, frequency response categories were collapsed to create a dichotomous variable (0 = this has never happened; 1 = 1 or more times) due to low cell frequencies.

One measure probed the frequency of physical assault. The dichotomous scale used for the previous two questions was also used for this question. The measure related to the frequency of physical assault was as follows:

3. How often have you slapped, hit, or kicked your child/any of your children?

A fourth outcome variable measuring the cumulative child maltreatment was made by creating a composite that reflects experiences with each form of neglect and physical assault. This measure represents a global assessment of the child maltreatment. The composite appears to be valid based on a principal components analyses conducted by Nguyen, Spence, and Hussey (2008). They suggest that it is appropriate to combine the items assessing different forms of maltreatment in order to create a summary maltreatment composite. Nguyen et al.'s analysis was conducted using four measures collected at Wave III which queried respondent's experiences as victims of assault and maltreatment, including sexual assault. Information about sexual assault perpetration was not collected, however. The alpha coefficient of reliability of .17 was derived for the additive combination of three assault measures. Although this alpha coefficient of reliability was low, the measure composite was retained based on its face validity. The maltreatment summary measure is a continuous variable that ranges from zero to nine.

Independent Measures. Independent measures will include both current contextual factors and historical factors. Historical factors were measures primarily gathered during Wave I. Some questions pertaining to childhood and early adolescence were queried during Waves III and IV however, and may be considered historical factors for the purpose of this study. Historical factors gathered from Waves III and IV asked respondents to recall events or feelings they may have experienced during a specified time period prior to the current survey administration. Current contextual factors are those gathered during Wave III and Wave IV. Current contextual and historical factors will be described separately when they are used at two separate time points in order to avoid confusing the two sets of factors. Repeated measures, those administered at Waves I and III, will be discussed together.

Depressive Symptoms (Waves I & III). Depressive symptomatology experienced within the week prior to interviews at Waves I and III were measured with a modified version of the Center for Epidemiologic Studies Depression (CES-D) Scale (Radloff, 1977). The CES-D Scale validly and reliably assesses (Gotlieb & Cane, 1989) depressive symptoms experienced within the previous seven days among adolescents (Dierker, Albano, Clarke et al., 2001; Radloff, 1977; Roberts, Lewinsohn & Seeley, 1991). It was first used to measure depression in the adult general population. The full CES-D Scale consists of 20 items and was administered to Wave I participants. A CES-D10-item scale was created and administered at Waves II and III, however. Meadows, Brown, and Elder (2006) maintain that the 10-item scale is representative of all sub-factors represented on the CES-D 20-item scale. Thus, the same measures used on the CES-D 10-item scale was extracted from Wave I and used for the analyses of Waves I and III. Items on the 10-item CES-D scale were as follows:

1. You were bothered by things that usually don't bother you.

2. You could not shake off the blues, even with help from your friends and family.

3. You felt that you were just as good as other people.

4. You had trouble keeping your mind on what you were doing.

5. You felt depressed.

6. You felt you were too tired to do things.

7. You were happy (Wave I); You were sad (Wave III).

8. You enjoyed life.

9. You felt that people disliked you.

10. You cried frequently.

Response options are on a four-point scale from "never or rarely" (0) to "most of the time or all of the time" (3). One item which queried the frequency of crying over the previous 12 months is on a five-point scale ranging from zero to four. Thus, two response categories, three and four, were collapsed in order to more closely match the other items in the scale. Items that were positively worded (items 3 and 7 on Wave I, and 8 on both Waves I and II) were reverse-coded so that a higher score indicated more depressive symptoms. As mentioned previously, all of the items refer to symptoms experienced in the past 7 days with the exception of the measure about the frequency of crying, which was queried about the past 12 months on the Wave III interview. In

addition, respondents at Wave III were asked whether they were sad rather than happy. Meadows et al. (2006) report that the "CES-D10-item scale is consistent across all three waves ($\alpha = 0.80$, wave 1; $\alpha = 0.80$, wave 2; $\alpha = 0.82$, wave 3)" (p. 96). Analyses conducted by Meadows et al. also revealed that "the factor structure of the CES-D Scale is time-invariant for males and females" (p. 97), stating that "all of the indicators [are] comparable across assessment periods" and that the "CES-D Scale operates in a very similar manner for males and females" (p. 98). Final scores were obtained by summing the items.

Perceived Parent-Child Relationship Quality (Waves I & III). At both Waves I and III, adolescents were asked several questions regarding their relationships with caregivers. At Wave I, these questions refer to "current residential parents," while at Wave III, the questions refer to "current or previous residential parents." It should be noted that in Add Health, "mother" and "father" are not limited to biological parents. They may also be "'parent-like' figures (e.g. grandparents, aunts, uncles, foster parents, etc.) and it is the adolescent who makes these determinations" (Meadows et al., 2006, p. 96). Each respondent was queried about their mother- and/or father-figure separately. Among adolescents and young adults with two-parent families, the score is an average of responses regarding both mothers and fathers, whereas adolescents and young adults with single-parent families answered just one set of items to reflect the nature of their relationship with a single parent or guardian. At Wave I, the questions were as follows:

1. How close do you feel to your {mother-figure/father-figure}?

2. How much do you think she/he cares about you?

3. Most of the time your mother-figure/father-figure is warm and loving toward you.

4. You are satisfied with the way your mother-figure/father-figure and you communicate with each other.

5. Overall, you are satisfied with your relationship with your mother-figure/father-figure.

Items were reverse coded such that higher values were indicative of greater emotional closeness. The mean scale ranges from 1 to 5, with higher scores indicating closer relationships (Bratter & Heard, 2009, p.667). Alpha coefficients of reliability calculated by Bratter and Beard for both mother closeness and father closeness were found to be acceptable ($\alpha = .83$ and $.86$, respectively).

At Wave III, two items measuring emotional closeness to parent figures were found to be consistent with those used at Wave I. These included the "warm/loving" and "close" items. A third item, "You enjoy

doing things with {him/her}," was used to construct the emotional closeness variable at Wave III. Consistent with the composite constructed from Wave I, a mean scale ranging from one to five was created, again with higher values indicative of greater emotional closeness. Alpha coefficients of reliability were calculated to range between .83 to .88 for mother-figures and .88 to .91 for father-figures. The range, or variability, in reliability among mother- and father-figures was due to the several mother- and father-figure forms for which respondents were queried (i.e. current residential mother, previous residential mother, biological mother). Thus, the alpha coefficient of reliability was calculated separately for current residential mothers and fathers, previous residential mothers and fathers, and biological mothers and fathers.

Self-Esteem (Wave I & III). Measures of self-esteem were compiled to create composite variables for Waves I and III. At Wave I, respondents were asked the following questions on a scale of 1 (strongly disagree) to 5 (strongly agree):

1. You have a lot of good qualities.

2. You have a lot to be proud of.

3. You like yourself just the way you are.

4. You feel loved and wanted.

On a scale of 0 (never or rarely) to 3 (most of the time or all of the time), they were asked the following question:

5. You felt that you were just as good as other people.

Responses to each of the five questions were summed to create one score with a range of 1 to 23 (Lippincott Williams & Wilkins, 2009, p. 377). For this measure an alpha coefficient of reliability of .86 was found (Resnick, Bearman, Blum, et al., 1997). Higher values on this measure indicated better self-esteem.

At Wave III, respondents were asked the first three questions included in the Wave I self-esteem measure. Questions four and five were not repeated at Wave III, however. Two additional questions were included in the Wave III composite because of their consistency with items found on Rosenberg's Self Esteem Scale (RSES) (Ang, Neubronner, Oh, & Leong, 2006, p. 120; RSES; Rosenberg, 1965). The following question is on a scale of 1 (very dissatisfied) to 5 (very satisfied):

1. How satisfied are you with your life as a whole?

Similar to a question from Rosenberg's scale which states, "I am able to do things as well as most other people" (Wang, Siegal, Falck, & Carlson, 2001, p. 286), a comparable Add Health question was posed, on a scale of 1 (strongly disagree) to 5 (strongly agree):

2. Do you agree or disagree that you feel you are doing things just about right?

Again, responses to each of the five questions were summed to create one score, ranging from 1 to 25. Higher values are thought to reflect higher self-esteem. The alpha coefficient of reliability for this measure was .79.

Parent Assault (Wave IV). At Wave IV, respondents were asked a set of questions about their experiences with different forms of maltreatment before their 18th birthday. These questions were intended to ascertain the frequency of verbal, physical, and sexual assault. The specific questions are as follows:

1. Before your 18th birthday, how often did a parent or other adult caregiver say things that really hurt your feelings or made you feel like you were not wanted or loved?

2. Before your 18th birthday, how often did a parent or adult caregiver hit you with a fist, kick you, or throw you down on the floor, into a wall, or down stairs?

3. How often did a parent or other adult caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?

Response options for these measures are on an ordinal scale, with 1 "one time," 2 "two times," 3 "three to five times," 4 "six to ten times," 5 "more than 10 times," and 6 "This has never happened." For this study, frequency response categories were collapsed into four categories (0 = this has never happened; 1 = 1 time; 2 = 2 times; and 3 = 3 or more times) (Nguyen et al., 2008). For the cluster analyses, the four-category response was used as well as a binary measure which collapsed responses 1 through 3 into one category, denoting any experience with each form of maltreatment (0 = no maltreatment, 1 = one or more experiences with maltreatment).

As mentioned with the dependent maltreatment variables, an additional independent variable measuring summary exposure to child maltreatment was created. Using the measures collected at Wave III, Nguyen et al. (2008) suggest that a summary maltreatment score can be created by summing frequency responses to each of the four maltreatment questions. Nguyen et al. tested this composite score using correlational and principal components analysis. A correlation of .97 was found between the summary maltreatment score and the maltreatment factor score. A similarly constructed Wave IV summary maltreatment

composite was constructed for the purpose of this study with a range of 0 to 9, with 0 indicative of no exposure and increasing values indicative of greater exposure. An alpha coefficient of reliability was found to be .51 for the three assault victimization measures collected at Wave IV.

Family Structure (Wave I). Family structure was determined from household roster information. Respondents were asked to list all household members and their relationship to the respondent at the time of the Wave I interview. Using this information, a nominal five-category variable was constructed by Marmer (1997). The five categories represent having two biological parents, any two parent structure, single mom, single dad, and other (Knoester, Haynie, & Stephens, 2006, p. 1252). Due to low cell frequencies, for the regression analyses, two biological parents and any two parent structure were combined to create a two-parent category and single mom and single dad were combined to create a one-parent category.

Connectedness to School (Wave I). Three items were used to measure school connectedness. They reflect respondents' feelings of being part of the school, feelings of closeness to the people at the school and feelings of happiness for being in school at the Wave I interview. The specific measures were stated as follows:

1. You feel close to people at your school.

2. You feel like you are a part of your school.

3. You are happy to be at your school.

Response categories were coded from 1 "Strongly Agree" to 5 "Strongly Disagree." The three items were reverse scored so that higher scores reflected higher perceptions of school connectedness. A final score was derived by averaging scores to all three items ($\alpha = .77$) (Botticello, 2009, p. 228). After averaging responses for the three items, the scale's responses ranged from 1 to 5.

Perception of Friends Caring (Wave I). At Wave I, respondents were asked the following question: "How much do you feel that your friends care about you?" Response categories were coded as 1 "not at all" to 5 "very much".

Retrospective ADHD (Wave III). For the Wave III interview, respondents were asked to recall behaviors they may have experienced between the ages of 5 and 12 and to rate their frequency on a scale from 0 (never or rarely) to 3 (very often). A total of eight statements were used that are consistent with the symptoms used to make a DSM-IV diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD), Predominantly Hyperactive, Impulsive Type. These statements included the following:

1. You fidgeted with your hands or feet or squirmed in your seat.

2. You felt restless.

3. You had difficulty doing fun things quietly.

4. You felt "on the go" or "driven by a motor."

5. You talked too much.

6. You blurted out answers before the questions had been completed.

7. You had difficulty awaiting your turn.

8. You left your seat in the classroom or in other situations when being seated was expected.

Nine statements were used that are consistent with the symptoms used to make a diagnosis of ADHD, Predominantly Inattentive Type consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The inattentive oriented questions were also on a four-point scale, ranging from 0 to 3. The inattentive statements included the following:

1. When you were between 5 and 12, you failed to pay close attention to details or made careless mistakes in your work.

2. When you were between 5 and 12, you had difficulty sustaining your attention in tasks or fun activities.

3. When you were between 5 and 12, you didn't listen when spoken to directly.

4. When you were between 5 and 12, you didn't follow through on instructions and failed to finish work.

5. When you were between 5 and 12, you had difficulty organizing tasks and activities.

6. When you were between 5 and 12, you avoided, disliked, or were reluctant to engage in work requiring sustained mental effort.

7. When you were between 5 and 12, you lost things that were necessary for tasks or other activities.

8. When you were between 5 and 12, you were easily distracted.

9. When you were between 5 and 12, you were forgetful.

Using these two sets of questions, two composite variables were created to reflect symptoms consistent with ADHD, Predominantly Inattentive Type and ADHD, Predominantly Hyperactive, Impulsive Type. For both variables, symptoms were considered present if experienced "often" or "very often." Thus, the response

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"sometimes" was recoded as 0 and responses "often" and "very often" were recoded as 1. Responses were then summed and, consistent with the DSM-IV diagnosis of ADHD, the presence of 6 or more symptoms was used to classify respondents on a dichotomous variable. A score of 1 denoted the presence of 6 or more ADHD symptoms and 0 denoted 5 or fewer symptoms (McClernon, Fuemmeler, Kollins, Kail, & Ashley-Koch, 2008, p. 120). Kollins, McClernon, and Fuemmeler (2005) reported an alpha coefficient of reliability for these measures of .86 (p. 1143).

Receipt of Financial Support from Residential or Previous Residential Caregivers (Wave III).
Participants were also asked to share whether or not they received any financial support from residential or non-residential caregivers and if so, how much. For those who responded "yes" (coded as 1), the follow-up question was coded with 1 being "less than $200," 2 being "200 to $499," 3 being "500 to 999," and 4 being "$1,000 or more." A response of "no" was coded as 0. The series of questions are stated as follows:

1. Has he/she given you any money or paid for anything significant for you during the past 12 months? Don't include regular birthdays or holiday gifts.

2. Please give an estimate of this financial help in the past 12 months. Include money given directly to you and the cost of significant items bought for you by <name>.

These questions were asked regarding current residential mothers and fathers (when applicable), previous residential mothers and fathers, and biological mothers and fathers. Thus, it was possible for respondents to have up to six responses. In order to get an estimate of the amount of financial assistance each respondent received in total, four variables were created to sum the number of responses indicating receipt of less than $200, the number of responses indicating between receipt of between $200 and $499, the number of responses indicating receipt of between $500 and $999, and the number of responses indicating receipt of $1,000 or more.

Residence (Wave III). A set of seven dummy variables consisting of ones and zeros to indicate the presence or absence of a particular living arrangement were created to gather complete information about respondents' living arrangements at the time of the Wave III interview. The options for living arrangement configurations included a) alone, b) significant other, c) child, d) one parent figure, e) two parent figures, f) other family, and g) non-relative. Questions used to derive this information include the following:

1. Where do you live now? That is, where do you stay most often?

2. Do you live {here/there} alone or with others?

3. What is {his/her} relationship to you?

Responses to the first question were coded as 1 "your parent's home," 2 "another person's home," 3 "your own place (apartment, house, trailer, etc.)," 4 "group quarters (dormitory, barracks, group home, hospital, communal home, prison or penitentiary, etc.), 5 "homeless—that is you have no place to stay," 6 being "other." All respondents who indicated that they lived with others, not alone, were asked "How many people live with you?" Responses ranged from 1 to 19 people. The respondent was queried about each listed individual's relationship to the respondent (e.g. romantic partner; two parental figures; one parental figure; other family type; child; non-relative). Due to low cell frequencies, one-parent figure and two-parent figure were collapsed into one variable, "parent-figure". Other family and non-relative were also collapsed into one variable, representing "other." Thus, for the purposes of this study, dummy variables for Wave III residential living status include "parent-figure," "significant other," "other," "alone," and "child."

Substance Use Related Problems (Wave III). Substance use related problems were used as a proxy for dependence and functional impairment. The composite included the following questions:

During the past 12 months, how many times has each of the following things happened?

1. You had problems at school or work because you had been drinking.

2. You had problems with your friends because you had been drinking.

3. You had problems with someone you were dating because you had been drinking.

Over the past 12 months, how many times:

4. were you hung over?

5. were you sick to your stomach or threw up after drinking?

6. did you get into a sexual situation that you later regretted because you had been drinking?

7. did you get into physical fight because you had been drinking?

8. were you drunk at work?

9. Since June 1995, have you driven while drunk?

Dichotomous variables with scores of 0 or 1 were created. Respondents were asked how many times, over the course of the past 12 months, the above stated alcohol related problems had occurred. Responses of one or more times were recoded as 1, while respondents who endorsed 0, or "never," remained the same. Question 9 was worded as a dichotomous variable, with a score of 0 or 1. A composite dependency score was created by

taking the sum of the dichotomous variables (Thompson, Sims, Kingree, & Windle, 2008, p. 22). An alpha coefficient of reliability of .74 was obtained.

Anxiety (Wave IV). A measure for diagnosis with anxiety was included from the Wave IV survey. The question asked whether respondents had ever received a diagnosis of anxiety. They were then asked the age at which they received this diagnosis. Individuals were coded as "0" for no diagnosis of anxiety, "1" for diagnosis after the Wave III interview, and "2" for indicated that they received this diagnosis prior to the Wave III interview.

Number of Children (Wave IV). For this study, cases were retained for respondents who had at least one child before their Wave III interview date. Information from the Wave IV interview was used for all pregnancy and birth related information due the improved accuracy of these records. A summary variable for the number of children for whom each respondent gave birth and took home from the hospital was created from the Wave IV live birth record.

Infant Birth Weight (Wave IV). A set of questions were asked about infant birth weight. Respondents were queried about their baby's weight in pounds (ranging from 1 to 10) and ounces (ranging from 0 to 15). A dichotomous variable was created with scores of 0 and 1 to indicate "less than normal birth weight" (≤87 ounces, or 5 pounds 7 ounces) and "normal birth weight" (≥88 ounces, or 5 pounds 8 ounces), respectively.

Child Age. Child age was calculated by subtracting the child's birth date (month and year) supplied at Wave IV from the Wave III interview date (month and year).

Age at which the Respondent began Parenting. To calculate the age at which the respondent became a parent, the child's age was subtracted from the parent's age at Wave III. Parent age was calculated by subtracting their date of birth (month and year) from the Wave III interview date (month and year). The age at which the respondent began parenting is an ordinal variable coded as younger adolescent (≤16.99999 years), older adolescent (≥17 and ≤19.99999 years), and young adult (≥20 years). This variables was used as interaction term and levels were combined with levels of all categorical and nominal independent variables as well as continuous independent variables

Socio-demographic Variables. Socio-demographic characteristics measured over the course of Waves I and III include the race/ethnicity, a history of the respondent's family having received public assistance during

the respondent's childhood and adolescence, the respondent's level of educational attainment at Wave III, their gender, and an individual's current and past current receipt of public assistance, or welfare.

Gender. The gender of the parent is a categorical variable with 1 being "female" and 0 being "male."

Race/Ethnicity. Race/ethnicity was measured by a series of questions about racial identity and country of origin; (1) "Are you Hispanic or Latino origin?" (2) "What is your race?" and for respondents who indicated more than one race, (3) "Which one race best describes your racial background?" Race-ethnicity was coded into dummy variables including "non-Hispanic White" (reference), "non-Hispanic Black," "Hispanic," and "Other race-ethnicity."

Family Economics. During the Wave III interview, respondents were asked whether their residential mother- and/or father-figure ever received public assistance, such as welfare, while they were in high school. Responses were coded as 0 being "no" and 1 being "yes."

Level of Educational Attainment. Respondents' reports of educational attainment at Wave III were coded as an ordered categorical variable representing "some college or university degree and above," "some college but not degreed," "high school diploma or equivalent," and "less than high school education." Given that many Wave III respondents were not old enough to have completed a bachelor's degree; these categories were collapsed in order to make them relevant to all respondents. The categories retained include "less than high school," "high school graduate," "some college/currently enrolled in college."

Sampling Weights. Weights were assigned to appropriately "handle observations that are no longer independent and identically distributed" (Chantala & Tabor, 1999, p. 3). Chantala and Tabor (1999) report that failure to specify the design structure of the Add Health data and failure to use the sample weights will result in "biased parameter estimates and incorrect variance estimates" (p. 2). Thus, regression analyses and all descriptive methods used to analyze the data were performed using sample weights, regional strata and primary sampling unit (cluster) information to account for Add Health's sampling design and produce nationally representative population estimates. Appropriate weights were identified for analyses using different waves of data according to Add Health specifications. Per recommendation of Chantala and Tabor, cases with missing sampling weights were eliminated from the analysis. This resulted in the deletion of 285 cases. Sample weights were not used to conduct the cluster analyses as cluster analysis is a method used to understand the data actually collected and groups which may naturally arise within them. It is not an inferential statistical method,

thus making the use of sampling weights inappropriate. Data were analyzed using Stata statistical software, version 11, which also does not permit the use of sample weights in cluster analyses.

Phase III: Missing Data

The imputation of missing data in the study is described in this section. Missing data were considered across all the variables. Among the 4,150 cases retained for this study, 3,184 cases had no missing values. Missing values for one or two variables were imputed for 18.34 percent of cases. Less than 1% of cases had missing values on more than six variables and only four cases had missing values on more than seven variables. Thus, it was not necessary to remove cases due to an exceedingly large number of missing values (over 50% missing values on all items). One way to address the problem of missing values is to drop records with missing data from the analysis. The decision to drop missing values can present problems, however. Sample size may be reduced; reducing the statistical power of the analysis. In addition, the remaining data set may be biased. Case deletion assumes that deleted cases are evenly distributed across the entire dataset when, in fact, missing data may reflect a nonrandom pattern. In addition, deletion could result in a significant loss of subjects.

Multiple imputation was selected to deal with missing data. Multiple imputation was used "instead of filling in missing values to create a single imputed dataset" (UCLA: Academic Technology Services Statistical Consulting Group. from www.ats.ucla.edu/stat/Stata/library/ice.htm). Multiple imputation is cited by Tabachnick & Fidell (2007) as a viable method for estimating missing data (p. 66). With multiple imputation, multiple (in this case 25) datasets were created, each with different imputed values. The values created by the 25 imputations are averaged and then used for the full analyses. It is reported that "The major advantage of multiple imputation over single imputation is that it produces standard errors that reflect the degree of uncertainty due to the imputation of missing values" (UCLA: Academic Technology Services Statistical Consulting Group. from www.ats.ucla.edu/stat/Stata/library/ice.htm). The approach to multiple imputation that was selected for this project is called Imputation by Chained Equations (ICE). Stata's ice is a user-written program. Additional advantages to Stata's ICE program include its lack of a multivariate joint distribution assumption, that it allows for the use of sampling weights in the regression of missing values, and it's lower sample size requirements (UCLA: Academic Technology Services Statistical Consulting Group. from www.ats.ucla.edu/stat/Stata/library/ice.htm). Stata's ice program allows the researcher to specify the variables on which the missing values will be regressed and to specify the type of imputed variable (i.e., ordinal, nominal,

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binary, or continuous). For this analysis, all of the dependent and independent variables as well as the sampling weight were used in the imputation of missing values.

Phase IV: Cluster Analysis

Following the preparation of data, including the elimination of variables with missing weights and the imputation of missing values, cluster analyses were conducted to determine whether there were any naturally occurring groups within the data on several variables previously thought to be pertinent to the child maltreatment. The purpose of this phase of the study was to identify varying profiles of parental characteristics as a way to understand differences which may vary across parenting age groups as well as different forms of child maltreatment. Because parental characteristics were the primary focus of this phase of the study, only these variables were used in the cluster analyses. Other, variables, including living arrangement, receipt of financial support, child characteristics, more distal ecological factors, and socio-demographic characteristics were used in later analyses to further describe clusters of parental characteristics once identified based on similar patterns of parental characteristics.

As previously mentioned, cluster analyses were performed using Stata 11. Prior to using the cluster command, the variables of interest were standardized using range standardization. Each variable was divided by its range. The range standardized variables all had ranges less than or equal to 1. According to Wilson, Kuebli, & Hughes (2005) "Cluster analyses are affected by highly correlated variables because such variables are implicitly weighted more heavily (Hair & Black, 2000)" (p. 990). Wilson et al. (2005) further report that intercorrelations greater than .80 are considered problematic. Thus, intercorrelations were calculated for all of the variables used in the cluster analyses. All of the intercorrelations fell below the .80 threshold and the variables were thus deemed appropriate for cluster analyses.

For the first step in the cluster analyses, a hierarchical agglomerative method using Ward's minimum variance technique and the squared Euclidean distance measure was employed to identify patterns of parents' characteristics. Ward's method "Joins the two groups that result in the minimum increase in the error sum of squares" (Hamilton, 2009, p. 352). The squared Euclidean distance measure is the recommended distance measure when using Ward's clustering algorithm (Hair & Black, 2000). There are few steadfast rules for determining the most appropriate number of clusters. Stata offers several postclustering commands to determine the number of clusters. The first method is called the Calinski Harabasz pseudo-F index. The second

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method is called the Duda, Hart, and Stork (2001) Je(2)/Je(1) index with associated pseudo-T squared. For the Calinski Harabasz pseudo-F index and Duda-Hart index, larger values are indicative of more distinct clustering. Pseudo-T squared values are also presented with the Duda-Hart index however, and smaller pseudo-T squared values indicate more distinct clustering. Thus, the Stata Multivariate Statistics Reference Manual Release 11 (2009) suggests when examining the Duda-Hart Je(2)/Je(1) index "to find one of the largest Je(2)/Je(1) values that corresponds to a low pseudo-T-squared value that has much larger T-squared values next to it" (p. 164). The Calinksi Harabasz pseudo-F index and the Duda-Hart index are only suitable for continuous data (Everitt et al., 2001). Lastly, a step-size stopping rule (Milligan & Cooper, 1985) was implemented which "computes the difference in fusion values between levels in a hierarchical cluster analysis" (StataCorp, 2009, p. 144). It is reported that "large values of the step-size stopping rule indicate groupings with more distinct cluster structure" (p. 144). The step-size values represent the difference between the matching coefficients when one more group is formed than the previous. These methods, in addition to the inspection of the cluster dendrogram, were utilized to determine the number of solutions worthy of following-up with a nonhierarchical K-means cluster analysis.

K-means cluster analysis is a partitioning method, which breaks "the observations into a pre-set number of nonoverlapping groups" (Hamilton, 2009, p. 351). The number of clusters most consistently found across clustering methods in step one was used as a starting point for forming clusters in step two. Thus, the cluster centers were set using the mean scores of each cluster derived in step one using Ward's method. This allowed cluster members to be reassigned to the cluster with the nearest centroid, when appropriate. When several K-means cluster solutions were explored, the Calinski Harabasz pseudo-F index was again inspected for each cluster solution to determine the one most appropriate for the data. In addition, the sum of the within-group sums of squares over all of the variables was also utilized as a method to determine cluster solution fit, with a minimization of the error sum of squares considered optimal.

A second hierarchical agglomerative method, weighted-average linkage using squared Euclidean distance measure, was used as an alternative clustering algorithm with which to compare the clustering results derived from Ward's method. Hamilton (2009) reports that for weighted-average linkage, "two groups are given equal weighting regardless of how many observations there are in each group" (p. 352). This method was chosen to counter-balance the drawbacks posed by Ward's method as Hamilton maintains that Ward's linkage

"Does well with groups that are multivariate normal and of similar size, but poorly when clusters have unequal numbers of observations" (p. 352). Cluster solutions were explored by inspecting the cluster dendrogram, examining the results of the Calinski Harabasz pseudo-F index, Duda-Hart index and associated pseudo T-squared values, as well as the step-size table. As with the Ward's method, follow-up K-means cluster analyses were then conducted using the means of the most stable cluster solutions suggested by the aforementioned rules. As a follow-up to multiple K-means cluster solutions examined for their descriptiveness of the data, the Calinski Harabasz pseudo-F index was inspected as well as minimization of the error sum of squares to help determine the most appropriate K-means cluster solution.

Ward's linkage followed by a K-means cluster analyses and weighted-average linkage, also followed by a K-means cluster analyses, were used to cluster the three ordered categorical maltreatment variables, and the continuous depressive symptoms and emotional closeness with parents variables. Alternative methods for clustering the observations were also attempted by using the continuous summary maltreatment index along with the depressive symptomatology and emotional closeness with parents variables. The continuous summary maltreatment index could not be clustered in conjunction with the ordered categorical maltreatment variables due high collinearity. This combination of clustering variables was employed in both Ward's linkage and weighted-average linkage clustering algorithms. In addition, a binary measure of each of the three forms of parent maltreatment victimization was utilized in Ward's linkage and weighted-average linkage cluster analyses. The combination of binary and continuous variables required the use of a mixed-methods dissimilarity measure. The Gower dissimilarity coefficient was selected as the appropriate measure for a mixture of binary and continuous variables. Each of these alternative methods for examining and clustering the maltreatment variables was followed-up with K-means cluster analyses. When non-continuous variables were included, step-size values were inspected to indicate the number of clusters to examine in the follow-up K-means cluster analyses. Following K-means cluster analyses of these continuous and binary variables, minimization of the error sum of squares was examined. These results are presented and described in Section 1 of Chapter 3.

Phase V: Describing the Clusters

Following the cluster analyses, bivariate cross-tabulations using survey commands and the sample weights were generated to further describe the cluster solutions selected and determine whether the clusters

could be differentiated on the outcome variables of interest as well as the three-category parent-age factor. These analyses used probability sampling weights so that the results would reflect the population of all young adult and adolescent parents between 2001 and 2002, when the Wave III interview occurred. In order to determine whether there were differences in the means of the summary child maltreatment variable across clusters, regression analyses were conducted, using cluster 1 as the reference cluster. Follow-up Adjusted Wald tests were used to determine whether there were significant differences in the mean summary child maltreatment variable between the additional clusters within each cluster solution.

One cluster solution was selected for further follow-up description using additional parent mental health variables, child maltreatment perpetration variables, proximal and distal social support variables, child variables, financial support variables, and socio-demographic variables. Variables of interest were binary, categorical, and continuous. Pearson's chi-square tests of row and column independence were again conducted as it was determined that the chi-square table did not have thin cells with low expected frequencies. The selected cluster solution was regressed on continuous variables in order to determine whether there were differences in the continuous variable across clusters. The initial regression indicated whether there were differences in the mean of the continuous variable between the reference cluster and each of the other clusters. Follow-up tests were conducted to determine whether mean differences on the continuous variable could be found between each cluster combination. These results are presented and described in Section 2 of Chapter 3.

Phase VI: Describing the Variables

In this study there were four dependent variables, measuring three different forms of child maltreatment and a summary maltreatment index to capture cumulative child maltreatment. Twenty-two independent variables were used in this study, including one used as an interaction term with the majority of the independent variables. Five socio-demographic variables were controlled for. Descriptive data on all predictors and dependent variables by parent age (3 categories), for the total analysis sample were generated using survey commands and the appropriate sampling weights. These results are presented and described in Section 3 of Chapter 3.

Phase VII: Logistic and Regression Analyses

Logistic regression analyses were used to calculate odds ratios for different forms of child maltreatment as well as to estimate cumulative child maltreatment queried among parents differentiated by age.

Several models were estimated. Model 1 examined the relationship between each of the four dependent variables and the interaction effect of parent age and overt maltreatment victimization before the age of 18. Model 2 examined the interaction effect of parent age and emotional closeness with caregivers at Waves I and III on the four dependent variables. Model 3 examined the interaction effect of parent age and mental health variables on the dependents. Model 4 examined the interaction between parent age and residential living status at Wave III on the dependents. Model 5 examined the interaction between parent age and family structure at Wave I. Model 6 examined the interaction between parent age and child variables on the dependents. Model 7 examined the interaction between parent age and more distal social support variables such as friendship and school connectedness. Model 8 examined the interaction between parent age and financial support provided by caregivers on the dependents. Socio-demographic variables were controlled for throughout. The full model examined the effect of the interaction between parent age and all of the independents on child maltreatment as well as total child maltreatment. The full model for each dependent variable was used to determine whether variables which were significant predictors in their individuals models would still retained their predictive significance after accounting for all of the other variables. Each full interaction model was compared with its equivalent non-interaction model, while controlling for parent age in the latter. Odds ratios, the factor by which the independent increases or decreases the log odds of the dependent, were calculated. Statistical significance was set at the $p \leq .05$ level. The results of the logistic and regression analyses are presented and described in Section 4 of Chapter 3.

The next chapter describes the results of analyses conducted to test each research question.

CHAPTER 3

Results

The results chapter is divided into four sections and is organized according to the four research questions previously discussed. The purpose of the first set of analyses was to identify patterns of current contextual and historical parent characteristics and experiences, interpersonal and intrapersonal, on which subgroups of adolescent and young adult parents are differentiated. Thus, Section 1 of the results describes cluster solutions identified in six sets of cluster analyses. The second set of analyses addressed in the results section was designed to further describe subgroups of adolescent and young adult parents by determining whether subgroups identified in Section 1 are further differentiated by other pertinent ecological and demographic variables, particularly different forms of child maltreatment as well as cumulative child maltreatment. The results of these follow-up analyses are described in Section 2. The third set of analyses was conducted to describe and potentially differentiate younger and older adolescent and young adult parents on the independent and socio-demographic variables of interest. Thus, Section 3 presents descriptive data on all predictors by parent age and differences between parent age groups on the predictive variables used in later analyses as well as the outcome variables. Lastly, Section 4 aimed to identify what personal, contextual, and historical factors significantly predict four child maltreatment outcomes among younger adolescent, older adolescent and young adult parents, in order to determine whether significant predictors vary among the three age groups. This question was addressed through a series of logistic and regression analyses. A Roadmap for the research questions, how they were addressed in the analyses, and presented in the results section that follows are presented in Figures 1 through 4. Each figure is a roadmap for the question and the section in the results that addresses that question.
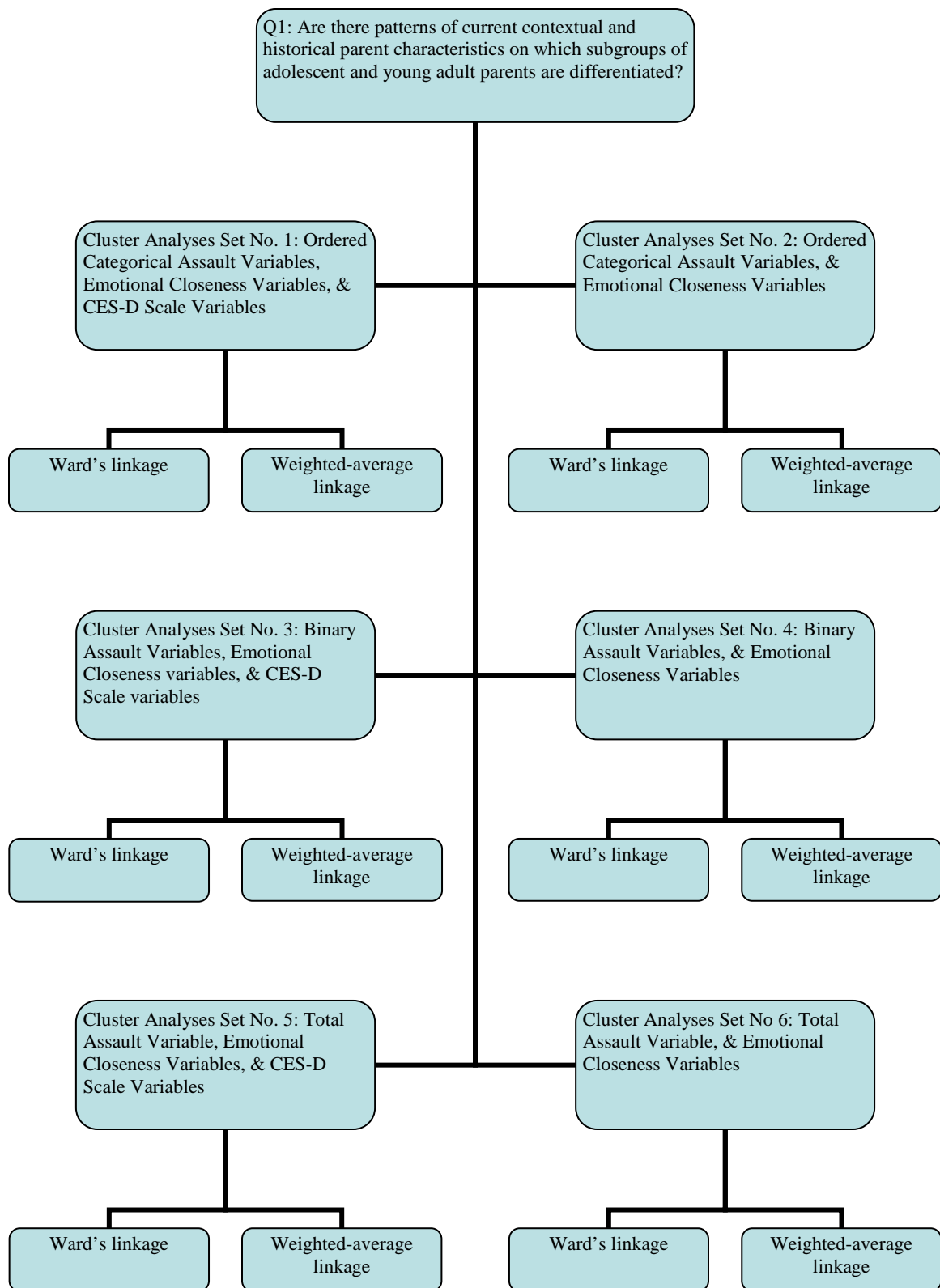
Figure 1. Road map for question number 1, cluster analyses sets 1 through 6.
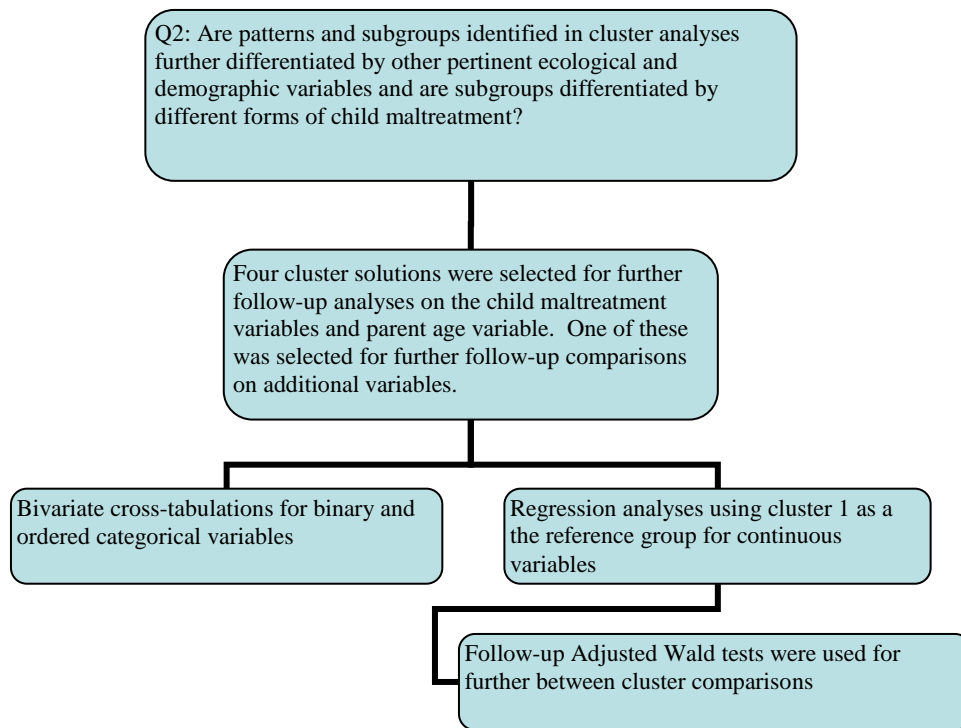
Figure 2. Roadmap for question 2, cluster comparisons on variables of interest.
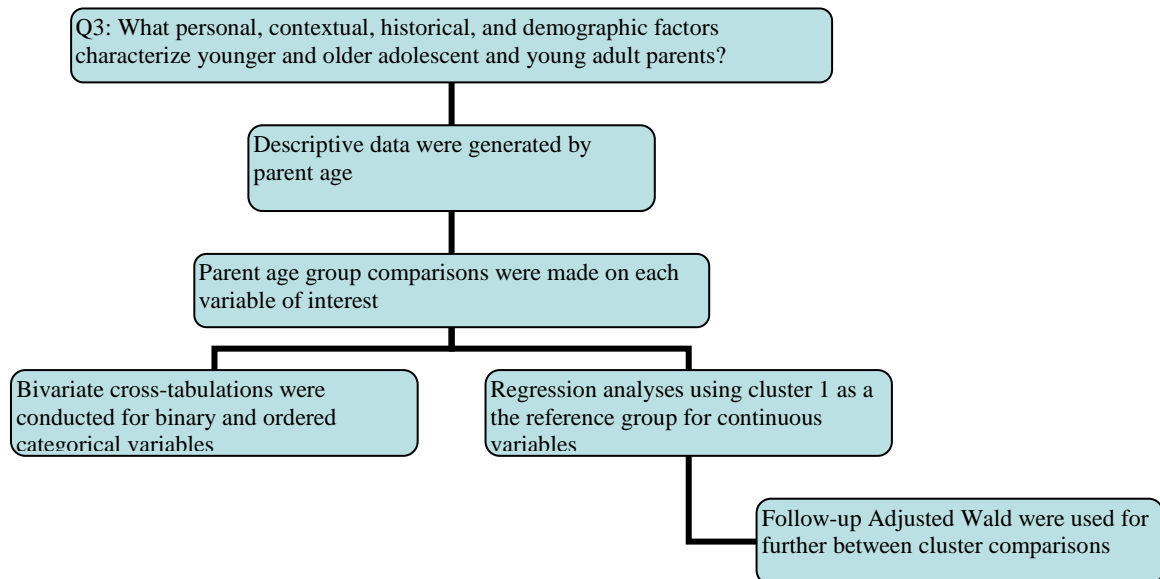
Figure 3. Roadmap for question 3, parent age comparisons.
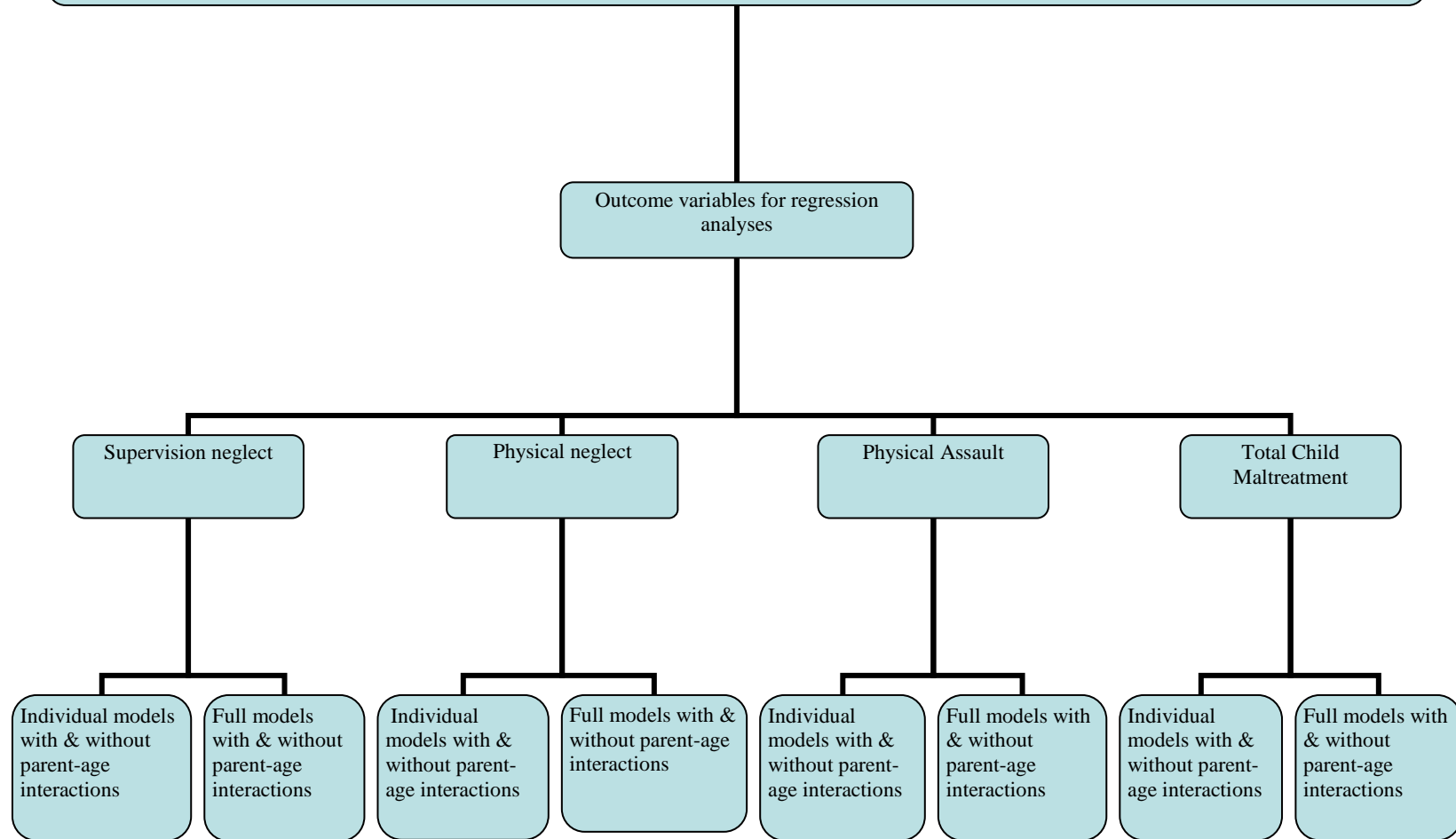
Figure 4. Roadmap for question number 4, regression analyses.

In order to identify patterns of current contextual and historical parent characteristics and experiences, interpersonal and intrapersonal, on which subgroups of adolescent and young adult parents are differentiated, multiple cluster analyses were conducted. Parent characteristics thought to be related to child maltreatment were identified based on current research and literature on child maltreatment. Three of these items measured the respondent's own experience with overt verbal, sexual, and physical assault prior to the age of 18. These items were used in cluster analyses in three different ways; first as ordered categorical variables, then as binary variables, and lastly as a summed continuous variable of all three forms of assault. The purpose of examining the assault variables in multiple ways was to determine whether different methods of organizing and understanding individuals' personal experiences with child maltreatment would yield different results. Further, multiple ways of looking at individuals' experiences with child maltreatment was an additional means for making comparisons in the follow-up analyses which examined differences in the perpetration of different forms of child maltreatment across clusters. In addition to individuals' experiences with child maltreatment, two of the variables used in the cluster analyses measured respondents' perception of closeness with a mother-figure, father-figure, or both at Waves I and again at Wave III. A third set of variables measured depressive symptoms at Waves I and III. The details of the compilation of each composite were described in further detail on pages 119-132 (Chapter 2, Method). Each of these continuous variables were range-standardized so that all variables had values equal less than or equal to one.

For the purpose of this analysis, 4,150 parents were included. The means and standard deviations (SD) for continuous variables employed are presented in Table 1. Proportions are presented for binary variables.

Table 1

Descriptive Statistics for Range-Standardized Cluster Analysis Variables

Variable	*Mean(SD) or Proportion(SD)*
Verbal Assault (ordered categorical)	.41(.44)
Physical Assault (ordered categorical)	.16(.34)
Sexual Assault (ordered categorical)	.07(.24)
Verbal Assault (binary)	.52(.50)
Physical Assault (binary)	.23(.41)
Sexual Assault (binary)	.09(.29)
Total Assault Index (continuous)	.21(.25)
Emotional Closeness I (continuous)	.79(.23)
Emotional Closeness III (continuous)	.84(.19)
CES-D Scale I (continuous)	.29(.18)

CES-D Scale III (continuous)	.23(.17)

Cluster Analyses Set Number 1: Ordered Categorical Assault Variables, Emotional Closeness Variables, and CES-D Scale Variables. The first hierarchical cluster analysis used Ward's clustering algorithm with seven clustering variables (three ordered categorical variables on assault, Waves I and III variables for emotional closeness, and the CES-D Scale measures). The Squared Euclidean distance measure was used. For the initial Ward's linkage clustering method, several different criteria were used to determine the most appropriate cluster solution. These include the Calinksi-Harabasz pseudo-F index, Duda/Hart index with contrasting Je(2)/Je(1) values, and the step-size index which were described in further detail on pages 137 (Chapter 2, Method). Following the use of the hierarchical clustering algorithm, the means of the clusters from potentially viable cluster solutions were used as starting points in K-means cluster analyses. Inspection of the error sum of squares from the resulting cluster solutions for dramatic decreases as well as the Calinski-Harabasz pseudo-F index allowed for the selection of a more refined cluster solution. Next, the weighted average linkage clustering algorithm, followed by K-means cluster analyses were conducted using the same seven variables for the purpose of comparison. The three aforementioned criteria were also used to determine the most viable cluster solutions. The range-standardized means of the seven variables used in this series of clustering algorithms are presented in Figures 5 through 10. The number within each cluster solution, means, and standard deviations are included in Table 2, Appendix B. Cluster solutions followed-up with K-means cluster analyses are shown. The selection of these cluster solutions for follow-up analyses and what they revealed is discussed in greater detail in the section that follows. The results from the Ward's linkage clustering algorithm and subsequent K-means cluster analyses, and weighted-average linkage clustering algorithm followed by K-mean cluster analyses are presented in succession for ease of comparison.
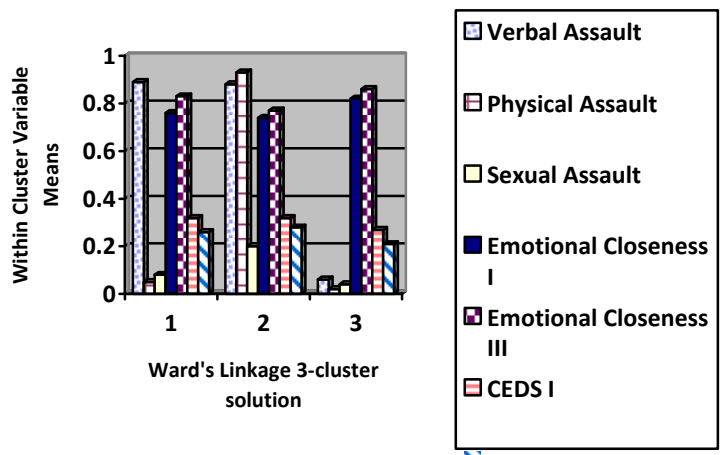
Figure 5. Within cluster variable means for Ward's linkage 3-cluster solution.
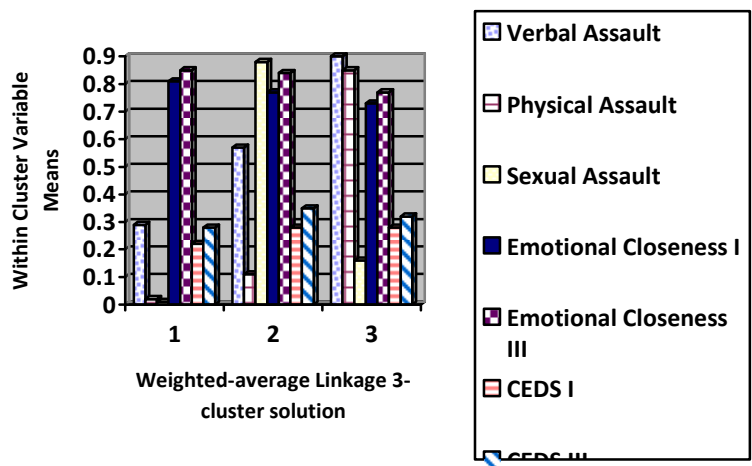
Figure 6. Within cluster variable means for weighted-average linkage 3-cluster solution.
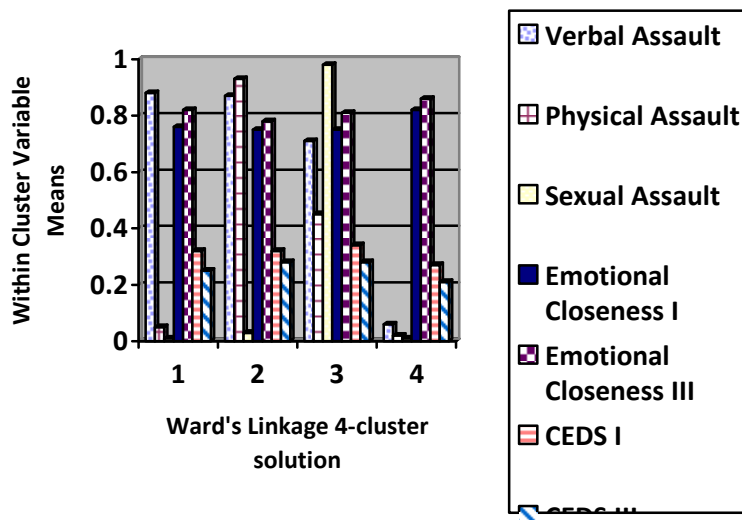
Figure 7. Within cluster variable means for Ward's linkage 4-cluster solution.

Figure 8. Within cluster variable means for weighted-average linkage 4-cluster solution.

Figure 9. With cluster variable means for Ward's linkage 5-cluster solution.

Figure 10. Within cluster variable means for weighted-average linkage 5-cluster solution.

Following the Ward's clustering algorithm for the seven variables previously specified, the Calinksi-Harabasz pseudo-F index indicated a two-cluster solution, with decreasing values as the number of clusters increased. The largest step-size value was found at the two-cluster, followed by four-cluster solution, indicating that a three- or five-cluster solution might be optimal. In contrast the Duda/Hart index with optimally

contrasting large Je(2)/Je(1) values, indicated that a 15-cluster solution, followed by 13- and 11-cluster

solutions might be best. Due the conflicting results from the three criteria employed to evaluate the cluster

solutions (step-size values, Duda/Hart Je(2)/Je(1) values, and Calinksi-Harabasz pseudo-F index), the means,

standard deviations, and ranges of the variables in each cluster solution were inspected. Minimal variability in

the range-standardized means was seen across clusters for the two CES-D Scale measures. Mean values on the

CES-D Scale I measure, indicating mean the number of symptoms endorsed by respondents within each

respective cluster on a scale from zero to one, had a very narrow range over all clusters, hovering at

approximately .30 until the formation of an 11-cluster solution. At the formation of an 11-cluster solution, the

measure ranged from .21 to .45 across clusters. The CES-D Scale I reached maximum variability at the 15-

cluster solution, with a range of .21 to .58 across clusters. Similarly, the mean of the CES-D Scale III variable

hovered around approximately .25 across clusters. Moderate variability was also seen at the 11-cluster solution,

where mean values ranged between .16 and .38. Maximum variability was seen at the 15-cluster solution, with

a range of .17 to .5.

On the follow-up K-means analyses, the means of two through fifteen groups were used as starting

points. The calculated error sum of squares for each cluster solution revealed that the largest decrease in the

error sum of squares occurred at the formation of a four-cluster solution. The Calinski-Harabasz pseudo-F

index indicated a two-cluster solution. The two-cluster solution lacked variability across almost all of the

variables used, with the most notable difference between the two groups being a high verbal assault group

(mean = .9), with a moderately low mean on physical assault (mean = .34), and low levels of sexual assault

(mean=.13); and a group with low levels of all three forms of assault. Minimal variability in emotional

closeness was reflected by the two-group cluster solution. The high verbal assault group had moderately high

emotional closeness at Wave I (mean = .74) and high emotional closeness at Wave III (mean = .81). The low

assault group had high emotional closeness at both waves. In summary, the two-cluster solution was primarily

defined by high and low verbal assault.

The four-cluster solution revealed more variability in the variables, with the exception of the CES-D

Scale variables. The first cluster in the four-group solution had high verbal assault (mean = .88) and low

physical (mean = .05) and sexual assault (mean = .01), as reported previously, and moderately high (mean =

.76) and high (mean = .82) emotional closeness at Waves I and III, respectively. The second cluster consisted

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of high verbal (mean = .87) and physical assault (mean = .93) and low sexual assault (mean = .03); and moderately high emotional closeness at Waves I (mean = .75) and III (mean = .78). The third cluster consisted of moderately high verbal assault (mean = .71), moderate physical assault (mean = .45), and high sexual assault (mean = .98); and moderately high (mean = .75) and high (mean = .81) emotional closeness. The fourth, and largest group consisted of low verbal (mean = .06), physical (mean = .02), and sexual (mean = .07) assault; as well as the highest means for emotional closeness at Waves I (mean = .82) and III (mean = .86). The third group, with elevated assault across all three variables, also had the most elevated scores on the Waves I (mean = .34) and III (mean = .28) CES-D Scale measures. The fourth group, with low scores across all three assault variables, had the lowest means on the Waves I (mean = .27) and III (mean = .20) CES-D Scale measures.

Inspection of the five-cluster solution revealed that an additional cluster was created from the splitting of cases from the "high verbal assault cluster" and the cluster with low means on all assault variables. The result was a cluster with a low mean for emotional closeness at Wave I, which substantially reduced the standard deviation on this variable for the "high verbal assault" cluster and also resulted in a low standard deviation on this variable in the formation of the new cluster. The new cluster had a high standard deviation on the verbal assault variable, however. This demonstrated that the new cluster was primarily formed around the Wave I emotional closeness variable and was comprised of high and low levels of verbal assault. The splitting of cases from the largest cluster, with low means on all assault variables also resulted in a substantial decrease in the standard deviations of the Wave I emotional closeness variable for this cluster. In summary, the five-cluster solution reduced, or improved, standard deviations of the Wave I emotional closeness variables for the "high verbal assault" cluster and the "overall low assault" cluster. This came at the expense of the formation of a cluster with a relatively high standard deviation for the verbal assault variable.

The weighted-average algorithm was used to determine whether the seven variables could be similarly or differently clustered using a different clustering algorithm. The results from the Calinksi-Harabasz pseudo-F index criteria indicated an eight-cluster solution. The results from the Duda/Hart index criteria indicated a four-cluster solution, followed by a 14-cluster solution. The step-size value indicated a seven-cluster solution. Using weighted-average linkage, more variability was seen on the two CES-D Scale measures with a five-cluster solution. Upon, inspection however, it became evident that the weight-average algorithm had produced a cluster with only one observation at the formation of a five-cluster solution. This case had values of zero for

the verbal and physical assault variables, as well as both emotional closeness variables. It had a value of one for the sexual assault variable. Given that this case appeared to be an outlier and seemed to skew the results of the weighted-average linkage cluster analysis, it was excluded from further weighted-average cluster analyses. The five-variable weighted-average linkage cluster analysis was run again excluding the outlier case. The Calinksi-Harabasz pseudo-F index found the two and eight-cluster solutions optimal. The Duda/Hart index found the four- and 14-cluster solutions best. The step-size table indicated a three-cluster solution. In the five-cluster solution, means on the CES-D Scale I ranged from .28 to .56. Variation on the means on CES-D Scale III variable was still minimal, however. In addition, this cluster solution also produced a very small cluster (n = 9). The formation of a six-cluster solution increased variability in the CES-D Scale III across clusters, although this solution also produced the small cluster seen in the five-cluster solution. Thus, for the clustering of all seven variables using the weighted-average linkage clustering algorithm, a four-cluster solution seemed to best maximize cluster variability without producing overly small clusters.

Despite the lack of variability on the two CES-D Scale measures and small clusters formed using the weighted-average algorithm, the means for two- through 11-cluster solutions were still utilized as the starting points for follow-up K-means cluster analyses. Large values on the Calinski-Harabasz pseudo-F index still indicated that the two-cluster solution was best (2,600.54), followed by the five-cluster solution (1,669.45). Greater variability across clusters on the CES-D Scale measures was seen as the number of clusters increased, although cluster membership grew increasingly smaller as several large stable clusters remained relatively intact and smaller, less stable, clusters became more fragmented. Inspection of the error sum of squares indicated that the most substantial decrease occurred at the five-cluster solution. While the error sum of squares continued to decrease as the number of clusters increased, the decrease across subsequent cluster solutions was substantially less than the difference between four-cluster and five-cluster error sum of squares. The five-cluster solution resulted in a cluster with low verbal, physical and sexual assault (means = .06, .02, .01, respectively), high emotional closeness at Wave I and III (means = .82 and .86, respectively), and low depressive symptomatology at Waves I and III (means = .27 and .21, respectively). The second cluster had high verbal assault (mean = .88) and low physical and sexual assault (means = .05 and .01, respectively); high emotional closeness at Wave III (mean = .82) and moderately high emotional closeness at Wave I (mean = .76); and slightly elevated (mean = .31) and low depressive symptoms (mean = .25) at Waves I and III, respectively. The third cluster had

moderate verbal assault (mean = .49), low physical assault (mean = .05), and high sexual assault (mean = .95); high emotional closeness at Waves I and III (means = .82 and .87, respectively); and moderately elevated (mean = .34) and low depressive symptoms (mean = .26) at Waves I and III, respectively. The fourth cluster had high verbal and physical assault (means = .87 and .93, respectively) and low sexual assault (mean = .02); moderately high emotional closeness at Waves I and III (means = .75 and .78, respectively); and moderately elevated depressive symptoms at Waves I and III (means = .31 and .28, respectively). The fifth cluster had high verbal, physical, and sexual assault (means = .93, .95, and .97, respectively); moderate emotional closeness at Waves III and I (means = .75 and .67, respectively); and moderately elevated depressive symptoms at Waves III and I (means = .31 and .33, respectively).

In summary, the comparison between weighted-average linkage and Ward's linkage five-cluster solutions revealed that using weighted-average linkage as the initial clustering algorithm, followed by the K-means cluster analysis tended to produce smaller clusters than Ward's clustering algorithm followed by the K-means cluster solution. Both cluster solutions had one large cluster which comprised approximately 53% to 56% of the entire sample used for clustering. On this cluster, the means of each assault variable were very low. The two clustering solutions were also similar in the formation of their next largest cluster, comprising approximately 23% to 25% of the entire cluster sample. This cluster had high means on verbal assault and low means on physical and sexual assault. Another similar cluster was found in which there were high means for both verbal and physical assault. This cluster comprised approximately 12% of each cluster solution. The two clustering methods primarily differed in the formation of two of their clusters. Drawing primarily from the cluster with high verbal assault and low physical and sexual assault and the cluster with low means on all assault variables, the Ward's five-cluster solution produced a cluster with a moderate level of verbal assault. What distinguished this cluster from the others was its very low mean on emotional closeness at Wave I. Nothing similar was found in the five-cluster weighted average cluster solution. Lastly, the Ward's linkage five-cluster solution produced one cluster with a high mean of sexual assault. This cluster also had a moderately high mean on verbal assault and a moderate mean for physical assault. This cluster was somewhat similar to a cluster formed by the weighted-average linkage five-cluster solution wherein the smallest cluster was defined by high means on all assault variables. This resulted in substantially lower standard deviations for verbal and physical assault, but a slightly higher standard deviation on sexual assault. In addition, the standard

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deviation for emotional closeness for Wave I was lower in what would be the comparable cluster in the Ward's linkage solution.

To conclude the results from the Ward's linkage and weighted-average linkage cluster solutions using ordered categorical assault variables, Wave I and III emotional closeness variables, and Wave I and III CES-D Scale variables, the main differences found between the two cluster solutions were first in their "high verbal assault" clusters. The splitting of the high verbal assault cluster in the Ward's linkage five-cluster solution resulted in the reduction in standard deviations across two of the three assault variables, emotional closeness at Wave III, and most notably, emotional closeness at Wave I. The resulting cluster formed had small standard deviations across all of the variables with the exception of the moderately elevated verbal assault variable. A further point of comparison is the clusters with elevated means on sexual assault. The weighted-average linkage solution resulted in a splitting of the group with high sexual assault into two groups, one with very high means across all assault variables and much lower means on both emotional closeness variables. This resulted in a reduction in the standard deviation on two of the assault variables, a moderate increase in the standard deviation of the sexual assault variable and a large increase in the standard deviation of the Wave I emotional closeness variable.

The differences in the two five-cluster solutions resulted in increases and decreases in standard deviations among variables across different clusters. Thus, one clustering method was not clearly superior to the other and a decision was made to retain both clustering solutions to examine differences across the child maltreatment variables of interest and the three-category parent age variable.

Cluster Analyses Set Number 2: Ordered Categorical Assault Variables and Emotional Closeness Variables. Given the lack of distinct variation in range-standardized endorsement of depressive symptoms across clusters, both CES-D Scale variables were removed from the analyses. Cluster analyses were then conducted using both Ward's and weighted-average linkage algorithms, each subsequently followed by K-means cluster analyses. Table 3 in Appendix B displays the number of cluster members as well as the range-standardized means and standard deviations for the three-cluster solutions formed using Ward's and weighted-average linkage clustering algorithms. The counts, means, and SD for the additional four- and five-cluster solutions formed using Ward's linkage are also shown in Table 3 in Appendix B. The four- and five-cluster weighted-average linkage cluster solutions are not depicted due to their similarity to the Ward's linkage four-

and five-cluster solutions. Figures 11 through 14 represent the means of the variables in these cluster solutions.

A discussion of the selection of the cluster solutions is in the text that follows.
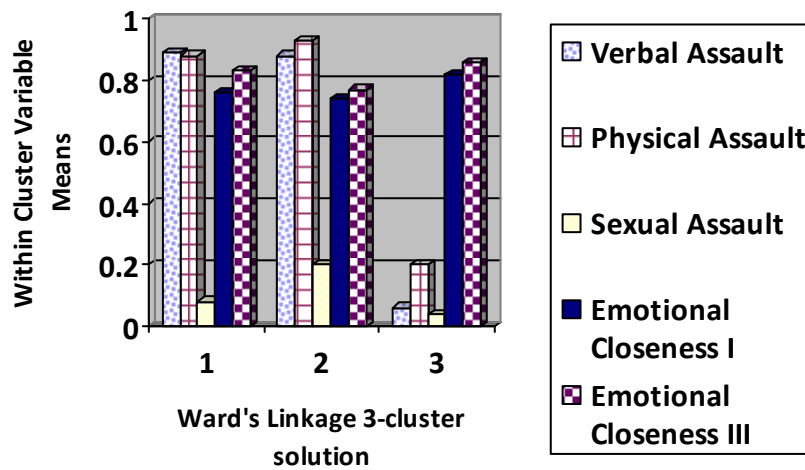
Figure 11. Within cluster variable means for Ward's linkage 3-cluster solution.
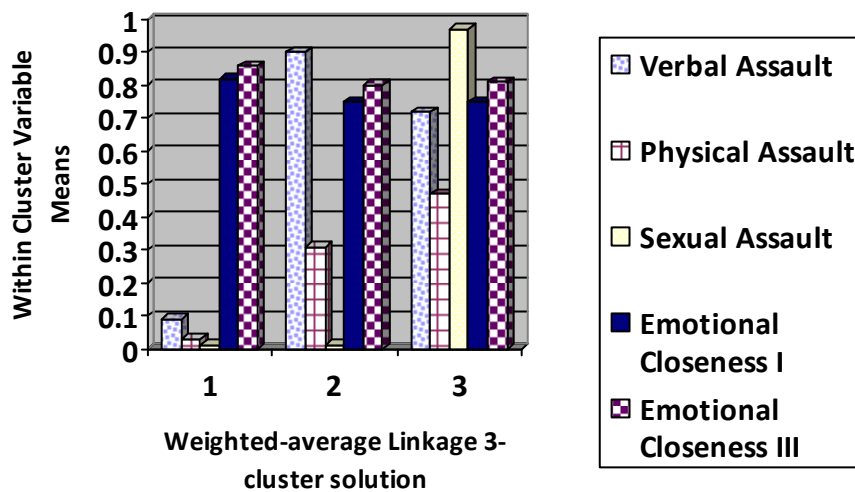
Figure 12. Within cluster variable means for weighted-average linkage 3-cluster solution.

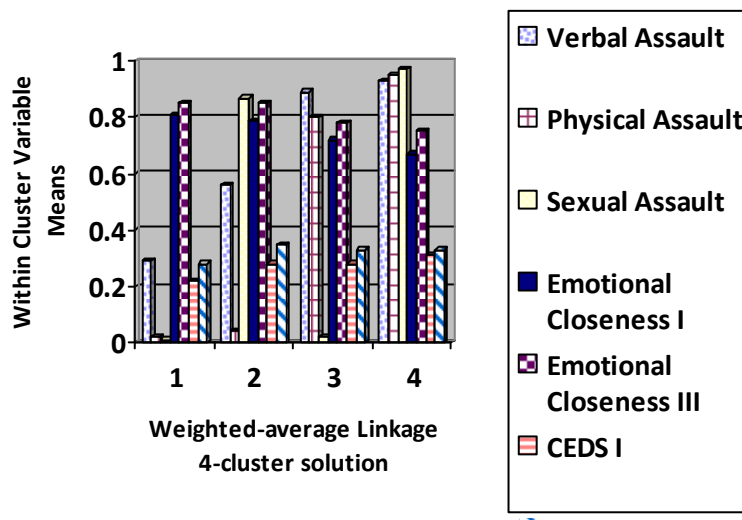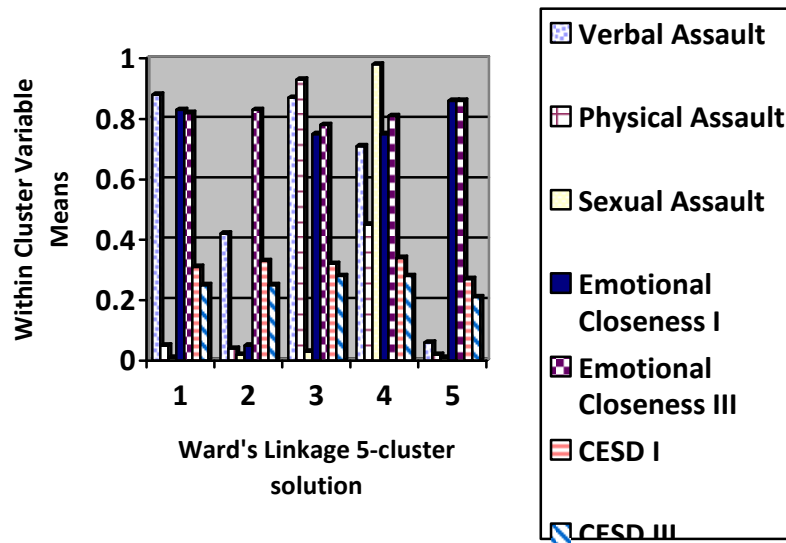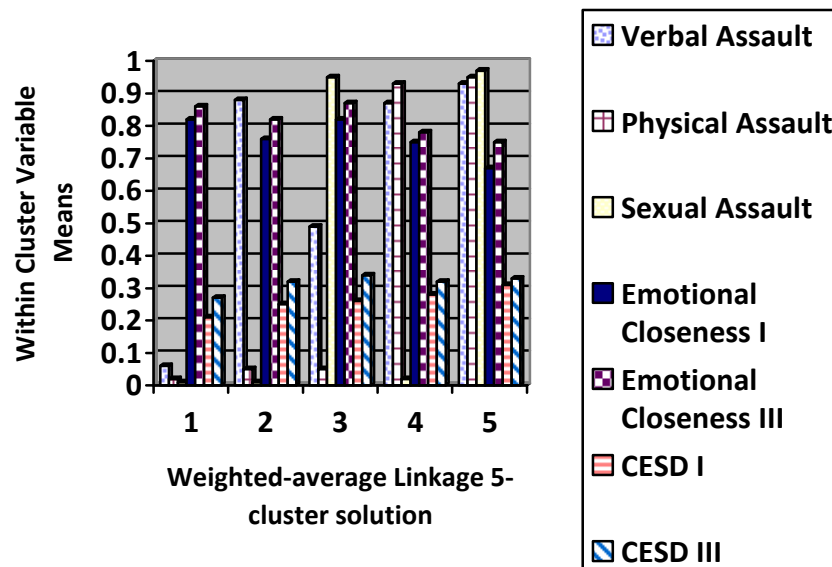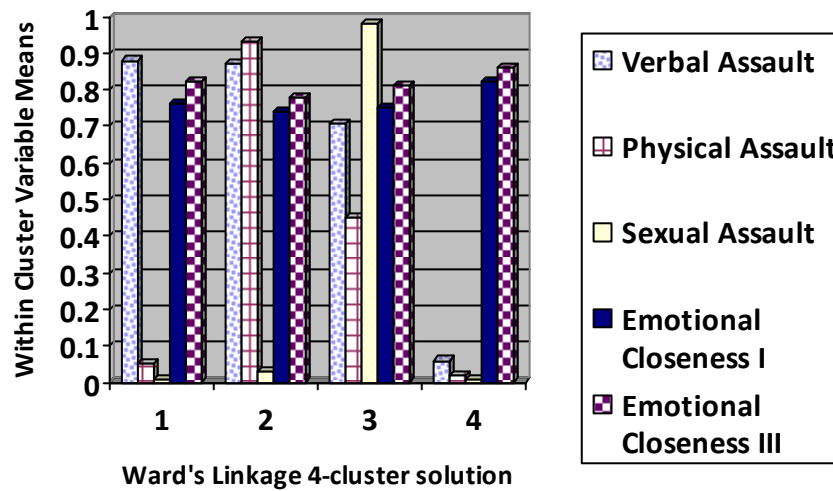*Figure 13.* Within cluster variable means for Ward's linkage 4-cluster solution.
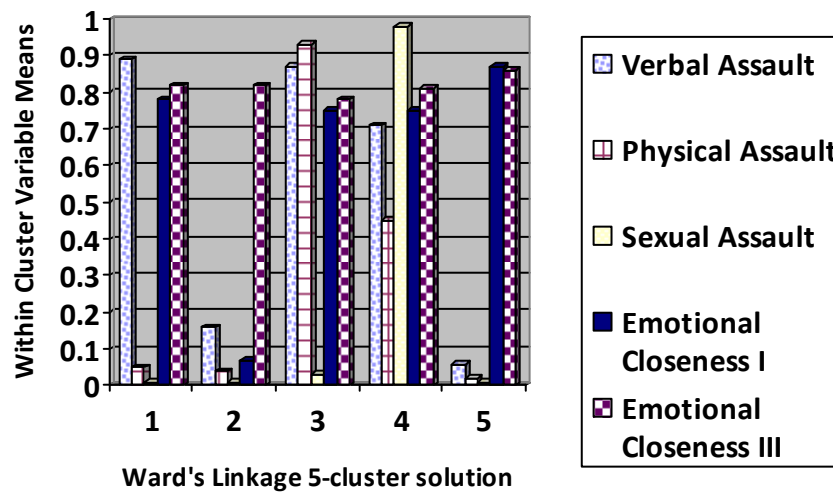
Figure 14. Within cluster variable means for Ward's linkage 5-cluster solution.

Using Ward's algorithm to cluster the three ordered categorical assault variables and emotional closeness variables from Waves I and III, the results of the Calinski-Harabasz pseudo-F index indicated an 8-cluster solution (1,940.89), closely followed by a 9-cluster solution (1,939.63). The results from the Duda/Hart index were not as clear. High Je(2)/Je(1) values were also paired with high pseudo T-squared values. The

highest Je(2)/Je(1) value indicated the four-cluster solution while the lowest pseudo T-squared value indicated the 13-cluster solution. The largest step-size value indicated a three-cluster solution, followed by four-, and five-cluster solutions.

As a result of the conflicting results from the three criteria used to determine the optimal number of clusters, the K-means follow-up to the Ward's linkage method was conducted for two- through 13-group solutions. The Calinski-Harabasz pseudo-F index indicated that the two-cluster solution was best (3,203.61). The means and ranges of the two emotional closeness variables were not very dissimilar from one another, however. For Waves I and III the means were .74 and .82, and .80 and .86, respectively. The three-cluster solution also had a high Calinksi-Harabasz pseudo-F index (3,100.69). In addition, the most significant decrease in the error sum of squares was seen going from the two-cluster to the three-cluster solution. The means for the emotional closeness variables were still not very different from one another (Wave III means = .83, .77, and .86; Wave I means =.75, .73, and .82), however. In addition, both emotional closeness variables in all three clusters ranged from zero to one. The first cluster had high verbal assault (mean = .88) and low physical and sexual assault (means = .05 and .08, respectively). The second cluster had high verbal and physical assault (means = .88 and .93, respectively) and low sexual assault (mean = .2). The third cluster had low verbal, physical, and sexual assault (mean = .06, .02, and .04, respectively). Overall, the three clusters formed from the five variables did not differ from the three clusters formed by the clustering of the original seven variables.

The four- and five-cluster solutions were examined to determine whether greater differentiation among variables across clusters would emerge, despite a sharp decline in the Calinski-Harabasz pseudo-F index (2,735.95 and 2,522.85, respectively). Means of the emotional closeness variables in the four-cluster solution still did not differ significantly across clusters (Wave I means = .76, .75, .75, and .82; Wave III means = .82, .77, .81, .86). Both variables still ranged from zero to one across the four-cluster solution. The first cluster had high verbal assault (mean = .88) and low physical and sexual assault (means = .05 and .01, respectively). The second cluster had high verbal and physical assault (means = .87 and .93, respectively) and low sexual assault (mean = .03). The third cluster had moderate verbal assault (mean = .71), moderately low physical assault (mean = .45), and high sexual assault (mean = .98). The fourth cluster had low verbal, physical, and sexual assault (mean = .06, .02, and .01, respectively). The lowest emotional closeness variables (Waves I and III

means =.75 and .78, respectively) were in the second cluster, with high verbal and physical assault. The third cluster's emotional closeness variables, where verbal and physical assault were moderately low to moderately elevated and sexual assault was high, were just slightly lower (Waves I and III means = .75 and .81, respectively) than the first cluster's emotional closeness variables (Waves I and III means = .76 and .82, respectively), where only verbal assault was highly elevated.

As was the case using seven variables, differentiation among the emotional closeness variables became evident in the five-cluster solution in which the depressive symptoms variables were excluded. One cluster emerged with very low emotional closeness at Wave I. In the five-cluster solution, the first cluster was similar to that in the four-cluster solution. The means for verbal, physical, and sexual assault were .88, .05, and .01, respectively. The second cluster however, had low verbal assault, and very low physical, and sexual assault (means = .16, .03, and .01, respectively), but differed from the previous clustering solutions with low assault variables in that emotional closeness at Wave I was very low (mean = .07), while emotional closeness at Wave III remained moderately high (mean = .81). The third cluster was similar to the second cluster in the four-cluster solution, with high verbal and physical assault and very low sexual assault (means =.87, .93, .03, respectively) and moderately high to moderate emotional closeness (Wave I and III means = .78 and .75, respectively). The fourth cluster was similar to the third cluster in that the four-cluster solution, with moderate verbal assault (mean = .71), moderately low physical assault (mean = .45), and high sexual assault (mean = .98), moderate emotional closeness at Wave I (mean = .75), and moderately high emotional closeness at Wave III (mean = .86). Finally, the fifth cluster closely resembled the fourth cluster in the four-cluster solution, with low values for all three assault variables (means for verbal, physical, and sexual assault = .06, .02, and .01, respectively). This cluster also had the highest values for the emotional closeness variables (Waves I and III emotional closeness means = .87 and .86, respectively). The main difference between the five-variable, five-cluster solution and the seven-variable, five-cluster solution, which included the CES-D Scale variables, was that the Wave I "low emotional closeness" cluster had a much lower mean and standard deviation on the verbal assault variable, thus indicating that the Ward's linkage five-variable solution, excluding the CES-D Scale variables, was superior to the Ward's linkage seven-variable, five cluster solution. Thus, although it had been previously determined that the seven-variable solution would be retained for further analysis, the comparison

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between the five- and seven-variable, five-cluster solutions revealed that it would be preferable to retain the five-variable solution rather than the seven-variable solution.

Weighted-average linkage cluster analysis for the five variables, including three ordered categorical assault variables and two continuous emotional closeness variables, was conducted. The Calinski-Harabasz index also indicated the eight-cluster solution (1,692.78), followed by the nine-cluster solution (1,514.07). The Duda/Hart index indicated first nine-, then two-, and twelve-cluster solutions. Step-size values indicated that three- and six-cluster solutions might be optimal.

Follow-up K-means analyses were conducted for two- and three-cluster solutions, as well as seven-through 12-cluster solutions, as indicated by the aforementioned cluster stopping tools. The Calinski-Harabasz index showed that the two-cluster solution was optimal and decreased as the number of clusters increased. As with the cluster analysis conducted with Ward's linkage, the three-cluster solution had the sharpest decline in the error sum of squares. Unlike the Ward's three-cluster solutions for five and seven variables, the weighted-average linkage three cluster solution for five variables was significantly different than the three-cluster solution formed with seven variables.

To conclude, a comparison of the Ward's linkage and weighted-average linkage three-cluster solutions using five variables revealed that the Ward's solution was preferable to the weighted-average linkage solution. The weighted average linkage solution produced clusters with much higher standard deviations on the physical assault variable in the second and third cluster and a high standard deviation for the verbal assault variable in the third cluster. In addition, it was decided that the Ward's linkage five-variable, five-cluster solution would be retained for reason previously discussed rather than the Ward's linkage seven-variable, five-cluster solution which also used the ordered categorical assault variables.

Cluster Analyses Set Number 3: Binary Assault Variables, Emotional Closeness Variables, and CES-D Scale variables. Alternative cluster analyses were conducted by examining the three assault variables as binary rather than ordered categorical variables. This allowed for a comparison of cluster solutions which included degree of assault as measured by the number of incidences (reflected by the ordered categorical assault variables) versus the experience of any incidence of assault (reflected by the binary assault variables) by a caregiver prior to the age of 18. In other words, individual who were experienced a form of assault anywhere from one time to three or more times were scored with a one and individuals who indicated never having

experienced this form of assault were scored with a zero. Seven variable analyses were conducted, again using

Ward's linkage and weighted-average linkage for initial clustering, followed by K-means cluster analyses for

the number of groups indicated by the cluster stopping tools. For these cluster analyses, step-size values were

examined as well as the error sum of squares following Ward's and weighted-average linkage analyses.

Duda/Hart and Calinski-Harabasz indices were not used as cluster stopping tools as they are not intended for

use with dichotomous variables. Figures 15 through 19 graphically depict the means of the seven variables

within each cluster solution examined for potential retention. Table 4 in Appendix B shows the number of

respondents within each cluster, means, and standard deviations for the weighted-average linkage and Ward's

linkage, followed by K-means, clustering algorithms.

Figure 15. Within cluster variable means for Ward's linkage 3-cluster solution.

Figure 16. Within cluster variable means for Ward's linkage 4-cluster solution.

Figure 17. Within cluster variable means for weighted-average linkage 4-cluster solution.
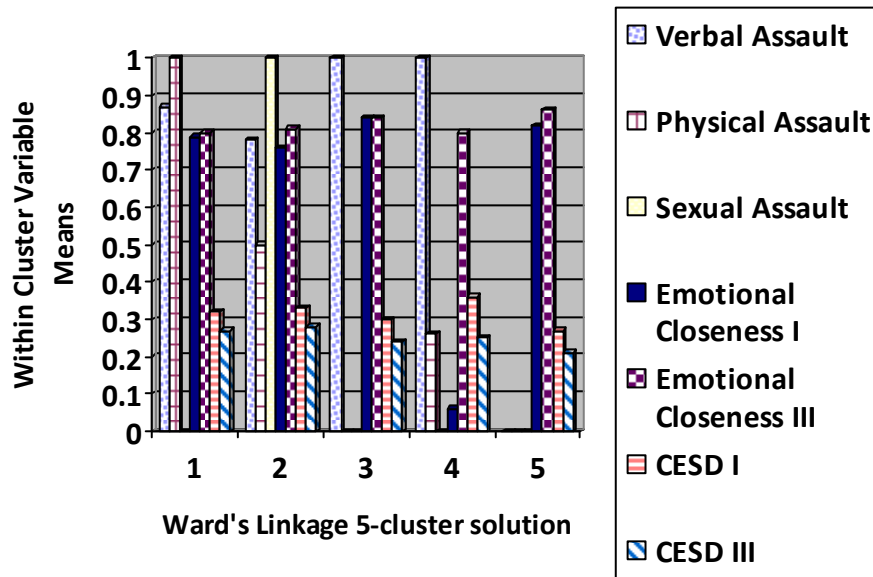
Figure 18. Within cluster variable means for Ward's linkage 5-cluster solution.

Figure 19. Within cluster variable means for weighted-average linkage 5-cluster solution.

Ward's linkage was conducted first. The Gower distance measure was used as it is deemed suitable for mixed-measures cluster analyses. The step-size table indicated a three-cluster solution, followed by five- and four-cluster solutions. The largest decrease in the error sum of squares was found at the formation of a three-cluster solution. The four-cluster solution also had a large decrease in the error sum of squares. As a result,

two- through five- cluster solutions were followed up with K-means cluster analyses and inspected for large decreases in the error sum of squares. The largest decrease occurred at the formation of a three-cluster solution, followed by a four-cluster solution. Although a large reduction in the error sum of squares for Ward's three-cluster solution indicated that was optimal, inspection of the means and standard deviations revealed that the first two clusters were extremely similar to one another on all variables. Furthermore, the sexual assault variable did not load cleanly on any of the clusters and resulted in a very high standard deviation in the first cluster and moderately high standard deviation in the second and third clusters.

Next, a weighted-average linkage cluster analysis, using the Gower distance measure, was conducted with the three binary assault variables, two emotional closeness variables, and two depressive symptoms variables. The step-size table indicated a three-cluster solution. The largest decrease in the error sum of squares occurred at the formation of a five-cluster solution. K-means analyses were subsequently conducted for four-, five-, and six- cluster solutions. Again, the largest decrease in the error sum of squares occurred at the five-cluster solution.

To summarize the results for the two sets of cluster analyses involving the binary assault variables, the weighted-average linkage five-cluster solution had the clearest distinction across clusters. There was a moderately large standard deviation for the verbal assault variable in the first cluster, a large standard deviation for the physical assault variable in the fourth cluster, and a relatively small standard deviation for the physical assault variable in the fifth cluster. In comparison to the five-cluster weighted-average solution using the original seven variables, three clusters were quite similar. In each solution there was a "high verbal and physical assault" cluster, a "high verbal assault" cluster, and a cluster "low assault" cluster. The "high assault" cluster differed from the original in that the proportion of physical assault in this cluster was less than mean physical assault in the "high assault" cluster in the original seven-variable solution. In addition, the initial seven-variable, five-cluster solution formed a cluster with a moderate mean on verbal assault, a low mean on physical assault, and a high mean on sexual assault. The comparable cluster using the binary variables had no report of verbal assault. On the remaining CES-D Scale and emotional closeness variables, means were more distinct among the clusters formed by the original seven variables. Pronounced differences in the standard deviations were not observed, with the exception of a large standard deviation for the CES-D Scale III variable in the "high verbal and physical assault" cluster. As a result, the original seven-variable, five-cluster weighted-

average linkage cluster solution was still maintained for further analysis and the cluster solution which used the dichotomous assault variables, emotional closeness variables, and CES-D Scale variables was rejected.

Cluster Analyses Set Number 4: Three Binary Assault Variables and Two Emotional Closeness Variables. Next, the Wave I and Wave III CES-D Scale variables were removed from the analyses. Cluster analyses using Ward's linkage and weighted-average linkage were conducted to cluster the three binary maltreatment variables and two emotional closeness variables. As previously mentioned, the Gower distance measure was employed because of suitability for mixed-methods. Each method was followed up by K-means cluster analyses for the cluster solutions indicated by the step-size table and the largest reduction in the error sum of squares. Figure 20 is a graphical depiction of variable means in each cluster within the seven-cluster solution decided upon. Table 5 in Appendix B provides more detail on the number of observations within each cluster, means, and standard deviations by variable and cluster for the seven-cluster solution. Details pertinent to the selection of this cluster are in the text that follows.
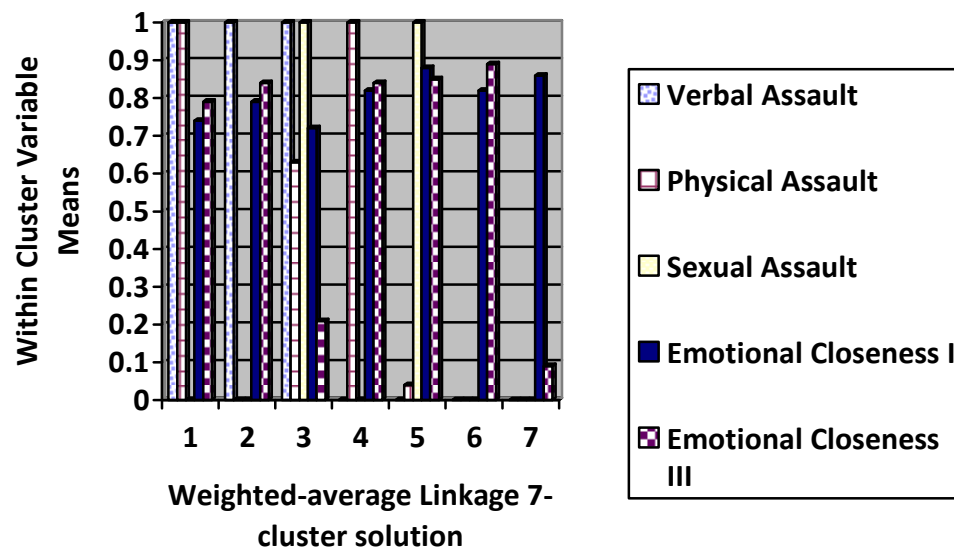
Figure 20. Within cluster variable means for weighted-average linkage 7-cluster solution.

Ward's linkage algorithm was employed first. The step-size table suggested that a three-cluster solution might be optimal. A large reduction in the error sum of squares with the formation of a three-cluster solution indicated this as well. A large reduction in the error sum of squares was also found for the four-cluster

solution. Thus, K-means cluster analyses were conducted for two- through five-cluster solutions. Following the K-means cluster analyses, the largest reduction in the error sum of squares occurred at the three-cluster solution. The clusters formed by the three-cluster solution using just five variables, were identical to those formed when the two CES-D Scale variables were included. Thus, the number of respondents within each cluster, cluster means, and standard deviations for the five-variable, three-cluster Ward's linkage solution is not displayed in a separate table.

Weighted-average linkage was next used as a clustering algorithm for the five variables. The step-size table indicated a three-cluster solution. The error sum of squares indicated a seven-cluster solution, followed by a four-cluster solution. Thus, K-means cluster analyses were conducted for three- through eight-cluster solutions. The largest reduction in the error sum of squares following the K-means cluster analyses also indicated a seven-cluster solution.

Some very distinct clusters were formed by the weighted-average linkage five-variable, seven cluster solution using binary assault variables. Two clusters were formed in which physical assault variables did not cluster "cleanly," that is individuals who were physically assaulted and individuals who were not physically assaulted were included in the same cluster. A higher proportion of this occurred within the cluster representing assault across all three assault variables, as indicated by the higher standard deviation. A smaller proportion of individuals who experienced physical assault were included in the cluster which most distinctly represented sexual assault.

The main ways in which the seven-variable, five-cluster solution using the binary assault variables differed from the five-variable, seven-cluster solution was in the formation of a group with a low mean on emotional closeness at Wave I by splitting the cluster with low means across all three forms of assault. In addition, the group with high verbal and physical assault was made less variable (i.e. smaller standard deviation) with the formation of a smaller group with only physical assault. The resulting five-variable, seven-cluster solution had more distinct means and smaller standard deviations across all variables. The additional two clusters formed in the seven-cluster solution were relatively small, however. Due to its distinctiveness, the five-variable, seven-cluster solution was retained for follow-up analyses.

Cluster Analyses Set Number 5: Summary Maltreatment Index, Two Emotional Closeness Variables, and Two CES-D Scale Variables. As an alternative to examining each form of assault individually, cluster

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analyses were also conducted using a total assault index, which summed respondents' experiences with assault over the verbal, physical, and sexual assault variables. This variable was clustered with the two emotional closeness variables and the two CES-D Scale variables. In keeping with previous analyses, Ward's and weighted-average linkage algorithms were used, followed by K-means cluster analyses. Squared Euclidean distance, recommended for continuous variables, was used as the distance measure. The Calinksi-Harabasz and Duda/Hart indices were used as cluster stopping tools as well as the step-size table. Error sum of squares were inspected to further determine suitable cluster solutions for follow-up K-means cluster analyses. Graphical depictions of three- to six- cluster solutions are presented in Figures 21 through 25. The three-cluster weighted-average linkage cluster solution was nearly identical to Ward's three-cluster solution, with the placement of one case in the second cluster (n = 272) rather than the third cluster (n = 1,175). This difference did not change the means of standard deviations substantially, thus only the results from the Ward's clustering algorithm for the three-cluster solution is presented in Figure 21. These similarities are further described in the text that follows.
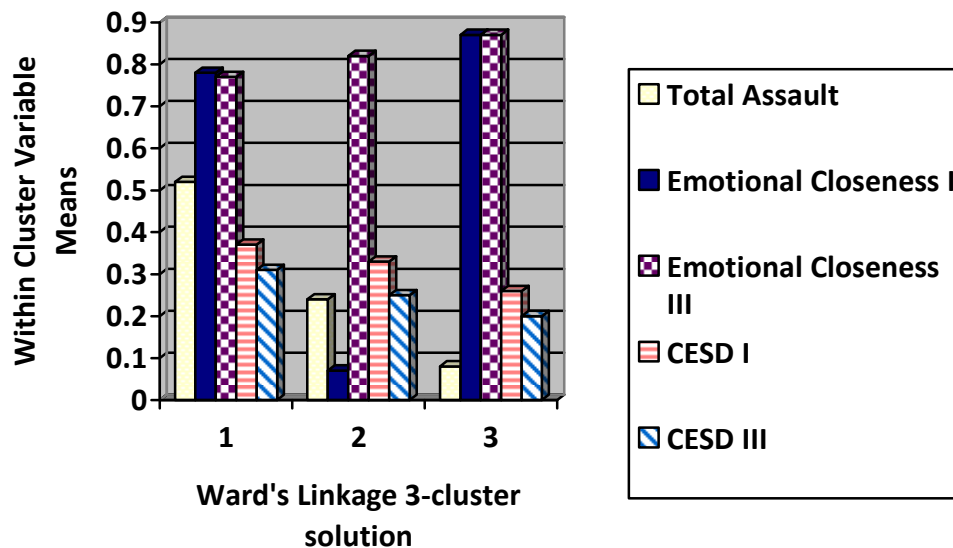
Figure 21. Within cluster variable means for Ward's linkage 3-cluster solution.
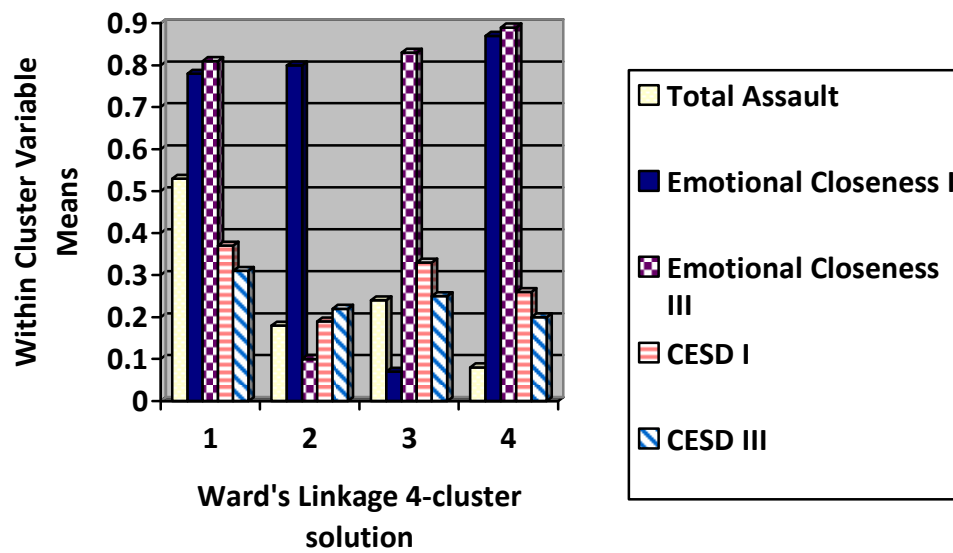
Figure 22. Within cluster variable means for Ward's linkage 4-cluster solution.
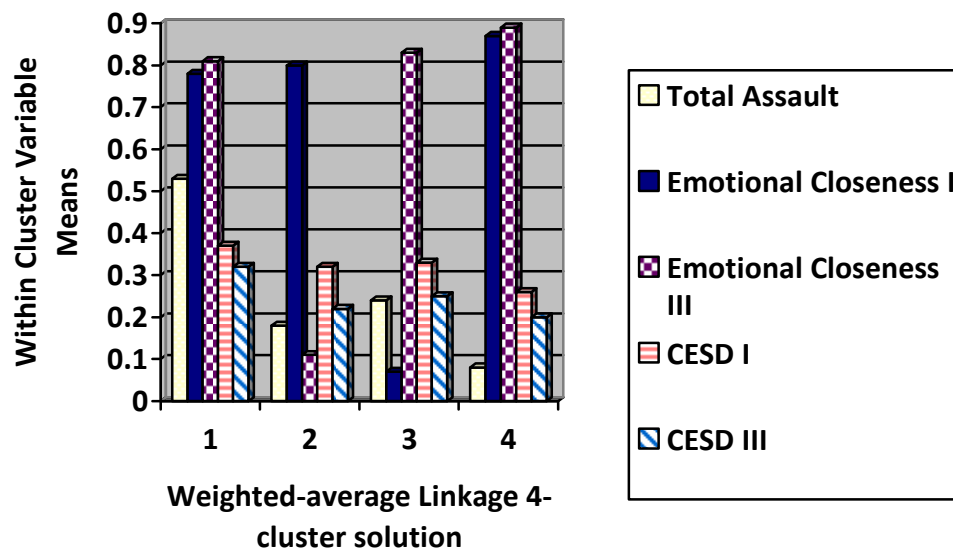
Figure 23. Within cluster variable means for weighted-average linkage 4-cluster solution.

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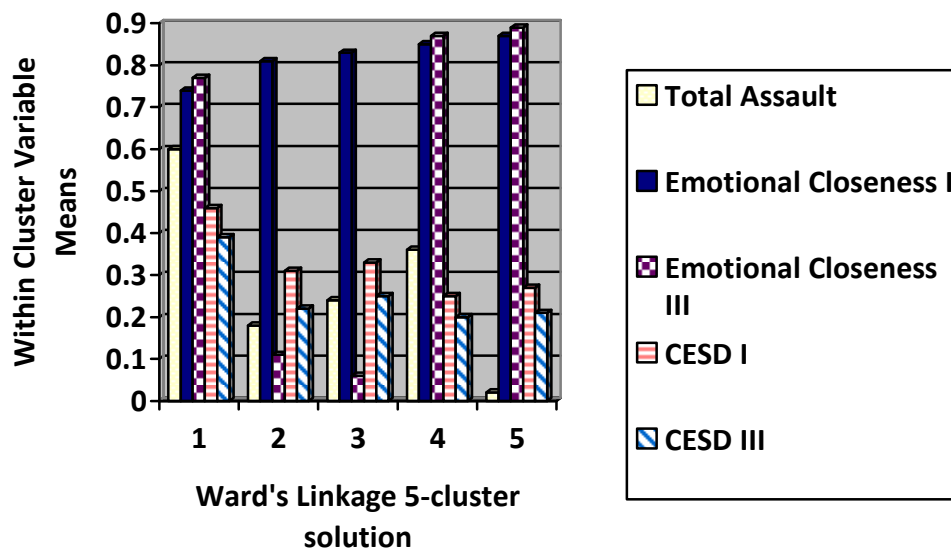
Figure 24. Within cluster variable means for Ward's linkage 5-cluster solution.
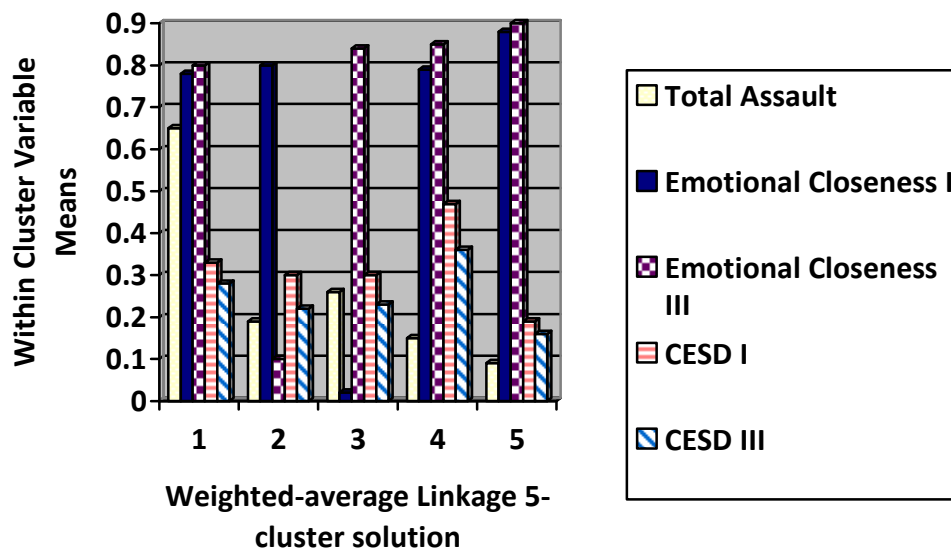
Figure 25. Within cluster variable means for weighted-average linkage 5-cluster solution.

After conducting Ward's clustering algorithm, the step-size table indicated a three-cluster solution, followed by four- and five-cluster solutions. The Calinski-Harabasz index suggested the two-cluster solution.

The Duda/Hart index suggested an 11-cluster solution. The largest reduction in the error sum of squares occurred at the formation of a three-cluster solution. Follow-up K-means cluster analyses for two- through 13-cluster solutions were conducted. Again, the largest reduction in the error sum of squares occurred at the three-cluster solution. Up to five clusters were explored, however, due to greater variability among variables across clusters as the number of clusters increased. At the formation of a four-cluster solution, a group emerged with a low mean on emotional closeness at Wave III. This slightly increased some means and had virtually no impact on standard deviations, with the exception of lowering the standard deviation of the Wave III emotional closeness variable in the "low assault" cluster. The formation of a fifth cluster resulted in increasing and decreasing means across multiple variables. The high assault cluster increased by .07 and CES-D Scale Wave I and CES-D Scale Wave III variables increased by .09 and .08, respectively. In addition, the emotional closeness variables each declined by .04. The two clusters with low emotional closeness and moderately low assault remained relatively intact. A large cluster was retained with a low/moderate mean on assault, a relatively high mean on emotional closeness, and a low means on the two CES-D Scale variables.

The step-size table for the weighted-average linkage clustering algorithm similarly indicated a three-cluster solution. The Calinksi-Harabasz index suggested the three-cluster solution. The Duda/Hart index suggested the seven-cluster solution. Inspection of the error sum of squares found a large reduction at the three-cluster solution and at the six-cluster solution. As a result, K-means follow-up analyses were conducted for two- through seven-cluster solutions. The largest reduction in the error sum of squares following the K-means cluster analyses occurred at the three-cluster solution. It should be noted however, that the five cluster solution had the largest value of on the Calinski-Harabasz index.

In addition to the three-cluster solution, the weighted-average linkage four-cluster solution was also nearly identical to Ward's four-cluster solution. In the weighted-average linkage five-cluster solution, the types of clusters formed were also very similar to those formed by Ward's linkage clustering algorithm. More cases were placed in the high assault cluster, however. This resulted in an increase in mean total assault by .05. This also resulted in an increase in the means of the emotional closeness variables and a decrease in the means of the two CES-D Scale variables, making them more commensurate with the means in the other clusters. The second largest cluster formed by the weighted-average linkage clustering algorithm also differed from the second largest cluster formed by the Ward's linkage five-cluster solution. This cluster had fewer cases and a lower

mean on the assault variable. The means on the emotional closeness variables were also lower and the CES-D

Scale variables were both elevated, thus representing the highest CES-D Scale scores across all clusters. The

largest cluster, with the lowest assault mean, had higher means on the emotional closeness variables and much

lower means on the two CES-D Scale variables than the low assault cluster formed by Ward's linkage. Overall,

the standard deviations were reduced across the majority clusters formed by the weighted-average linkage five-

cluster solution compared to Ward's linkage five cluster solution. The only cluster in which the standard

deviations were lower in Ward's cluster solution was the fourth cluster, in which mean total assault was lower

in the weighted-average linkage solution, mean emotional closeness was lower, and the means of the two CES-

D Scale variables were much higher. As a result, the five-cluster solution formed by the weighted-average

linkage clustering algorithm, using the continuous summative assault variable, was retained for further analysis.

Cluster Analyses Set Number 6: Summary Maltreatment Index and Two Emotional Closeness

Variables. Again, using the summary maltreatment index, the two CES-D Scale measures were removed from

the analyses using Ward's linkage and weighted-average linkage algorithms. K-means follow-up analyses were

also conducted for cluster solutions indicated by the step-size table, Calinski-Harabasz index, Duda/Hart index,

and large reductions in the error sum of squares. Comparisons of the three- and four-cluster solutions are

displayed in Table 7 in Appendix B. Figures 26 and 27 graphically depict variable means for clusters within

each cluster solution. Ward's three-cluster solution was identical to the three-cluster solution obtained with the

weighted-average linkage clustering algorithm. As a result, only Ward's three-cluster solution is presented in

Table 7 in Appendix B and in the two graphs that follow. The 4-cluster solutions were nearly identical to one

another as well, with the only exception being the assignment of two more cases to the first cluster (n = 2,399)

and two fewer cases in the third cluster (n = 264). Means and standard deviations were not discrepant.
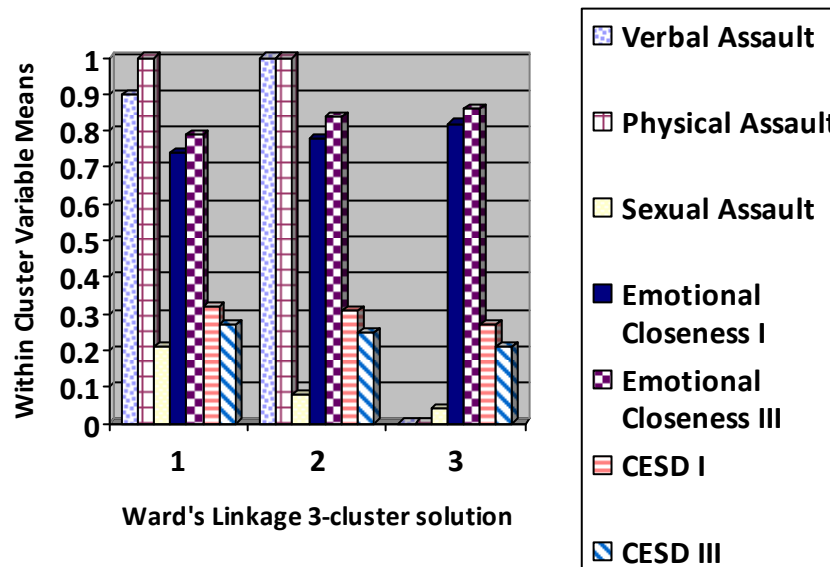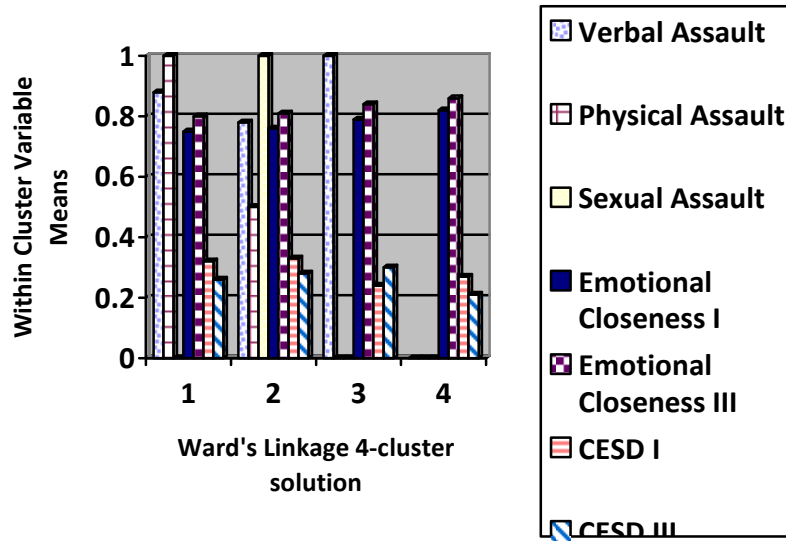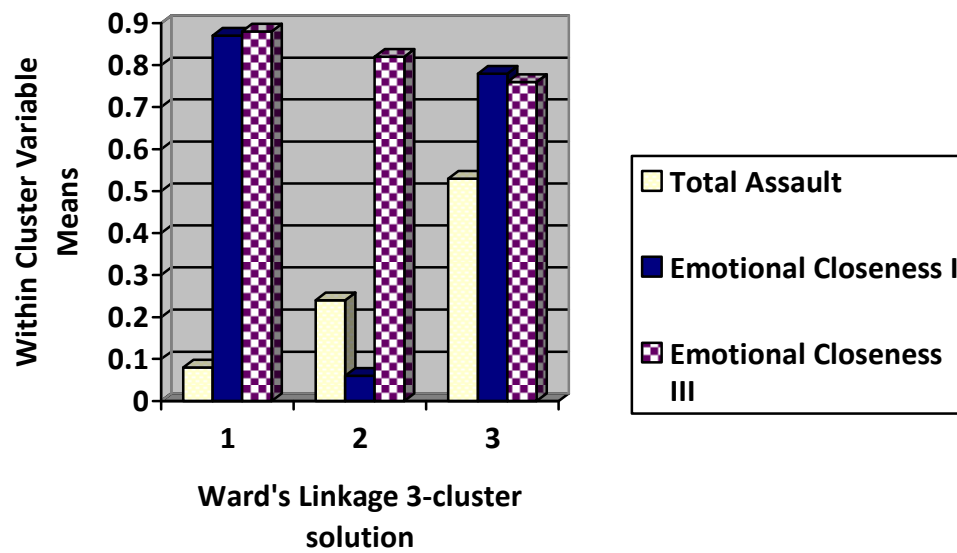
Figure 26. Within cluster variable means for Ward's linkage 3-cluster solution.
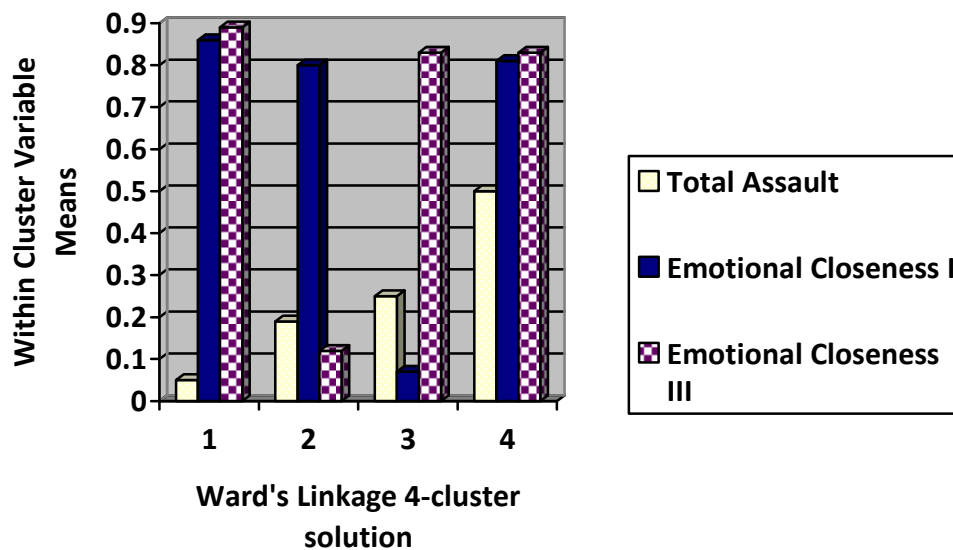
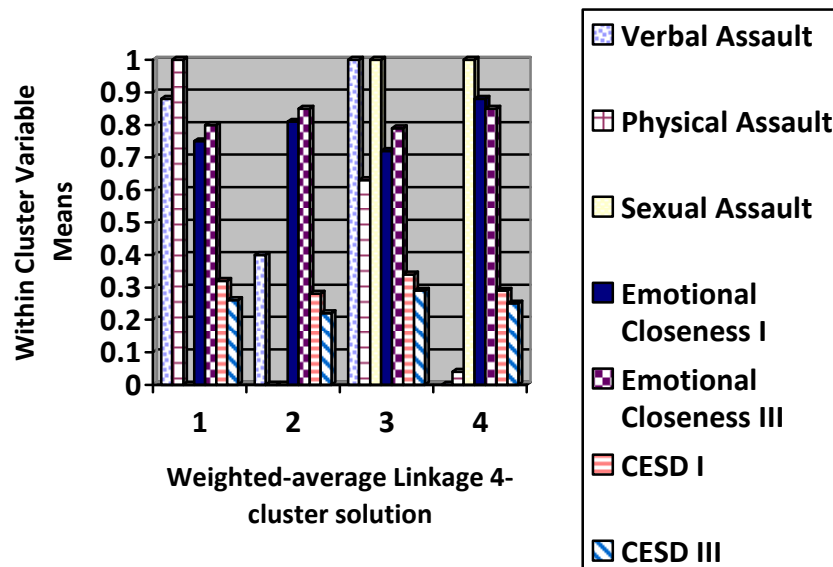*Figure 27.* Within cluster variable means for Ward's linkage 4-cluster solution.

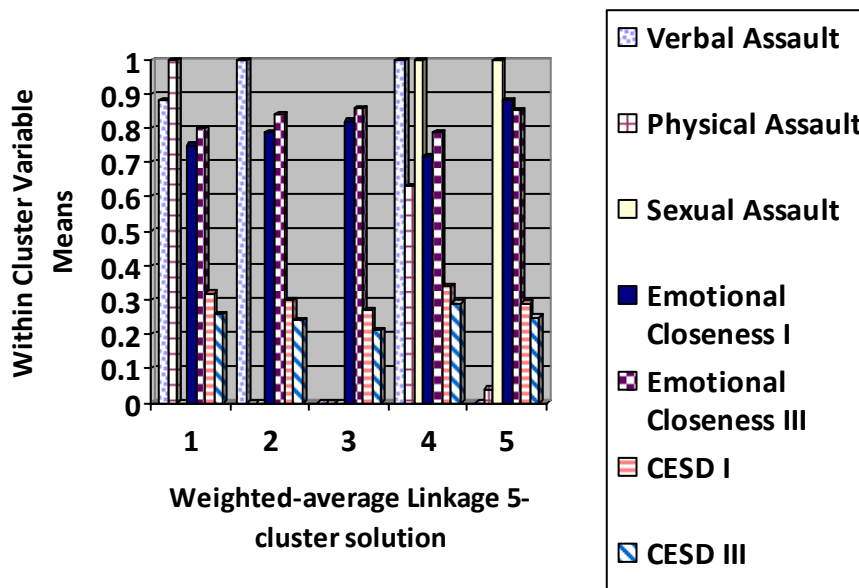The step-size table for Ward's linkage clustering algorithm of the remaining three variables of interest indicated a three-cluster solution. The Calinksi-Harabasz and Duda/Hart indices indicated four- and nine-

cluster solutions, respectively. A large reduction in the error sum of squares, also suggested a three-cluster solution. As a result, two- through nine-cluster solutions were conducted using the K-means partitioning cluster method. The three-cluster solution had the largest reduction in the error sum of squares, while the four-cluster solution retained the highest value of the Calinski-Harabasz index.

Next, the weighted-average linkage clustering algorithm was used for the three continuous variables, the summary assault index and emotional closeness at Waves I and III. The step-size table indicated a seven-cluster solution and perhaps a five-cluster solution. The Calinski-Harabasz index suggested a three-cluster solution and the Duda/Hart indices suggested an eight-cluster solution. The largest reduction in the error sum of squares occurred at the three- and eight-cluster solutions. Thus, three- through eight-cluster solutions were followed-up with K-means cluster analyses. The three-cluster solution indicated the largest reduction in the error sum of squares.

The resulting three- and four-cluster weighted-average linkage and Ward's linkage cluster solutions using three variables were not significantly different than those formed when the two CES-D Scale variables were included. Thus, neither of these clusters was retained for further analyses.

Summarizing Results for Cluster Analyses Sets 1 Through 6. In summary, a total of twelve different types of cluster analyses were conducted in ordered to determine whether there were subgroups of adolescent and young adult parents that could be determined by their experiences with assault, emotional closeness with caregivers measured at Waves I and III, and depressive symptomatology also measured at Waves I and III. These twelve cluster analyses were broken down into six sets. That is, each new combination of variables was clustered first with Ward's linkage clustering algorithm, followed by K-means partitioning method, and second with a weighted-average linkage clustering algorithm, followed by K-means partitioning method. The two different clustering algorithms, Ward's linkage and weighted-average linkage, were used in order to determine whether different clustering algorithms would have similar results and to determine which would yield the most parsimonious clustering solutions. Cluster solutions were judged by several different indices and criteria and ultimately judged based on the variation in means across clusters as well as minimization of standard deviations. Multiple combinations of the assault variables were clustered to determine whether different ways of examining experience with assault would yield different results. In addition, the CES-D Scale variables were

removed and the remaining variables were clustered in order to determine whether the narrow range of this variable was impacting the cluster solutions.

Among the six sets of cluster analyses, several different types of cluster solutions were retained for further analyses. A five-cluster solution formed using the weighted-average linkage clustering algorithm and the seven original variables was selected for follow-up analyses. The five-cluster solution formed using Ward's clustering algorithm and the same variables was not retained for comparative purposes because the five-variable, five-cluster solution formed with Ward's linkage was determined to be superior to the seven-variable, five-cluster solution. A seven-cluster solution was selected that used the weighted-average linkage clustering algorithm to cluster three binary assault variables and the emotional closeness variables. Lastly, a five-cluster solution using weighted-average linkage to cluster the continuous assault variable, emotional closeness variables, and CES-D Scale variables was selected for follow-up analyses. In each of the cluster solutions selected for follow-up analyses, some themes unique to each of them emerged as well as some commonalities. These will be discussed in further detail.

Cluster solutions varied by their mean scores on each of the parent characteristics. Figure 28 shows how verbal assault, physical assault, and sexual assault varied most dramatically across clusters in the weighted-average linkage five-cluster solution using the original ordered categorical assault variables.
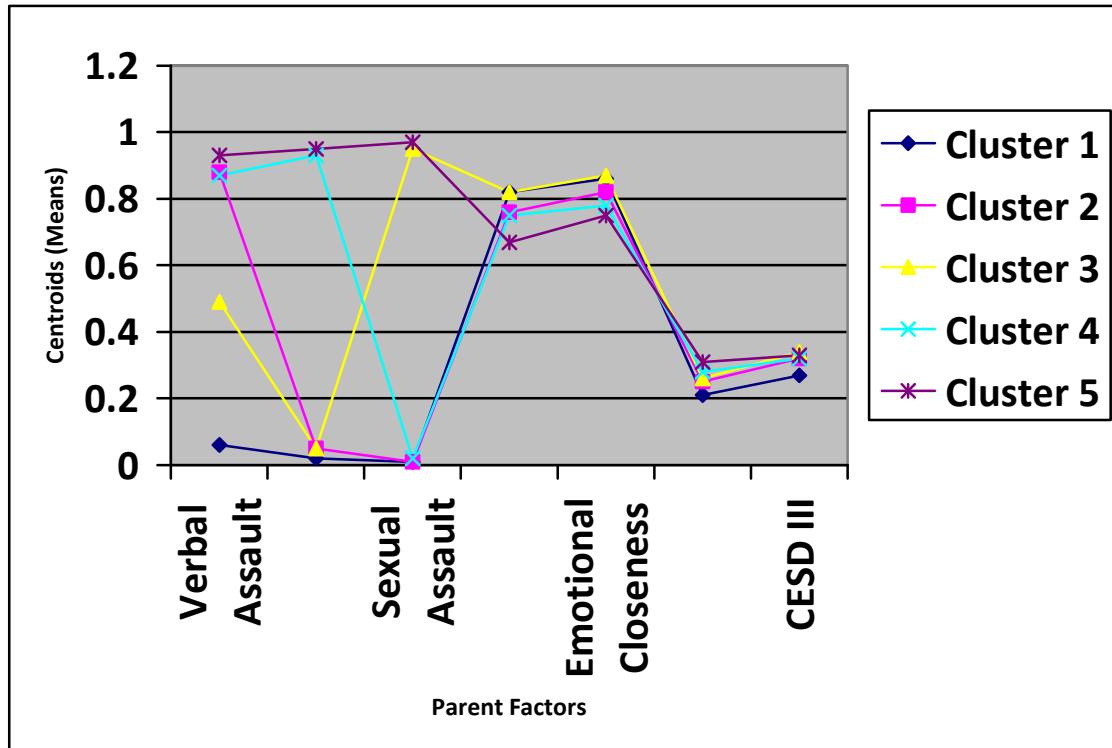
Figure 28. Variable centroids according to cluster for the weighted-average linkage seven-variable, five-cluster solution.

While the means for emotional closeness and the CES-D Scale variables did not exhibit as much variability, the visual representation in Figure 28 shows that individuals in cluster 5, with the highest levels of assault, also had the lowest means on both emotional closeness variables and the highest means on the CES-D Scale variables. In contrast, individuals in cluster 1, who experienced the least amount of assault, corresponded with the highest means on emotional closeness and clearly the lowest means on the CES-D Scale variables. This was a theme common across the four cluster solutions selected with the exception of a few variables in specific clusters that will be further elaborated upon when their respective cluster solutions are addressed. The limited variability seen most prominently on the CES-D Scale variables and, to a slightly lesser degree, on the emotional closeness variables, illustrates respondents' overall tendency to report largely positive relationships with caregivers as well as relatively few depressive symptoms despite what appears to be a significant history of abuse. This too was common across each of the four cluster solutions. These findings suggest that parents, based on the Add Health study and nationally representative population estimates, may be more readily grouped according to their

experiences with assault rather than more subtle interpersonal variables such as emotional closeness with parents and depressive symptomatology.

Figure 29 is a visual representation of the means of the five variables, including three ordered categorical assault variables and emotional closeness at Waves I and III, used in Ward's clustering algorithm followed by K-means partitioning method.
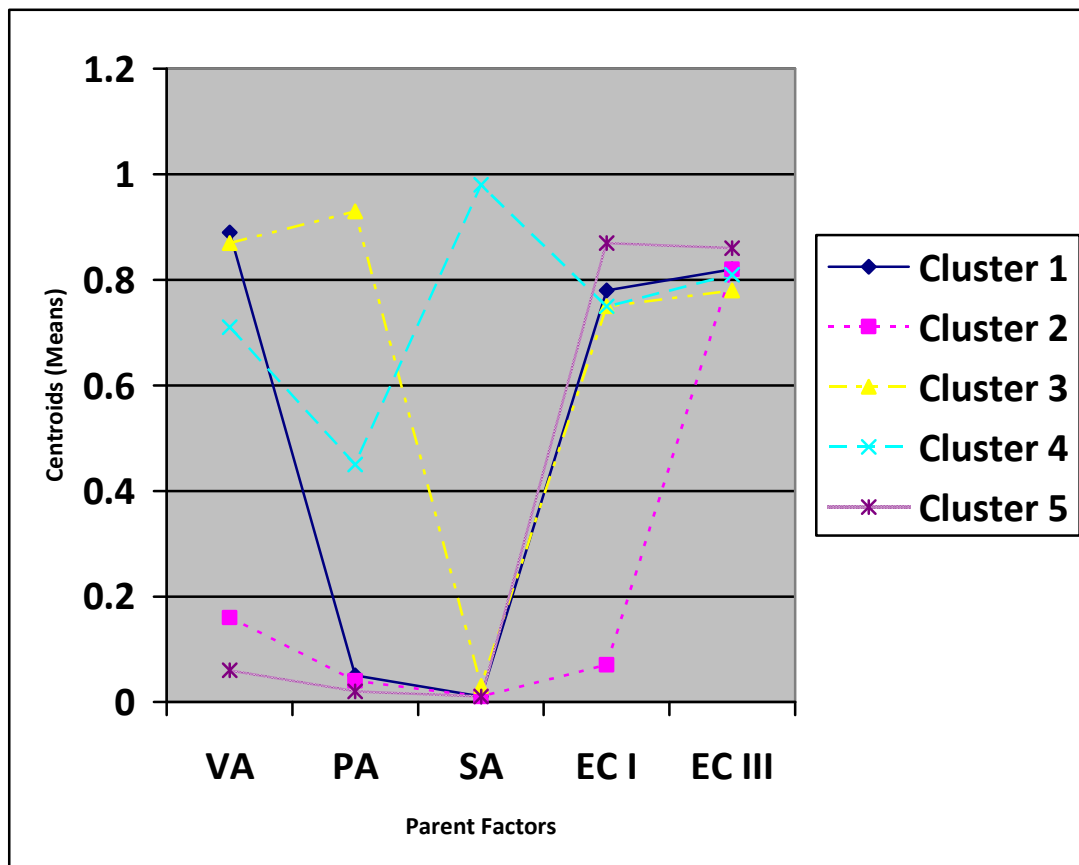
Figure 29. Variable centroids according to cluster for Ward's linkage five-variable, five-cluster solution.

The resulting five-cluster solution selected clearly had a low assault cluster with corresponding high means for emotional closeness. Unlike the previous weighted-average linkage five-cluster solution for seven variables, the Ward's linkage five-variable, five-cluster solution had a relatively low assault cluster with a low mean on emotional closeness at Wave I (cluster 2). The means on emotional closeness at Waves I and III on all of the other clusters were quite similar, however. The Ward's cluster solution did not have a cluster in which the means on all of the assault variables are high. Rather, there was a cluster (cluster 4) with moderately high verbal assault, moderate physical assault, and high sexual assault. In this cluster solution, the most variability

was again seen in the assault variables, with levels of verbal assault ranging most widely across clusters, followed by physical assault. The least variation was seen across clusters for the sexual assault variable, however. Thus, in comparison to one another, the weighted-average linkage seven-variable, five-cluster solution previously discussed was consistent with the Ward's linkage five-variable, five-cluster solution with regard to the verbal and physical assault variables. This was not the case for the sexual assault variable nor the Wave I emotional closeness variable, particularly in the "low emotional closeness" cluster. Thus, according to the results of these two sets of cluster analyses, parents appeared to be most consistently grouped according to varying degrees of experience with verbal and physical assault.

The clusters formed by the weighted-average linkage seven cluster solution using binary assault variables and their means are quite different from those formed using the ordered categorical assault variables. Figure 30 shows the range and variation in variable means.
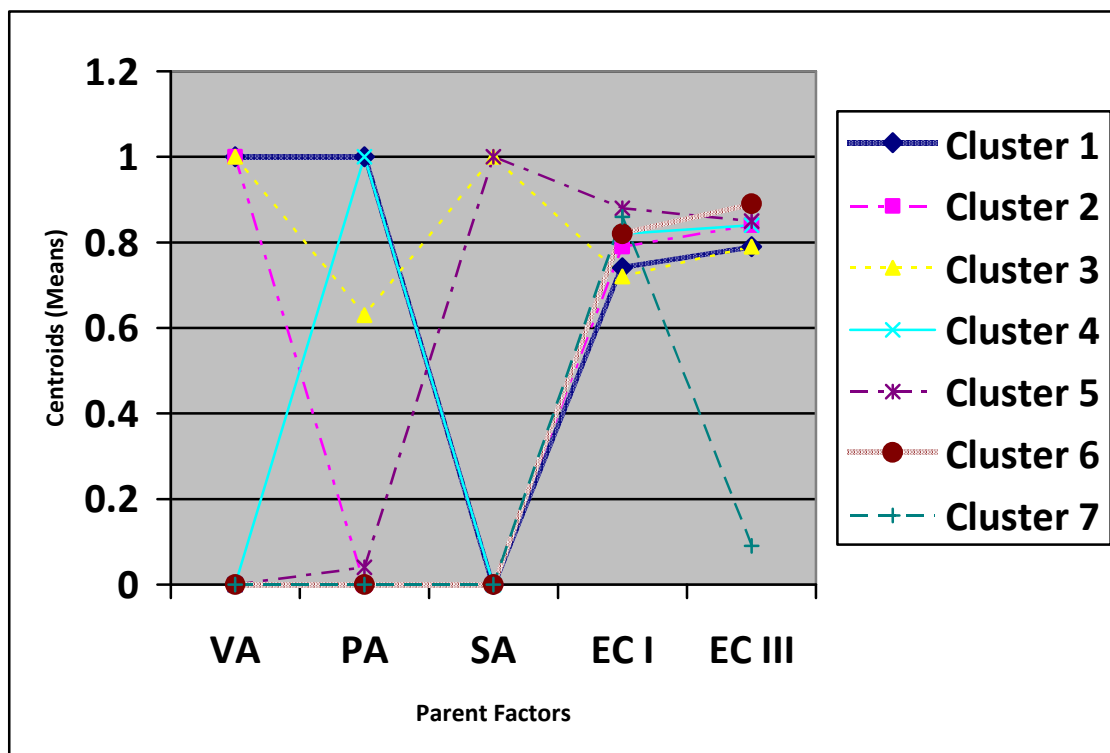
Figure 30. Variable centroids according to cluster for the weighted-average linkage seven-cluster solution using binary assault variables.

As shown in Figure 30, this cluster solution was characterized by a large degree of variation across all three assault variables. In keeping with the theme most prominent in the two previous cluster solutions discussed

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however, this representative population was once again most consistently organized according to their experiences with assault. It is important to restate that in this set of cluster analyses, cluster membership was more accurately defined by experiences with any assault versus degree of assault, which defined the two previous cluster analyses. One unique cluster was formed which differed from clusters formed in all other cluster solutions. Cluster 7, characterized by no assault of any kind, had a very low mean for Wave III emotional closeness. This again illustrates the lack of consistency across cluster solutions on the emotional closeness variables.

Figure 31 shows the cluster centroids for the five-cluster solution formed using the weighted-average linkage clustering algorithm for the continuous total assault variable, two emotional closeness variables, and two CES-D Scale variables.
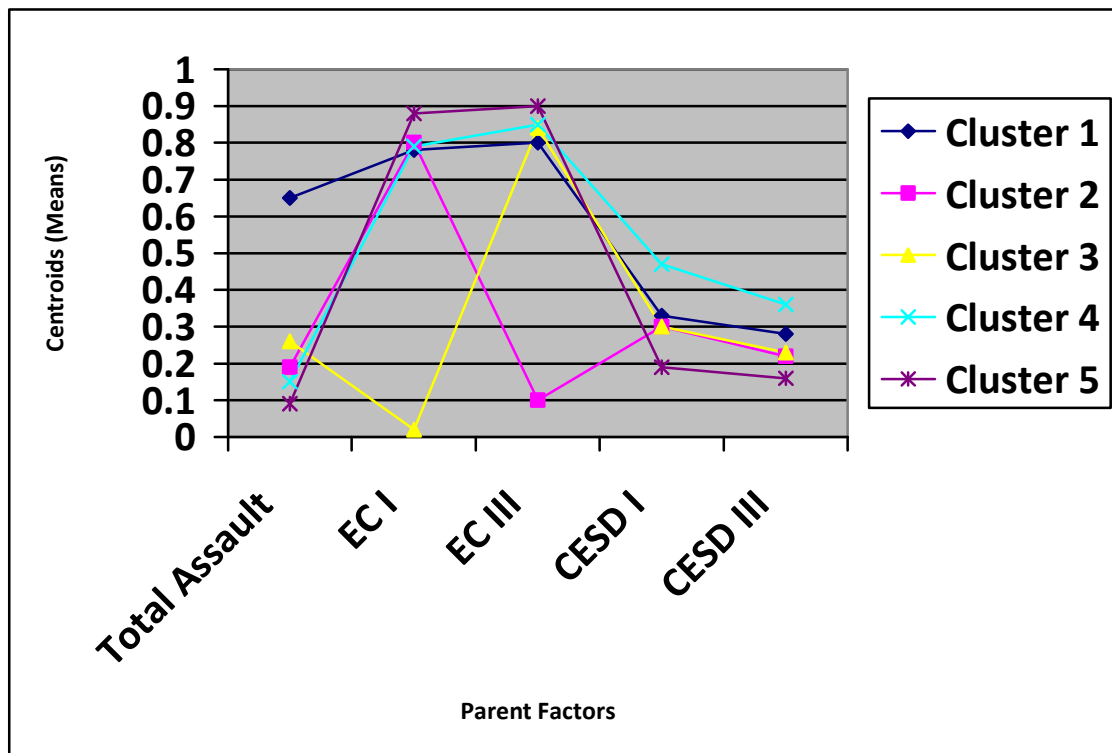
Figure 31. Variable centroids according to cluster for the weighted-average linkage five-cluster solution using the continuous assault variable.

In this cluster solution, in contrast to the previous three discussed, variability was seen across clusters on all variables. Again, the least amount of variability was seen on the two CES-D Scale variables. The total assault

variable was primarily distinguished by individuals in one small cluster who reported significant incidences of assault versus individuals in the other four clusters with relatively low levels of assault. Cluster 2 and cluster 3 are characterized by extremely low means on Wave I emotional closeness (cluster 3) and Wave III emotional closeness (cluster 2). Thus, the use of a continuous assault variable, measuring total experiences with all three forms of assault, appeared to have an effect on the defining characteristics of clusters previously unseen in other cluster solutions.

Descriptors were applied to clusters within each of the four cluster solutions previously discussed. Table 8 provides a summary of patterns of parent characteristics defining the clusters in each solution. For ease of interpretation and comparison, the means of the clustering variables were categorized into one of six categories, ranging from "Very Low" to "High." Means with a range between 0 and .10 were categorized as "Very Low." Means with a range of .11 to .25 were categorized as "Low." Means ranging from .26 to .49 very labeled "Moderately Low." Means ranging from .50 to .75 were labeled "Moderate." Means between .76 and .89 were labeled "Moderately High." Lastly, means between .90 and 1.00 were labeled "High." One asterisk delineates the lowest column mean within that cluster solution and two asterisks indicate the highest column mean within that cluster solution. The binary assault variables do not have asterisks.

Table 8

Patterns of Parent Characteristics Defining Clusters

	Verbal Assault	Physical Assault	Sexual Assault	Total Assault	Emotional Closeness I	Emotional Closeness III	CES-D Scale I	CES-D Scale III
Weighted-average linkage, original 7-variable, 5-cluster solution	Very Low*	Very Low*	Very Low*	--	Moderately High**	Moderately High	Low*	Moderately Low*
	Moderately High	Very Low	Very Low*	--	Moderately High	Moderately High	Low	Moderately Low
	Moderately Low	Very Low	Very High	--	Moderately High**	Moderately High**	Moderately Low	Moderately Low**
	High	Very High	Very Low	--	Moderate	Moderately High	Moderately Low	Moderately Low
	Very High**	Very High**	Very High**	--	Moderate*	Moderate*	Moderately Low**	Moderately Low
Ward's linkage, original 5-variable, 5-cluster solution	Moderately High**	Very Low	Very Low*	--	Moderately High	Moderately High	--	--
	Low	Very Low	Very Low*	--	Very Low*	Moderately High	--	--
	Moderately High	Very High**	Very Low	--	Moderate	Moderately High*	--	--
	Moderate	Moderately Low	Very High**	--	Moderate	Moderately High	--	--
	Very Low*	Very Low *	Very Low*	--	Moderately High**	Moderately High**	--	--
Weighted-average linkage, 3 binary assault variables, 7-cluster solution	Very High	Very High	Very Low	--	Moderate	Moderately High	--	--
	Very High	Very Low	Very Low	--	Moderately High	Moderately High	--	--
	Very high	Moderate	Very High	--	Moderate*	Moderately High	--	--
	Very Low	Very High	Very Low	--	Moderately High	Moderately High	--	--
	Very Low	Very Low	Very High	--	Moderately High**	Moderately High	--	--
	Very Low	Very Low	Very Low	--	Moderately	Moderately	--	--

					High	High**		
	Very Low	Very Low	Very Low	--	Moderately High	Very Low*	--	--
Weighted-average linkage, continuous total assault variable, 5-clusters	--	--	--	Moderate**	Moderately High	Moderately High	Moderately Low	Moderately Low
	--	--	--	Low	Moderately High	Very Low*	Moderately Low	Low
	--	--	--	Moderately Low	Very Low	Moderately High	Moderately Low	Low
	--	--	--	Low	Very low*	Moderately High	Moderately Low**	Moderately Low**
	--	--	--	Very Low*	Moderately High**	High**	Low*	Low*

Note: * Lowest column mean within the respective cluster solution; ** highest column mean within the respective cluster solution. Binary assault variables do not have * or **.

Differences between clusters can also be described by the differences in the number of standard deviations from the mean value on each respective factor within each cluster. A visual representation of cluster solution viability for the weighted-average linkage seven-variable, five-cluster solution according to standard deviations from the mean for each factor within each cluster is presented in Figure 32. Figures 33 through 35 also depict standard deviations from cluster means for variables in the remaining three cluster solutions.
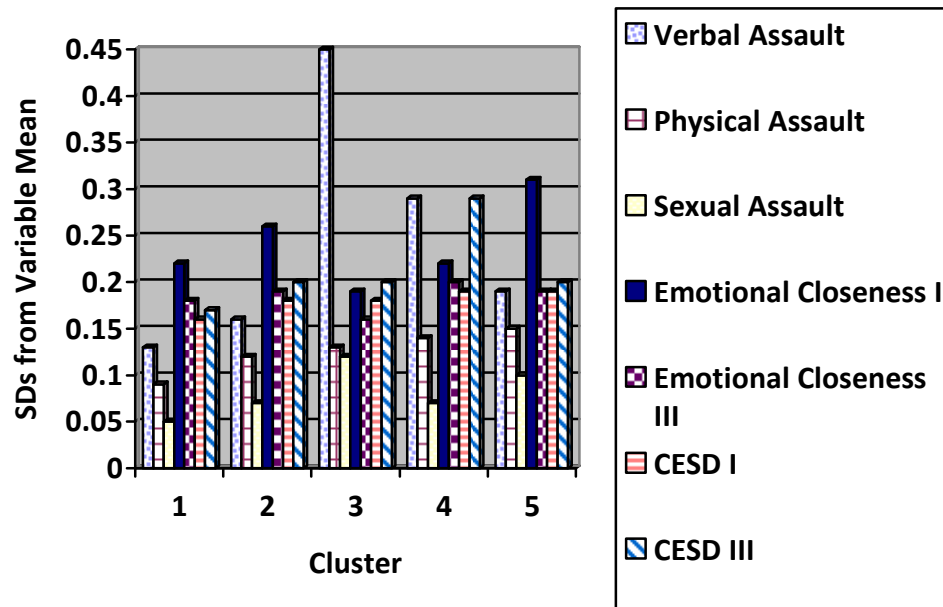
Figure 32. Weighted-average linkage seven-variable (using ordered categorical assault variables), five-cluster solution. Cluster centroids, depicted as SDs from variable means within each cluster.
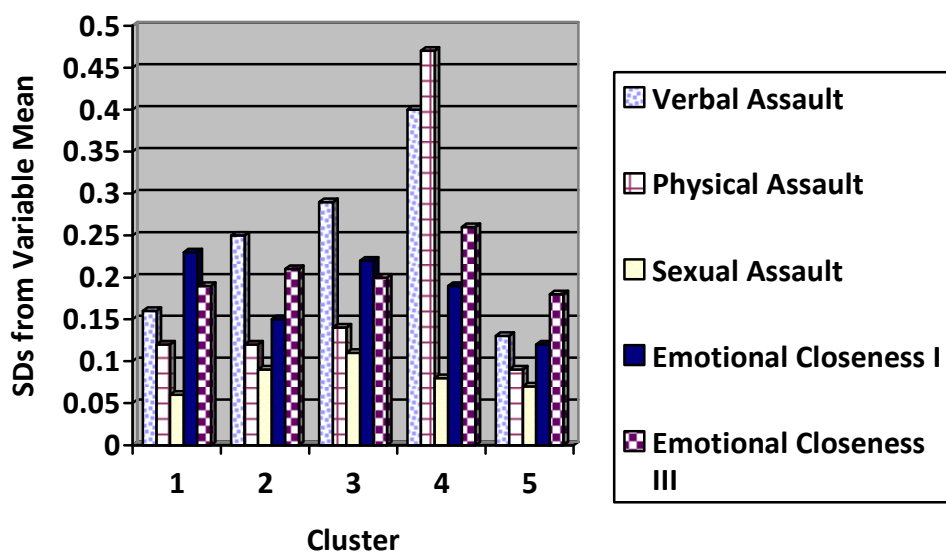
Figure 33. Ward's linkage five-variable (using ordered categorical assault variables), five-cluster solution. Cluster centroids depicted as SDs from variable means within each cluster.
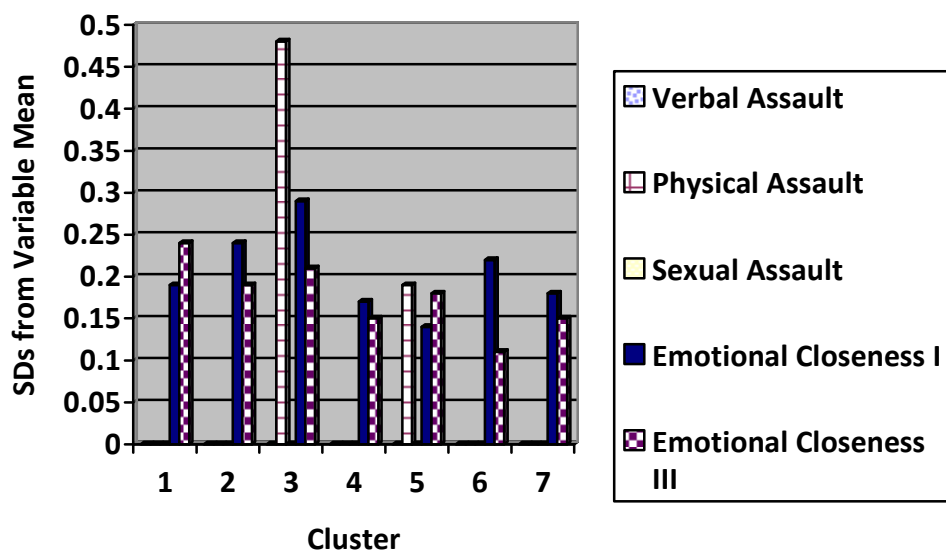
Figure 34. Weighted-average linkage five-variable (using binary assault variables), seven-cluster solution. Cluster centroids, depicted as SDs from factor means.
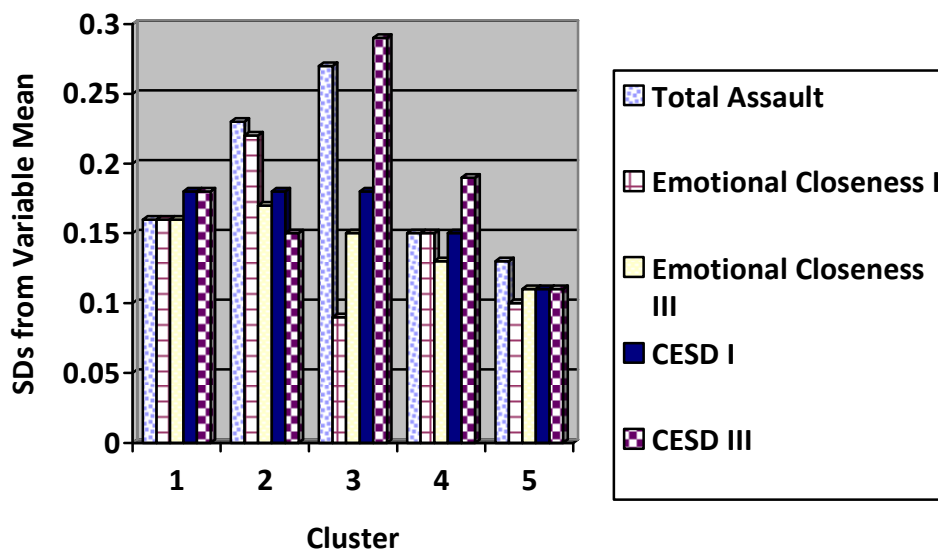
Figure 35. Weighted-average linkage five-variable (using the continuous summary assault index), five-cluster solution. Cluster centroids, depicted as SDs from variable means within each cluster.

Visual inspection and comparison of the standard deviations of cluster means for each cluster solution revealed that the clusters represented in Figures 32, 33, and 34 each have one or two clusters with large standard deviations from the mean. This suggested a larger degree of dissimilarity within these clusters on the variables with large standard deviations. In the weighted-average linkage seven-variable, five-cluster solution using ordered categorical assault variables, the third cluster's verbal assault variable had a standard deviation approaching .45. The Ward's linkage five-variable, five-cluster solution using the ordered categorical assault variables had one cluster (cluster 4) with large standard deviations for verbal and physical assault. The physical assault variable was also problematic for cluster 3 within the clustering solution which used the binary assault variables. Among the four clustering solutions, that which used the total assault index had the lowest standard deviations, as they all fell below .3. Thus, the "total assault" clustering solution had the "tightest" clusters. That is, cases within each cluster were comparatively close to the variable means for their respective clusters.

Section 2: Description of Cluster Members

The aforementioned four cluster solutions were selected for further descriptive analyses due to the uniqueness of their respective clusters and some pertinent differences from one another as well as continuity in several themes found among them. They were also determined to be the most appropriate clusters based on comparisons among means and standard deviations and large reductions in error sums of squares. Thus, follow-

up analyses were conducted for the four selected cluster solutions to determine whether there were any significant differences across clusters on the three child maltreatment variables measuring different forms of child maltreatment as well as the total child maltreatment measure. The purpose of this portion of the analyses was to further describe subgroups of adolescent and young adult parents by determining whether subgroups identified could be further differentiated by other pertinent ecological and demographic variables, particularly different forms of child maltreatment as well as cumulative child maltreatment. Chi-square tests were also conducted to determine whether there were differences across clusters on the parent age variable which grouped parents into three categories. These five variables were selected for follow-up tests to determine whether there were any differences across clusters because they were primary outcomes of interest.

The results that follow first show the proportion of each form of child maltreatment as well mean cumulative child maltreatment and the proportion of each parent age category across clusters in each of the four cluster solutions selected. Next, the seven-cluster solution was selected for further follow-up analysis on additional variables of interest in order to further compare and describe clusters within this solution. Survey commands were used and results are thus based on a total population size of 5,948,097 parents.

The seven clusters formed by the weighted-average linkage cluster solution using binary assault variables and emotional closeness variables were compared on the aforementioned child maltreatment and parent age variables using chi-square tests of independence. Regression analyses were conducted to determine whether there were differences in the means of the continuous total assault index across clusters. The results are shown in Table 9.

Table 9

Child Maltreatment and Parent Age Characteristics of the Weighted-Average Linkage Seven-Cluster Solution Using Binary Assault Variables and Wave I and III Emotional Closeness Variables

	Population Estimates	Cluster 1 %(SE)	Cluster 2 %(SE)	Cluster 3 %(SE)	Cluster 4 %(SE)	Cluster 5 %(SE)	Cluster 6 %(SE)	Cluster 7 %(SE)
Physical Neglect**								
No	90(.01)	91(.02)	87(.02)	94(.02)	71(.09)	89(.04)	91(.01)	91(.06)
Yes	10(.01)	9(.02)	12(.02)	6(.02)	29(.09)	11(.04)	9(.01)	9(.06)
Supervision Neglect								
No	97(.005)	96(.02)	96(.01)	97(.01)	88(.08)	95(.03)	98(.01)	99(.01)
Yes	3(.005)	4(.02)	4(.01)	3(.01)	12(.08)	5(.03)	2(.01)	1(.01)
Physical Assault								
No	95(.01)	94(.01)	94(.01)	94(.02)	94(.03)	94(.04)	95(.01)	99(.002)
Yes	5(.01)	6(.01)	6(.01)	6(.02)	6(.03)	6(.04)	5(.01)	>1(.002)
Total Child Maltreatment**	.44(.03)	.41(.08)	.50(.06)	.33(.07)	.95(.24)	.55(.20)	.40(.05)	.29(.17)
Parent Age***								
≤16.999	7(.01)	11(.02)	7(.01)	8(.02)	1(.01)	23(.07)	6(.01)	9(.05)
17-19.999	36(.01)	37(.2)	39(.02)	34(.04)	37(.06)	40(.07)	35(.02)	32(.09)
≥20	56(.02)	52(.03)	54(.02)	58(.04)	62(.06)	38(.06)	60(.02)	60(.08)

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$. For nominal and ordered categorical variables, values in cells represent observed percentages of groups at each level of each variable, with standard error percentages in parentheses. For continuous variables, values in cells represent cluster means. Percentages, means, and standard deviations shown are weighted.

Significant differences were found on three of the five variables examined. Significant differences in the proportion of child physical neglect endorsed were found χ^2 (4.93, 621.56) = 2.97, $p \leq .01$. The largest proportion of child physical neglect was in the fourth cluster (29%). The fourth cluster was characterized by parents who endorsed being physically assaulted, although no other forms of assault were endorsed. The emotional closeness variables in this cluster were both categorized as moderately high. Interestingly, the smallest proportion of child physical neglect was endorsed by individuals in the third cluster. All of the individuals in the third cluster endorsed verbal and sexual assault. Approximately 63% of individuals in the third cluster endorsed physical assault and the remaining 37% indicated that they had never been physically assaulted. Individuals in the third cluster also had the lowest mean for emotional closeness with their caregiver(s) at Wave I. Differences were also found on mean total child maltreatment across the seven-cluster solution. Cluster 4 differed from clusters 1, 3, 6, and 7 ($p \leq .01$ for cluster 3; $p \leq .05$ for clusters 1, 6, and 7). Cluster 4 had the highest total child maltreatment mean, while Cluster 3 had the lowest child maltreatment mean. Although significant differences were not found, Clusters 2 and 5 had moderate total child maltreatment means. Lastly, the three categories of parent age varied across cluster χ^2 (9.81, 1235.64) = 3.39, $p \leq .001$. An inspection of the proportions revealed that the highest proportion of younger adolescents were in the fifth cluster, while the lowest proportion of younger adolescents were in the fourth cluster. The highest proportion of older adolescents was also in the fifth cluster and the lowest proportion of older adolescents was in the seventh cluster. The largest proportion of young adults was in the fourth cluster and the smallest proportion of young adults was in the fifth cluster.

Next, differences in variables of interest were examined across the five-cluster weighted-average linkage solution. The weighted-average linkage five-cluster solution used the ordered categorical assault variables, emotional closeness variables, and the CES-D Scale variables. The results of follow-up chi-square tests of independence for the dichotomous child maltreatment variables as well as the results of the regression analyses used to tests mean differences in the continuous assault variable across clusters are presented in Table 10.

Table 10

Child Maltreatment and Parent Age Characteristics of the Weighted-Average Linkage Five-Cluster Solution Using Ordered Categorical Assault Variables, Waves I and III Emotional Closeness Variables, and Waves I and III CES-D Scale Variables

	Population Estimates %(SE)	Cluster 1 %(SE)	Cluster 2 %(SE)	Cluster 3 %(SE)	Cluster 4 %(SE)	Cluster 5 %(SE)
Physical Neglect						
No	90(.01)	90(.01)	88(.02)	93(.02)	90(.03)	91(.04)
Yes	10(.01)	10(.01)	12(.02)	7(.02)	10(.03)	9(.04)
Supervision Neglect						
No	97(.005)	97(.01)	95(.01)	97(.02)	96(.02)	99(.01)
Yes	3(.005)	3(.01)	5(.01)	3(.02)	4(.02)	1(.01)
Physical Assault						
No	95(.01)	95(.01)	94(.01)	99(.01)	95(.01)	91(.03)
Yes	5(.01)	5(.01)	6(.01)	1(.01)	5(.01)	9(.03)
Total Child Maltreatment*	.44(.03)	.42(.04)	.50(.06)	.25(.09)	.44(.09)	.45(.10)
Parent Age						
≤16.999	7(.01)	.06(.01)	8(.01)	11(.04)	10(.02)	9(.03)
17-19.999	36(.01)	35(.02)	38(.02)	38(.07)	39(.03)	31(.04)
≥20	36(.02)	58(.02)	54(.03)	51(.08)	51(.03)	60(.04)

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$. For nominal and ordered categorical variables, values in cells represent observed percentages of groups at each level of each variable, with standard error percentages in parentheses. For continuous variables, values in cells represent cluster means. Percentages, means, and standard deviations shown are weighted.

The only significant difference found across clusters was between cluster 2 and cluster 3 on the total child maltreatment measure ($p \leq .05$). The mean for child maltreatment was significantly higher in cluster 2 (mean = .50) than in cluster 3 (mean = .25). Individuals in cluster 2 reported high verbal assault and low physical and sexual assault. Their means for emotional closeness with parents at Waves I and III were categorized as "moderately high" and "high," respectively. Cluster 2's means on the CES-D Scale I and III variables were "low" and "moderately low" respectively. Cluster 3, with the lowest mean on total child maltreatment had a surprisingly high means for physical assault ("moderate") and sexual assault ("high"). The means of both emotional closeness variables were categorized as "moderately high" and the means of both CES-D Scale variables were "moderately low."

The same follow-up analyses were conducted on the five-cluster solution formed by the weighted-average linkage clustering algorithm using the continuous total assault variable, two emotional closeness

variables, and two CES-D Scale variables. Significant differences were not found on any of the five variables of interest across clusters. Table 11 displays the results of the follow-up analyses for this cluster solution.

Table 11

Child Maltreatment and Parent Age Characteristics of the Weighted-Average Linkage Five-Cluster Solution Using the Continuous Total Assault Index, Waves I and III Emotional Closeness Variables, and Waves I and III CES-D Scale Variables

	Population Estimates	Cluster 1 %(SE)	Cluster 2 %(SE)	Cluster 3 %(SE)	Cluster 4 %(SE)	Cluster 5 %(SE)
Physical Neglect						
No	90(.01)	90(.01)	92(.02)	86(.04)	88(.02)	92(.03)
Yes	10(.01)	10(.01)	8(.02)	14(.04)	12(.02)	8(.03)
Supervision Neglect						
No	97(.005)	97(.01)	97(.02)	97(.02)	96(.01)	97(.03)
Yes	3(.005)	3(.01)	3(.02)	3(.02)	4(.01)	3(.03)
Physical Assault						
No	95(.01)	95(.01)	95(.01)	97(.01)	94(.01)	91(.04)
Yes	5(.01)	5(.01)	5(.01)	3(.01)	6(.01)	9(.04)
Total Child Maltreatment	.44(.03)	.43(.04)	.38(.07)	.47(.11)	.50(.06)	.48(.16)
Parent Age						
≤16.999	7(.01)	6(.01)	10(.02)	9(.02)	9(.02)	12(.05)
17-19.999	36(.01)	36(.02)	36(.03)	37(.03)	38(.02)	35(.06)
≥20	56(.02)	59(.02)	54(.03)	55(.03)	53(.02)	53(.07)

Note: For nominal and ordered categorical variables, values in cells represent observed percentages of groups at each level of each variable, with standard error percentages in parentheses. For continuous variables, values in cells represent cluster means. Percentages, means, and standard deviations shown are weighted.

Lastly, follow-up descriptive analyses were conducted for the Ward's linkage cluster solution which used the three ordered categorical assault variables and two emotional closeness variables. The results for these follow-up analyses are shown in Table 12.

Table 12

Child Maltreatment and Parent Age Characteristics of the Ward's Linkage Five-Cluster Solution Using the Three Ordered Categorical Assault Variables and Waves I and III Emotional Closeness Variables

	Population Estimates	Cluster 1 %(SE)	Cluster 2 %(SE)	Cluster 3 %(SE)	Cluster 4 %(SE)	Cluster 5 %(SE)
Physical Neglect						
No	90(.01)	88(.02)	94(.03)	90(.03)	93(.02)	90(.01)
Yes	10(.01)	12(.02)	6(.02)	10(.03)	7(.02)	10(.01)
Supervision Neglect						
No	97(.005)	95(.01)	97(.02)	96(.02)	99(.01)	97(.01)

Yes	3(.005)	5(.01)	3(.02)	4(.02)	1(.01)	3(.01)
Physical Assault						
No	95(.01)	94(.01)	96(.02)	95(.01)	95(.02)	95(.01)
Yes	5(.01)	6(.01)	4(.02)	5(.01)	5(.02)	5(.01)
Total Child Maltreatment*	.44(.03)	.50(.06)	.30(.09)	.44(.09)	.31(.06)	.44(.04)
Parent Age						
≤16.999	7(.01)	8(.01)	12(.03)	10(.02)	7(.02)	6(.01)
17-19.999	36(.01)	38(.02)	35(.04)	39(.03)	35(.04)	35(.02)
≥20	56(.02)	54(.03)	53(.04)	51(.03)	58(.05)	59(.02)

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$. For nominal and ordered categorical variables, values in cells represent observed percentages of groups at each level of each variable, with standard error percentages in parentheses. For continuous variables, values in cells represent cluster means. Percentages, means, and standard deviations shown are weighted.

Clusters in the Ward's linkage five-variable, five-cluster solution were only found to significantly differ on the total child maltreatment measure. Cluster 1 had a significantly higher total child maltreatment mean than cluster 4 ($p \leq .05$). Cluster 1 was characterized by the highest mean on verbal assault. Physical assault and sexual assault were very low. In contrast, cluster 4 had a moderate means for both verbal and physical assault and a very high mean for sexual assault. Both clusters had comparable means on the emotional closeness variables, however. In fact, the means of the cluster 1 emotional closeness variables ranged from just 1 to 3% higher than the means of the cluster 4 emotional closeness variables.

Contrary to expectation, the results from these follow-up analyses revealed that parents in clusters characterized by the most assault, did not, in turn, have the highest proportions of child maltreatment. In fact, clusters in the majority of the cluster solutions did not differ significantly from one another on the child maltreatment variables. The only variable that was consistently significantly discrepant across clusters in the majority of cluster solutions was total child maltreatment. Across cluster solutions on which this variable was significantly different, the lowest proportions of child maltreatment were consistently found in those clusters characterized by the highest incidence of previous assault experience. The highest proportions of child maltreatment were generally marked by a degree of some form of maltreatment, but also relatively high levels of emotional closeness with caregivers and relatively low depressive symptomatology. Thus, these follow-up analyses answered an important question asked: could these cluster be further differentiated by child maltreatment? Although the answer was yes, this pattern of differentiation on the summary child maltreatment variable was, as previously noted, contrary to expectation. That is, these results suggested that something other than assault experience, emotional closeness with caregivers, depressive symptoms, and parent age might better

account for child maltreatment among older and younger adolescent and young adult parents. In addition, only the seven-variable, seven-cluster solution had several variables on which clusters significantly differed from one another. These included physical neglect, summary child maltreatment, and parent age. As a result of these significant differences and the need to identify additional variables on which clusters, particularly those associated with differences in means and proportions of child maltreatment, differed, the seven-cluster solution formed by the weighted-average linkage clustering algorithm using the three binary assault variables and two emotional closeness variables was selected for further follow-up analyses on additional variables of interest. Again, this cluster solution was selected because it demonstrated the greatest variability across clusters on the maltreatment outcome variables and the parent age factor. The purpose of the additional follow-up analyses was to lend greater insight into clusters characterized by high and low levels of child maltreatment. Results of the follow-up analyses for the weighted-average linkage, seven cluster solution using binary assault variables are presented in Table 13. Again, follow-up analyses used sample weights and thus reflect results for a population of 5,948,097 parents.

Table 13

Psychological, Child, Family, School, Financial, and Socio-Demographic Characteristics of the Seven-Cluster Weighted-Average Linkage Clustering Solution

	Population Estimates %(SE)	Cluster 1 %(SE)	Cluster 2 %(SE)	Cluster 3 %(SE)	Cluster 4 %(SE)	Cluster 5 %(SE)	Cluster 6 %(SE)	Cluster 7 %(SE)
Educational Attainment								
<HS	22(.02)	21(.03)	18(.02)	28(.05)	18(.08)	36(.10)	23(.02)	25(.10)
HS	72(.01)	73(.03)	76(.02)	68(.05)	74(.09)	64(.10)	69(.02)	73(.10)
College	6(.01)	6(.01)	6(.01)	4(.02)	9(.04)	0	7(.01)	2(.02)
Gender* **								
Male	35(.02)	36(.04)	30(.03)	17(.04)	58(.10)	9(.04)	41(.02)	41(.12)
Female	65(.02)	64(.04)	70(.03)	83(.04)	42(.10)	91(.04)	59(.02)	59(.12)
Family History of Welfare Receipt* **								
No	73(.02)	64(.04)	75(.03)	59(.06)	87(.05)	65(.09)	78(.02)	74(.08)
Yes	27(.02)	36(.04)	25(.03)	41(.06)	13(.05)	35(.09)	22(.02)	26(.08)
Current/Past Welfare Receipt*								
Yes/yes	10(.01)	13(.03)	9(.01)	17(.04)	8(.05)	18(.07)	8(.01)	19(.08)
Yes/no	6(.01)	6(.02)	7(.01)	11(.03)	2(.01)	4(.02)	5(.01)	7(.03)
No/yes	18(.01)	20(.03)	21(.02)	14(.04)	25(.08)	14(.10)	15(.02)	10(.07)
No/no	66(.01)	61(.04)	64(.02)	58(.06)	66(.09)	54(.10)	72(.02)	63(.10)
Race/Ethnicity								
White	57(.04)	58(.05)	55(.04)	59(.06)	44(.09)	49(.11)	59(.04)	41(.12)
African Am.	25(.04)	23(.04)	28(.04)	23(.06)	31(.09)	24(.09)	24(.04)	40(.13)
Other	3(.01)	2(.01)	3(.01)	4(.02)	3(.02)	3(.03)	2(.01)	16(.13)
Hispanic	15(.03)	18(.04)	14(.03)	14(.04)	22(.09)	24(.10)	15(.03)	3(.02)
Birth Weight								
NBW	92(.01)	92(.02)	93(.01)	91(.02)	80(.09)	97(.01)	92(.01)	92(.05)
LTNBW	8(.01)	8(.02)	7(.01)	9(.02)	20(.09)	3(.01)	8(.01)	8(.05)
Number of Children	2.69(.08)	2.62(.12)	2.60(.10)	2.96(.16)	2.84(.28)	2.55(.21)	2.73(.11)	3.02(.37)
Child Age**	2.71(.08)	2.62(.10)	2.78(.12)	3.18(.21)	2.43(.26)	3.12(.29)	2.63(.10)	2.66(.20)
Self-esteem I	11.78	11.80	11.81	11.82	11.63	11.54	11.73	11.29

ADHD-IN								
No	94(.01)	93(.02)	92(.02)	94(.03)	91(.06)	1	95(.01)	94(.04)
Yes	6(.01)	07(.02)	08(.02)	06(.03)	9(.06)	0	5(.01)	6(.04)
ADHD-HI								
No	94(.01)	92(.02)	93(.01)	95(.02)	91(.06)	1	95(.01)	96(.04)
Yes	6(.01)	8(.02)	7(.01)	5(.02)	9(.06)	0	5(.01)	4(.04)
Dependency**	.98(.07)	1.21(.12)	1.01(.09)	.77(.16)	.91(.26)	.55(.18)	.91(.08)	1.62(.74)
Self-esteem III***	20.82(.11)	20.35(.17)	20.57(.18)	20.07(.41)	21.95(.39)	20.53(.50)	21.24(.12)	21.34(.63)
Anxiety**								
No diagnosis	85(.01)	85(.02)	83(.02)	70(.05)	78(.08)	87(.05)	89(.02)	97(.02)
After Wave III	9(.01)	9(.02)	10(.02)	17(.04)	12(.05)	7(.04)	7(.01)	3(.02)
Before Wave III	6(.01)	7(.02)	7(.01)	13(.03)	10(.06)	6(.04)	4(.01)	0(0)
CES-D Scale I***	8.05(.14)	9.29(.37)	8.21(.24)	9.02(.42)	7.61(1.17)	9.90(1.00)	7.30(.19)	7.93(.97)
CES-D Scale III***	6.39(.18)	7.63(.40)	6.66(.21)	7.91(.65)	5.40(.51)	6.87(.87)	5.50(.24)	5.43(.69)
School-Connectedness**	3.52(.03)	3.36(.06)	3.50(.05)	3.50(.10)	3.73(.13)	3.65(.12)	3.60(.05)	3.83(.11)
Perception of Friends Caring	4.18(.03)	4.08(.08)	4.19(.04)	4.24(.07)	4.34(.15)	4.18(.16)	4.18(.04)	4.34(.17)
Financial support-number of 4s***	.21(.04)	.15(.03)	.22(.03)	.32(.10)	.17(.06)	.23(.10)	.23(.02)	0(0)
Financial support-number of 3s***	.17(.01)	.13(.02)	.19(.02)	.19(.04)	.24(.15)	.31(.16)	.16(.01)	.02(.02)
Financial support-number of 2s***	.30(.02)	.30(.04)	.32(.02)	.25(.05)	.26(.09)	.36(.15)	.31(.03)	.01(.01)
Financial support-number of 1s***	.33(.02)	.29(.04)	.27(.03)	.21(.04)	.34(.10)	.49(.13)	.42(.04)	.03(.02)
Residential Status Wave III Other								

No	70(.02)	69(.04)	72(.02)	70(.05)	58(.09)	49(.09)	70(.03)	79(.09)
Yes	30(.02)	31(.04)	28(.02)	30(.05)	42(.09)	51(.09)	30(.03)	21(.09)
Residential Status Wave III Parent-figure								
No	75(.02)	76(.03)	77(.02)	81(.05)	76(.07)	65(.10)	71(.02)	95(.04)
Yes	25(.02)	24(.03)	23(.02)	19(.05)	24(.07)	35(.10)	29(.02)	5(.04)
Residential Status Wave III Child								
No	19(.02)	19(.03)	18(.03)	19(.07)	19(.06)	6(.03)	19(.02)	26(.12)
Yes	81(.02)	81(.03)	82(.03)	81(.07)	81(.06)	94(.03)	81(.02)	74(.12)
Residential Status Wave III Significant other								
No	39(.02)	39(.04)	42(.03)	42(.06)	28(.07)	47(.08)	36(.02)	33(.12)
Yes	61(.02)	61(.04)	58(.03)	58(.06)	72(.07)	53(.08)	64(.02)	67(.12)
Alone								
No	96(.01)	99(.01)	96(.01)	91(.06)	99(.01)	98(.02)	96(.01)	87(.11)
Yes	4(.01)	1(.01)	4(.01)	9(.06)	1(.01)	2(.02)	4(.01)	13(.11)
Family Structure Wave I								
2 parent	58(.02)	56(.04)	59(.03)	52(.05)	46(.09)	51(.09)	61(.03)	57(.12)
1 parent	28(.02)	31(.04)	28(.02)	23(.05)	37(.09)	34(.09)	27(.02)	29(.10)
Other	13(.01)	14(.02)	12(.02)	25(.05)	17(.08)	15(.07)	12(.02)	14(.07)

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$. For nominal and ordered categorical variables, values in cells represent observed percentages of groups at each level of each variable, with standard error percentages in parentheses. For continuous variables, values in cells represent cluster means. Percentages, means, and standard deviations shown are weighted.

Significant differences were seen across clusters in the seven-cluster weighted-average linkage cluster solution on the additional variables of interest examined in follow-up analyses. Results found significant differences on 14 of the variables examined. Among the socio-demographic variables, significant differences were found for gender $\chi2$ (5.33, 671.83) = 6.92, $p \le .001$, family history of welfare receipt $\chi2$ (5.11, 643.37) = 4.77, $p \le .001$, and parents' own current and historical welfare receipt $\chi2$ (12.76, 1,607.22) = 1.94, $p \le .05$. The smallest proportion (9%) of males was in cluster 5, while the largest proportion (58%) of males was in cluster 4. The largest percentage individuals who endorsed that their families had received public assistance prior to their 18th birthday was in cluster 3 (41%), while the smallest percentage of individuals who indicated that their families had received public assistance prior to their 18th birthday was in cluster 4 (13%). The largest percentage of individuals who indicated their own receipt of public assistance in the past as well as currently was in cluster 7 (19%), while the smallest percentage was in clusters 6 and 4 (8%). The largest percentage of individuals who indicated they had received public assistance in the past, but not currently was also in cluster 3 (11%) and the smallest percentage was in cluster 4 (2%). The largest percentage of individuals who had not received public assistance in the past, but were receiving it at the time of the Wave III interview was in cluster 4 (25%) and the smallest percentage was in cluster 7 (10%). The largest percentage of individuals who indicated they had never received public assistance (past or present) was in cluster 6 (72%) and the smallest percentage was in cluster 5 (54%).

Several of the psychological variables had significant differences across the seven clusters, including self-esteem at Wave III, dependency, anxiety $\chi2$(9.55, 1,203.40) = 2.94, $p \le .001$, and depression at Waves I and III. For self-esteem at Wave III, the mean of clusters 1, 2, 3, and 5 ($p \le .001$ for clusters 1, 2, and 3; $p \le .05$ for cluster 5) were significantly less than Wave III mean self-esteem in cluster 4. The means of clusters 1, 2, and 3 ($p \le .001$ for clusters 1 and 2; $p \le .05$ for cluster 3) were also significantly less than Wave III mean self-esteem in cluster 6. On the dependency variable, the means of clusters 3, 5, and 6 ($p \le .001$ for cluster 5; p $\le .05$ for clusters 3 and 6) were significantly less than the mean of cluster 1. The mean of cluster 2 ($p \le .05$) was also significantly greater than cluster 5. For the variable measuring diagnosis with anxiety, the largest percentage of individuals diagnosed prior to Wave III was in cluster 3 (13%), while no individuals were diagnosed with anxiety prior to Wave III in cluster 7. Cluster 3 also held the largest proportion of individuals diagnosed with anxiety after Wave III (17%) and the smallest proportion of diagnosis after Wave III was again

in cluster 7 (3%). Cluster 7 held the largest percentage of individuals who had never been diagnosed with anxiety (97%), while cluster 3 had the smallest percentage of individuals who had never received this diagnosis. The mean on depressive symptoms at Wave I was highest for cluster 5 (mean = 9.90) and lowest for cluster 6 (mean = .30). The means of clusters 1, 2, 3, and 5 ($p \leq .001$ for clusters 1 and 3; $p \leq .01$ for cluster 2; $p < .05$ for cluster 5) were significantly higher than the mean of cluster 6. Mean depressive symptoms at Wave III on cluster 1 was significantly higher than mean depressive symptoms at Wave III on clusters 2, 4, 6, and 7 ($p \leq .001$ for clusters 4 and 6; $p \leq .01$ for cluster 7; $p \leq .05$ for cluster 2). Mean Wave III depressive symptomatology for clusters 4 ($p \leq .05$) and 6 ($p \leq .001$) were significantly less than cluster 2. The mean of cluster 3, the highest Wave III CES-D Scale mean among all of the clusters, was significantly higher than cluster 4 ($p \leq .001$), 6 ($p \leq .001$), and 7 ($p \leq .01$).

Mean school connectedness, a continuous variable, was significantly different across the seven-cluster solution. The mean for school connectedness in cluster 1 was significantly less than the means of clusters 4, 5, 6, and 7 ($p \leq .01$ for cluster 4 and 6; $p \leq .001$ for cluster 7; $p \leq .05$ for cluster 5). The means on cluster 2 and 3 ($p \leq .01$) were significantly less than the mean on cluster 7, which had the highest mean among all the clusters. Of the child-specific variables, only child age was significantly different across clusters. Clusters 1, 2, 4, and 6 ($p \leq .05$ for clusters 2 and 4; $p \leq .01$ for clusters 6 and 1) had significantly lower means on child age than cluster 3.

Significant differences were found on all of the financial support variables. On the variable measuring the largest amount of financial support, receipt of $1,000 or more, clusters 1 through 6 ($p \leq .001$ for clusters 1, 2, and 6; $p \leq .01$ for clusters 3 and 4; $p \leq .05$ for cluster 5) were all significantly greater than the mean on cluster 7, in which individuals did not receive any support of that amount. Cluster 6, which had the highest mean on this level of financial support, was also significantly different from cluster 1 ($p \leq .05$), which had the second lowest mean on this level of financial support. The next largest amount of financial support measured was receipt of $500 to $999. Cluster 7 again had the lowest mean for this amount of financial support and was significantly less than that received by parents in clusters 1, 2, 3, and 6 ($p \leq .001$ for all clusters). There were higher means over all clusters, with the exception of cluster 7, for receipt of $200 to $499. Clusters 1 through 6 were all significantly greater than the mean for cluster 7 ($p \leq .001$ for clusters 1, 2, 3, and 6; $p \leq .01$ for cluster 4; $p \leq .05$ for cluster 5). Lastly, for the majority of clusters, means were higher for receipt of less than $200

than they were for receipt of all other levels of financial support. The mean for receipt of less than $200 remained low for individuals in cluster 7, however. Thus, the means for clusters 1 through 6 were all significantly greater than the mean for cluster 7 ($p \leq .001$ for all clusters). In addition, the means of clusters 1, 2 and 3 were also significantly less than the mean of cluster 6 ($p \leq .001$ for clusters 1 and 3; $p \leq .01$ for clusters 2 and 5). The mean of cluster 3 was also significantly less than the mean of cluster 5.

In summary, follow-up analyses were first conducted with variables of particular interest (child physical neglect, supervision neglect, physical assault, and total child maltreatment, as well as parent age) to determine whether clusters within each of these solutions could be further differentiated on these four variables in addition to those used for clustering. The results revealed that across cluster solutions, only total child maltreatment consistently had significantly different means. In keeping with the concept of intergenerational transmission of abuse, it was thought that clusters characterized by the most assault would also be marked by the most child maltreatment. This was not the case. The highest child maltreatment means were not found in clusters with the most personal assault, lowest emotional closeness, or highest depressive symptoms. These findings were consistent with those found for the five-variable, seven-cluster solution which used the binary assault variables, although this cluster solution also significantly differed on the physical neglect variable as well as parent age. As a result, additional follow-up analyses for the five-variable, seven-cluster solution were conducted to further describe clusters, particularly clusters characterized by the highest and lowest levels of child maltreatment as well as those differentiated by parent age.

The results of the additional follow-up analyses on the five-variable, seven-cluster solution revealed that individuals in cluster 4, characterized by the largest mean on the total child maltreatment variable and the largest proportion of physical neglect, were predominantly male, had the smallest percentage of individuals whose families had received public assistance prior to their 18th birthday, the smallest percentage individuals to receive their own public assistance in the past as well as currently, as well as the smallest percentage of individuals to receive public assistance in the past, but not currently. Cluster 4 however, had the largest percentage of individuals who had not received public assistance in the past, but who were receiving it at the time of the Wave III interview. This cluster had neither the largest nor the smallest percentage of individuals that had never received public assistance. Also notable, cluster 4 had the highest mean self-esteem at Wave III in comparison to clusters 1, 2, 3, and 5. The results of the additional follow-up analyses for cluster 3 were a bit

more consistent with expectations for a cluster characterized by the most assault and lowest means on the emotional closeness variables. Cluster 3 had the largest percentage of individuals whose families had received public assistance before their 18th birthday. They also had the largest percentage of individuals who had received their own public assistance in the past but not at the time of the Wave III interview. In terms of mental health, cluster 3 had the largest percentage of individuals who had been diagnosed with anxiety before and after the Wave III interview as well as the highest mean on depressive symptoms at Wave III. Individuals in cluster 3 had the oldest children and the lowest school connectedness.

In conclusion, the results from the follow-up analyses that addressed the second research question posed demonstrated that child maltreatment does not necessarily correspond with, or further describe, individuals' experiences with assault in childhood, emotional closeness, depressive symptoms, or parent age. Experiences with assault and emotional closeness with caregivers did correspond with some measures of current as well as historical socio-economic status as well as mental health implications and lower levels of social support. The cluster which corresponded with the highest levels of child maltreatment was most notably distinguished by gender difference.

Section 3: Describing the Variables by Parent Age

The purpose of the third set of analyses was to further describe and potentially differentiate younger and older adolescent and young adult parents on the independent, socio-demographic, and outcome variables of interest. It was thought that in the subsequent analyses, wherein each independent variable was interacted with the three-category parent age variable, the effect of the independent variables on the maltreatment outcome variables of interest might vary by parent age. Thus, in Section 3 cross-tabulations on all of the independent and dependent variables and the three-category parent age variable were run. Chi-square tests of independence were examined to compare the ordered categorical, nominal, and binary variables by parent age. The means of continuous variables in each parent age group were compared using regression analyses, using younger adolescents as the reference category. Follow-up adjusted Wald tests were conducted to determine whether there were significant differences between older adolescents and young adults. The results are shown in Table 14 and then discussed in the paragraph that follows.

Table 14

Descriptive Statistics of Variables by Parent Age

	Younger Adolescent No. (% or mean)	Older Adolescent No. (% or mean)	Young Adult No. (% or mean)	Total No. (% or mean)
Gender				
Male	35(20)	336(31)	836(39)	1237(35)
Female	220(80)	1107(67)	1586(61)	2913(65)
Family History of Welfare Receipt				
No	165(68)	1086(71)	1874(76)	3125(73)
Yes	90(31)	387(29)	548(24)	1025(26)
Current/Past Welfare Receipt				
Yes/yes	32(14)	151(11)	233(9)	416(10)
Yes/no	20(8)	98(7)	134(5)	252(6)
No/yes	55(16)	312(21)	384(16)	751(18)
No/no	148(62)	912(61)	1671(70)	2731(66)
Race/ethnicity				
White	89(39)	689(56)	1184(59)	1962(57)
African Am.	105(32)	462(26)	646(24)	1213(25)
Other	7(3)	62(2)	133(3)	202(3)
Hispanic	54(26)	260(15)	459(14)	773(15)
Child Physical Neglect				
No	216(88)	1315(87)	2178(90)	3709(90)
Yes	39(12)	158(11)	244(10)	441(10)
Child Supervision Neglect				
No	239(97)	1419(97)	2338(97)	3996(97)
Yes	16(3)	54(3)	84(3)	154(3)
Child Physical Assault				
No	229(92)	1351(93)	2309(96)	3889(95)
Yes	26(8)	122(7)	113(4)	261(5)
Total Child Maltreatment Index	.52(.07)	.51(.05)	.39(.03)	.44(.03)
Parent Sexual Assault				
No				
Yes	222(87)	1339(91)	2209(91)	3770(91)
	33(13)	134(9)	213(9)	380(9)
Parent Verbal Assault				
No				
Yes	102(40)	685(45)	1215(50)	2002(47)
	153(60)	788(55)	1207(50)	2148(53)
Parent Physical Assault				
No	179(71)	1150(77)	1918(79)	3247(78)
Yes	76(29)	323(23)	504(21)	903(22)
Total Parent Assault Index	2.38(.20)	2.01(.10)	1.89(.08)	1.97(.08)
Emotional Closeness with Caregiver(s) I	3.74(.10)	3.91(.07)	3.92(.05)	3.90(.05)

Emotional Closeness with Caregiver(s) III	3.92(.13)	4.11(.05)	4.21(.03)	4.15(.04)
Self-esteem I	11.84(.14)	11.77(.07)	11.74(.07)	11.78(.05)
Self-esteem III	20.04(.33)	20.72(.11)	20.98(.12)	20.82(.11)
CES-D Scale I	9.00(.45)	8.13(.18)	7.89(.15)	8.05(.14)
CES-D Scale III	7.26(.46)	6.59(.20)	6.14(.21)	6.39(.18)
Dependency	.75(.15)	.96(.08)	1.03(.08)	.98(.07)
Anxiety				
No diagnosis	217(82)	1222(83)	2139(87)	3578(85)
Diagnosis after Wave III	24(12)	161(11)	174(8)	359(9)
Diagnosis before Wave III	14(6)	90(7)	109(6)	213(6)
ADHD-IN				
No	244(93)	1375(93)	2287(94)	3906(94)
Yes	11(7)	98(7)	135(6)	244(6)
ADHD-HI				
No	236(93)	1383(93)	2294(95)	3913(94)
Yes	19(7)	90(7)	128(5)	237(6)
Residential Status Wave III Parent-figure				
No	189(71)	1053(73)	1801(76)	3043(75)
Yes	66(29)	420(27)	621(24)	1107(25)
Residential Status Wave III Other				
No	176(66)	984(68)	1703(72)	2863(70)
Yes	79(34)	489(32)	719(28)	1287(30)
Residential Status Wave III Alone				
No	240(97)	1419(97)	2344(96)	4003(96)
Yes	15(3)	54(3)	78(3)	147(4)
Residential Status Wave III Significant Other				
No	152(60)	656(42)	852(34)	1660(39)
Yes	103(40)	817(58)	1570(66)	2490(25)
Residential Status Wave III Child				
No	47(21)	264(20)	372(18)	683(19)
Yes	208(80)	1209(80)	2050(82)	3467(81)
Child Birth Weight				
LTNBW	15(5)	117(7)	206(9)	338(8)
NBW	240(95)	1356(93)	2216(91)	3812(92)
Number of Children	2.96(.17)	2.77(.09)	2.61(.07)	2.69(.08)
Child age	5.89(.28)	3.60(.16)	1.72(.05)	2.71(.08)
School Connectedness	3.50(.07)	3.53(.04)	3.54(.03)	3.53(.03)
Perception of Friends Caring	4.23(.07)	4.19(.04)	4.16(.03)	4.18(.03)
Financial Support- number of 1s	.30(.06)	.34(.03)	.33(.02)	.33(.02)

Financial Support-number of 2s	.35(.05)	.29(.02)	.30(.02)	.30(.02)
Financial Support-number of 3s	.19(.04)	.15(.01)	.18(.01)	.17(.01)
Financial Support-number of 4s	.17(.04)	.23(.02)	.21(.02)	.21(.02)

Note: N's and percentages are shown for nominal and ordered categorical variables; means and standard errors are shown for continuous variables. Percentages, means, and standard errors are weighted; N's are unweighted.

On the parent total assault index, younger adolescent parents had a significantly higher mean ($p \leq .01$) than young adult parents. Older adolescents on the total child maltreatment index had a significantly higher mean than young adults ($p \leq .05$). In terms of emotional closeness with parents at Wave III, young adults had a significantly higher mean than both older adolescents ($p \leq .05$) and younger adolescents ($p \leq .01$). On the self-esteem variable at Wave III, the mean for younger adolescent parents was significantly less than the means for older adolescent ($p \leq .05$) and young adult parents ($p \leq .01$). Mean self-esteem for older adolescents was also significantly less than that for young adult parents ($p \leq .05$). Significant differences were also found on the two CES-D Scale variables by parent age. On both CES-D Scale variables, means were highest (indicative of greater depression) for younger adolescent parents. At Wave I, mean depression for younger adolescents was significantly higher than that for young adults ($p \leq .05$). At Wave III, both younger adolescent and older adolescent parents had significantly higher means on depression than young adults ($p \leq .05$). Mean child age also varied between all of the age groups. Children of younger adolescent parents were significantly older than the children of both older adolescent and young adult parents ($p \leq .001$). Children of older adolescent parents were also significantly older than the children of young adult parents ($p \leq .001$). Lastly, the three parent age groups differed in their receipt of $500 to $999 (number of 3s). The mean for this amount of financial support was significantly less for older adolescents than for young adults ($p \leq .05$).

The results of these descriptive analyses revealed some important trends for younger and older adolescent parents as well as young adult parents. The results suggest that parent age may play an important role in total child maltreatment. That is, parent age may be negatively associated with total child maltreatment. The results also suggest a positive correlation between parent age and emotional closeness with caregivers as young adult parents reported having more positive relationships with caregiver than both younger and older adolescent parents. Younger and older adolescent parents also appear to be more vulnerable to mental health problems than young adult parents, including lower self-esteem and a greater number of depressive symptoms.

This was also true of younger versus older adolescent parents, with better mental health again positively associated with increasing parent age.

Section 4: Regression Analyses

The series of regression analyses presented in this section were conducted in order to identify what personal, contextual, and historical factors significantly predict four child maltreatment outcomes among younger adolescent, older adolescent and young adult parents with varying degrees of exposure to multiple forms of child maltreatment. It was thought that factors which predict different types of maltreatment as well as total child maltreatment might vary by parent age. That is, it was thought that the independent variables may have a different effect on the dependent variables for parents in different age categories. Thus, it was important to examine the effects of the independent variables among parents in different groups, rather than as a whole. This was done by examining the interaction between the three category parent age variable and each of the independent variables on the four dependent variables. As previously described in Chapter 2, eight different models, not including the full model, were run for each of the outcome variables. To briefly summarize, Model 1 examined the relationship between each of the four dependent variables and the interaction effect of parent age and overt maltreatment victimization before the age of 18. Model 2 examined the interaction effect of parent age and emotional closeness with caregivers at Waves I and III on the four dependent variables. Model 3 examined the interaction effect of parent age and mental health variables on the dependents. Model 4 examined the interaction between parent age and residential living status at Wave III on the dependents. Model 5 examined the interaction between parent age and family structure at Wave I. Model 6 examined the interaction between parent age and child variables on the dependents. Model 7 examined the interaction between parent age and more distal social support variables such as friendship and school connectedness. Model 8 examined the interaction between parent age and financial support provided by caregivers on the dependents. Each model controlled for the following demographic variables: gender, race or ethnicity, individual past and current receipt of public assistance, familial receipt public assistance prior to the individual's 18th birthday, and level of educational attainment. Coefficients, standard errors, confidence intervals, and odds ratios for the socio-demographic variables in each of the full models are included in Appendix C. The full model examined the effect of the interaction between parent age and all of the independents on child maltreatment as well as total child maltreatment. The full model for each dependent variable was run to determine whether variables which

were significant predictors in their individual models would retain their predictive significance after accounting for all of the other variables. Each full and individual interaction model was compared with its equivalent non-interaction model, while controlling for parent age as well as the aforementioned socio-demographic factors in the latter.

Results of the logistic regression analyses for the three binary maltreatment outcome variables and regression analyses for the continuous summary maltreatment index are broken down into four sub-sections, titled according to the outcome variable utilized in each respective set of analyses. The results of the logistic regression for the outcome "supervision neglect" are presented first, followed by dependent variable "physical neglect," "physical assault," and lastly, "total child maltreatment."

Logistic regression analyses set 1: Supervision neglect

Table 15 contains reported odds ratios, coefficients, standard errors, and confidence intervals for the effect of the independent variables on supervision neglect for younger adolescent, older adolescent, and young adult parents as well as the effects of the independent variables on a weighted sample undifferentiated by parent age. In the non-interaction models, parent age was still controlled for. Table 16 reports differences between age groups in the effects of the independent variables on supervision neglect. The results from each of the individual models are discussed in the text following tables 15 and 16.

Table 15

Individual Models for Outcome Variable Supervision Neglect

| | Without Interactions | | | With Interactions | | | | | | | | |
| | | | | Younger adolescent | | | Older adolescent | | | Young Adult | | |
	OR	Coeff(SE)	95%CI	OR	Coeff(SE)	95%CI	OR	Coeff(SE)	95%CI	OR	Coeff(SE)	95%CI
Physical Assault	1.53	.43(.66)	-.88-1.73	.27	-1.32(1.33)	-3.95-1.30	2.14	1.00(.78)	-.56-2.56	1.36	.31(.73)	-1.14-1.76
Sexual Assault	1.08	.08(.64)	-1.19-1.35	1.45	.37(1.44)	-2.47-3.21	1.94	.68(.77)	-.85-2.19	.50	-.70(.89)	-2.46-1.05
Verbal Assault	1.51	.41(.48)	-.53-1.36	2.00	.69(1.08)	-1.44-2.83	2.35	.85(.69)	-.52-2.22	1.17	.15(.51)	-.85-1.16
Total Assault Index	.93	-.08(.15)	-.37-.22	1.01	.01(.18)	-.34-.36	.75	-.29(.20)	-.69-.10	1.33	.29(.31)	-.34-.91
Emotional Closeness I	1.04	.04(.14)	-.24-.31	.73	-.31(.21)	-.75-.11	.95	-.05(.15)	-.35-.25	1.19	.17(.13)	-.09-.44
Emotional Closeness III	1.03	.03(.18)	-.32-.38	1.46	.38(.25)	-.17-.87	1.03	.03(.21)	-.40-.45	.97	-.03(.17)	-.37-.31
Self-Esteem I	.95	-.05(.07)	-.18-.09	.93	-.07(.18)	-.42-.28	.87	-.14(.10)	-.33-.06	1.00	-.002(.08)	-.16-.15
Self-Esteem III	1.01	.01(.06)	-.10-.12	.93	-.08(.06)	-.39-.24	1.00	.003(.09)	-.17-.18	1.02	.02(.07)	-.12-.16
CES-D Scale I	1.03	.03(.03)	-.02-.08	.92	-.08(.06)	-.20-.04	1.08	.08(.03)*	.02-.14	1.01	.01(.03)	-.05-.07
CES-D Scale III	1.04	.04(.03)	-.03-.10	1.04	.04(.10)	-.15-.23	1.03	.03(.05)	-.07-.13	1.05	.05(.04)	-.03-.12
Dependency	.98	-.02(.12)	-.26-.22	.97	-.03(.24)	-.49-.44	.94	-.06(.16)	-.38-.27	.99	-.01(.13)	-.27-.25
Significant Other III	1.23	.21(.43)	-.64-1.06	.73	-.32(.66)	-1.61-.98	3.08	1.12(.54)*	.06-2.19	.80	-.22(.49)	-1.19-.75
Child III	1.60	.47(.46)	-.44-1.37	2.02	.70(.86)	-1.01-2.41	1.22	.20(.56)	-.91-1.31	1.79	.58(.49)	-.38-1.55
Parent III	.69	-.38(.38)	-1.12-.37	.16	-1.80(1.09)	-3.95-.35	.38	-.96(.54)	-2.02-.10	1.00	.002(.42)	-.83-.83
Other III	1.77	.57(.35)	-.11-1.26	1.09	.08(.74)	-1.38-1.54	2.33	.85(.47)	-.09-1.78	1.59	.46(.40)	-.33-

												1.26
Two-Parent I	1.06	.06(.49)	-.91-1.03	.08	-2.48 (.92)**	-4.03-(-.65)	1.13	.12(.62)	-1.11-1.35	1.95	.67(.71)	-.74-2.07
One-Parent I	1.38	.32(.53)	-.72-1.36	.23	-1.48(.64)*	-2.75-(-.20)	1.81	.59(.64)	-.67-1.85	2.09	.74(.77)	-.79-2.27
Child Birth Weight	.41	-.88(.39)*	1.66-(-.10)	.39	-.94(1.01)	-2.94-1.06	.32	-1.13(.51)*	-2.13- (-.13)	.48	-.74(.45)	-1.63-.16
Number of Children	1.13	.12(.11)	-.09-.34	1.07	.06(.26)	-.46-.58	1.18	.17(.10)	-.03-.37	1.09	.09(.15)	-.21-.38
Child Age	1.08	.07(.08)	-.09-.23	1.26	.23(.20)	-.16-.62	1.11	.10(.10)	-.09-.29	.99	-.01(.11)	-.23-.21
School-connectedness	1.39	.33(.17)	-.003-.67	1.73	.55(.42)	-.29-1.39	1.51	.42(.25)	-.08-.92	1.31	.27(.19)	-.10-.64
Perception of Friends Caring	.65	-.43(.15)**	-.72-(-.14)	.37	-.98(.38)**	-1.74-(-.23)	.73	-.32(.23)	-.78-.14	.65	-.42(.15)**	-.73-(-.12)
Number of 2s	.86	-.15(.21)	-.57-.27	.43	-.84(.74)	-2.30-.62	.56	-.57(.36)	-1.29-.14	1.10	.09(.22)	-.35-.54
Number of 3s	1.36	.31(.32)	-.32-.94	.83	-.18(.50)	-1.17-.80	1.49	.40(.40)	-.39-1.18	1.40	.34(.31)	-.28-.96
Number of 4s	.73	-.32(.26)	-.84-.20	.29	-1.22(.74)	-2.68-.24	.49	-.71(.39)	-1.49-.06	.91	-.10(.29)	-.66-.47

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 16

Individual Models' Between Parent Age Group Differences for Outcome Variable Supervision Neglect

	Older Adolescent v. Younger Adolescent		Young Adult v. Younger Adolescent		Older Adolescent v. Young Adult	
	Coefficient(SE)	OR	Coefficient(SE)	OR	Coefficient(SE)	OR
Physical Assault	2.32(1.12)*	10.21	1.63(1.15)	5.13	.68(.65)	1.99
Sexual Assault	.30(1.40)	1.35	-1.07(1.32)	.34	1.37(1.00)	3.94
Verbal Assault	.16(1.21)	1.18	-.54(.94)	.58	.70(.55)	2.01
Total Assault Index	-.30(.17)	.74	.27(.26)	1.32	-.58(.28)*	.56
Emotional Closeness I	.27(.18)	1.31	.49(.18)**	1.63	-.22(.10)*	.80
Emotional Closeness III	-.35(.30)	.71	-.41(1.25)	.66	.09(.14)	1.06
Self-Esteem I	-.06(.18)	.94	.07(.19)	1.07	-.13(.11)	.87
Self-Esteem III	.08(.18)	1.08	.10(.16)	1.10	-.02(.10)	.98
CES-D Scale I	.16(.06)**	1.17	.09(.06)	1.10	.06(.04)	1.07
CES-D Scale III	-.01(.10)	.99	.01(.10)	1.01	-.02(.06)	.98
Dependency	-.03(.31)	.97	.02(.27)	1.02	-.05(.13)	.95
Significant Other III	1.44(.67)*	4.22	.09(.71)	1.10	1.35(.53)**	3.84
Child III	-.50(.91)	.61	-.12(.88)	.89	-.38(.48)	.68
Parent III	.85(1.26)	2.33	1.81(1.18)	6.09	-.96(.52)	.38
Other III	.76(.79)	2.14	.38(.73)	1.47	.38(.49)	1.46
Two-Parent I	2.60(1.01)**	13.48	3.15(1.02)**	23.22	-.54(.73)	.58
One-Parent I	2.07(.78)**	7.92	2.21(.80)**	9.14	-.14(.79)	.87
Child Birth Weight	-.19(1.08)	.83	.20(.99)	1.23	-.39(.54)	.68
Number of Children	.10(.28)	1.11	.02(.32)	1.02	.08(.11)	1.08
Child Age	-.12(.21)	.88	-.24(.21)	.79	.11(.12)	1.12
School Connectedness	-.13(.50)	.87	-.28(.48)	.75	.15(.24)	1.56
Perception of Friends Caring	.66(.43)	1.94	.56(.41)	1.75	.10(.23)	1.11
Number of 2s	.27(.81)	1.31	.94(.73)	2.55	-.67(.40)	.51
Number of 3s	.58(.56)	1.79	.52(.54)	1.68	.06(.27)	1.06
Number of 4s	.51(.81)	1.67	1.13(.81)	3.08	-.61(.39)	.54

Note: * $p \le .05$, ** $p \le .01$, *** $p \le .001$.

Model 1 examined the effect of being physically, sexually, and verbally assaulted before the age of 18 on supervision neglect of one's own child or children. The effect of total maltreatment reported on supervision neglect for each age group was also examined. None of the forms for assault victimization had a significant effect on supervision neglect among any of the age groups examined. Between parent age group differences were found within Model 1, however. For each unit increase in physical assault, the odds of supervision neglect for older adolescents was 10.21 times greater than the odds of supervision neglect for younger adolescents ($p \le$

.05). Thus, physical assault had a significantly greater effect on older adolescent parents than it did on younger adolescent parents. A significant difference was also found on the effect of total assault on supervision neglect for older adolescent parents versus young adult parents. Increasing levels of total assault decreased supervision neglect by 25% among older adolescents and increased supervision neglect by 33% among young adults. As a result, for each unit increase in total assault, older adolescents were 44% (OR = .66) less likely to report supervision neglect than young adults ($p \leq .05$). Thus, the effect of total assault for young adults was significantly greater than the effect of total assault for older adolescents.

Model 2 examined parents' reports of emotional closeness with caregivers. Emotional closeness did not have a significant effect on supervision neglect for any parent age group. Differences in the effect of emotional closeness on supervision neglect were found between parent age groups, however. The odds of supervision neglect associated with an increase in emotional closeness at Wave I for young adults was 1.63 times, or 63%, greater than the odds of supervision neglect associated with an increase in emotional closeness at Wave I for younger adolescents ($p \leq .01$). Although the effect of increasing Wave I emotional closeness for the two parent age groups is itself insignificant, the significant discrepancy between the two is the result of the decreasing effect of the variable for younger adolescents and the increasing effect of the variable for young adults. Similarly, the effect of emotional closeness at Wave I on supervision neglect for older adolescents was .80, or 20%, less than the effect of emotional closeness at Wave I on supervision neglect for young adults ($p \leq .05$). That is, increasing emotional closeness at Wave I served to decrease supervision neglect among older adolescent parents and served to increase supervision neglect among young adult parents. Again, the effect of emotional closeness at Wave I on supervision neglect was, in and of itself insignificant across parent age groups, but resulted in significant discrepancies between them.

Model 3 examined psychological variables such as depression at Waves I and III, self-esteem at Waves I and III, and dependency at Wave III. Each unit increase in depression increased the odds ratio of supervision neglect among older adolescents by 1.08, or 8% ($p \leq .01$). The effect of increased depression at Wave I on supervision neglect for older adolescent was 1.17 times, or 17%, greater than the effect of depression at Wave I on supervision neglect for younger adolescents ($p \leq .01$). Thus, depression at Wave I was a greater risk factor for older adolescents than it was for younger adolescents.

Model 4 examined residential living status at Wave III, including whether the respondent was living with a significant other, child, parental figure, and/or other individual defined as a non-relative or other family. For older adolescents, the effect of living with a significant other increased the odds of supervision neglect by 3.08 ($p \leq .05$). In turn, the effect of living with a significant other on supervision neglect for older adolescents was 4.22 times greater than the effect of living with a significant other on supervision neglect for younger adolescents ($p \leq .05$). Similarly, the effect of living with a significant other on supervision neglect for older adolescents was 3.84 times greater than the effect of living with a significant other on supervision neglect for young adults ($p \leq .01$). Although the effect was not significant, living with a significant other reduced the odds of supervision neglect for both younger adolescents and young adults.

Model 5 examined the effects of family structure, including two-parent and one-parent, at Wave I. For younger adolescents, having had a two-parent family structure reduced the odds of supervision neglect by 92%, given an odds ratio (OR) of .08 ($p \leq .01$). For younger adolescents, having had a one-parent family structure reduced the odds of supervision neglect by 77% (OR=.23) ($p \leq .05$). Older adolescents with a two-parent family structure were 13.48 times more likely to report supervision neglect than younger adolescents with a two-parent family structure ($p \leq .01$). Young adults with a two-parent family structure were 23.23 times more likely to report supervision neglect than younger adolescents with a two-parent family structure ($p \leq .01$). The odds of reporting supervision neglect for older adolescents who reported a one-parent family structure were 7.92 times greater than the odds of reporting supervision neglect for younger adolescents who reported having a one-parent family structure at Wave I ($p \leq .01$). Similarly, the odds of reporting supervision neglect among young adults who reported a one-parent family structure was 9.14 times greater than the odds of reporting supervision neglect for younger adolescents who reported a one-parent family structure ($p \leq .01$). The significant differences between parent age groups are likely due to the large effect that having a two-parent and well as a one-parent family structure had on younger adolescent parents compared to the minimal effect that it had on older adolescent and young adult parents.

Model 6 examined the effects of offspring-centered variables on supervision neglect among younger adolescent, older adolescent, and young adult parents. Child-centered variables examined included child birth weight, number of children, and child age. For older adolescent parents, the effect of normal child birth weight reduced the odds of supervision neglect by 68% (OR=.32) ($p \leq .05$).

Model 7 examined other protective factors, namely additional social supports, including connectedness to school and respondents' perception of the degree to which their friends cared about them. For younger adolescent parents, each unit increase in perception of friends caring reduced the odds of supervision neglect by 63% (OR = .37) ($p \leq .01$). Each unit increase in perception of friends caring also reduced the odds of supervision neglect among young adult parents by 35% (OR = .65) ($p \leq .01$).

Model 8 examined financial support variables. None of the financial support variables had a significant impact on supervision neglect for younger adolescent, older adolescent, or young adult parents.

Each of the eight aforementioned models was also run without interactions between the independent variables and parent age. This was done in order to determine whether the models with interactions were superior to the models without interactions. That is, the thought was that the model with interactions might detect factors that predict maltreatment among specific age groups, when the significance of such factors might be imperceptible by examining the effects of the independent variables on a representative sample undifferentiated by age. These factors were examined after controlling for age and the same demographic variables as those controlled for in the models with interactions. Among the models without interactions, only Model 6 and Model 7 had significant independent predictors. Normal birth weight reduced the likelihood of supervision neglect among all parents by 59% (OR = .41) ($p \leq .05$). In addition, each unit increase in perception of friends caring reduced the odds of supervision neglect by 35% (OR=.65) ($p \leq .01$).

The results of the individual models with parent age interactions show that independent variables had a different effect on supervision neglect for parents in different age groups. For example, these results showed that emotional closeness at Wave I was a more salient protective factor for older and younger adolescent parents than it was for young adult parents. In fact, when the model was run without parent age interactions, emotional closeness at Wave I was not found to have any effect on supervision neglect among the entire parent population. Depressive symptoms at Wave I were a significant predictor of supervision neglect among older adolescents, but not for the other two age groups. Again, no effect was found when the analyses were conducted without parent age interactions. Two-parent and one-parent family structures were significant protective factors for younger adolescents, but not for older adolescents or young adults. Neither of these factors had a significant effect on supervision neglect in the models run without parent age interactions. Only two variables had significant effects on supervision neglect in the non-interaction models. These were normal child birth weight

and perception of friends caring. The parent age interactions with these variables further specified however, that the positive effect of normal birth weight on reducing the odds of supervision neglect was specific to the older adolescent portion of the population and that the positive effect of each unit increase in perception of friends caring was limited to the younger adolescent and young adult population.

Next, the full model, containing all of the independent variables interacted with parent age, was run in order to determine whether significant interactions identified in the individual models would retain their significance in the presence of other models or whether additional significant independent variable by age effects would emerge. A table of odds ratios, coefficients, standard errors, and confidence intervals for demographic variables controlled for is provided in Appendix C. Table 17 displays the odds ratios, coefficients, standard errors, and confidence intervals for the effects of the independent variables interacted with parent age on supervision neglect in the full model. The effects of the independent variables without parent age interactions are included as well. Table 18 compares the effects of the odds ratios between parent age groups.

Table 17

Full Model for Outcome Variable Supervision Neglect

| | Without Interactions | | | With Interactions | | | | | | | | |
| | | | | Younger adolescent | | | Older adolescent | | | Young Adult | | |
	OR	Coeff(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI
Physical Assault	1.44	.36(.67)	-.96-1.69	.13	-2.04(1.73)	-5.47-1.38	3.48	1.23(.86)	-.46-2.95	1.13	.12(.78)	-1.42-1.67
Sexual Assault	1.11	.10(.66)	-1.21-1.41	.71	-.35(1.30)	-2.92-2.23	3.72	1.31(.74)	-.15-2.78	.46	-.77(.98)	-2.71-1.17
Verbal Assault	1.88	.63(.47)	.30-1.57	1.71	.54(1.44)	-2.31-3.38	6.63	1.89(.62)**	.67-3.11	1.17	.16(.55)	-.92-1.24
Total Assault Index	.90	-1.0(.16)	-.43-.22	1.03	.03(.21)	-.38-.44	.61	-.49(.19)**	-.88-(-.11)	1.95	.67(.33)*	.02-1.31
Emotional Closeness I	1.09	.09(.14)	-.20-.37	1.06	.06(.35)	-.64-.76	.87	-.14(.17)	-.47-.19	1.28	.04(.20)	-.36-.44
Emotional Closeness III	1.12	.11(.20)	-.28-.51	2.78	1.02(.64)	-.25-2.29	1.11	.11(.21)	-.31-.52	1.04	.04(.20)	-.36-.44
Self-Esteem I	.96	-.04(.06)	-.16-.09	.73	-.32(.26)	-.82-.19	.87	-.14(.13)	-.39-.12	1.02	.02(.07)	-.12-.16
Self-Esteem III	.99	-.01(.05)	-.12-.10	.81	-.21(.24)	-.67-.27	.95	-.05(.09)	-.22-.12	1.01	.01(.07)	-.13-.15
CES-D Scale I	1.03	.03(.03)	-.03-.09	.93	-.08(.09)	-.26-.11	1.11	.11(.05)*	.02-.20	1.01	.01(.03)	-.05-.08
CES-D Scale III	1.03	.03(.03)	-.03-.09	.99	-.01(.11)	-.22-.20	1.02	.02(.04)	-.06-.11	1.05	.05(.04)	-.04-.13
Dependency	1.00	-.002(.11)	-.23-.22	.78	-.25(.39)	-1.03-.54	.88	-.13(.20)	-.52-.26	1.01	.01(.13)	-.24-.27
Significant Other III	1.18	.16(.51)	-.84-1.16	2.21	.79(.78)	-.76-2.34	3.97	1.38(.57)*	.25-2.51	.73	-.32(.61)	-1.52-.89
Child III	1.86	.62(.50)	-.37-1.60	1.99	.69(1.01)	-1.32-2.70	1.66	.51(.64)	-.77-1.78	2.03	.71(.58)	-.45-1.86
Parent III	.70	-.35(.39)	-1.12-.42	.35	-1.05(1.57)	-4.16-2.05	.35	-1.06(.53)*	-2.10-(-.01)	.95	-.05(.40)	-.84-.74
Other III	1.87	.63(.37)	-.10-1.35	1.35	.30(.88)	-1.43-2.03	3.57	1.27(.54)*	.21-2.33	1.61	.48(.46)	-.44-1.39

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Two-Parent I	1.19	.17(.51)	-.85-1.19	.07	-2.66 (1.26)*	-5.15-(-.17)	2.43	.89(.76)	-.62-2.40	1.53	.42(.75)	-1.06-1.91
One-Parent I	1.34	.29(.57)	-.83-1.42	.45	-.80(.85)	-2.48-.87	3.80	1.33(.73)	-.11-2.78	1.36	.31(.82)	-1.31-1.93
Child Birth Weight	.47	-.76(.34)*	-1.44-(-.08)	.35	-1.05(.90)	-2.83-.73	.36	-1.03(.52)*	-2.05-.0002	.56	-.58(.48)	-1.53-.38
Number of Children	1.14	.13(.10)	-.07-.33	.77	-.27(.42)	-1.10-.56	1.13	.13(.10)	-.08-.33	1.14	.13(.14)	-.14-.41
Child Age	1.14	.13(.09)	-.05-.32	1.31	.27(.21)	-.15-.70	1.21	.19(.11)	-.04-.43	1.08	.07(.11)	-.15-.30
School-connectedness	1.44	.36(.18)*	.01-.71	2.04	.71(.51)	-.29-1.72	2.05	.72(.28)**	.17-1.27	1.28	.25(.21)	-.15-.30
Perception of Friends Caring	.64	-.44 (.15)**	-.74-.15	.43	-.85(.42)*	-1.68-(-.03)	.64	-.44(.25)	-.93-.04	.62	-.48(.17)**	-.82-(-.14)
Number of 2s	.82	-.20(.25)	-.69-.28	.42	-.87(.67)	-2.19-.45	.50	-.69(.38)	-1.44-.06	.99	-.01(.28)	-.57-.54
Number of 3s	1.32	.28(.30)	-.31-.87	1.13	.12(.70)	-1.26-1.50	1.31	.27(.47)	-.65-1.20	1.32	.28(.33)	-.38-.94
Number of 4s	.75	-.28(.32)	-.91-.34	.64	-.45(1.42)	-3.27-2.37	.58	-.54(.52)	-1.56-.49	.91	-.10(.33)	-.75-.55

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 18

Full Model Between Parent Age Group Differences for Outcome Variable Supervision Neglect

	Younger adolescent v. Older adolescent		Younger adolescent v. Young Adult		Older adolescent v. Young Adult	
	Coefficient(SE)	OR	Coefficient(SE)	OR	Coefficient(SE)	OR
Physical Assault	3.29(1.70)*	26.86	2.17(1.72)*	8.75	1.12(.75)	3.07
Sexual Assault	1.66(1.44)	5.27	-.42(1.32)	.66	2.08(1.02)*	8.03
Verbal Assault	1.35(1.45)	3.87	-.38(1.35)	.68	1.73(.55)**	5.66
Total Assault Index	-.52(.20)**	.59	.63(.31)**	1.89	-1.16(.33)***	.31
Emotional Closeness I	-.20(.34)	.82	.18(.35)	1.20	-.38(.19)*	.68
Emotional Closeness III	-.92(.65)	.40	-.98(.64)	.37	.07(.15)	1.07
Self-Esteem I	.18(.27)	1.20	.33(.25)	1.40	-.15(.14)	.86
Self-Esteem III	.16(.26)	1.17	.22(.24)	1.24	-.06(.11)	.94
CES-D Scale I	.19(.10)*	1.20	.09(.09)	1.09	.10(.05)*	1.10
CES-D Scale III	.03(.11)	1.03	.05(.11)	1.06	-.02(.06)	.98
Dependency	.11(.44)	1.12	.26(.40)	1.29	-.14(.16)	.87
Significant Other III	.59(.99)	1.80	-1.11(.92)	.33	1.70(.56)**	5.45
Child III	-.18(1.16)	.83	.02(1.14)	1.02	-.20(.60)	.82
Parent III	-.004(1.64)	1.00	1.00(1.62)	2.73	-1.01(.51)*	.36
Other III	.97(.90)	2.64	.18(.91)	1.19	.79(.60)	2.21
Two-Parent I	3.55(1.49)*	34.79	3.08(1.42)*	21.81	.47(.91)	1.60
One-Parent I	2.14(1.08)*	8.49	1.11(1.02)	3.05	1.02(.98)	2.79
Child Birth Weight	.02(.99)	1.02	.47(.92)	1.61	-.45(.64)	.64
Number of Children	.39(.47)	1.48	.40(.49)	1.49	-.01(.12)	.99
Child Age	-.08(.23)	.92	-.20(.21)	.82	.12(.12)	1.12
School Connectedness	.01(.61)	1.01	-.46(.58)	.63	.47(.29)	1.60
Perception of Friends Caring	.41(.51)	1.51	.37(.49)	1.45	.04(.25)	1.04
Number of 2s	.18(.78)	1.20	.85(.74)	2.35	-.67(.46)	.51
Number of 3s	.15(.77)	1.17	.16(.73)	1.17	-.01(.43)	.99
Number of 4s	-.09(1.5)	.92	.35(1.49)	1.42	-.44(.50)	.65

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

In the full model, verbal assault significantly increased the odds of supervision neglect among older adolescent parents ($p \leq .05$). For each unit increase in verbal assault, older adolescent parents were 6.63 times more likely to report supervision neglect. Among older adolescents, each unit increase in total assault reported reduced the odds of supervision neglect by 39% (OR = .61) ($p \leq .01$). Among young adults, each unit increase in total assault increased the odds of supervision neglect by 95% or 1.95 times ($p \leq .05$). The effect of physical assault on supervision neglect for older adolescent parents was 26.86 times greater than the effect of physical

assault on supervision neglect for younger adolescent parents ($p \le .05$). The effect of physical assault on

supervision neglect for young adult parents was 8.75 times greater than the effect of physical assault on

supervision neglect for younger adolescent parents ($p \le .05$). Differences were found between groups for the

effect of total assault on supervision neglect. For each unit increase in total assault, the odds of older adolescent

parents for supervision neglect were 31% (OR=.59) less than the odds for younger adolescent parents ($p \le .01$).

In the comparison of the effect of each unit increase in total assault on supervision neglect between younger

adolescent and young adult parents, the odds of supervision neglect among young adult parents were 89%

greater than the odds of supervision neglect among younger adolescent parents ($p \le .01$). In addition, the effect

of each unit increase in total assault on the odds of supervision neglect were 69% less for older adolescent

parents than for young adult parents ($p \le .001$). For older adolescent parents, the odds ratio for each unit

increase in sexual assault was 8.03 times greater than the odds ratio associated with each unit increase in sexual

assault for young adult parents ($p \le .05$). Similarly, the odds ratio associated with each unit increase in verbal

assault for older adolescent parents was 5.66 times greater than the odds ratio associated with each unit increase

in verbal assault for young adult parents ($p \le .01$).

     In the full model, the effect of emotional closeness with caregivers at Waves I and III did not have a

significant effect on supervision neglect for younger adolescent, older adolescent, or young adult parents. The

effect of emotional closeness with caregiver(s) at Wave I was 69% less for older adolescent parents than the

effect of emotional closeness with caregiver(s) at Wave I for young adult parents ($p \le .05$). This significant

difference was due to the discrepancy between the increasing versus decreasing effect of emotional closeness at

Wave I for younger adult and older adolescent parents, respectively.

     When the psychological variables were inspected in the full model, each unit increase in depression

significantly increased the odds of supervision neglect by 1.11, or 11%, among older adolescent parents ($p \le$

.05). The odds of supervision neglect associated with each unit increase in depression at Wave I for older

adolescent parents were significantly greater than the odds of supervision neglect associated with a similar

increase for both younger adolescent and young adult parents ($p \le .05$ for both). Thus, the odds ratios for older

adolescents were 20% greater than those for younger adolescents and 10% greater than those for young adults.

     In the full model, the effect of living with a significant other at Wave III increased the odds of

supervision neglect for older adolescent parents by 3.97 ($p \le .05$). That is, older adolescent parents who

reported living with a significant other were 3.97 times more likely to report supervision neglect than older adolescent parents who did not report living with a significant other. A comparison of older adolescents versus young adults revealed that the odds ratio for supervision neglect among older adolescent parents who lived with significant others were 5.45 times greater than the odds ratio for supervision neglect among young adult parents who lived with significant others ($p \leq .01$). For older adolescent parents, residing with a parent-figure significantly reduced the odds of supervision neglect by 65% (OR=.35) ($p \leq .05$). The reduction in odds of supervision neglect for older adolescents who reported that they lived with a parent were significant when compared to the reduced odds of supervision neglect for young adults who also reported living with a parent ($p \leq .05$). The odds of supervision neglect for older adolescent parents living with a parent at Wave III were 64% less than the odds of supervision neglect for young adult parents living with a parent at Wave III, although living with a parent-figure was associated with reduced odds of supervision neglect for both parent age groups. Older adolescents who endorsed living with a non-relative or someone designated as "other family" were 3.57 times more likely to report supervision neglect than older adolescents who did not report living with non-relatives or other family ($p \leq .05$).

As it did in the individual model, family structure at Wave I had a significant effect on supervision neglect for younger adolescent parents. Younger adolescent parents who reported having a two-parent family structure at Wave I were 93% less likely to report supervision neglect than younger adolescent parents who did not report a two-parent family structure ($p \leq .05$). As result, the odds ratio for supervision neglect for older adolescents who reported a having a two-parent family structure were 34.79 times greater than the odds ratio for supervision neglect associated with the effect of a two-parent family structure for younger adolescent parents ($p \leq .05$). The odds ratio associated with the effect of a two-parent family structure on supervision neglect for young adult parents was 21.81 times greater than the odds ratio associated with the effect of a two-parent family structure on supervision neglect for younger adolescent parents ($p \leq .05$). While a one-parent family structure in the full model did not significantly reduce the odds of supervision neglect for younger adolescent parents as it had in the individual model, a significant discrepancy was found between the odds ratio associated with the effect of a one-parent family structure on supervision neglect for younger adolescent and older adolescent parents. The effect of a one-parent family structure on supervision neglect for older adolescent parents was 8.49 times greater than the effect of a one-parent family structure on supervision neglect for younger adolescent

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parents ($p \leq .05$). That is, a one-parent family structure decreased the odds of supervision neglect among younger adolescent parents and increased the odds of supervision neglect among older adolescent parents, thus creating a significant discrepancy between their supervision neglect odds ratios.

Perception of friends caring significantly reduced the odds of supervision neglect among younger adolescent and young adult parents. For each unit increase in perception of friends caring, younger adolescents were 57% (OR = .43) less likely to report supervision neglect ($p \leq .05$). For each unit increase in perception of friends caring, young adults were 38% (OR=.62) less likely to report supervision neglect ($p \leq .01$). Among older adolescents, each unit increase in school connectedness was associated with 2.05 times greater likelihood of reporting supervision neglect ($p \leq .01$).

Among the child-centered factors, only normal child birth weight was significantly associated with a 64% decrease in supervision neglect among older adolescent parents ($p \leq .05$).

As reported in the individual model, none of the financial support variables had a significant effect on supervision neglect among younger adolescent, older adolescent, and young adult parents.

The full model excluding age-group interactions identified some, but not all of the same significant predictors as the full model in which interactions between parent age and each predictor were included. The full model which did not include parent age interactions only identified school connectedness, child birth weight, and perception of friends caring as significant predictors of supervision neglect. Among the entire representative sample, perception of friends caring reduced the likelihood of supervision neglect by 36% ($p \leq$ .01). School-connectedness increased supervision neglect by 44% ($p \leq .05$). Normal birth weight reduced the likelihood of supervision neglect by 53% ($p \leq .05$).

Overall, in both the individual models and in the full model for the outcome variable supervision neglect, interactions between the three-category parent age variable and the independent variables allowed for a more refined specification of the effects of the independent variables. This method of analysis also allowed for comparisons between parent age groups regardless of whether the independent variables had a significant effect on supervision neglect. For some of the independent variables, it was found that some which did not significantly increase or decrease the odds of supervision neglect in the entire parent population had a significant effect on one or two of the parent age categories when parent age interactions were included. The effects of some of the independent variables on the outcome variable supervision neglect for parents in the three

age categories also differed across the full model and the individual models. In the individual models, depressive symptoms at Wave I had a significant effect on supervision neglect for older adolescent parents, as well as living with a significant other at Wave III, and normal child birth weight. Among younger adolescents, family structure at Wave I (two-parent and one-parent) had a significant effect on supervision neglect as well as perception of friends caring. In the full model, in comparison, two of the assault variables, verbal assault and total assault, were salient for older adolescent parents and total assault was salient for young adult parents as well. Depressive symptoms at Wave I continued to have a significant effect on older adolescent parents. Several Wave III residential living status variables had a significant effect on supervision neglect for older adolescent parents. Residential living status at Wave I, specifically two-parent family structure, maintained a significant effect on supervision neglect for younger adolescent parents. Normal child birth weight continued to have a significant effect on supervision neglect for older adolescent parents in the full model and perception of friends caring maintained and effect on supervision neglect for younger adolescent parents as well. Given that all of the variables found to be significant in the individual models continued to have a significant effect on supervision neglect in the full model with parent age interactions, it was evident that the full model did not have a suppression effect. Rather, several additional variables were found to have a significant effect on supervision neglect in the full model that did not have such an effect in the individual models. This suggested that the full model was superior to each of the individual models and that the significant effects of several of the additional variables was contingent upon the presence of the others.

After conducting the full logistic regression for supervision neglect, the mean predicted probabilities of supervision neglect and their standard deviations were determined for each of the clusters in the four cluster solutions previously examined. The mean predicted probability of supervision neglect for clusters within each cluster solution and their standard deviations are presented in Table 19.

Table 19

Mean Predicted Probability and Standard Deviation of Supervision Neglect Within Cluster Solutions

Cluster	Cluster Solution 1	Cluster Solution 2	Cluster Solution 3	Cluster Solution 4
1	.04(.07)	.03(.05)	.04(.07)	.03(.05)
2	.04(.06)	.04(.07)	.03(.06)	.04(.06)
3	.04(.08)	.03(.05)	.04(.07)	.03(.08)

4	.05(.08)	.04(.07)	.03(.06)	.05(.07)
5	.03(.05)	.03(.05)	.03(.05)	.02(.03)
6	.03(.05)	--	--	--
7	.02(.02)	--	--	--

Note: Cluster solution 1 – weighted average linkage five-variable solution using binary assault variables; Cluster solution 2 – weighted-average linkage seven-variable solution using ordered categorical assault variables; Cluster solution 3 – Ward's linkage five-variable solution using ordered categorical assault variables; Cluster solution 4 – weighted-average linkage five-variable solution using continuous total assault index.

Logistic regression analyses set 2: Physical neglect

Next, the effects of the independent variables on the outcome physical neglect for parents in each of the three age groups were determined The individual models were run first, while controlling for demographic variables in each models. Then the models were run without the age interactions. Next, the full model with parent age interactions was run. Lastly, the full model excluding parent age interactions was run. Information on the effects of the demographic variables controlled for in the full models (both with and without interactions is included in Appendix C. Table 20 shows the effects, including odds ratios, coefficients, standard errors, and confidence intervals, of each independent variable for the three parent age groups on physical assault. Table 21 shows differences between parent age groups in the effects of the independent variables on the reporting of physical neglect.

Table 20

Individual Models for Outcome Variable Physical Neglect

	Without Interactions			With Interactions								
				Younger adolescent			Older adolescent			Young Adult		
	OR	Coeff(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coeff(SE)	95%CI	OR	Coef(SE)	95%CI
Physical Assault	.98	-.02(.35)	-.71-.67	.67	-.39(.67)	-1.71-.93	1.04	.04(.65)	-1.24-1.32	.95	-.05(.30)	-.65-.55
Sexual Assault	.53	-.64(.46)	-1.54-.26	.29	-1.24(1.04)	-3.30-.83	.71	-.35(.53)	-1.39-.70	,45	-.81(.58)	-1.96-.35
Verbal Assault	.96	-.04(.37)	-.76-.69	.29	-1.24(1.04)	-3.30-.83	.59	-.53(.48)	-1.48-.43	1.13	.12(.38)	-.64-.88
Total Assault Index	1.03	.03(.13)	-.23-.29	1.01	.01(.12)	-.24-.26	1.09	.09(.19)	-.28-.46	.98	-.02(.27)	-.55-.52
Emotional Closeness I	.95	-.05(.06)	-.18-.08	.85	-.16(.13)	-.42-.10	.97	-.03(.07)	-.18-.11	.96	-.04(.08)	-.20-.11
Emotional Closeness III	1.02	.02(.07)	-.11-.16	1.21	.19(.19)	-.19-.57	.97	-.03(.09)	-.21-.15	1.04	.04(.10)	-.16-.23
Self-Esteem I	.95	-.05(.06)	-.16-.07	1.20	.18(.15)	-.11-.48	.91	-.09(.08)	-.24-.06	.94	-.06(.06)	-.17-.05
Self-Esteem III	1.02	.02(.05)	-.07-.11	1.07	.08(.08)	-.07-.23	.99	-.01(.05)	-.11-.09	1.03	.03(.06)	-.08-.14
CES-D Scale I	1.01	.01(.02)	-.04-.05	1.08	.08(.05)	-.01-.17	1.00	-.0006(.03)	-.06-.06	1.00	-.003(.02)	-.05-.04
CES-D Scale III	1.04	.04(.03)	-.02-.10	1.01	.01(.06)	-.10-.13	1.03	.03(.03)	-.04-.09	1.06	.05(.03)	-.01-.12
Dependency	.99	-.01(.06)	-.13-.11	.95	-.05(.20)	-.45-.35	1.04	.04(.07)	-.10-.18	.96	-.04(.07)	-.19-.11
Significant Other III	1.21	.19(.28)	-.37-.75	1.00	-.004(.64)	-1.27-1.26	1.72	.54(.29)	-.03-1.12	.95	-.06(.33)	-.71-.60
Child III	.69	-.37(.29)	-.94-.19	1.73	.55(.61)	-.66-1.76	.62	-.48(.32)	-1.12-.15	.70	-.35(.33)	-1.00-.29
Parent III	.80	-.23(.24)	-.70-.24	.74	-.30(.69)	-1.66-1.07	.62	-.48(.32)	-1.12-.15	.70	-.35(.33)	-1.00-.29
Other III	1.34	.28(.22)	-.16-.73	.74	-.29(.47)	-1.22-.65	1.77	.57(.27)*	.04-1.10	1.19	.17(.28)	-.37-.72
Two-Parent I	.74	-.30(.28)	-.85-.25	.49	-.71(.74)	-2.17-.75	.61	-.50(.30)	-1.09(.09)	.93	-.07(.33)	-.73-.59
One-Parent I	.71	-.35(.31)	-.97-.27	.82	-.19(.63)	-1.45-1.06	.54	-.62(.33)	-1.30-.07	.86	-.16(.36)	-.87-.55
Child Birth Weight	.76	-.28(.28)	-.82-.27	2.77	1.02(1.10)	-1.16-3.19	.74	-.30(.41)	-1.12-.52	.71	-.34(.30)	-.94-.26
Number of	1.00	.004(.06)	-.12-.12	1.09	.08(.17)	-.25-.42	.97	-.03(.08)	-.18-.13	1.01	.01(.07)	-.13-.16

Children												
Child Age	.99	-.01(.07)	-.14-.12	1.00	-.005(.12)	-.24-.23	1.01	.01(.07)	-.12-.14	.95	-.06(.10)	-.25-.14
School-connectedness	.84	-.18(.10)	-.38-.02	.54	-.61(.25)*	-1.10-(-.12)	.86	-.15(.13)	-.39-.10	.87	-.14(.13)	-.39-.11
Perception of Friends Caring	.94	-.06	-.25-.13	.72	-.32(.24)	-.81-.16	1.12	.11(.13)	-.15-.38	.87	-.14(.11)	-.36-.08
Number of 2s	.88	-.13(.15)	-.43-.17	1.22	.20(.40)	-.59-.99	.90	-.10(.22)	-.53-.33	.80	-.22(.15)	-.52-.08
Number of 3s	1.17	.16(.21)	0.25-.56	1.55	.44(.44)	-.43-1.32	1.08	.08(.30)	-.51-.68	1.16	.15(.23)	-.30-.60
Number of 4s	.93	-.07(.20)	-.47-.32	1.43	.36(.50)	-.63-1.36	1.07	.07(.24)	-.41-.55	.75	-.29(.21)	-.71-.14

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 21

Individual Models' Between Parent Age Group Differences for Outcome Variable Physical Neglect

	Younger adolescent v. Older adolescent		Younger adolescent v. Young Adult		Older adolescent v. Young Adult	
	Coefficient(SE)	OR	Coefficient(SE)	OR	Coefficient(SE)	OR
Physical Assault	.44(.91)	1.55	.34(.68)	1.41	.09(.62)	1.10
Sexual Assault	.89(1.01)	2.43	.43(1.07)	1.54	.46(.64)	1.58
Verbal Assault	-1.90(1.02)	.15	-1.26(.82)	.28	.64(.50)	.53
Total Assault Index	.08(.19)	1.08	-.03(.21)	.97	.10(.29)	1.11
Emotional Closeness I	.13(.14)	1.14	.12(.12)	1.12	.01(.08)	1.01
Emotional Closeness III	-.22(.21)	.80	-.16(.20)	.86	-.06(.13)	.94
Self-Esteem I	-.28(.16)	.76	-.24(.14)	.78	-.03(.07)	.97
Self-Esteem III	-.09(.08)	.91	-.05(.08)	.95	-.04(.05)	.96
CES-D Scale I	-.08(.05)	.92	-.08(.05)	.92	.002(.03)	1.00
CES-D Scale III	.01(.06)	1.01	.04(.05)	1.01	-.03(.04)	.97
Dependency	.09(.21)	1.10	.01(.21)	1.01	.08(.08)	1.08
Significant Other III	.55(.61)	1.73	.05(.56)	.95	.60(.29)*	1.82
Child III	-1.03(.59)	.36	-.90(.58)	.40	-.13(.31)	.88
Parent III	-.25(.67)	.78	.28(.74)	1.32	-.53(.36)	.59
Other III	.86(.46)	2.37	.46(.52)	1.59	.40(.31)	1.49
Two-Parent I	.22(.73)	-1.24	.64(.62)	1.90	-.43(.34)	.65
One-Parent I	-.42(.55)	.66	.04(.52)	1.04	-.46(.36)	.63
Child Birth Weight	1.32(1.13)	.27	-1.36(1.12)	.26	.04(.43)	1.04
Number of Children	-.11(.16)	.90	-.07(.16)	.93	-.04(.10)	.96
Child Age	.02(.11)	1.02	-.05(.11)	.95	.07(.09)	1.07
School Connectedness	.46(.23)*	1.59	.46(.25)	1.59	-.001(.14)	1.00
Perception of Friends Caring	.44(.27)	1.55	.19(.24)	1.20	-.25(.14)	1.28
Number of 2s	-.30(.42)	.74	-.42(.37)	.66	.12(.22)	1.13
Number of 3s	-.36(.51)	.70	-.29(.41)	.75	-.07(.32)	.93
Number of 4s	-.30(.42)	.74	-.65(.54)	.52	.35(.26)	1.42

Note: * $p \le .05$, ** $p \le .01$, *** $p \le .001$.

Results from the individual models with interactions showed that none of the variables in Models 1, 2, or 3 significantly increased or decreased the odds of physical neglect for parents any age group. Model 4, which measured residential status at Wave III, showed that older adolescent parents who indicated 'other,' meaning that they were living with another family member or non-relative at Wave III, were 1.77 times, or 77%, more likely to report physical neglect than older adolescent parents who did not indicate 'other' ($p \le .05$). The next significant finding was in Model 7, which measured school connectedness and perception of friends caring. It was found that for each unit increase in school connectedness, younger adolescents were 46% less

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likely (OR = .54) to report physical neglect than younger adolescents who reported lower means for school connectedness ($p \leq .05$).

Differences in the effects of several independent variables on physical neglect were found between parent age groups as well. The odds of reporting physical neglect for older adolescent parents who lived with a significant other at Wave III were 1.82 times greater than the odds of reporting physical neglect for young adult parents who were also living with a significant other at Wave III ($p \leq .05$). A comparison of the effect of school connectedness for younger adolescents and older adolescents revealed that each unit increase in school connectedness for older adolescents was associated with, on average, 1.59 times greater odds of reporting physical neglect than younger adolescents, for whom school connectedness significantly decreased the odds of reporting physical neglect ($p \leq .05$).

Individual models run without parent age interactions did not significantly increase or decrease the odds of reporting physical neglect for among the entire parent population sample. The comparison between the interaction and non-interaction models clearly illustrated the greater precision with which the parent-age interaction models were able to identify the effects of independent variables which impact physical neglect among specific parent age populations. Thus, these finding lend further credence to the examination of factors which predict child maltreatment from a developmental perspective.

Next, the full model for physical neglect was run, with and without parent age interactions. Table 22 shows the results of the full model, run with and without parent age interactions. The effects of the independent variables on physical neglect for the three parent age groups are compared in Table 23.

Table 22

Full Model for Outcome Variable Physical Neglect

| | Without Interactions | | | With Interactions | | | | | | | | |
| | | | | Younger adolescent | | | Older adolescent | | | Young Adult | | |
	OR	Coeff(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI
Physical Assault	.94	-.07(.34)	-.75-.61	.51	-.66(1.00)	-2.65-1.32	.94	-.06(.63)	-1.31-1.18	.88	-.13(.32)	-.76-.50
Sexual Assault	.51	-.67(.44)	-1.54-.20	.19	-1.64(1.05)	-3.72-.44	.63	-.46(.50)	-1.45-.54	.44	-.81(.60)	-.200-.38
Verbal Assault	.94	-.06(.35)	-1.54-.20	4.26	1.45(.78)	-.09-2.99	.55	-.61(.50)	-1.59-.38	1.11	.10(.35)	-.59-.79
Total Assault Index	1.02	.02(.12)	-.22-.27	1.01	.01(.12)	-.23-.26	1.10	.10(.19)	-.28-.47	1.04	.04(.25)	-.46-.54
Emotional Closeness I	1.02	.02(.07)	-.12-.15	1.11	.10(.16)	-.22-.43	1.04	.04(.09)	-.13-.22	.98	-.02(.08)	-.18-.15
Emotional Closeness III	1.07	.07(.08)	-.09-.22	1.20	.19(.26)	-.32-.70	1.00	.002(.10)	-.20-.20	1.11	.10(.11)	-.11-.32
Self-Esteem I	.93	-.07(.06)	-.18-.04	1.10	.10(.15	-.20-.40	.87	-.14(.08)	-.29-.02	.93	-.08(.05)	-.19-.03
Self-Esteem III	1.01	.01(.04)	-.08-.10	1.07	.07(.11)	-.14-.28	.97	-.03(.06)	-.14-.08	1.03	.03(.05)	-.08-.14
CES-D Scale I	1.00	-.002(.02)	-.04-.04	1.07	.06(.05)	-.04-.17	.99	-.01(.03)	-.07-.05	.99	-.01(.02)	-.06-.04
CES-D Scale III	1.04	.04(.03)	-.02-.09	.99	-.01(.05)	-.12-.10	1.04	.03(.03)	-.02-.09	1.05	-.05(.03)	-.01-.11
Dependency	.99	-.01(.06)	-.13-.11	1.04	.04(.20)	-.35-.44	1.03	.03(.07)	-.12-.17	.96	-.04(.07)	-.18-.10
Significant Other III	1.25	.23(.28)	-.33-.79	1.43	.35(.47)	-.57-1.29	1.95	.67(.32)*	-.03-1.31	.95	-.05(.33)	-.71-.61
Child III	.67	-.39(.30)	-.98-.19	1.36	.31(.87)	-1.41-2.04	.57	-.56(.34)	-1.23-.12	.68	-.39(.32)	-1.02-.24
Parent III	.84	-.17(.24)	-.64-.30	.81	-.20(.72)	-1.64-1.23	.61	-.50(.30)	-1.08-.09	1.01	.01(.31)	-.60-.63
Other III	1.36	.31(.24)	-.17-.78	1.02	.02(.60)	-1.16-1.20	1.78	.58(.30)*	-.01-1.16	1.28	.25(.29)	-.33-.82
Two-Parent I	.69	-.37(.30)	-.96-.23	.32	-1.15(.76)	-2.65-.36	.52	-.65(.40)	-1.44-.15	1.01	.01(.35)	-.68-.71
One-Parent I	.63	-.46(.32)	-.109-.16	.86	-.15(.79)	-1.72-1.41	.49	-.71(.42)	-1.54-.12	.79	-.23(.38)	-.98-.53
Child Birth Weight	.72	-.32(.25)	-.82-.18	2.04	.71(1.19)	-1.64-3.06	.75	-.28(.41)	-1.10-.53	.67	-.41(.30)	-1.00-.19
Number of Children	1.00	-.004(.06)	-.12-.11	1.05	.05(.20)	-.35-.46	.96	-.04(.08)	-.19-.11	1.02	.02(.07)	-.11-.16
Child Age	.96	.04(.06)	-.16-.08	.96	-.04(.17)	-.38-.30	.94	-.06(.08)	-.22-.10	.93	-.07(.08)	-.24-.10

School-connectedness	.81	-.21(.16)	-.44-.01	.57	-.56(.30)	-1.14-.02	.80	-.23(.15)	-.52-.07	.84	-.18(.14)	-.47-.11
Perception of Friends Caring	.95	-.05(.10)	-.24-.15	.70	-.35(.32)	-1.00-.29	1.16	.15(.13)	-.11-.41	.88	-.13(.11)	-.34-.09
Number of 2s	.86	-.15(.16)	-.46-.17	1.53	.43(.63)	-.82-1.67	.87	-.14(.23)	-.60-.32	.76	-.27(.17)	-.60-.06
Number of 3s	1.18	-.17(.21)	-.25-.59	1.94	.66(.45)	-.23-1.55	1.10	.09(.31)	-.52-.71	1.14	.13(.23)	-.32-.57
Number of 4s	.92	-.08(.20)	-.48-.31	1.45	.37(.41)	-.45-1.18	1.08	.08(.24)	-.40-.60	.73	-.32(.21)	-.74-.10

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 23

Full Model Between Parent Age Group Comparisons for Outcome Variable Physical Neglect

	Younger adolescent v. Older adolescent		Younger adolescent v. Young Adult		Older adolescent v. Young Adult	
	Coefficient(SE)	OR	Coefficient(SE)	OR	Coefficient(SE)	OR
Physical Assault	.60(1.13)	1.83	.53(1.03)	1.70	.07(.62)	1.07
Sexual Assault	1.19(1.12)	3.27	.83(1.21)	2.29	.36(.61)	1.43
Verbal Assault	-2.06(.97)*	.13	-1.35(.78)	.26	-.71(.50)	.49
Total Assault Index	.08(.20)	1.09	.03(.25)	1.03	.06(.31)	1.06
Emotional Closeness I	-.06(.16)	.94	-.12(.17)	.89	.06(.09)	1.06
Emotional Closeness III	-.18(.27)	.83	-.08(.25)	.92	-.10(.15)	.90
Self-Esteem I	-.23(.16)	.79	-.18(.14)	.84	-.06(.08)	.94
Self-Esteem III	-.10(.12)	.91	-.05(.11)	.96	-.05(.06)	.95
CES-D Scale I	-.07(.06)	.93	-.07(.05)	.93	.0003(.03)	1.00
CES-D Scale III	.05(.06)	1.05	.06(.05)	1.06	-.01(.03)	1.00
Dependency	-.02(.22)	.99	-.08(.21)	.92	.07(.07)	1.07
Significant Other III	.31(.45)	1.36	-.41(.45)	.66	.72(.33)*	2.05
Child III	-.87(.87)	.42	-.70(.87)	.50	-.17(.31)	.84
Parent III	-.29(.76)	.75	.22(.78)	1.24	-.51(.37)	.60
Other III	.55(.58)	1.74	.22(.62)	1.25	.33(.33)	1.39
Two-Parent I	.50(.82)	1.65	1.16(.77)	3.19	-.66(.42)	.52
One-Parent I	-.56(.77)	.57	-.07(.81)	.93	-.48(.48)	.62
Child Birth Weight	-1.00(1.20)	.37	-1.12(1.21)	.33	.12(.45)	1.13
Number of Children	-.09(.20)	.91	-.03(.21)	.97	-.06(.09)	.94
Child Age	-.02(.17)	.98	-.03(.18)	.97	.01(.09)	1.01
School Connectedness	.33(.30)	1.39	.38(.31)	1.46	.05(.17)	.95
Perception of Friends Caring	.50(.34)	1.66	.23(.32)	1.25	.28(.15)	1.32
Number of 2s	-.57(.63)	.57	-.70(.62)	.50	.13(.23)	1.14
Number of 3s	-.57(.51)	.57	-.53(.43)	.59	-.04(.30)	.96
Number of 4s	-.29(.39)	.75	-.69(.45)	.50	.40(.25)	1.49

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

The full model for physical neglect revealed that only a few variables in Model 4, residential living status at Wave III, significantly increased or decreased the odds of reporting physical neglect. Older adolescents who indicated that they lived with another family member or non-relative were 1.78 times, or 78%, more likely to report physical neglect than older adolescents who did not indicate this living arrangement ($p \leq$ .05). Living with a significant other had a similar effect for older adolescents. Their odds for physical neglect were 1.95 times greater than the odds of reporting physical neglect for older adolescents who did not indicate that they lived with a significant other at Wave III ($p \leq .05$). In the comparison between parent age groups, the

odds of reporting physical neglect among older adolescent parents who lived with their significant others were 2.05 times greater than the odds of reporting physical neglect among young adults who lived with a significant other ($p \leq .05$).

No other variables had a statistically significant effect on the reporting of physical neglect among younger adolescent, older adolescent, or young adult parents. The full model run without parent age interactions did not find any significant effects for the independent variables on the reporting of physical neglect for the entire parent population sample.

In summary, the results of the four sets of logistic regression analyses conducted for the outcome variable physical neglect demonstrated the limitations of the variables selected for significantly increasing or decreasing the odds of physical neglect, particularly when the entire parent population was examined as a whole. When parent age interactions were taken into account, residential living status variables at Wave III had a significant effect on physical neglect for older adolescent parents. The effect of living with an individual or individuals designated 'other' was found in both the individual and full model, while the effect of living with a significant other for older adolescents was only found in the full model. The positive effect of school connectedness for the younger adolescent population was suppressed in the full model.

As was done with the outcome variable supervision neglect, the predicted probability of physical neglect for clusters within each cluster solution was determined following the full logistic regression analysis. Mean predicted probabilities of physical neglect within clusters and their standard deviations are presented in Table 24.

Table 24

Mean Predicted Probability and Standard Deviation of Physical Neglect within Cluster Solutions

Cluster	Cluster Solution 1	Cluster Solution 2	Cluster Solution 3	Cluster Solution 4
1	.11(.08)	.10(.07)	.11(.07)	.10(.06)
2	.11(.07)	.11(.07)	.12(.06)	.10(.08)
3	.07(.06)	.08(.08)	.12(.08)	.13(.08)
4	.12(.08)	.12(.08)	.07(.06)	.12(.08)
5	.08(.09)	.05(.04)	.10(.07)	.09(.06)
6	.10(.07)	--	--	--

| 7 | .08(.07) | -- | -- | -- |
| | | | | |

Note: Cluster solution 1 – weighted average linkage five-variable solution using binary assault variables; Cluster solution 2 – weighted-average linkage seven-variable solution using ordered categorical assault variables; Cluster solution 3 – Ward's linkage five-variable solution using ordered categorical assault variables; Cluster solution 4 – weighted-average linkage five-variable solution using continuous total assault index.

Logistic regression analyses set 3: Physical assault

The next outcome examined was physical assault. The effects of the individual models, including parent age interactions, on physical assault were examined first. Again, this was followed by the inspection of non-interaction models. Demographic variables were controlled for throughout (see Appendix C for details). Table 25 shows the effects of the variables within the individual models on physical assault for younger adolescent, older adolescent, and young adult parents. Between-group comparisons are shown in Table 26.

Table 25

Individual Models for Outcome Variable Physical Assault

| | Without Interactions | | | With Interactions | | | | | | | | |
| | | | | Younger adolescent | | | Older adolescent | | | Young Adult | | |
	OR	Coeff(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI
Physical Assault	1.29	.25(.44)	-.61-1.12	2.41	.88(.85)	-.80-2.56	1.62	.48(.61)	-.73-1.70	.70	-.35(.48)	-1.30-.60
Sexual Assault	1.29	.26(.53)	-.78-1.30	1.90	.64(1.23)	-1.78-3.08	.97	-.03(.63)	-1.28-1.22	1.64	-.50(.61)	-.71-1.71
Verbal Assault	1.17	.16(.32)	-.48-.80	1.93	.66(.92)	-1.16-2.47	1.18	.16(.42)	-.67-.99	.95	-.05(.45)	-.94-.84
Summary Assault Index	.93	-.07(.11)	-.29-.14	.98	-.02(.15)	-.30-.27	.96	-.04(.15)	-.35-.26	.73	-.31(.24)	-.78-.16
Emotional Closeness I	1.09	.09(.07)	-.05-.23	1.15	.41(.30)	-.19-1.01	1.04	.03(.09)	-.14-.21	1.11	.10(.10)	-.10-.31
Emotional Closeness III	.84	-.17(.09)	-.36-.006	.71	-.34(.19)	-.71-.03	.81	-.21(.11)*	-.43-.003	.95	-.05(.12)	-.29-.19
Self-Esteem I	.95	-.05(.07)	-.19-.08	.87	-.14(.14)	-.43-.14	1.02	.02(.11)	-.20-.24	.89	.12(.09)	-.30-.09
Self-Esteem III	1.02	.02(.04)	-.07-.10	1.03	-.02(.08)	-.14-.19	.98	-.02(.06)	-.13-.10	1.05	.05(.07)	-.08-.18
CES-D Scale I	.96	-.04(.02)	-.08-.01	.95	-.05(.05)	-.15-.05	.97	-.03(.03)	-.10-.03	.96	-.04(.03)	-.10-.01
CES-D Scale III	1.05	.05(.03)	-.002-.10	1.09	.09(.05)	-.01-.19	1.06	.06(.04)	-.02-.13	1.03	.03(.03)	-.03-.07
Dependency	1.11	.10(.06)	-.01-.21	1.05	.05(.15)	-.25-.36	1.11	.10(.08)	-.05-.25	1.13	.12(.07)	-.01-.25
Significant Other III	.60	-.51(.29)	-1.07-.06	.38	-.97(.58)	-2.11-.17	.56	-.59(.31)	-1.21-.03	.75	-.29(.41)	-1.10-.52
Child III	1.54	.43(.39(	-.34-1.20	2.82	1.04(1.04)	-1.02-3.09	2.33	.85(.50)	-.15-1.84	1.04	.04(.44)	-.84-.91
Parent III	.85	-.16(.33)	-.81-.50	.27	-1.30(.77)	-2.82-.22	.51	-.68(.43)	-1.54-.18	1.67	.51(.32)	-.11-1.14
Other III	1.18	.17(.27)	-.37-.71	.76	-.28(.67)	-1.61-1.05	1.39	.33(.37)	-.40-1.06	1.10	.10(.37)	-.63-.82
Two-Parent I	1.16	.15(.45)	-.74-1.03	.67	-.41(.71)	-1.81-1.00	2.13	.76(.43)	-.10-1.61	.81	-.21(.65)	-1.50-1.08
One-Parent I	.87	-.14(.45)	-1.02-.74	.57	-.56(.76)	-2.07-.94	1.43	.36(.48)	-.60-1.31	.66	-.41(.72)	-1.85-1.02

Child Birth Weight	1.42	.35(.39)	-.43-1.13	1.91	.65(1.08)	-1.50-2.79	1.22	.20(.58)	-.96-1.36	1.57	.43(.51)	-.56-1.47
Number of Children	.86	-.15(.08)	-.313-.004	.85	-.17(.18)	-.52-.18	.87	-.14(.11)	-.35-.07	.86	-.15(.12)	-.38-.08
Child Age	1.26	.23(.05)***	.13-.33	1.29	.35(.17)	-.09-.60	1.15	.14(.07)*	-.01-.28	1.46	.38(.06)***	-.25-.50
School-connectedness	1.05	.05(.15)	-.35-.04	1.04	.04(.33)	-.60-.69	.75	-.29(.13)*	-.55-(-.04)	.95	-.06(.11)	-.28-.17
Perception of Friends Caring	1.05	.05(.15)	-.24-.33	.76	-.27(.31)	-.88-.34	1.21	.19(.17)	-.14-.51	.97	-.01(.21)	-.43-.41
Number of 2s	1.03	.03(.23)	-.42-.48	.97	-.03(.36)	-.75-.68	1.04	.04(.27)	-.50-.57	1.04	.04(.29)	-.54-.62
Number of 3s	1.14	.13(.23)	-.32-.58	1.24	.22(.61)	-.99-1.42	1.06	.05(.30)	-.54-.65	1.17	.16(.34)	-.51-.83
Number of 4s	.996	-.004(.22)	-.44-.43	1.24	.22(.44)	-.64-1.08	1.10	.09(.26)	-.42-.61	.81	-.21(.29)	-.78-.37

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 26

Individual Models' Between Parent Age Group Comparisons for Outcome Variable Physical Assault

	Younger adolescent v. Older adolescent		Younger adolescent v. Young Adult		Older adolescent v. Young Adult	
	Coefficient(SE)	OR	Coefficient(SE)	OR	Coefficient(SE)	OR
Physical Assault	-.40(.98)	.67	-1.23(.94)	.29	.83(.53)	2.30
Sexual Assault	-.67(1.09)	.51	-.15(1.24)	.86	-.52(.76)	.59
Verbal Assault	-.50(.95)	.61	-.71(1.01)	.49	.21(.52)	1.24
Summary Assault Index	-.02(.18)	.98	-.29(.27)	.75	.27(.26)	1.31
Emotional Closeness I	-.37(.30)	.69	-.31(.31)	.74	-.07(.13)	.94
Emotional Closeness III	.13(.18)	1.13	.29(.21)	1.34	-.16(.15)	.85
Self-Esteem I	.16(.16)	1.18	.03(.15)	1.03	.14(.14)	1.15
Self-Esteem III	-.04(.09)	.96	.03(.10)	1.03	-.07(.08)	.94
CES-D Scale I	.02(.05)	1.02	.01(.05)	1.01	.01(.03)	1.01
CES-D Scale III	-.03(.05)	.97	-.06(.06)	.94	.02(.04)	1.02
Dependency	.05(.15)	1.06	.07(.16)	1.07	-.02(.09)	.98
Significant Other III	.38(.59)	1.47	.68(.64)	1.97	-.29(.41)	.74
Child III	-.19(.82)	.83	-1.00(1.07)	.37	.81(.55)	2.25
Parent III	.62(.82)	1.87	1.82(.80)*	6.15	-1.19(.43)**	.30
Other III	.61(.70)	1.84	.38(.73)	1.46	.23(.46)	1.26
Two-Parent I	1.16(.64)	3.20	.20(.83)	1.22	.96(.69)	2.62
One-Parent I	.92(.79)	2.50	.15(1.01)	1.16	.77(.84)	2.15
Child Birth Weight	-.45(1.26)	.64	-.20(1.19)	.82	-.26(.75)	.77
Number of Children	.02(.19)	1.02	.02(.18)	1.02	.01(.16)	1.01
Child Age	-.11(.17)	.89	.12(.19)	1.13	-.23(.09)**	.79
School Connectedness	-.34(.31)	.72	-.10(.32)	.91	-.24(.17)	.79
Perception of Friends Caring	.46(.33)	1.58	.25(.38)	1.29	.20(.23)	1.22
Number of 2s	.07(.41)	1.07	.08(.38)	1.08	-.004(.32)	1.00
Number of 3s	-.16(.50)	.85	-.06(.68)	.94	-.11(.49)	.90
Number of 4s	-.13(.39)	.88	-.43(.51)	.65	.30(.33)	1.35

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Model 2, examining emotional closeness with caregiver(s) at Waves I and III, had a significant effect on the reporting of physical assault for older adolescent parents. Specifically, each unit increase in emotional closeness at Wave III was associated with, on average, a 19% (OR = .81) decrease in the odds of reporting physical assault when compared to other older adolescent parents. In Model 6, child age also had a significant effect on physical assault for older adolescent and young adult parents. Among older adolescent parents, each unit increase in child age was associated with, on average, 1.15 times greater odds of reporting physical assault

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than older adolescent parents with younger children ($p \leq .05$). The effect was greater for young adult parents, for whom each unit increase in child age increased the odds of reporting physical neglect by 1.46, or 46 % ($p \leq .001$). In Model 7, school connectedness significantly decreased the odds of reporting physical neglect among older adolescent parents. Each unit increase in school connectedness decreased the odds of reporting physical neglect among older adolescents by 25% (OR = .75) ($p \leq .05$). When the individual models were run without parent age interactions, only child age had a significant effect on the odds of reporting physical neglect for the entire parent population sample. The odds of reporting physical neglect were, on average, 1.26 times greater for each unit increase in child age ($p \leq .001$).

A comparison of the effects of the independent variables on physical assault for parents in different age groups revealed that the odds of reporting physical assault for young adults who lived with a parent-figure at Wave III were 6.15 times greater than the odds of reporting physical assault for younger adolescents who lived with a parent-figure at Wave III ($p \leq .05$). Similarly, the odds of reporting physical assault for older adolescents who lived with a parent-figure at Wave III were .30 times less than the odds of reporting physical assault for young adults who lived with a parent figure at Wave III ($p \leq .01$). In other words, older adolescents who lived with a parent-figure at Wave III were 70% less likely to report physical assault than young adults who lived with a parent-figure at Wave III. In addition, the effect of increasing child age on the reporting of physical assault did not have the same effect for older adolescents as it did for young adults. The effect of increasing child age on physical assault for young adults was significantly greater than the effect of increasing child age on physical assault for older adolescents. Specifically, the odds ratio for physical assault associated with increasing child age for older adolescents was 21% (OR = .79) less than the odds ratio for physical assault associated with increased child age for young adult parents ($p \leq .01$).

The comparison between interaction and non-interaction models for the outcome variable physical assault illustrates, as previously discussed, the strengths of the developmental model which included parent age interactions. Several variables thought to be pertinent to child maltreatment, including parent relationship variables and social support variables, were found to be pertinent to specific populations of parents in the logistic regression models which included parent age interactions. Only the child centered variable, child age, was significant in both interaction and non-interaction models.

Lastly, the full model with interactions and without interactions was examined. Table 27 reports the results of the full model with and without parent age interaction for the outcome physical assault. Comparisons between parent age groups are presented in Table 28.

Table 27

Full Model for Outcome Variable Physical Assault

| | Without Interactions | | | With Interactions | | | | | | | | |
| | | | | Younger adolescent | | | Older adolescent | | | Young Adult | | |
	OR	Coeff(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI	OR	Coef(SE)	95%CI
Physical Assault	1.48	.39(.45)	-.49-1.28	2.99	1.10(1.32)	-1.51-3.70	2.20	.79(.66)	-.53-2.10	.72	-.33(.49)	-1.30-.64
Sexual Assault	1.15	.14(.53)	-.90-1.18	.40	-.91(1.05)	-2.99-1.17	.98	-.02(.71)	-1.42-1.38	1.64	.49(.60)	-.70-1.68
Verbal Assault	1.05	.06(.03)	-.53-.65	.75	-.28(1.09)	-2.45-1.88	1.02	.02(.41)	-.79-.82	1.01	.01(.43)	-.84-.87
Summary Assault Index	.93	-.08(.11)	-.29-.14	1.00	.001(.15)	-.29-.29	.94	-.07(.16)	-.39-.25	.74	-.30(.24)	-.78-.19
Emotional Closeness I	1.17	.16(.13)	-.10-.41	1.86	.62(.34)	-.06-1.30	1.00	.003(.16)	-.31-.31	1.26	.23(.17)	-.12-.58
Emotional Closeness III	.79	-.23(.10)*	-.43-(-.04)	.44	-.82(.23)***	-1.28-(-.37)	.76	-.27(.15)	-.57-.02	.88	-.13(.13)	-.39-.13
Self-Esteem I	.95	-.05(.07)	-.19-.08	.73	-.32(.19)	-.70-.06	.99	-.005(.09)	-.19-.18	.91	-.09(.08)	-.25-.06
Self-Esteem III	1.04	.04(.05)	-.06-.14	.99	-.01(.11)	-.22-.20	1.01	.01(.06)	-.12-.14	1.07	.07(.07)	-.07-.21
CES-D Scale I	.96	-.04(.03)	-.09-.01	.93	-.07(.08)	-.22-.08	.95	-.05(.03)	-.12-.01	.95	-.05(.03)	-.11-.02
CES-D Scale III	1.06	.06(.03)*	.005-.11	1.18	.16(.06)**	.05-.28	1.06	.06(.04)	-.01-.14	1.03	.03(.03)	-.01-.08
Dependency	1.10	.09(.06)	-.02-.20	.81	-.21(.21)	-.62-.20	1.09	.08(.08)	-.08-.25	1.13	.12(.08)	-.03-.28
Significant Other III	.67	-.41(.29)	-.98-.17	.16	-1.82(.93)*	-3.66-.02	.60	-.51(.32)	-1.14-.12	.87	-.14(.39)	-.92-.64
Child III	1.82	.60(.37)	-.13-1.32	12.53	2.53(1.08)*	.39-4.67	2.93	1.07(.45)*	.18-1.97	1.16	.15(.40)	-.64-.95
Parent III	.97	-.03(.34)	-.71-.65	.12	-2.13(.78)**	-3.68-(-.58)	.47	-.75(.44)	-1.62-.12	2.16	.77(.38)*	.03-1.51
Other III	1.16	.15(.29)	-.43-.73	.45	-.80(.93)	-2.64-1.04	1.59	.46(.39)	-.30-1.23	1.23	.20(.42)	-.63-1.04
Two-Parent I	1.33	.28(.64)	-.98-1.55	.57	-.57(.76)	-2.07-.94	4.64	1.53(.59)**	.37-2.69	.61	-.50(.78)	-2.04-1.05
One-Parent I	.81	-.22(.62)	-1.45-1.02	.29	-1.23(.75)	-2.72-.25	2.16	.77(.64)	-.50-2.04	.44	-.81(.89)	-2.53-.96

Child Birth Weight	1.50	.41(.39)	-.37-1.18	5.81	1.76(1.44)	-1.08-4.60	1.54	.43(.50)	-.56-1.43	1.57	.45(.54)	-.63-1.53
Number of Children	.88	-.13(.08)	-.29-.03	.66	-.42(.31)	-1.04-.20	.88	-.13(.11)	-.34-.09	.88	-.13(.12)	-.36-.11
Child Age	1.32	.28(.05)***	.18-.37	1.39	.33(.23)	-.12-.77	1.28	.24(.07)***	.11-.38	1.50	.40(.07)***	.27-.54
School-connectedness	.84	-.19(.10)	-.39-.01	.86	-.15(.36)	-.87-.57	.74	-.31(.13)*	-.56-.05	.81	-.22(.17)	-.56-.13
Perception of Friends Caring	1.02	.02(.14)	-.26-.30	.85	-.16(.29)	-.75-.42	1.17	.16(.18)	-.19-.51	.92	-.08(.29)	-.50-.65
Number of 2s	1.05	.05(.24)	-.41-.52	.93	-.08(.53)	-1.12-.97	1.08	.07(.29)	-.50-.65	1.03	.03(.32)	-.61-.66
Number of 3s	1.18	.16(.23)	-.29-.61	1.35	.30(.56)	-.82-1.41	1.14	.14(.31)	-.48-.75	1.19	.17(.33)	-.47-.82
Number of 4s	1.01	.007(.22)	-.43-.44	2.00	.69(.57)	-.42-1.81	1.18	.17(.25)	-.34-.67	.74	-.30(.33)	-.95-.35

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 28

Full Model Between Parent Age Group Comparisons for Outcome Variable Physical Assault

	Younger adolescent v. Older adolescent		Younger adolescent v. Young Adult		Older adolescent v. Young Adult	
	Coefficient(SE)	OR	Coefficient(SE)	OR	Coefficient(SE)	OR
Physical Assault	-.31(1.46)	.73	-1.43(1.37)	.24	1.12(.58)	3.06
Sexual Assault	.89(1.08)	2.43	1.40(1.16)	4.06	-.51(.82)	.60
Verbal Assault	.30(1.19)	1.35	.30(1.17)	1.35	.003(.52)	1.00
Summary Assault Index	-.07(.19)	.93	-.30(.28)	.74	.23(.29)	1.26
Emotional Closeness I	-.62(.36)	.54	-.39(.38)	.68	-.23(.23)	.80
Emotional Closeness III	.55(.26)*	1.73	.69(.27)**	2.00	-.15(.17)	.86
Self-Esteem I	.32(.20)	1.37	.23(.18)	1.25	.09(.12)	1.09
Self-Esteem III	.02(.11)	1.02	.08(.12)	1.08	-.06(.08)	.94
CES-D Scale I	.02(.08)	1.02	.03(.08)	1.03	-.006(.03)	.99
CES-D Scale III	-.10(.06)	.90	-.14(.06)*	.87	.04(.04)	1.04
Dependency	.29(.20)	1.34	.33(.22)	1.40	-.04(.11)	.96
Significant Other III	1.30(.90)	3.68	1.68(.98)	5.35	-.37(.42)	.69
Child III	-1.45(.92)	.23	-2.38(1.06)*	.09	.92(.51)	2.52
Parent III	1.38(.87)	3.96	2.90(.88)***	18.18	-1.52(.47)**	.22
Other III	1.26(1.03)	3.53	1.00(1.02)	2.73	.26(.53)	1.29
Two-Parent I	2.10(.84)**	8.16	.07(.95)	1.07	2.03(.86)*	7.61
One-Parent I	2.00(.86)*	7.42	.42(1.12)	1.53	1.58(1.06)	4.86
Child Birth Weight	-1.32(1.56)	.27	-1.30(1.48)	.27	-.02(.72)	.98
Number of Children	.29(.32)	1.34	.29(.33)	1.34	.003(.16)	.997
Child Age	-.09(.24)	.92	.08(.23)	1.08	-.16(.09)	.85
School Connectedness	-.16(.37)	.85	-.07(.39)	.93	-.09(.23)	.91
Perception of Friends Caring	.32(.33)	1.38	.08(.35)	1.09	.24(.25)	1.27
Number of 2s	.15(.61)	1.16	.10(.62)	1.11	.05(.34)	1.05
Number of 3s	-.16(.52)	.85	-.12(.65)	.88	-.04(.49)	.96
Number of 4s	-.53(.56)	.59	-1.00(.65)	.37	.47(.35)	1.60

Note: * $p \le .05$, ** $p \le .01$, *** $p \le .001$.

In the full model for physical assault, emotional closeness with parent(s) significantly decreased the odds of reporting physical assault for younger adolescent parents. More specifically, increased means on emotional closeness at Wave III reduced the odds of reporting physical assault among younger adolescent parents by 66% (OR = .44) ($p \le .001$). CES-D Scale measured at Wave III also had a significant effect on the reporting of physical assault for younger adolescent parents. Among younger adolescent parents, increasing means on the CES-D Scale III variables were associated with, on average, 1.18 times greater likelihood

reporting physical assault ($p \le .01$). Several of the variables indicating residential status at Wave III also had significant effects on the reporting of physical assault. Younger adolescents who indicated that they lived with a significant other at Wave III were 84% (OR = .16) less likely to report physical assault than younger adolescents who did not report living with a significant other ($p \le .05$). Younger adolescents who reported living with their child or children at Wave III were 12.53 times more likely to report physical assault than younger adolescents who did not report living with their child or children ($p \le .05$). Older adolescents who reported living with their child or children were 2.93 times more likely to report physical assault than older adolescents who did not report living with their child or children at Wave III ($p \le .05$). Younger adolescent parents who reported living with a parent-figure at Wave III were 88% less likely to report physical assault than younger adolescent parents who did not report living with a parent-figure at Wave III ($p \le .01$). Living with a parent-figure at Wave III increased the odds of reporting physical assault for young adult parents. Young adult parents who lived with a parent-figure at Wave III were 2.16 times more likely to report physical assault than young adult parents who did not live with a parent-figure at Wave III ($p \le .05$). At Wave I, having a two-parent family significantly increased the odds of reporting physical assault for older adolescent parents. Older adolescent parents who reported having a two-parent family structure at Wave I were 4.64 times more likely to report physical assault than older adolescent parents who did not have a two-parent family structure at Wave I ($p \le .01$). Child age had a significant effect on physical assault for older adolescent and young adult parents. For older adolescent parents, increasing child age was associated with, on average, 1.28 times greater likelihood of reporting physical assault ($p \le .001$). For young adult parents, increasing child age was associated with, on average 1.50 times greater likelihood of reporting physical assault ($p \le .001$). School connectedness significantly reduced the odds of reporting physical assault among older adolescent parents. Increasing means on school connectedness were associated with a 26% (OR = .74) decrease in the reporting of physical assault ($p \le .05$).

Significant differences in effects of the independent variables on physical assault were also found between parent age groups. The odds of reporting physical assault associated with increasing emotional closeness at Wave III for older adolescent and young adult parents were significantly greater than the odds of reporting physical assault associated with increasing emotional closeness at Wave III for younger adolescent parents. This difference in the effect of emotional closeness on physical assault among younger adolescent

parents versus older adolescent and young adult parents was the result of the fact that increasing emotional closeness at Wave III significantly decreased the odds of reporting physical assault for younger adolescent parents.   The odds of reporting physical assault associated with emotional closeness at Wave III for older adolescent parents were 1.73 times greater than the odds of reporting physical assault for younger adolescent parents ($p \leq .05$). The odds of reporting physical assault associated with emotional closeness at Wave III were 2.00 times greater for young adult parents than the odds of reporting physical assault for younger adolescent parents ($p \leq .01$). Thus, the effect of emotional closeness decreased as parent age increased. Increasing means on the CES-D Scale III variable had a less deleterious effect on physical assault for young adult parents than the effect on physical assault for younger adolescent parents. The odds of physical assault associated with increasing means on the CES-D Scale III variables were 13% (OR =.87) less for young adults than for younger adolescent parents ($p \leq .05$). The effect of residing with one's child or children was also significantly less for young adult parents compared to younger adolescent parents. The odds of physical assault associated with living with one's child or children were 91% (OR = .09) less for young adult parents than the odds associated with living with one's child or children for younger adolescent parents ($p \leq .05$). In contrast, the odds of physical assault for young adult parents who reported living with a parent-figure at Wave III were 18.18 times greater than the odds of physical assault for younger adolescent parents who reported living with a parent-figure at Wave III ($p \leq .001$). Similarly, the odds of physical assault for older adolescent parents who reported living with a parent-figure at Wave III were 78% (OR = .22) less than the odds of physical assault for young adult parents who reported living with a parent-figure at Wave III ($p \leq .01$). Significant differences were also found between parent age groups in the effect of family structure at Wave I on physical assault. Older adolescent parents who reported a two-parent family structure were 8.16 times more likely to report physical assault than younger adolescents with a two-parent family structure at Wave I ($p \leq .01$). Similarly, older adolescents with a two-parent family structure were 7.61 times more likely to report physical assault than young adults who reported a two-parent family structure ($p \leq .05$). Older adolescents who reported a one-parent family structure were 7.42 times more likely to report physical assault than younger adolescents who reported a one-parent family structure ($p < .05$).

When the logistic regression analyses were conducted without parent age interactions for the entire parent population, emotional closeness at Wave III significantly decreased the odds of physical assault by 21%

(OR = .79) ($p \leq .05$). Depressive symptomatology at Wave III was associated with a 6% increase in the odds of physical assault for the entire population ($p \leq .05$). Lastly, increasing child age significantly increased the odds of physical assault by 32% among all parents included in the sample ($p \leq .001$).

In summary, the results from the four sets of logistic regression analyses conducted for the outcome variable physical assault demonstrated that in both the individual and the full models, parent age interactions revealed a much greater number of variables which either significantly increased or decreased the odds of physical assault. Both full and individual models run without parent age interactions found that increasing child age significantly increased the odds of physical assault among the entire parent population. Two additional variables in the full model, emotional closeness and depressive symptoms, had a significant effect among the total parent population. The comparison between the full and individual interaction models made clear the superiority of the full model, which identified a greater number of significant variables for specific parent age groups.

Predicted probabilities of physical assault within clusters in each of the solutions previously examined were determined following the full logistic regression analysis for physical assault. Mean predicted probabilities, as well their standard deviations, of physical assault for clusters within each cluster solution are presented in Table 29.

Table 29

Mean Predicted Probability and Standard Deviation of Physical Assault within Cluster Solutions

Cluster	Cluster Solution 1	Cluster Solution 2	Cluster Solution 3	Cluster Solution 4
1	.07(.08)	.05(.06)	.06(.07)	.05(.06)
2	.06(.07)	.06(.07)	.05(.08)	.06(.08)
3	.07(.08)	.06(.06)	.07(.09)	.05(.07)
4	.05(.05)	.07(.09)	.06(.06)	.06(.07)
5	.07(.10)	.06(.07)	.05(.07)	.11(.12)
6	.05(.06)	--	--	--
7	.09(.10)	--	--	--

Note: Cluster solution 1 – weighted average linkage five-variable solution using binary assault variables; Cluster solution 2 – weighted-average linkage seven-variable solution using ordered categorical assault

variables; Cluster solution 3 – Ward's linkage five-variable solution using ordered categorical assault variables; Cluster solution 4 – weighted-average linkage five-variable solution using continuous total assault index.

Logistic regression analyses set 4: Child summary maltreatment index

The last outcome variable examined was the child summary maltreatment index. This index was created by summing the three forms of maltreatment previously used as individual outcome variables: supervision neglect, physical neglect, and physical assault. As in the previous logistic regressions, total child maltreatment was first regressed on the individual models with parent age interactions and socio-demographic variables were controlled for in each model. The individual non-interaction models were then examined. Next, total child maltreatment was regressed on the full model using all independent variables and their interactions with parent age. Lastly, total child maltreatment was regressed on the full model without interactions. The results of the regression analyses examining individual models with parent age interactions and without parent age interactions are presented in Table 30. A comparison of the effects of the independent variables between parent age groups is displayed in Table 31. The discussion of these results is in the section that follows.

Table 30

Individual Models for Outcome Variable Total Child Maltreatment

	Without Interactions		With Interactions					
			Younger adolescent		Older adolescent		Young Adult	
	Coeff(SE)	95%CI	Coeff(SE)	95%CI	Coeff(SE)	95%CI	Coeff(SE)	95%CI
Physical Assault	.01(.10)	-.19-.21	.16(.29	-.42-.73	.07(.20)	-.33-.48	-.07(.08)	-.23-.10
Sexual Assault	-.10(.12)	-.34-.13	.005(.36)	-.71-.72	-.06(.20)	-.46-.33	-.14(.11)	-.36-.08
Verbal Assault	-.01(.12)	-.23-.21	.31(.37)	-.42-1.05	-.13(.14)	-.42-.15	.03(.12)	-.20-.27
Summary Assault Index	.004(.04)	-.07-.07	.01(.03)	-.06-.07	.01(.06)	-.10-.13	-.05(.11)	-.26-.17
Emotional Closeness I	-.01(.02)	-.05-.04	-.07(.06)	-.18-.04	.003(.03)	-.05-.06	-.005(.03)	-.06-.05
Emotional Closeness III	-.02(.03)	-.08-.03	.02(.06)	-.10-.14	-.05(.04)	-.13-.02	-.005(.03)	-.07-.06
Self-Esteem I	-.02(.02)	-.05-.02	.03(.06)	-.08-.14	-.03(.03)	-.08-.03	-.02(.02)	-.05-.01
Self-Esteem III	-.002(.02)	-.03-.03	.02(.03)	-.04-.08	-.02(.02)	-.03-.02	.004(.02)	-.03-.04
CES-D Scale I	-.004(.01)	-.02-.01	.01(.02)	-.02-.04	-.004(.01)	-.02-.01	-.006(.01)	-.02-.01
CES-D Scale III	.02(.01)	-.005-.04	.01(.03)	-.04-.06	.01(.01)	-.02-.04	.02(.01)	-.003-.04
Dependency	.01(.02)	-.02-.05	.04(.07)	-.10-.18	.03(.03)	-.03-.08	.01(.02)	-.04-.05
Significant Other III	.02(.10)	-.18-.22	-.20(.22)	-.63-.23	.16(.11)	-.05-.37	-.04(.12)	-.27-.19
Child III	-.02(.10)	-.22-.19	.23(.18)	-.12-.59	-.008(.11)	-.23-.22	-.04(.12)	-.27-.19
Parent III	-.13(.07)	-.28-.01	-.29(.19)	-.66-.08	-.31(.10)**	-.50-.12	.001(.09)	-.18-.18
Other III	.13(.08)	-.03-.29	-.17(.15)	-.47-.13	.30(.12)*	-.06-.54	.07(.08)	-.10-.24
Two-Parent I	-.01(.09)	-.20-.18	-.38(.33)	-1.03-.26	-.04(.12)	-.28-.20	.05(.09)	-.13-.24
One-Parent I	-.04(.11)	-.26-.19	-.19(.32)	-.82-.45	-.12(.13)	-.38-.15	.03(.12)	-.20-.27
Child Birth Weight	-.07(.10)	-.27-.12	.39(.18)*	-.03-.76	.07(.17)	-.39-.26	-.11(.12)	-.34-.11
Number of Children	-.01(.02)	-.06-.04	-.03(.07)	-.16-.10	-.02(.03)	-.08-.04	-.001(.03)	-.06-.06
Child Age	.02(.02)	-.01-.06	.08(.05)	-.01-.18	.02(.02)	-.03-.07	.02(.02)	-.03-.06
School-connectedness	-.06(.04)	-.13-.01	-.21(.10)*	-.40-(-.02)	-.06(.05)	-.17-.04	-.04(.04)	-.12-.03
Perception of Friends Caring	-.01(.03)	-.08-.06	-.09(.10)	-.29-.11	.04(.05)	-.06-.14	-.03(.04)	-.11-.04
Number of 2s	-.03(.05)	-.12-.06	.04(.15)	-.25-.34	-.03(.07)	-.17-.11	-.03(.05)	-.13-.06
Number of 3s	.06(.07)	-.08-.20	.19(.22)	-.25-.63	.03(.11)	-.19-.25	.06(.08)	-.10-.21
Number of 4s	-.04(.05)	-.15-.06	.05(.13)	-.19-.30	-.001(.08)	-.16-.16	-.09(.05)	-.18-.10

Note: * $p \le .05$, ** $p \le .01$, *** $p \le .001$.

Table 31

Individual Models' Between Parent Age Group Comparisons for Outcome Variable Total Child Maltreatment

	Younger adolescent v. Older adolescent	Younger adolescent v. Young Adult	Older adolescent v. Young Adult
	Coefficient(SE)	Coefficient(SE)	Coefficient(SE)
Physical Assault	-.08(.34)	-.22(.29)	.14(.19)
Sexual Assault	-.07(.36)	.15(.36)	-.08(.21)
Verbal Assault	-.45(.39)	-.28(.34)	-.17(.16)
Summary Assault Index	.01(.06)	-.05(.10)	.06(.12)
Emotional Closeness I	.07(.06)	.06(.05)	.01(.03)
Emotional Closeness III	-.07(.07)	-.02(.07)	-.05(.04)
Self-Esteem I	-.06(.06)	-.05(.05)	-.006(.03)
Self-Esteem III	-.04(.03)	-.02(.03)	-.02(.02)
CES-D Scale I	-.02(.02)	-.02(.02)	.002(.01)
CES-D Scale III	-.003(.02)	-.003(.02)	-.01(.02)
Dependency	-.01(.07)	-.03(.07)	.02(.03)
Significant Other III	.36(.20)	.16(.18)	.20(.11)
Child III	-.24(.19)	-.27(.17)	.03(.11)
Parent III	-.01(.20)	.30(.19)	-.31(.12)**
Other III	.47(.18)**	.24(.16)	.23(.12)
Two-Parent I	.35(.34)	.44(.29)	-.09(.11)
One-Parent I	.07(.31)	.22(.29)	-.15(.13)
Child Birth Weight	-.46(.23)*	-.51(.20)**	.05(.18)
Number of Children	.01(.07)	.03(.06)	-.02(.04)
Child Age	-.06(.05)	-.07(.04)	.004(.03)
School Connectedness	.15(.10)	.17(.10)	-.02(.05)
Perception of Friends Caring	.13(.11)	.06(.10)	.08(.06)
Number of 2s	-.07(.16)	-.08(.14)	.004(.08)
Number of 3s	-.16(.21)	-.13(.22)	-.03(.13)
Number of 4s	-.06(.12)	-.14(.13)	.08(.08)

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

In the individual models, several variables within Model 4, residential living status at Wave III, had a significant effect on total child maltreatment. The effect of living with a parent-figure or figures at Wave III decreased total child maltreatment by .31 ($p \leq .01$) for older adolescent parents. The effect of living with other family or a non-relative at Wave III increased total child maltreatment by .30 ($p \leq .05$) for older adolescent parents. In Model 6, normal child birth weight increased total child maltreatment by .39 for younger adolescent parents ($p \leq .05$). In Model 7, each one unit increase in school connectedness reduced total child maltreatment by .21 for younger adolescent parents ($p \leq .05$). There were no significant effects when parent age interactions were removed from the individual models.

The effects of the some of the independent variables on total child maltreatment were significantly different across parent age categories. The effect of living with a parent at Wave III resulted in a significantly greater decrease (-.31) in total child maltreatment for younger adolescent parents compared to the effect of living with a parent at Wave III for young adult parents ($p \leq .01$). The effect of living with other family or nonrelatives on total child maltreatment for older adolescent parents resulted in a larger increase on total child maltreatment (a difference in effect of .47) compared to the effect of living with other family or nonrelatives on total child maltreatment for younger adolescent parents ($p \leq .01$). Significant differences in the effects of child birth weight on total child maltreatment were also found for older adolescent versus younger adolescent parents. Having a normal birth weight baby had a significantly smaller increasing effect on total child maltreatment (a difference in effect of -.46) for older adolescent parents than for younger adolescent parents ($p < .05$). The decreasing effect of having a normal birth weight baby on total child maltreatment for young adult parents was also significantly different (difference in effect of -.51) from the increasing effect of having a normal birth weight baby on child maltreatment for younger adolescent parents ($p \leq .01$).

The same variables found to significantly affect total child maltreatment in the individual models, also had a significant affect on total child maltreatment in the full model. The results of the full model are presented in Table 32. Comparisons between parent age groups are shown in Table 33.

Table 32

Full Model for Outcome Variable Total Child Maltreatment

	Without Interactions		With Interactions					
			Younger adolescent		Older adolescent		Young Adult	
	Coeff(SE)	95%CI	Coeff(SE)	95%CI	Coeff(SE)	95%CI	Coeff(SE)	95%CI
Physical Assault	.01(.10)	-.19-.21	.03(.31)	-.60-.65	.09(.19)	-.29-.46	-.08(.09)	-.26-.09
Sexual Assault	-.10(.12)	-.34-.13	-.32(.31)	-.94-.29	-.04(.18)	-.40-.33	-.13(.12)	-.37-.11
Verbal Assault	-.02(.11)	-.23-.19	.07(.29)	-.50-.64	-.16(.14)	-.43-.11	.03(.11)	-.19-.26
Summary Assault Index	-.002(.03)	-.07(.06)	.004(.03)	-.06-.07	.004(.05)	-.10-.11	.03(.09)	-.15-.21
Emotional Closeness I	.01(.03)	-.04-.06	.003(.07)	-.13-.14	.02(.04)	-.05-.09	-.01(.03)	-.07-.05
Emotional Closeness III	-.01(.03)	-.06-.05	.01(.08)	-.15-.17	-.04(.04)	-.12-.04	.01(.03)	-.06-.08
Self-Esteem I	-.02(.02)	-.06-.01	-.02(.06)	-.14-.10	-.04(.03)	-.09-.02	-.02(.02)	-.06-.01
Self-Esteem III	-.002(.01)	-.03(.03)	.02(.03)	-.05-.08	-.02(.02)	-.06-.02	.01(.02)	-.03-.04
CES-D Scale I	-.01(.01)	-.02-.004	.003(.02)	-.03-.03	-.01(.01)	-.03-.01	-.01(.01)	-.02-.003
CES-D Scale III	.02(.01)	-.003-.04	.01(.02)	-.03-.06	.01(.01)	-.01-.04	.02(.01)	-.004-.04
Dependency	.01(.02)	-.03-.05	.03(.06)	-.09-.16	.02(.03)	-.03-.07	.01(.02)	-.04-.05
Significant Other III	.05(.10)	-.15-.25	-.09(.19)	-.46-.29	.20(.12)	-.03-.43	-.02(.11)	-.24-.21
Child III	-.01(.10)	-.21-.18	.17(.22)	-.27-.61	-.0003(.11)	-.22-.22	-.04(.11)	-.26-.17
Parent III	-.12(.07)	-.26-.03	-.21(.17)	-.58-.16	-.32(.10)**	-.52-(-.12)	.01(.09)	-.17-.19
Other III	.14(.08)	-.03-.30	-.18(.16)	-.50-.14	.32(.13)*	.06-.57	.09(.09)	-.09-.28
Two-Parent I	.02(.10)	-.18-.21	-.35(.33)	-1.01-.31	-.01(.16)	-.33-.31	.10(.10)	-.10-.29
One-Parent I	-.03(.12)	-.26-.20	-.16(.34)	-.84-.52	-.10(.17)	-.44-.24	.05(.13)	-.21-.30
Child Birth Weight	-.09(.09)	-.28-.09	.29(.18)	-.07-.65	-.06(.16)	-.38-.25	-.13(.11)	-.35-.08
Number of Children	-.01(.02)	-.06-.03	-.05(.06)	-.17-.07	-.04(.03)	-.10-.02	.004(.03)	-.05-.06
Child Age	.02(.02)	-.01-.06	.05(.05)	-.05-.14	.02(.03)	-.04-.07	.02(.02)	-.03-.06
School-connectedness	-.07(.04)	-.15-.01	-.21(.09)*	-.39-.04	-.09(.06)	-.20-.02	.05(.04)	-.14-.03
Perception of Friends Caring	-.01(.03)	-.08-.05	-.10(.10)	-.29-.09	.04(.05)	-.06-.15	-.04(.04)	-.11-.04
Number of 2s	-.02(.05)	-.12-.07	.13(.17)	-.20-.46	-.02(.08)	-.17-.13	-.05(.05)	-.15-.05
Number of 3s	.06(.07)	-.07-.19	.32(.21)	-.09-.74	.04(.11)	-.19-.25	.05(.07)	-.09-.19
Number of 4s	-.03(.05)	-.14-.07	.06(.13)	-.21-.32	.04(.08)	-.13-.21	.09(.05)	-.19-.01

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 33

Full Model Between Parent Age Group Comparisons for Outcome Variable Total Child Maltreatment

	Younger adolescent v. Older adolescent	Younger adolescent v. Young Adult	Older adolescent v. Young Adult
	Coefficient(SE)	Coefficient(SE)	Coefficient(SE)
Physical Assault	.06(.34)	-.11(.32)	.17(.19)
Sexual Assault	.29(.34)	.19(.33)	.09(.21)
Verbal Assault	-.23(.32)	-.03(.27)	-.19(.15)
Summary Assault Index	-.001(.06)	.02(.08)	-.03(.10)
Emotional Closeness I	.02(.07)	-.01(.07)	.03(.04)
Emotional Closeness III	-.05(.09)	-.002(.08)	-.05(.05)
Self-Esteem I	-.02(.06)	-.006(.06)	-.02(.03)
Self-Esteem III	-.04(.04)	-.01(.04)	-.03(.02)
CES-D Scale I	-.01(.02)	-.01(.01)	-.001(.01)
CES-D Scale III	.001(.02)	.003(.02)	-.002(.02)
Dependency	-.02(.07)	-.03(.07)	.01(.03)
Significant Other III	.29(.17)	.07(.18)	.22(.11)
Child III	-.17(.24)	-.21(.23)	.04(.11)
Parent III	-.11(.21)	.22(.19)	-.33(.12)**
Other III	.50(.20)**	.28(.17)	.22(.13)
Two-Parent I	.34(.37)	.45(.35)	-.11(.16)
One-Parent I	.06(.36)	.21(.36)	-.14(.18)
Child Birth Weight	-.36(.23)	-.43(.21)*	.07(.18)
Number of Children	.01(.06)	.05(.06)	-.04(.04)
Child Age	-.03(.05)	-.03(.05)	-.001(.03)
School Connectedness	.13(.09)	.16(.09)	-.03(.06)
Perception of Friends Caring	.14(.11)	.06(.10)	.08(.06)
Number of 2s	-.15(.18)	-.18(.17)	.02(.08)
Number of 3s	-.29(.21)	-.27(.21)	-.01(.13)
Number of 4s	-.02(.13)	-.15(.14)	.14(.08)

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

For older adolescent parents, living with a parent at Wave III significantly reduced total child maltreatment by .32 ($p \leq .01$) and living with other family or nonrelatives significantly increased total child maltreatment by .32 ($p \leq .05$). A one unit increase in school connectedness significantly reduced total child maltreatment for younger adolescent parents by .21 ($p \leq .05$). There were no significant effects found in the full model when parent age interactions were removed.

Between parent age groups revealed that the effect of living with a parent-figure was significantly greater for older adolescents than for young adult parents. This variable actually had a non-significant increasing effect on total child maltreatment for young adult parents. Thus, a difference in effect of .33 ($p \leq$

.01) was found. The effect of living with other family or nonrelatives was also significantly different for older adolescent versus younger adolescent parents. Living with other relatives or non-family at Wave III had a non-significant decreasing effect on total child maltreatment for younger adolescent parents while this same living arrangement had a significant increasing effect on total child maltreatment for older adolescent parents. As a result, the significant difference in the effect of this variable between older and younger adolescent parents was .50 ($p \leq .01$). Normal child birth weight for young adult parents had a significantly larger decreasing effect on total child maltreatment than it did for younger adolescent parents (difference in effect of -.43) ($p \leq .05$).

The results from the four sets of regression analyses conducted for total child maltreatment suggest that not many of the variables selected were good predictors of total child maltreatment, particularly in the two non-interaction models. The full and individual models with interactions were still limited in their ability to predict total child maltreatment, however. In both the full and individual models, several residential living status variables at Wave III were significant predictors of total child maltreatment for older adolescent parents. In the full and individual models, school connectedness significantly predicted total child maltreatment for younger adolescent parents. In the individual model, normal child birth weight also significantly predicted total child maltreatment.

Predicted probabilities of total child maltreatment for clusters within each of the four cluster solutions previously examined were determined following the full model regression analysis for total child maltreatment. Mean predicted probabilities of total child maltreatment and their standard deviations for clusters within four cluster solutions are presented in Table 34.

Table 34

Mean Predicted Probability of Total Child Maltreatment and Standard Deviations within Cluster Solutions

Cluster	Cluster Solution 1	Cluster Solution 2	Cluster Solution 3	Cluster Solution 4
1	.49(.28)	.45(.25)	.47(.24)	.42(.23)
2	.46(.24)	.47(.24)	.49(.27)	.45(.28)
3	.40(.29)	.39(.27)	.50(.29)	.49(.29)
4	.50(.26)	.50(.29)	.37(.27)	.51(.27)
5	.39(.31)	.34(.27)	.44(.25)	.51(.27)
6	.44(.25)	--	--	--
7	.49(.27)	--	--	--

Note: Cluster solution 1 – weighted average linkage five-variable solution using binary assault variables; Cluster solution 2 – weighted-average linkage seven-variable solution using ordered categorical assault variables; Cluster solution 3 – Ward's linkage five-variable solution using ordered categorical assault variables; Cluster solution 4 – weighted-average linkage five-variable solution using continuous total assault index.

To conclude the results from the logistic regression and regression analyses the nature of the effects of the independent variables on the three different forms of child maltreatment as well as total child maltreatment were compared across older and younger adolescent parents and young adult parents. Table 35 provides this comparison. The plus sign is symbolic of an increasing effect and the minus symbol stands for a decreasing effect. The asterisk shows that the variable was statistically significant.

Table 35

Comparison of Independent Variable Effects across Parent Age for Child Maltreatment Outcome Variables

	Younger Adolescent				Older Adolescent				Young Adult			
	Super. Neg.	Phys. Neg.	Phys. Ass.	Sum. Mal.	Super. Neg.	Phys. Neg.	Phys. Ass.	Sum. Mal.	Super. Neg.	Phys. Neg.	Phys. Ass.	Sum. Mal.
Physical Assault	-	-	+	+	+	-	+	+	+	-	-	-
Sexual Assault	-	-	-	-	+	-	-	-	-	-	+	-
Verbal Assault	+	+	-	+	+*	-	+	-	+	+	+	+
Summary Assault Index	+	+	+	+	-*	+	-	+	+*	+	-	+
Emotional Closeness I	+	+	+	+	-	+	+	+	+	-	+	-
Emotional Closeness III	+	+	-*	+	+	+	-	-	+	+	-	+
Self-Esteem I	-	+	-	-	-	-	-	+	-	-	-	-
Self-Esteem III	-	+	-	+	-	-	+	-	+	+	+	+
CES-D Scale I	-	+	-	+	+*	-	-	-	+	-	-	-
CES-D Scale III	-	-	+*	+	+	-	+	+	+	-	+	+
Dependency	-	+	-	+	-	+	+	+	+	-	+	+
Significant Other III	+	+	-*	-	+*	+*	-	+	-	-	-	-
Child III	+	+	+*	+	+	-	+*	-	+	-	+	-
Parent III	-	-	-*	-	-*	-	-	-*	-	+	+*	+
Other III	+	+	-	-	+*	+*	+	+*	+	+	+	+
Two-Parent I	-*	-	-	-	+	-	+*	-	+	+	-	+
One-Parent I	-	-	-	-	+	-	+	-	+	-	-	+
Child Birth Weight	-	+	+	+	-*	-	+	-	-	-	+	-
Number of Children	-	+	-	-	+	-	-	-	+	+	-	+
Child Age	+	-	+	+	+	-	+*	+	+	-	+*	+
School Connectedness	+	-	-	-*	+*	-	-*	-	+	-	-	+
Perception of Friends Caring	-*	-	-	-	-	+	+	+	-*	-	-	-
Number of 2s	-	+	-	+	-	-	+	-	-	-	+	-
Number of 3s	+	+	+	+	+	+	+	+	+	+	+	+
Number of 4s	-	+	+	+	-	+	+	+	-	-	-	+

Note: + = increasing effect; - = decreasing effect; * = statistically significant.

As Table 35 shows, there were few consistent significant differences seen across parent age groups as well as type of child maltreatment. Some similarities and trends across child maltreatment type and within parent age groups were found, however. Perception of friends caring significantly decreased supervision neglect for both younger adolescents and young adults. Although this variable reduced the odds of supervision neglect for older adolescent parents, the effect was not significant. School connectedness actually significantly increased total child maltreatment among younger adolescents as well as supervision neglect among older adolescents. For older adolescents however, school connectedness decreased the odds of physical assault. Thus, some significant variables were found to have different effects on different forms of child maltreatment even within a one parent age group. Child age had an increasing effect on physical assault for both older adolescents and young adults. This trend was seen among younger adolescents as well, but was insignificant, most likely due to the relatively large (.22) standard error.

Interestingly, the two-parent family structure decreased supervision neglect among younger adolescent parents, while it increased physical assault among older adolescent parents. Although insignificant, the two-parent family structure had a decreasing effect on physical assault for younger adolescent and young adult parents. The "other" family structure at Wave III had a very consistent effect across two forms of maltreatment among older adolescents as well as for the total maltreatment variable. This effect was similar but not significant among the other two parent age groups. Living with a parent-figure at Wave III seemed to have a consistent decreasing effect on different forms of child maltreatment for both younger and older adolescents. Among younger adolescents, living with a parent at Wave III significantly decreased physical assault. The same effect was found for older adolescents, although not to a significant degree. Among young adult parents, this living arrangement actually increased the odds of physical assault. Living with a parent-figure at Wave III significantly decreased supervision neglect among older adolescents. Again, this trend was found across parent age groups, although not to a significant degree among younger adolescent parents. The effect was even less among young adult parents. On the total child maltreatment variable, living with a parent at Wave III had a decreasing effect on total child maltreatment for older and younger adolescent parents, although the effect was only significant for older adolescent parents. This same living arrangement had a very insignificant increasing effect on total child maltreatment among young adult parents. Thus, living with a parent figure at Wave III tended to have very different effect on different types of child maltreatment among young adult parents than it

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did for the adolescent parent population in general. Living with a significant other had a significant increasing effect on both supervision neglect and physical neglect among older adolescent parents. In contrast, living with a significant other at Wave III had decreasing effect across all three parent age groups for physical assault, which was only significant for younger adolescent parents. Living with one's child or children increased the odds of physical assault across all three parent groups. This effect was inversely related to parent age. As parent age increased, the negative effect of living with one's child or children tended to decrease. Overall, living status arrangements at Wave III were among the most salient cluster of variables, particularly for older adolescent parents. Although significant in some instances, these variables were generally less pertinent to child maltreatment among younger adolescent and young adult parents.

In terms of intrapersonal variables, only depressive symptoms at Wave III significantly increased the odds of physical assault among younger adolescent parents. This increasing effect was seen across parent age groups, however. Depressive symptoms at Wave I significantly increased the odds of supervision neglect among older adolescent parents. An insignificant decreasing effect was found for younger adolescent parents and insignificant increasing effect was found for young adult parents.

With regard to the more proximal interpersonal variables, such as experiences with assault and emotional closeness with parents, the assault variables had a surprising lack of effect. Only total child maltreatment and verbal assault had any significant effect. Among older adolescent parents, verbal assault significantly increased the odds of supervision neglect. This trend was evident among the other two age groups as well, but not to a significant degree. Interestingly, the total assault variable significantly decreased supervision neglect among older adolescent parents, but significantly increased supervision neglect among young adult parents. On the emotional closeness variables, only emotional closeness at Wave I had a significant decreasing effect on physical assault for younger adolescent parents, although this decreasing trend was observed in the other three parent age groups as well.

The results of these four sets of regression analyses suggest that some variables share a similar trend in their effect on the outcome variables, but vary in degree or significance. Others had a completely different, or opposite, effect on parents in different age groups. Regression analyses with parent-age interactions more often revealed these more refined distinctions compared to regression analyses conducted without parent-age

interactions. For the majority of the outcome variables, the full models were superior to the regression analyses in which individual models were run, thus illustrating the important relationships between these variables.

CHAPTER 4

Discussion

Four questions were addressed in this study. The discussion will address each of those questions and the implications of the results presented in Chapter 3. The first question asked whether there were subgroups of adolescent and young adult parents differentiated by patterns of current contextual and historical interpersonal and intrapersonal characteristics thought to be pertinent to child maltreatment. This question was addressed in Section 1 of the results. Question 2 asked whether patterns and subgroups identified in cluster analyses were further differentiated by other pertinent ecological and demographic variables, particularly different forms of child maltreatment as well as parent age. This question was addressed in Section 2 of the results. Question 3 asked what personal, contextual, historical, and demographic factors characterize younger and older adolescent and young adult parents. This question was addressed in Section 3 of the results. The fourth question aimed to determine what personal, contextual, and historical factors significantly predict different types of maltreatment as well as total experiences with child maltreatment among younger adolescent, older adolescent and young adult parents with varying degrees of exposure to multiple forms of child maltreatment. This question was addressed in Section 4 of the results. The discussion of these results will also be presented in four sections, followed by an integrated synthesis of the conclusions that can be drawn from all four questions and their analyses. This chapter will conclude with a discussion of the studies limitations and suggestions for further study.

Section 1: Cluster Identification

To address the first research question, cluster analyses were conducted using a stratified sample of 4,150 adolescent and young adult parents from the Add Health Survey. A total of four different cluster solutions provided support for the notion that parenting individuals can be distinctly differentiated from one another by their respective subgroups. The weighted-average linkage five-cluster solution which used three ordered categorical assault variables (verbal, physical, and sexual), continuous Waves I and III emotional closeness variables, and continuous Waves I and III CES-D Scale variables was selected for further analysis.

The five clusters in this solution showed the most distinction on the three assault variables. The largest cluster had very low means on all three forms of assault, moderately high means on the two emotional closeness variables, and low and moderately low means on the CES-D Scale I and III variables, respectively. The next largest cluster had a moderately high mean on verbal assault and very low means on physical and sexual assault. The means of the two emotional closeness variables were lower than those in the "low assault cluster," although both were still moderately high. Similarly, the means of the two CES-D Scale variables were higher than those found in the "low assault" cluster. The two CES-D Scale variables in this cluster were low and moderately low, however. The next largest cluster was characterized by moderately high and high means on verbal and physical assault, respectively, and a very low mean on sexual assault. This cluster's means on the two emotional closeness variables were not vastly discrepant from those on the "high verbal assault" cluster, but were still lower than the emotional closeness means in both of the groups previously described. Both CES-D Scale variables had means that were more elevated than or equivalent to those in the two groups previously described as well. The fourth cluster was also most distinguishable from the other three clusters on the three assault variables. This relatively small cluster had a moderately low mean on verbal assault, a low mean on physical assault, and a very high mean on sexual assault. This cluster's emotional closeness variables were almost commensurate with those in the "low assault" cluster. This cluster had the highest mean on depression at Wave III and fell near the mid-range of all of the clusters on depressive symptoms at Wave I. Lastly, the smallest cluster had very high means on all of the assault variables. Among all of the clusters, the "high assault" cluster had the lowest means on the two emotional closeness variables, the highest mean on depression at Wave I and had very close to the highest mean on depression at Wave III. Overall, this cluster solution could be characterized as having a "low assault" cluster, "high verbal assault" cluster, "high sexual assault" cluster, "high verbal and physical assault" cluster, and a "high assault" cluster.

In summary, the weighted-average linkage five-cluster solution, using the ordered categorical assault variables, was well differentiated on the assault variables. There was some subtle evidence however, that the CES-D Scale and emotional closeness variables followed a pattern consistent with the continuum of the degree of assault, both in the amount of each individual form of assault and experience with more than one form of assault. For example, the lowest means on the emotional closeness variables and the highest means on the depression variables were consistent with high means on all three assault variables. In contrast, the overall

highest means on the emotional closeness variables and the lowest means on both CES-D Scale variables were consistent with low means across all three assault variables. The implication is that more extreme experiences with assault, that is the most and the least amount of assault, may be negatively related to individuals' emotional closeness with caregivers as well as positively related to depressive symptoms.

The Ward's linkage five-cluster solution, which used the ordered categorical assault variables and Waves I and III continuous emotional closeness variables, was also selected as distinct subgroups of parents, again primarily differentiated on the assault variables, were also formed. This cluster solution, which excluded the CES-D Scale variables, was also unique in that one cluster was formed with a very low mean on emotional closeness at Wave I. Like the previous cluster solution discussed, the largest cluster consisted of individuals with very low means on all of the assault variables and the highest means on emotional closeness at both time points. This cluster solution was also similar to the previous one in that the second largest cluster was defined by its moderately high mean on verbal assault and very low means on physical and sexual assault. The means of the emotional closeness variables were still moderately high, although lower than those in the "low assault" cluster. Another cluster was formed which paralleled one found in the cluster solution previously discussed. This cluster was distinguished by a moderately high mean on verbal assault, a high mean on physical assault, and a low mean on sexual assault. Again, the means on the emotional closeness variables were lower than the means on emotional closeness in the other two clusters discussed within this solution. Thus, the trend, albeit subtle, again revealed a negative correlation between increasing assault and emotional closeness. The second smallest cluster was very high on sexual assault and had moderate and moderately low means on verbal and physical assault, respectively. This cluster was not grossly discrepant from the previous one described in terms of emotional closeness. The smallest cluster differed drastically from the others in that it had a very low mean on emotional closeness at Wave I. The mean on verbal assault for this cluster was low and the means on physical and sexual assault were very low. In summary, this cluster solution had three clusters very similar to the cluster solution formed by the weighted-average linkage algorithm. It was quite different however, in that it contained a cluster with very a very low mean on emotional closeness at Wave I. Thus, this cluster solution could be described as having a "low assault" cluster, "high verbal assault" cluster, "high verbal and physical assault" cluster, "mixed levels of verbal and physical assault and high sexual assault" cluster, and "low Wave I emotional closeness" cluster. The unique "low Wave I emotional closeness" cluster formed by this cluster

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solution is counter to the slight trend observed in the other clusters as well as the previous cluster solution as extremely low emotional closeness was not characterized by a significant amount of any form of assault. Thus, it cannot be hypothesized that low emotional closeness is accounted for by experiences with assault.

The weighted average linkage five-cluster solution which used a continuous total assault measure, the sum of the three individual ordered categorical assault variables, two continuous CES-D Scale variables, and two continuous emotional closeness variables also provided some support for the notion that there are distinct subgroups of adolescent and young adult parents on these five dimensions. In this cluster solution, the clusters were most notably distinguished by the continuous assault variable, but marked differences were also seen for several clusters on the emotional closeness variables. The largest cluster was defined by very low total assault, moderately high and high means on emotional closeness at Waves I and III, respectively, and markedly low means on both CES-D Scale measures. The next largest cluster had a low mean on total assault, moderately high means on the emotional closeness variables, and moderately low means on the two CES-D Scale measures. It should be noted however, that the means on the two CES-D Scale variables in this "low assault" cluster were the highest among all of the cluster solutions. Thus, unlike other cluster solutions in which the highest means on depressive symptoms tended to coincide with high means on assault, this cluster solution's highest means on depressive symptoms were found in the "low assault" cluster. The next largest cluster could be described as the "high assault" cluster. The means on the emotional closeness variables in this cluster were quite a bit less than those in the "very low assault" cluster. They were not grossly discrepant from the means on emotional closeness in the "low assault" cluster, however. In addition, this cluster's means on the CES-D Scale variables were quite a bit higher than those in the "very low assault" cluster, but also quite a bit lower than those in the "low assault" cluster, which was marked by the highest depressive symptoms. Again, unlike the other cluster solutions discussed, the highest assault cluster was not accompanied by the lowest means on emotional closeness and the highest means on the depressive symptoms measures. The remaining two clusters were primarily defined by their distinctiveness on the two emotional closeness variables. The second smallest cluster solution had a moderately low mean on total assault, but the mean on emotional closeness at Wave I was very low. The means on the two CES-D Scale variables did not differ a great deal from several other clusters which also did not have the highest or lowest means on the CES-D Scale variables. The smallest cluster had a low mean on total assault and a moderately high mean on emotional closeness at Wave I, but a low mean on

emotional closeness at Wave III. Like the previous cluster described, the means on the two CES-D Scale variables were unremarkable. In summary, this cluster solution could be described as having a "very low assault" cluster, a "low assault with relatively high depressive symptoms" cluster, a "moderate assault" cluster, a "very low Wave I emotional closeness" cluster, and a "low Wave III emotional closeness" cluster. It is notable that this cluster solution was defined by both total experiences with assault as well as emotional closeness. Emotional closeness did not follow a pattern or trend consistent with the amount of assault experienced, however. As in other cluster solutions, the two depressive symptoms variables had a very narrow range across cluster solutions and means were less differentiated across clusters.

The last cluster solution supported by the cluster analyses was a weighted-average linkage seven-cluster solution which used three dichotomous assault variables and the two emotional closeness variables. Given that the assault variables were dichotomous, the clusters formed primarily reflected having been the victim of at least one incidence of assault prior to the age of 18 or having never been assaulted. As it has been the case in each of the cluster solutions previously discussed, the largest cluster was comprised of individuals who indicated no assault for all three forms. The means on the emotional closeness variables for this cluster were moderately high. The next largest cluster indicated verbal assault and no physical or sexual assault and means on emotional closeness were still moderately high, although lower than those in the "no assault" cluster. The third largest cluster solution indicated verbal and physical assault and no sexual assault. Means on emotional closeness for Waves I and III were moderate and moderately high, respectively. The next largest cluster was one in which all individuals indicated verbal and sexual assault and 63% of individuals indicated physical assault. What is notable about this cluster is that the means on the emotional closeness variables were the overall lowest among all clusters. The remaining three clusters were very small, but unique. One cluster was formed which indicated physical assault alone and moderately high means on emotional closeness. Another small cluster indicated sexual assault, very few indicated physical assault, and no one indicated verbal assault. Finally, the last cluster was differentiated by its very low mean on the Wave III emotional closeness variable. This cluster indicated no assault of any type and moderately high emotional closeness at Wave I. Thus, the clusters within this cluster solution could be characterized as having "no assault," "verbal assault only," "verbal and physical assault," "verbal, sexual, and partial physical assault," "physical assault only," "sexual assault only," and "no assault/very low Wave III emotional closeness."

To summarize, the four cluster solutions selected were similar to each other in some respects. They were also chosen however, because of their uniqueness. There was evidence for distinct patterns of adolescent and young adult parent characteristics on the variables of interest, some of which were similar to each other across cluster solutions. The three cluster solutions which used the three individual assault variables formed perhaps the most similar cluster solutions. In each of these three cluster solutions, there was a "low assault" cluster, a "verbal assault" cluster, a "verbal and physical assault" cluster, and a cluster which tended to vary a bit more. This cluster endorsed sexual assault to a greater degree than the other clusters within their respective cluster solutions but differed from each other with regard to their levels of physical and verbal assault. The two five-cluster solutions that used the ordered categorical assault primarily differed from one another on one cluster. The weighted-average linkage five-cluster solution formed one "high assault" cluster, with high means on all three assault variables. In contrast, the Ward's linkage cluster solution did not have a "high assault" cluster. Instead, this cluster solution formed one relatively low assault cluster which differed dramatically on one of its emotional closeness variables. In addition, there were four clusters on which the seven-cluster solution was similar to the other two cluster solutions which used the three assault variables. This cluster solution was also comprised of some additional smaller unique clusters, however. Two of these clusters were differentiated on their endorsement of two different forms of assault and the last was distinguished by low emotional closeness also seen in the Ward's linkage cluster solution. Finally, the cluster solution which used the continuous total assault variable rather than the three individual measures of assault was most different from the other three cluster solutions. This cluster solution primarily reflected differences in mean total assault on three clusters and differences in means on emotional closeness at Waves I and III on two clusters.

Although several of the cluster solutions described were sufficiently similar to one another, each also had something unique to offer and depicted subgroups of adolescent and young adult parents in a slightly different way. Collectively, the four cluster solutions described demonstrated that subgroups of adolescent and young adult parents could be distinguished primarily by their experiences with one or more forms of assault. The analyses also revealed two very distinct subgroups of individuals within this sample who indicated a very low level of emotional closeness with their caregiver(s). One group had a particularly low level of emotional closeness at Wave I, the other at Wave III. Finally, while parents could not be as readily distinguished by their levels of depressive symptoms, these symptoms seemed to be positively correlated with their experiences with

assault in the majority of clusters. Further, emotional closeness seemed to be negatively correlated with experiences with assault in the most extreme clusters. Thus, these cluster analyses suggest that adolescent and young adult parents in this sample can be uniquely described in terms of their experiences with one or more forms of assault as well as total assault, that there is some degree of positive correlation between experiences with assault and depressive symptoms, and that there is some degree of negative correlation between emotional closeness with caregivers and assaultive experiences. In addition, there is evidence for a subgroup with a very low level of emotional closeness that is not consistent with a high assaultive profile.

Section 2: Description of Cluster Members

As a result of the uniqueness of each of the four cluster solutions, follow-up analyses on the primary variables of interest were conducted on each of the cluster solutions. The variables included in this set of follow-up analyses were each of the four child maltreatment outcome variables as well as parent age. The purpose of these follow-up analyses were to determine whether clusters within each of the solutions selected could be differentiated by cluster members' perpetration of different forms of maltreatment as well as parent age. It was thought that individuals who had experienced the most assault, both across assault variables and who, correspondingly, had the lowest means on the emotional closeness variables and the highest means on the CES-D Scale variables, would subsequently have the highest percentages of the three forms of child maltreatment measured and the highest mean on total maltreatment. In contrast, it was thought that individuals who had few or no experiences with assault, relatively high means on emotional closeness, and relatively low means on the CES-D Scale variables would have the lowest mean total child maltreatment and the lowest percentages on each of the independent measures. Thus, it was believed that these findings would lend support to the notion that these variables were indeed related and pertinent to the child maltreatment. Chi-square tests of independence were used to determine whether there were differences between clusters in the perpetration of three different forms of maltreatment, including supervision neglect, physical neglect, and physical assault. A continuous summary child maltreatment measure was also included as a measure of comparison between clusters. To determine whether there were differences between clusters on their mean total child maltreatment score, clusters were regressed on this variable and follow-up Adjusted Wald tests were used to compare clusters.

Using the above stated procedures, it was found that clusters within the weighted-average linkage, five-cluster solution (using ordered categorical assault variables, emotional closeness variables, and CES-D Scale variables) were only differentiated on the total child maltreatment variable. Individuals in the second, "high verbal assault," cluster had significantly higher means on total child maltreatment than individuals in the third, "high sexual assault" cluster, which also had moderately low verbal assault. It is important to point out that the means on emotional closeness in the "high verbal assault" cluster were relatively low compared to those in the "high sexual assault" cluster. The means on the two CES-D Scale variables were comparable. In terms of physical neglect, the "high verbal assault" cluster also had the largest percentage while "high sexual assault" cluster, which also had a moderate level of verbal assault, had the lowest percentage. The highest percentage of supervision neglect was in the "high verbal assault" cluster as well, but the lowest percentage of supervision neglect was in the "low assault" cluster. The highest percentage of physical assault was in the "high assault" cluster and the lowest percentage of physical assault was in the "high sexual assault." Thus, in three out of four of the outcome variables examined across this cluster solution, the highest percentage of child maltreatment occurred in the "high verbal assault" cluster, while the lowest percentage of child maltreatment was found in the "sexual assault cluster."

Follow-up analyses for the Ward's linkage five-cluster solution revealed that the clusters were also only significantly differentiated on the total child maltreatment measure. Like the weighted-average linkage five-cluster solution, the "high verbal assault" cluster had a significantly higher mean on total child maltreatment than the cluster with mixed levels of assault and high sexual assault. Thus, follow-up analyses for both cluster solutions illustrated the relative significance of verbal assault with regard to total child maltreatment. Within the Ward's cluster solution, the highest percentages of physical neglect, supervision neglect, and assault were also in the "high verbal assault" cluster. The lowest percentage of physical neglect and physical assault were in the "low emotional closeness" cluster, also characterized by very minimal assault. The lowest percentage of supervision neglect was in the cluster with mixed levels of assault and high sexual assault. Thus, the Ward's linkage and weighted-average linkage cluster solutions were also similar to each other in that the clusters with the highest levels of sexual assault corresponded with the lowest levels of total assault and supervision neglect.

Significant differences were not found across clusters in the weighted-average linkage five-cluster solution, which used the continuous assault variable, on any of the individual child maltreatment variables or continuous total child maltreatment variable. The highest mean on the total child maltreatment variable was in the "low total assault" cluster and the lowest mean was in the cluster with low emotional closeness at Wave III. The cluster with moderately low total assault and very low emotional closeness at Wave I had the highest percentage of physical neglect. The percentage of supervision neglect was very similar across clusters. The highest percentage of physical assault was in the cluster with the lowest mean on the total assault variable, highest means on the emotional closeness variables, and lowest means on the depressive symptoms variables. The lowest percentage of physical assault was in the cluster with low emotional closeness at Wave I. Thus, descriptions of each cluster by type of child maltreatment and total child maltreatment did not correspond with preconceived notions about the proposed negative relationship between experiences with assault and child maltreatment nor with the similar notions about the positive relationship between emotional closeness and child maltreatment.

Lastly, the weighted-average linkage seven-cluster solution, which used the dichotomous assault and emotional closeness variables, demonstrated the most variability on outcomes of interest. Significant differences were found in the proportion of child physical neglect endorsed across clusters as well as total child maltreatment. Interestingly, the highest proportion of physical neglect was concentrated in the "physical assault" cluster, which also had moderately high means on emotional closeness. The smallest proportion of child physical neglect was concentrated in the "high verbal and sexual assault and partial physical assault" cluster, which also corresponded with the overall lowest means on both emotional closeness variables. Differences were also found on mean total child maltreatment across the seven-cluster solution. Again, the "physical assault" cluster differed from the majority of other clusters, including the cluster with both verbal and sexual assault and partial physical assault, which had the lowest total child maltreatment mean. The descriptions of the clusters within this cluster solution can be compared and contrasted to the first two ordered categorical cluster solutions in some respects. This cluster solution was similar to the first two discussed in that the cluster characterized by the most assault, most notably sexual assault, also had the lowest percentages of child maltreatment. In contrast to these first two cluster solutions however, the highest percentages of child maltreatment were found in the "physical assault" cluster rather than in the "verbal assault" cluster.

The results of the follow-up analyses disproved the notion that individuals in the highest assault clusters, both across individual measures and cumulatively, would also have the highest percentages on the individual child maltreatment variables and mean on total child maltreatment. Quite the opposite was found for several different forms of child maltreatment as well as total child maltreatment. For example, in the weighted-average linkage five-cluster solution, which used the ordered categorical assault variables, individuals who had experienced a high degree of verbal assault had the highest mean on total child maltreatment, and highest percentages on supervision neglect, and physical neglect. Within this cluster solution, the only two clusters that were consistent with the preconceived idea that experiences with assault would be positively correlated with child maltreatment, were the "low assault" cluster, which had the lowest percentage of supervision neglect, and the "high assault" cluster, which had the highest percentage of child physical assault. This pattern of was not true of the Ward's linkage solution however, for which the "high verbal assault" cluster consistently had the highest percentage of each form of child maltreatment. Thus, within this cluster solution in particular, an individual's experience with verbal assault appeared to be more strongly associated with all forms of child maltreatment rather than experience with multiple types of assault. The follow-up results from the cluster solution which used total assault were completely counter to the anticipated positive relationship between an individual's experiences with assault and the child maltreatment. The seven-cluster solution was the only cluster solution in which any of the individual child maltreatment variables were significantly different across clusters. With several more clusters than the other three cluster solutions described, the results of the follow-up analyses were quite different in general, as the highest mean on the total child maltreatment variable was not in the "high verbal assault" cluster nor was it in the cluster with the highest percentages on all of the assault variables. Instead, the highest proportion of physical neglect was found in the "physical assault" cluster, while the lowest proportion of physical neglect was found in the cluster characterized by the most assault and lowest overall means on the emotional closeness variables. These results are clearly contrary to the idea that higher proportions and means on individual forms of assault as well as cumulative assault, low emotional closeness, and high depressive symptoms are associated with higher proportions and means on individual forms of child maltreatment and total child maltreatment, respectively. In addition, total assault did not distinguish maltreating from non-maltreating parents. Instead, it was only cluster solutions in which individual measures of assault were used that found differences in total maltreatment across clusters. Within these, only two types of clusters,

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"verbal assault" in the five-cluster solutions and "physical assault" in the seven-cluster solution, appeared to represent a significant higher proportion of total child maltreatment.

In conclusion, these follow-up analyses suggest that the child maltreatment, both its individual forms and cumulatively, might be better explained by variables that were not included in these cluster analyses given that the highest means on total child maltreatment did not significantly correspond with individuals' cumulative experiences with assault nor with the their individual experiences with different forms of assault, with the exception of verbal assault in the five-cluster solutions and physical assault in the seven-cluster solution. These findings do suggest that verbal assault may be more highly associated with the perpetration of the three different forms of child maltreatment measured as well as total child maltreatment and that physical assault may be associated with the perpetration of physical neglect and total child maltreatment, as well as supervision neglect to a lesser degree. In addition, a more subtle interpersonal relationship measure, emotional closeness, did not correspond with child maltreatment, as previously suspected. Rather, individuals in the "physical assault" cluster in the seven-cluster solution and "verbal assault" in the five-cluster solutions also had moderately high emotional closeness that was neither the highest nor the lowest among all of the clusters within their respective cluster solutions. This was also true of the means of the two CES-D Scale variables in the "verbal assault" cluster in the weighted average linkage-five cluster solution which used the ordered categorical assault variables, CES-D Scale variables, and emotional closeness variables.

Lastly, each of the cluster solutions was inspected for significant differences across clusters on the three category parent age variable. It was hypothesized that younger adolescent parents would be more likely to be disproportionately concentrated in clusters with high means on depressive symptoms and low means on emotional closeness and that they would also occupy the clusters with the highest proportions child maltreatment in its individual forms as well as cumulatively. Both of these preconceived thoughts were also disproven. Significant differences were only found between clusters in the seven cluster solution. Interestingly, the smallest proportion of younger adolescents was in the "physical assault" cluster which also had the highest proportion of physical neglect and highest mean on total child maltreatment. The highest proportion of young adults was also in this cluster. The highest proportions of younger adolescents and older adolescents were in the "sexual assault" cluster. It should be noted however, that older adolescents were fairly evenly distributed across clusters. These results suggest that contrary to what has been reported in previous literature, younger

adolescent parents may not be unequivocally more likely perpetrators of child maltreatment than young adult parents.

As a result of differences found across the seven cluster solution on several variables of interest (child physical neglect, total child maltreatment, and parent age), this cluster solution was followed-up with additional analyses. These additional follow-up analyses allowed for further description of the distinct clusters which emerged, particularly the "physical assault" cluster, characterized by the highest proportion of child physical neglect and the highest mean on total child maltreatment, and the "high assault cluster" with low proportions of individual forms of child maltreatment and a low mean on total child maltreatment.

Differences across clusters within the seven-cluster solution were identified for a number of continuous, nominal, and categorical variables that were also of interest with regard to the child maltreatment among adolescent and young adult parents. The largest proportion of males occupied the "physical assault" cluster. This cluster also had the largest proportion of individuals whose families had never received public assistance. The cluster characterized by the lowest mean on total child maltreatment and the smallest proportion of physical neglect, had the highest percentage of family receipt of public assistance. Individuals' personal receipt of welfare was also found to vary across clusters. The "physical assault" cluster was one of two clusters to have the smallest proportion of individuals who had received public assistance both at the time of the Wave III interview as well as in the past. This cluster had by far the smallest percentage of individuals who had received public assistance in the past, but not at the time of the Wave III interview. This cluster did however, have the largest proportion of individuals who had not received public assistance in the past, but were receiving it at the time of the Wave III interview. The cluster with the lowest mean child maltreatment, the "high assault" cluster, had the third largest proportion of individuals who had received public assistance both in the past as well as at the time of the Wave III interview. This cluster had, by far, the largest percentage of individuals who had received public assistance in the past, but not at the time of the Wave III interview. The "high assault" cluster had a relatively small percentage, but not the smallest percentage, of individuals who had not received public assistance in the past, but were receiving it at the time of the Wave III interview. Lastly, this cluster had the second smallest percentage of individuals to have never received public assistance. The "no assault" cluster had the largest percentage of individuals who had never received public assistance, while the "sexual assault" cluster had the smallest percentage of individuals who had never received public assistance.

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The "sexual assault" and "no assault, low emotional closeness" clusters had the two largest percentages of individuals receiving public assistance both at the time of the Wave III interview as well as in the past.

Although several socio-demographic factors did not differ significantly across clusters, their results are still worth discussing. These include level of educational attainment and race/ethnicity. The largest percentage of individuals who did not graduate from high school was in the "sexual assault" cluster. The "sexual assault" cluster also did not have any individuals that attended some college or graduated from college. This cluster also had the largest percentage of younger adolescent and older adolescent parents. The "physical assault" cluster, also characterized by the most child maltreatment, had among the smallest percentages of individuals who did not graduate from high school, a large percentage of individuals who graduated from high school, and the largest percentage of individuals who graduated from college. It is important to note that this cluster was also characterized by the largest percentage of young adult parents. Although race and ethnicity did not vary significantly across clusters, some trends are worth noting. First, the largest percentage of Hispanic respondents were in the "sexual assault" cluster and smallest percentage of Hispanic respondents were in the "no assault, low emotional closeness" cluster. The largest percentage of individuals who fell in the "other" category was also in the "no assault, low emotional closeness" cluster and the remainder were fairly evenly spread amongst the other clusters. The largest percentage of African American respondents was also in the "no assault, low emotional closeness" cluster, followed by the "physical assault" cluster. The percentage of Caucasian respondents within each cluster closely approximated the percentage of Caucasian respondents within the sample in all but three clusters. A substantially smaller percentage of Caucasian respondents were represented in the "no assault, low emotional closeness cluster," "physical assault" cluster, and "sexual assault" cluster.

Previous literature has suggested that level of educational attainment is inversely correlated with the child maltreatment. This was not consistent with the results from this study, given that the most highly educated individuals were concentrated within the cluster in which individuals had the highest mean on child maltreatment. The high level of educational attainment within this cluster is most likely related to the high percentage of young adult parents. Conversely, the cluster with the lowest percentage of young adult parents had the lowest level of educational attainment. This cluster also had the smallest mean for total child maltreatment and the lowest percentage of physical neglect. The results from the examination of race and ethnicity across clusters suggest that Caucasian and Hispanic respondents were less likely to express a lack of

emotional closeness with caregivers than African American and respondents categorized as "other." This may reflect cultural differences in individuals' willingness to share the more subtle or intimate aspects of their relationships with caregivers. The relationship between gender and child maltreatment was not one previously considered, nor the potential relationship between gender and disclosure of assault. Given that a large percentage of males were concentrated in the "physical assault" cluster, also characterized by significant levels of total child maltreatment and physical assault, it is possible that males may be less likely to discuss or contemplate other forms of assault, such as sexual assault and verbal assault, and perhaps also more open to admitting to child maltreatment.

With regard to the receipt of public assistance, several findings were particularly interesting. Family receipt of public assistance, a measure of individuals' historical socio-economic status, was associated with the cluster that had low child maltreatment and physical neglect, while the smallest percentage of family receipt of public assistance was associated with the cluster with the highest mean total child maltreatment and highest percentage of physical neglect. This is contrary to the commonly held assumption that child maltreatment and neglect might be accounted for by the culture of poverty. Furthermore, individuals' receipt of public assistance, both in the past and at the time of the Wave III interview, also did not necessarily seem to correspond with child maltreatment in accordance with expectations as individuals in the high child maltreatment and physical neglect cluster actually had the lowest percentage of past and current receipt of public assistance. It should be noted however, that the "physical assault" cluster had the highest percentage of individuals who had not received public assistance in the past, but were receiving it at the time of the Wave III interview. Overall, personal receipt of public assistance was consistent with what was found about family receipt of public assistance as consistent receipt of individual public assistance corresponded with those clusters with low means on total child maltreatment, whereas the high child maltreatment cluster had a small percentage of individuals who received public assistance the past as well as currently. These findings suggest that poverty measured by the receipt of public assistance both by one's family during childhood and individually, as a parent, is not necessarily a good marker for child maltreatment. Instead, it is possible that the receipt of public assistance may function as a protective factor for families in need, helping ease the stress of caring for families. It should also be noted however, that, as previously mentioned, males occupied a significant percentage of the "physical assault" cluster. Thus, it is also possible the difference in receipt of public assistance may be accounted for by the

gender disparity. There is both the possibility that males are less likely to receive public assistance and that they are less likely to divulge this information. Acknowledgement of the receipt of public assistance may be less stigmatizing and laden with shame for females than it is for males.

Child-centered variables were also inspected for differences across clusters. Child age was found to significantly differ across clusters. On average, the oldest offspring were concentrated in the cluster with "high assault." Interestingly, the youngest offspring were concentrated in the cluster with the largest percentage of young adult parents. Although statistically significant differences were not found between clusters for child birth weight and number of children, they will be discussed. Of note, the "physical assault" cluster had the largest percentage of individuals who had infants born below normal birth weight. The sexual assault cluster had the smallest percentage of babies born below normal birth weight. Individuals in the "no assault, low emotional closeness" cluster had the largest average number of children, followed by the least maltreating cluster. The "sexual assault" cluster, which also had largest percentage of younger adolescent parents, had the smallest mean number of children.

The results from follow-up analyses on the child centered variables were somewhat inconsistent with what might be expected in terms of parent age as well as child maltreatment outcomes. For example, it would seem more likely for the cluster with the largest percentage of young adult parents to also have a larger average mean child age. On the other hand, a comparatively large percentage of infants in this cluster were reportedly born at less than normal birth weight. These findings suggest that perhaps the challenges associated with raising very young children as well as infants born prematurely, were associated with the significantly higher incidence of total child maltreatment and percentage of physical neglect within this cluster. Also of interest, the cluster with the largest percentage of both younger adolescent and older adolescent parents also had the smallest percentage of babies born below normal birth weight. This also contradicts previous research findings which document the correlation between adolescent parenting and an increased incidence of low birth weight infants.

A number of psychological variables varied significantly across clusters. The highest mean on alcohol dependency was in the "no assault, low emotional closeness" cluster. The lowest mean on alcohol dependency was in the "sexual assault" cluster, which also had the lowest percentage of young adult parents. The cluster with the highest mean on alcohol dependency, in contrast, had percentages of all three parent age categories that more closely approximated population estimates. Consistent with what has been found in previous literature

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examining the relationship between self-esteem and exposure to abuse or assault during childhood, mean self-esteem at Wave III was lowest in the cluster characterized by the most exposure to assault. This was also the cluster however, characterized by the lowest mean on total child maltreatment, thereby thwarting the assumption that higher self-esteem would be associated with lower means on total child maltreatment. In fact, the cluster with the highest mean on self-esteem at Wave III was the cluster with the highest mean on total child maltreatment and the largest percentages of physical and supervision neglect. Also consistent with expectations for individuals who experienced a large amount of assault, reports of being diagnosed with anxiety both before and after the Wave III interview were highest among individuals in the cluster that reported experiences with all three forms of assault. Reports of anxiety before and after the Wave III interview were lowest in the "no assault, low emotional closeness" cluster. It is also noteworthy however, that individuals in the "physical assault" cluster, also characterized by the highest mean of total child maltreatment, had the second largest percentage of individuals who received diagnoses with anxiety both before and after the Wave III interview. Depressive symptoms at Waves I and III also differed significantly across clusters. The patterns of depressive symptomatology were somewhat inconsistent with the expectation that higher depressive symptoms would be associated with more assault victimization and/or a higher mean or percentage of child maltreatment. The highest mean on the CES-D Scale Wave I variable was in the "sexual assault" cluster. The sexual assault cluster had a moderate, second highest, mean on total child maltreatment. Consistent with expectations, the "no assault" cluster had the lowest mean on depressive symptoms at Wave I. While characterized by neither highest nor lowest means, the "physical assault" cluster had a relatively low mean on the CES-D Scale Wave I variable and the "verbal, sexual, and partial physical assault" cluster had the second highest mean on this variable. These findings imply that degree of depressive symptomatology may be specifically related to the type of assault experienced as well as total exposure, although the relationship still appears to be subtle. Further, there seems to be only slight evidence of a potential relationship between depressive symptomatology at Wave I and child maltreatment variables. Means on the Wave III CES-D Scale variable across clusters were more consistent with what would be expected for individuals' experiences with assault, particularly for the "high assault" cluster. Individuals in the "verbal, sexual, and partial physical assault" cluster had the highest mean on the CES-D Scale III variable. As previously discussed, what was not expected was the low child maltreatment

also found in this cluster and the high child maltreatment mean found in the "physical assault" cluster, which had the lowest mean on the CES-D Scale III variable.

Although significant differences were not found across clusters, interesting patterns were also found between clusters on other psychological variables. For example, on the two dichotomous ADHD measures, no one in the sexual assault cluster indicated either ADHD Inattentive Type or ADHD Hyperactive-Impulsive Type. In addition, the largest percentage of individuals who indicated both types of ADHD were in the "physical assault" cluster which also corresponded with the largest percentage of physical neglect and the highest mean on total child maltreatment. There were no significant differences found on the Wave I self-esteem variable. The highest mean on self-esteem at Wave I was however, in the cluster which had the lowest mean on total child maltreatment and lowest percentage of physical and supervision neglect. The lowest mean on self-esteem at Wave I was found in the "low assault, low emotional closeness cluster."

Follow-up analyses on the seven-cluster solution using the psychological variables provided further description of the clusters and highlighted possible associations with other variables. The low mean on dependency in the "sexual assault" cluster corresponded with the lowest percentage of younger and older adolescents within any cluster, while the highest mean on dependency occurred in the "low assault, low emotional closeness." These findings suggest that dependency is not as strongly associated with being assaulted, nor would it seem to play a big role in the child maltreatment. Rather, these findings suggest that dependency may be related to age and/or more subtle relationship factors than any other explanatory factors examined. The fact that the largest percentage of ADHD occurred in the "physical assault" cluster suggests that there may be an association between both types of ADHD and physical assault, and, potentially, with child maltreatment. Examination of self-esteem across both Waves revealed some interesting insights as well. The group with the least amount of child maltreatment and highest levels of assault had the highest mean on self-esteem at Wave I. The "no assault, low emotional closeness" cluster had the lowest mean on self-esteem at Wave I. These results imply that subtle relationship factors (i.e. emotional closeness with caregivers), may be more pertinent to self-esteem at Wave I than more overt relationship factors (i.e., assault). At Wave III however, this pattern changed quite a bit. The "high assault" cluster had the lowest mean on self-esteem at Wave III while the "physical assault" cluster had the highest mean on Wave III self-esteem. There does not appear to be a good explanation for the "physical assault" cluster's high mean on self-esteem at Wave III. The

high percentages of anxiety diagnosed before and after Wave III among the "high assault" cluster seems consistent with the significant degree of assault experienced by individuals within this cluster. As a whole, the clusters in which individuals experienced at least one or more forms of assault had higher percentages of anxiety diagnoses than the two clusters in which individuals indicated no assault. These results suggest that there is also an association between assault and diagnoses with anxiety. In addition, the fact that the largest percentage of diagnoses both before and after Wave III occurred in the cluster in which the majority of individuals experienced all three forms of assault, is further evidence that experience with multiple forms of assault is more strongly associated with anxiety diagnoses than experience with fewer types of assault or no assault at all. In other words, it seems likely that an individual who has experienced multiple forms of assault is more likely to have a diagnosis with anxiety than an individual who had not had exposure to as many different forms of assault. Lastly, the examination of the CES-D Scale variables at Waves I and III across the seven clusters did not provide the results expected. At Wave I, the highest mean on depressive symptoms was in the "sexual assault" cluster and the lowest mean was in the "no assault" cluster, reflecting what would naturally be predicted to some degree. The results do not maintain consistency over time, however. Individuals who experienced the most assault had the highest mean on depressive symptoms at Wave III. Quite unexpectedly, the "physical assault" cluster had the lowest CES-D Scale mean at Wave III. Again, it makes theoretical sense for individuals with no assault to have the lowest mean on depressive symptoms at Wave I and, perhaps, for individuals who have experienced sexual assault to have the highest mean on depressive symptoms. Similarly, at Wave III it seems to make the most intuitive sense for individuals who have experienced the most amount of assault to have the highest mean on depressive symptoms, but not for individuals who have experienced physical assault and who have the highest levels of child maltreatment to have the lowest mean on depressive symptoms at Wave III.

Adolescent and young adult parents varied across more distal social support variables examined as well. Significant differences were found across clusters on the school connectedness variable. The highest mean for school connectedness was on the "no assault, low emotional closeness" cluster. Individuals in the "physical assault" cluster had the next highest mean on school connectedness. The lowest mean on school connectedness was in the "verbal and physical assault" cluster. Significant differences were not found across clusters on the variable measuring perception of friends caring. Equally high means for perception of friends

caring were found in the "physical assault" and "no assault, low emotional closeness" clusters. The lowest mean on this variable was in the "verbal and physical assault" cluster. Overall, individuals in the physical assault cluster had among the highest means on what were assumed to be two protective factors.

The results of the follow-up analysis for the school connectedness variable make plausible the inference that individuals with low means on emotional closeness might compensate for this with their school lives and relationships with teachers and peers. It is not clear what might account for the relatively high mean on school connectedness among individuals in the "physical assault" cluster, however. Perhaps with the largest number of young adult parents, the individuals in this cluster were able to more fully engage in their school experience and feel comparatively less disenfranchised from their teachers and peers. Although significant differences were not found between clusters on the variable which measured perception of friends caring, the results paralleled those found for the school connectedness variable, suggesting a similar relationship between factors discussed and the perception of friends caring variable.

Significant differences were revealed across clusters on all of the financial support variables. Most notably, the "no assault, low emotional closeness" cluster received the least amount of financial support at all levels. Individuals in the "verbal, sexual, and partial physical assault" cluster had the highest mean on the receipt of $1,000 or more. For the receipt of $500 to $999, $200 to $499, and less than $200, individuals in the "sexual assault" cluster had the highest means.

The results of the follow-up analyses using the financial support variables suggest two potential relationships, although causal inferences cannot be made from the analyses conducted. First, it seems that emotional closeness may be more strongly correlated with the receipt of financial support than overt experiences with assault. Second, it would seem that parent age is likely to be at least moderately correlated with the receipt of almost all levels of financial support, with younger adolescent parents more likely recipients of such support.

Residential status at Wave III and family structure at Wave I were examined as proximal indicators of levels of potential support and also the types of family relationships in which individuals were situated. Among the entire parent population, the majority of individuals indicated that they did not live with other family or non-relatives. The majority of the clusters closely approximated these population estimates. Two clusters however, had a fairly large percentage of individuals who indicated that they lived with other family or non-relatives.

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This was true for just over half of all individuals in the "sexual assault" cluster and just over 40% of individuals in the "physical assault" cluster. Approximately a quarter of all parents indicated that they were living with a parent-figure at the time of the Wave III interview. A much smaller percentage of individuals in the "no assault, low emotional closeness" cluster resided with a parent-figure at Wave III. This was also true of individuals in the "verbal, sexual, and partial physical assault" cluster. A larger percentage of individuals in the "sexual assault" cluster resided with a parent-figure at wave III. Approximately 19% of all parents in the population did not live with their child or children. This percentage was noticeably larger for individuals in the "low assault, no emotional closeness" cluster and quite a bit smaller for individuals in the "sexual assault" cluster. Approximately 61% of all parents were estimated to live with a significant other. A smaller percentage, just over half, of individuals in the "sexual assault" cluster lived with a significant other. In contrast, over half of individuals in the "physical assault" cluster lived with a significant other. Lastly, a very small percentage of parenting adolescents and young adult were estimated to live alone (4%). A much larger percentage of individuals in the "no assault, low emotional closeness" cluster, followed by the "verbal, sexual, and partial physical assault cluster" lived alone. A very small percentage of individuals in the "verbal and physical assault," "physical assault," and "sexual assault" clusters lived alone.

It is not clear whether the relatively large percentage of individuals in the "physical assault" cluster living with other family or non-relatives is related to parent age, their experience with physical assault, or some other explanatory variable. If this particular living arrangement was related to their experience with assault, then it would also seem that other who had experienced physical assault, such as individuals in the "verbal and physical assault" cluster, would also have a larger percentage of individuals with this living arrangement. This set of analyses also did not clarify whether this living arrangement is related to the high incidence of total child maltreatment and relatively large percentage of child physical neglect. Similar questions were raised about the very large percentage of individuals in the "sexual assault" living with other family or non-relatives. For individuals in this cluster however, incidences of total child maltreatment were moderate, but not significantly different from the estimated population average. Thus, it does not stand to reason that living with other family or non-relatives necessarily accounts for high incidences of child maltreatment or that the type of maltreatment an individual experiences is related to their living arrange with other-family or non-relatives. Furthermore, the individuals in these two clusters differed drastically in terms of parent age. This discrepancy reduces the

likelihood that parent age may help explain the large percentage of this living arrangement in each of these clusters. The trend for living with a parent-figure identified among the clusters seems better accounted for by parents' overt experiences with assault, more subtle measures of relationships with caregivers, as well as parent age. The "sexual assault" cluster, with the largest percentage of younger adolescent and young adult parents, also had the largest percentage of individuals who indicated that they lived with a parent figure. Both overt assault and subtle relationship factors may have played a role in the much smaller percentage of individuals living with a parent-figure who experienced at least verbal and sexual assault or had a poor relationship with their caregiver or caregivers at Wave III. Living with one's child or children was much more prominent in the cluster characterized by predominantly younger adolescents and older adolescents. This living arrangement was much less common in the cluster most notably characterized by low emotional closeness at Wave III. One possibility for this is that individuals who resided with a parent-figure were also more likely to concurrently reside with their child or children. Thus, given that adolescent parents are more likely to live with a parent-figure, they may also be more likely to live with their child or children. Notable cluster differences for living with a significant other seem most aptly accounted for by parent age, as the cluster with the largest percentage of young adults also had the largest percentage of individuals who lived with a significant other. In contrast, the cluster with the largest percentage of younger adolescents had the smallest percentage of individuals who lived with their significant other. The cluster with the large percentage of individuals who lived with a significant other was also the "physical assault" cluster, also characterized by a high mean on total child maltreatment. Thus, it is uncertain whether living with a significant other is a significant predictor of total child maltreatment and physical neglect. Lastly, while a fairly small percentage of parents lived alone, this variable was most closely aligned with parents' overt experiences with assault as well as the more subtle measure of emotional closeness at Wave III. Individuals in these two clusters had the largest percentages of individuals who indicated that they lived alone.

In summary, several themes emerged from the set of Wave III living arrangement variables. First living arrangement seemed to be related to parent age, particularly among adolescent parents. Adolescent parents were more likely to live with other family or non-relatives, a parent-figure and their child or children. They were much less likely to live with a significant other. In contrast, individuals in the cluster with a high concentration of young adult parents were more likely to live with a significant other or in an alternative living

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arrangement, such as with other family or non-relatives, than individuals in clusters which more closely approximated the estimated population distribution of younger adolescent, older adolescent, and young adult parents. Second, living arrangement at Wave III also seems to be related to extreme overt assault experiences as well as more subtle relationship factors like emotional closeness with a caregiver or caregivers. Individuals who experienced at least verbal and sexual assault and individuals who indicated low emotional closeness with caregivers at Wave III had the smallest percentages of individuals who lived with a parent-figure and the largest percentages of individuals who lived alone. Further differences were seen among individuals who indicated low emotional closeness at Wave III as this cluster also had a relatively low percentage of individuals who had an alternative living arrangement with other relatives or non-relatives in addition to a relatively low percentage who lived with their child or children.

A measure of family structure at Wave I revealed that majority of individuals in the population had a two-parent family structure, followed by a one-parent family structure, and then other family structure. The only clusters which seemed to differ from the population estimate for the percentage of two-parent family structures was the "physical assault" cluster which had a much smaller percentage of two-parent families and much larger percentage of one-parent families. The "sexual assault" cluster also exceeded the population estimate in the percentage of one-parent family structures and was also below the population estimate in the percentage of two-parent families. The "verbal, sexual, and partial physical assault" cluster was also slightly below the population estimate for both two-parent and one-parent family structure. This cluster had the largest percentage of family structures designated as "other," followed by the "physical assault" cluster.

Trends in family structure at Wave I suggest that the child maltreatment may, in part, be related to family structure, given the small percentage of two parent family structures and the large percentage of one-parent family structures among individuals in the "physical assault" cluster. It is also possible that the large percentage of younger adolescent and older adolescent parents in the "sexual assault" cluster could be related to the high percentage of one-parent families. That is, adolescent parenting may be related to having a one-parent family structure and/or sexual assault may somehow be related to this type of family structure. Lastly, the large percentage of "other" family structure in the cluster in which individuals experienced at least verbal and sexual assault may be a product of their assault history, neither of which appear to be related to the child maltreatment. In summary, the results of these analyses suggest that family structure at Wave I may be related to the child

maltreatment, the incidence of adolescent parenting in general, and experiences with assault itself in the most extreme clusters (i.e. clusters in which individuals endorsed one or more forms of assault).

The results of the follow-up analyses for the seven-cluster solution revealed profiles of parent characteristics and parent functioning. This provided a wholistic description, spanning past to present, of each of the seven clusters in terms of subtle and overt relationship factors, psychological factors, demographic factors, child-centered factors, social support, and financial support variables. The discussion that follows is a description of each cluster in terms of such factors.

The "verbal and physical assault" cluster had a larger percentage of individuals whose families had received public assistance than the percentage of individuals whose families received public assistance in the population estimation. Individuals' past and current receipt of public assistance was also slightly higher than the percentage of individuals who received past and current public assistance in the population estimation. The percentage of individuals in this cluster who had never received public assistance was slightly lower than the percentage in the population estimation. The "verbal and physical assault" cluster was higher on the dependency measure and depressive symptoms at Waves I and III than were individuals in the population estimation, but this cluster did not have the highest means among all of the clusters. This cluster had the lowest means on the connectedness to school and perception of friends caring variables. Receipt of financial support was less than the population average on almost all of the financial support variables. Living status at Wave III and family structure at Wave I closely approximated population estimates.

The "verbal assault" cluster was also characterized by some unique parent characteristics. This was one of two clusters with the smallest percentage of individuals that did not graduate from high school and it had the highest percentage of individuals that graduated from high school. The "verbal assault" cluster had a higher percentage of females than in the population estimation. This cluster was not extremely remarkable on any other variables as it closely approximated population estimates.

The "verbal, sexual, and partial physical assault" cluster had the second largest percentage of individuals that did not graduate from high school and the second smallest percentage of individuals that graduated from high school. This cluster had the second largest percentage of females and had a much higher percentage of females than in the population estimation. On the measure of family receipt of public assistance, this cluster had a larger percentage of individuals who indicated their families had received public assistance

than in the population estimation. Individuals in this cluster had the second largest percentage of individuals who received public assistance across both time points queried and the second smallest percentage of individuals who received public assistance at neither time point. In terms of child-centered variables, the "verbal, sexual, and partial physical assault" cluster was second highest in number of children among all of the clusters and had, on average, the oldest children. Follow-up analyses on the psychological variables revealed that this cluster was lower than the population average on the dependency variable, but was not the lowest on dependency among all of the clusters. The "verbal, sexual, and partial physical assault" cluster had the lowest self-esteem at Wave III and the highest percentage of anxiety both before and after the Wave III interview. At Wave I this cluster's CES-D Scale score was higher than the population average, but was not the highest among all of the clusters, while the Wave III CES-D Scale score was the highest among all of the clusters. This cluster had the largest amount of financial support of $1,000 or more, but received less than the average financial support for amounts of less that $200 and $200 to $499. This cluster had the second largest percentage of individuals who did not live with a parent-figure at Wave III as well as the second largest percentage of individuals living alone at Wave III. At Wave I, this cluster had the largest percentage of individuals living in a family structure designated as "other."

The "physical assault" cluster is the second of two clusters described with the smallest percentage of individuals that did not graduate from high school. This cluster also had the largest percentage of individuals that either attended some college or graduated from college. The "physical assault" cluster had by far the largest percentage of males among all of the clusters. In terms of family socio-economic status, individuals in this cluster had the smallest percentage of individuals who indicated their family had received public assistance before they turned 18. In terms of individual socio-economic status, this cluster had the smallest percentage of individuals to have received public assistance in the past, but not at the time of the Wave III interview and the largest percentage of individuals to not have received public assistance in the past, but to receive it at the time of the Wave III interview. This cluster had the second smallest percentage of Caucasian respondents and the second largest percentage of African American and Hispanic respondents. Unique trends were found among the child-centered variables as well. For example, the "physical assault" cluster had the largest percentage of babies born below normal birth weight and individuals within this cluster also had, on average, the youngest children among all of the clusters. Follow-up analyses on the psychological variables revealed that this cluster

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had the largest percentage of individuals who met diagnostic criteria for both types of ADHD. This cluster had the highest mean self-esteem at Wave III, was below the population average on depressive symptoms at Wave I, and had the lowest average depressive symptoms at Wave III. Interestingly, this cluster had the second largest percentage of anxiety diagnoses before and after Wave III. This cluster had the second highest mean on the school connectedness variable and was one of two clusters with the highest mean on the perception of friends caring variable. Individuals in the "physical assault" cluster received less than the population average for receipt of financial support of $1,000 or more, although they received the most financial support of amounts between $200 and $499. At Wave III, individuals in this cluster had the second largest percentage of individuals who lived with other family or nonrelatives and the largest percentage of individuals who lived with a significant other. This was one of two clusters with the smallest percentage of individuals who lived alone. At Wave I, the "physical assault" cluster had the smallest percentage of individuals who had a two-parent family structure and had the largest percentage of individuals who had a one-parent family structure. This cluster also had the second largest percentage of individuals who had a family structure designated as "other."

The next cluster was labeled the "sexual assault" cluster. The "sexual assault" cluster had the largest percentage of individuals who did not graduate from high school, the smallest percentage of individuals who graduated from high school and no one who graduated from college. This cluster was disproportionately female. It had the second largest percentage of family receipt of public assistance and the second largest percentage of current and past receipt of public assistance. This cluster had the second smallest percentage of Caucasian respondents and the largest percentage of Hispanic respondents. The "sexual assault" cluster had the smallest percentage of infants below normal birth weight and the smallest number of children. In terms of psychological variables, none of the individuals in this cluster met the criteria for either type of ADHD and they also had the lowest mean alcohol dependency. In contrast, individuals in this cluster had the highest mean depression at Wave I. School connectedness was higher than the population average at Wave I. This cluster of individuals received the most financial support all amounts less than $1,000. At Wave III, the "sexual assault" cluster had the highest percentage of individuals who resided with other family or non-relatives, parent-figure(s), and their own child or children. This cluster had the smallest percentage of individuals who resided with a significant other. At Wave I, this cluster had the second smallest percentage of individuals who had a two-parent structure and the second highest percentage of individuals who had a one-parent structure.

The "no assault" cluster was not as well defined by variables as some of the previous clusters described. Some unique trends and differences on variables of interest were found, however. For example, the percentage of males in this cluster was notably larger than the percentage of males in the population estimation. This cluster also had the second smallest percentage of individual's whose families received public assistance. This was also one of two clusters with the smallest percentage of individuals who received public assistance themselves, both in the past as well as at the time of the Wave III interview. It was also the cluster with the largest percentage of individuals who received public assistance at neither time point. In terms of psychological variables, individuals in this cluster had the second largest percentage of no diagnosis with anxiety and the lowest mean depressive symptomatology at Wave I. Depressive symptomatology at Wave III was not the lowest among all of the clusters, but was well below the population estimate. At Wave III, the "no assault" cluster had the second highest percentage of individuals who lived with a parent-figure, and at Wave I, the highest percentage of individuals with a two-parent family structure.

The last cluster to be thoroughly described is the "no assault, low emotional closeness" cluster. This cluster had the second lowest percentage of individuals who attended some college or graduated from college. Like the previous cluster, this cluster also had a larger percentage of males than in the population estimate. Socio-economically, this cluster had the largest percentage of individuals who received public assistance in the past as well as at the time of the Wave III interview. In terms of race and ethnicity, follow-up analyses revealed that this cluster had the smallest percentage of Caucasian and Hispanic respondents and the largest percentage of African American and other respondents. Individuals in this cluster had the most children. They had the highest mean on alcohol dependency, the second highest mean on self-esteem, virtually no anxiety, and the second lowest mean on Wave III depressive symptomatology. School connectedness was the highest among all of the clusters and perception of friends caring was one of two clusters with the highest means. Individuals in this cluster received the least amount of financial support from a varied array of caregivers. They had the smallest percentage of individuals who lived with other family or nonrelatives, a parent-figure, and with their own child or children. The "no assault, low emotional closeness" cluster had the second largest percentage of individuals who lived with a significant other and the largest percentage of individuals who lived alone.

Section 3: Describing the Variables by Parent Age

To answer the third question regarding the personal, contextual, historical, and demographic factors that characterize younger and older adolescent and young adult parents, chi-square tests of independence were conducted to determine whether there were between parent-age group differences on the independent variables previously discussed. To determine whether there were any between group differences on continuous variables, the variable parent age was regressed on these variables and follow-up Adjusted-Wald tests were used to compare the two groups which were not used as the reference in the initial regression. The broader purpose of these analyses was to examine some of the specific ways in which parents at different developmental stages differ from each other. The discussion that follows first describes significant differences and prominent trends seen across parent age groups and then concludes with a summary of these findings and what they may mean for younger and older adolescent and young adult parents.

In terms of demographic characteristics, no significant differences were found. There were however, a noticeably smaller percentage of males in the younger adolescent category than in the older adolescent and young adult categories, which more closely approximated the population estimate. Younger adolescents also had the highest percentage of family history of welfare receipt compared to older adolescents, young adults, and the population estimate. Likewise, they had the largest percentage of individuals who received public assistance both in the past and at the time of the Wave III interview while older adolescents had the largest percentage of individuals who had not received public assistance in the past, but were receiving it at the Wave III interview. Young adults had the largest percentage of individuals who had never received public assistance. In terms of race and ethnicity, younger adolescents had the largest percentage of both African American and Hispanic respondents, while older adolescents and young adults closely approximated the population distribution. Just in terms of demographic characteristics, these statistics reaffirm much what is often assumed about younger adolescent parents. They are more likely to be female, have been raised in poverty, to live in poverty, and disproportionately of ethnic minority status.

The three parent age groups were compared on their experiences with three different forms of assault, as well as total experiences with assault. Significant differences were not found between parent age groups on the individual assault variables, but younger adolescent parents reported the highest percentages of all three forms of assault. Their mean total assault was significantly higher than the mean total assault for young adult parents. At Waves I and III, younger adolescent parents reported the lowest mean emotional closeness with

their caregiver or caregivers and young adult parents had a significantly higher mean emotional closeness at Wave III than both younger adolescents and older adolescents. While causality cannot be inferred from these analyses, a negative relationship between adolescent parenting and emotional closeness with one's caregiver or caregivers seems plausible. It is also possible however, that this perceived correlation might be better attributed to the several other variables with which younger adolescents also seem to be significantly associated in comparison to the two older parent age groups.

Significant differences were found between parent age groups on a number of the psychological variables. Mean self-esteem at Wave III for younger adolescent parents was significantly less than that for older adolescent and young adult parents, with self-esteem increasing with parent age. Similarly, depressive symptoms were significantly heightened for younger adolescent parents at Wave I compared to young adults. At Wave III, depressive symptoms for both younger adolescents and older adolescents were significantly higher than depressive symptoms than young adults. Percentages of anxiety diagnoses both before and after Wave III were fairly commensurate across parent age groups and consistent with population estimates as were reports of both types of ADHD and self-esteem at Wave I. Significant differences were not found between parent age groups on the variable measuring alcohol dependency, although increasing alcohol dependence was seen with increasing parent age. These results highlight the possible effect of parent age on psychological problems, particularly self-esteem and depressive symptoms. While younger adolescents and older adolescents both had worse self-esteem and more depressive symptoms, the data suggest that these problems were even more severe for younger adolescent parents, particularly when compared to young adult parents. Young adult parents however, had more alcohol related problems. Thus, these results continue to paint a bleaker picture for the functioning of adolescent parents, especially younger adolescent parents, compared to young adult parents.

Several significant differences were found between parent-age groups for the child-centered variables. Children of younger adolescent parents were significantly older than children of both older adolescent and young adult parents and the children of older adolescent parents were significantly older than the children of young adult parents. While significant differences were not found between parent age groups, mean number of children within each age group was highest for younger adolescent, followed by older adolescent, and young adult parents. Thus a negative relationship was found between the parent age and the variables number of children and child age. The implications of these results are that while it makes logical sense for individuals

who begin childbearing at a younger age to have the oldest children, they also tend to have more children overall. Surprisingly, younger adolescent parents had the smallest percentage of babies born with less than normal birth weight, while young adults had the largest percentage of babies born with less than normal birth weight.

Significant differences were not found between parent age groups on any of the Wave III residential living status variables. These included living with a parent-figure, with other family or non-relative, alone, with a significant other, or with their child or children. Of note however, the percentage of individuals living with a parent-figure decreased with increasing parent age as did the number of individuals who lived with other family or non-relatives. In contrast, the percentage of individuals living with a significant other increased with increasing parent age. Thus, adolescents, particularly younger adolescents, may be more likely to have more social support available to them from parental caregivers and other family or non-relatives. On the other hand, they may be less likely to have the support provided by a significant other.

In terms of more distal social support variables, mean school connectedness was highest for young adult parents and declined slightly with decreasing parent age. In contrast, mean perception of friends caring was highest for younger adolescent parents and lowest for young adult parents. Significant differences were not found between groups on any of these variables, however. As previously mentioned in the discussion of the cluster analyses, the positive correlation between parent age and school connectedness may be a product of the parent age itself. That is, younger adolescents may be less engaged with the school environment due to the demands of early parenting, although causality cannot be inferred. There are many other negative characteristics and risk factors, already discussed, which appear to also be associated with younger adolescent parents. Thus, the positive association between parent age and school connectedness cannot be attributed to adolescent parenting alone. The parent age trend for perception of friends caring is less well explained by the other variables. Perhaps perception of friends caring was more important to younger adolescents parents compared to individuals who had children later in their development.

The variables which measured receipt of financial support did not follow any clear pattern with regard to parent age. Younger adolescents received the smallest amount of financial support of less than $200, while older adolescents received the most financial support at this level. Younger adolescents received the most financial support of amounts between $200 and $499 and $500 to $999, while older adolescents received the

least financial support at this level. Lastly, older adolescents received the most financial support of $1,000 or more while younger adolescents received the least financial support of this amount. Overall, young adults appeared to receive the least amount of financial support among all three age groups as they only received the most amount of financial support for amounts of less than $200.

The outcome variables of interest, physical neglect, supervision neglect, physical assault, and total child maltreatment, were also examined. There were no significant differences found between parent age groups on the three individual maltreatment variables, although younger adolescents had the highest percentage of child physical neglect and child physical assault among all three parent age categories. It should be noted however, that younger adolescents were only one percent higher than older adolescents on both of these variables. Thus, the largest discrepancy was between younger adolescents and young adults. Younger adolescents also had the highest mean total child maltreatment and total child maltreatment was significantly higher for older adolescents than for young adults. Although significant differences between parent age groups were not found on the outcome variables of interest, the results demonstrate that younger adolescent as well as older adolescent parents had a higher incidence of child maltreatment, specifically physical neglect and physical assault, compared to young adult parents. Thus, these results suggest that parent age may be pertinent to the child maltreatment, particularly the interaction between parent age and other independent variables of interest.

In summary, between parent age group comparisons on variables of interest revealed some interesting differences between younger and older adolescent, and young adult parents. The differences were most striking between younger adolescent and young adult parents, although there were also some differences between adolescent parents as a whole and young adult parents. Some broad generalizations can be made from the results of the analyses. First, younger adolescent parents have a number of striking negative risk factors, especially if a comparison is made with older parents. As stated previously, younger adolescent parents had a higher percentage of a history of growing up in poverty, of being impoverished themselves, female, and of minority ethnic status. They experienced the highest percentages of all three forms of assault and had much higher total assault than young adult parents. Parent age group differences were particularly evident on variables measured at Wave III. For example, on the emotional closeness with caregiver(s) and psychological variables, significant differences were only found between groups on the Wave III measures. This implies that contemporaneous factors are more distinguishing and potentially more pertinent than are temporally distal

factors. On nearly all of the psychological variables, with the exception of the ADHD and anxiety measures, younger adolescent parents were nearly always worse off, followed by older adolescent parents. The one exception to this was alcohol dependency, on which young adults had the highest means. This variable was mentioned in the follow-up cluster analyses discussion, where higher mean alcohol dependency was most likely attributed to age itself and the increased use of alcohol with age. The results from the child-centered variables were primarily as expected, with younger adolescent parents having the oldest children. It was interesting however, that the results suggest that adolescent parents continue to have children and thus tend to have more children than older parents. Also a surprise was the slightly higher percentage of normal birth weight babies among younger adolescent parents. The results also suggested that younger adolescents were more likely to have the support of a parent-figure and/or other-family or non-relatives in their living arrangement while older parents were more likely to have the support of a significant other. Given younger adolescent parents' comparatively poorer overt and subtle caregiver relationships however, this draws into question whether this living arrangement was a beneficial one. Also unclear from the results was whether the difference between younger adolescents' and young adults' connectedness to school was related to their early childrearing, or, conversely, whether their early childrearing was in somehow related to their lack of connectedness to school as well as caregivers, or heightened psychological problems. Again, these variables are consistent with the finding that adolescent parents, specifically older adolescent parents, had a statistically higher mean on the total child maltreatment variable than young adult parents. Although the causality cannot be inferred, it stands to reason that the negative risk factors which appear to be associated with adolescent parenting, may also contribute to the heightened incidence of specific forms of child maltreatment as well as total child maltreatment.

Section 4: Regression Analyses

The fourth set of analyses aimed to determine what personal, contextual, and historical factors significantly predict four child maltreatment outcomes among younger adolescent, older adolescent and young adult parents with varying degrees of exposure to multiple forms of child maltreatment. To accomplish this goal, four sets of regression analyses were conducted for each outcome variable (supervision neglect, physical neglect, physical assault, and total child maltreatment). That is, for each outcome variable, eight separate regression analyses were conducted using parent-age interactions. Then these same eight models were run without parent-age interactions. The purpose of this was to determine whether the models with parent-age

interactions would reveal predictors specific to parent age groups that were not evident in the models without parent age interactions. Next, the full models were run, including parent-age interactions. The last step in each set of regression analyses was to run the full models without parent-age interactions. In total, 18 regression analyses were conducted for each outcome variable.

A few broad themes can be drawn from the results of these regression analyses. First, factors which significantly increased or decreased the odds of different forms of child maltreatment and had a significant effect on total child maltreatment, varied among among younger and older adolescent and young adult parents. Thus, both the full and individuals models conducted without parent-age interactions generally failed to identify significant effects of the independent variables. When the parent age groups were separated, it became clear that the predictive significance of these variables was frequently isolated to specific age groups, even when a similar trend was identified across age groups. In other instances, the predictive variables had a very different, or opposite, effect on one or more of the parent age groups. Second, factors which predicted child maltreatment not only differed across parent age groups, but also by maltreatment type. Third, while all predictive variables selected for these analyses were thought to be pertinent to child maltreatment, it was surprising to find that several variables previously thought to significantly predict child maltreatment did not have the preconceived effect. Fourth, in general, contemporaneous variables, those drawn from Wave III, tended to have a more significant effect on child maltreatment (also measured at Wave III). Sixth, among the three parent age groups, the predictive variables selected had the greatest number of significant effects on older adolescents.

Among the independent variables selected for the logistic regression and regression analyses described in the preceding paragraphs, it was initially thought that variables selected for the cluster analyses (being exposed to various forms of assault during one's childhood, depressive symptoms, and emotional closeness) would significantly increase the odds of individual forms of child maltreatment and have a significant effect on total child maltreatment. Significant effects for these variables were only found for specific types of assault and were also particular to parent age group. For example, verbal assault only significantly increased supervision neglect among older adolescent parents in the full model, although, as previously discussed, verbal assault tended to result in a slight increase in supervision neglect across parent age groups. A surprising effect was found for the summary assault index among older adolescent parents. For this group, total assault significantly reduced the odds of supervision neglect. Among young adults however, total assault significantly increased the

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odds of supervision neglect. These results illustrate the different effect that one variable had on parents in different age groups. In addition, the effect of total assault on older adolescents was counter to previous expectations. Similarly, physical assault, although insignificant, had a different effect on the parent age groups. Among older adolescent and young adult parents, physical assault increased the odds of supervision neglect. Among younger adolescent parents, physical assault decreased the odds of supervision neglect. Sexual assault also significantly decreased the odds of supervision neglect among younger adolescent and young adult parents, while increasing the odds of supervision neglect among older adolescent parents. In summary, the decreasing effect that some of the assault variables had on supervision neglect among parents in different age groups was counter to expectations.

When the effects of the assault variables on physical neglect were examined, it was found that none of these variables significantly increased or decreased the incidence of physical neglect. Both physical and sexual assault had a decreasing effect on physical neglect, but not to a significant degree. Verbal assault increased the odds of physical neglect among younger adolescent and young adult parents, but not to a significant degree. The total assault index increased physical neglect among all parents. In the total population, none of the assault variables significantly increased or decreased the odds of physical neglect. All three individual assault variables reduced the odds of physical neglect. The total assault index only slightly increased the odds of physical neglect in the total population. To summarize, the results from these regression analyses were also inconsistent with expectations, particularly the decreasing effect that physical and sexual assault had on physical neglect among all three parent age groups. Verbal assault varied in its effect across parent age groups and actually increased the odds of physical neglect among younger adolescent and young adult parents. The increasing effect of the total assault index on physical neglect across parent age groups was more consistent with expectations, although its effects were insignificant.

The effects of the assault variables on physical assault were also examined in the full model with and without parent-age interactions. Like physical neglect, none of the assault variables had a significant effect on physical assault. Parent physical assault increased the odds of child physical assault among younger and older adolescent parents while it decreased the odds of child physical assault among young adult parents. Sexual assault decreased the odds of child physical assault among older and younger adolescent parents while it increased the odds of child physical assault among young adult parents. Verbal assault only decreased the odds

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of child physical assault among younger adolescent parents. The total assault index had no effect on younger adolescent parents, but slightly decreased the odds of child physical assault among older adolescent and young adult parents. When parent age interactions were not included, each of the variables, with the exception of the summary assault index, resulted in an insignificant increase in the odds of physical neglect. Although the results of analyses with and without parent age interactions using these variables were insignificant, the comparison between them illustrates the masking effect that analyses conducted within the entire population can have on the results. For example, while it appears that parent physical assault increases the odds of child physical assault in the total parent population, the model with parent-age interactions revealed that this is only true among young adult parents. Overall, the pattern of results for this set of regression analyses could not be consistently linked to those found for the outcome variables previously discussed.

The last outcome examined was total child maltreatment. None of the assault variables had a significant effect on total child maltreatment across parent age. For younger and older adolescents, physical assault had a small positive effect. For young adults, this effect was negative. Sexual assault had a negative effect across all three parent age groups. Verbal assault had a positive effect on younger adolescent and young adult parents and a negative effect on older adolescent parents. Lastly, the summary assault index had a very small positive effect among all three parent age groups. In the total parent population, only physical assault had a slight positive effect on total child maltreatment, while sexual assault, verbal assault, and the summary assault index had a small negative effect on total child maltreatment.

Summarizing the conclusions that can be drawn from the results of the full model regression analyses with and without parent age interactions and the effects of the assault variables on individual and total child maltreatment, several points can be made. Third, there were few predictor variables that had a uniform effect on all of the child maltreatment outcomes among parents in specific age groups. Verbal assault consistently increased the odds of supervision neglect. Verbal assault also had a uniform increasing effect across all forms of assault for young adult parents. Physical assault and sexual assault consistently decreased the odds of physical neglect, while the summary assault index consistently increased the odds of physical neglect. Sexual assault consistently decreased the odds of total child maltreatment and the summary assault index consistently increased the odds of total child maltreatment. Second, for some subpopulations of parents, experiences with different forms of assault significantly decreased the odds of some forms of child maltreatment. The decreasing

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effect of some of the assault variables was counter to expectations and thus came as a surprise. This trend only occurred uniformly among younger adolescents, for whom sexual assault consistently reduced the odds of all forms of child maltreatment, including total child maltreatment. Within each parent age category, assault variables resulted in an increase in reports of child maltreatment in approximately half of the analysis results. Only two assault variables actually significantly increased the odds of child maltreatment and only one assault variable significantly reduced the odds of child maltreatment. Lastly, the comparison of interaction and non-interaction models demonstrated that analyzing parents as a whole did not identify trends and effects which vary by parent age groups and, in some instances, masked significant effects that were specific to age group.

Neither of the emotional closeness variables had a significant effect on supervision neglect among any of the parent age groups. The trend at Wave I was inconsistent across parent age and at Wave III, emotional closeness increased the odds of supervision neglect. On the outcome physical neglect, neither of the emotional closeness variables had a significant effect for any of the parent age groups. Emotional closeness at Wave I had a very slight increasing effect on physical neglect among younger and older adolescent parents and a slight decreasing effect on physical neglect among young adult parents. Emotional closeness at Wave III had absolutely no effect on physical neglect among older adolescent parents and only a slight decreasing effect on physical neglect among younger adolescent and young adult parents. In the total parent population, both variables resulted in a very minor increase in the odds of physical neglect. Unlike the previous two outcome variables discussed, emotional closeness at Wave III significantly reduced the odds of physical assault among younger adolescent parents. This trend was consistent for older adolescent and young adult parents as well. Emotional closeness at Wave I, on the other hand, had an insignificant increasing effect on the odds of physical assault among younger adolescent and young adult parents and absolutely no effect among older adolescent parents. In the total parent population, emotional closeness at Wave I increased the odds of physical assault while emotional closeness at Wave III significantly decreased the odds of physical assault. In comparing the results of the analyses for physical assault with and without parent age interactions, the model without interactions was consistent with what was found across individual parent age groups. The specific parent age interactions showed however, the greater salience that Wave III emotional closeness had among younger adolescent parents. Lastly, emotional closeness did not have a significant effect on total child maltreatment among any of the parent age groups. Emotional closeness at Wave I had a very minor positive effect on total

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child maltreatment among younger and older adolescent parents and a minor negative effect on total child maltreatment among young adult parents. Emotional closeness at Wave III had a small positive effect on total child maltreatment among younger adolescent and young adult parents and a small negative effect on total child maltreatment among older adolescent parents. In the total parent population, emotional closeness at Wave I had very small positive effect on total child maltreatment while emotional closeness at Wave III had a very small negative effect on total child maltreatment.

Overall, emotional closeness resulted in a greater number of increases in the odds of child maltreatment among younger adolescent parents than among older adolescent and young adult parents. The effect of these variables was highly inconsistent across parent age groups as well as types of child maltreatment, however. The only consistency found was the increasing effect that emotional closeness at Wave I had across all parent age groups on physical assault as well as the decreasing effect that emotional closeness at Wave III had on physical assault among parents in all age groups, especially among younger adolescent parents.

Depressive symptoms at Waves I and III were among the three sets of variables, including emotional closeness and experiences with assault, considered likely to be most pertinent to child maltreatment. Only depressive symptoms at Wave I significantly increased the odds of supervision neglect among older adolescent parents. Wave I depressive symptoms also had an insignificant increasing effect on supervision neglect for young adult parents and an insignificant decreasing effect on supervision neglect for younger adolescent parents. Neither of the two CES-D Scale variables had a significant effect on physical neglect among parents in any of the three age groups. Depressive symptoms at Wave I had a very modest increasing effect on physical neglect among younger adolescents and a very moderate decreasing effect for both older adolescents and young adults. Depressive symptoms at Wave III had a very slight decreasing effect on physical neglect among younger adolescents and a very slight increasing effect on physical neglect among older adolescent and young adult parents. In the total parent population, depressive symptoms at Wave I had no effect on physical neglect while depressive symptoms at Wave III had a very minor increasing effect on the odds of physical neglect. Unlike the other two outcome variables discussed, depressive symptoms at Wave III significantly increased the odds of physical assault among younger adolescent parents. This trend was consistent across parent age groups as well, however. Depression at Wave I resulted in a very slight decrease in the odds of physical assault among all three parent age groups. In the total parent population, depressive symptoms at Wave III resulted in a

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significant increase in the odds of physical assault while depressive symptoms at Wave I resulted in an insignificant decrease in the odds of physical assault. Neither of the CES-D Scale variables significantly effected total child maltreatment across parent age. Only a very small increasing effect was found among younger adolescent parents for CES-D Scale I. CES-D Scale III had a small positive effect on total child maltreatment for all parent age groups. In the total parent population, neither of the CES-D Scale variables was significant either. CES-D Scale I had a small negative effect and CES-D Scale III had a small positive effect on total child maltreatment. Again, lack of a consistent trend across parent age groups illustrates that the effects of these variables, including assault, emotional closeness, and depressive symptoms, was highly specific to parent age as well as type of child maltreatment.

To summarize, depressive symptoms at Waves I and III had a consistent increasing effect on physical assault. The CES-D Scale at Wave III was especially pertinent to younger adolescent parents. The CES-D Scale at Wave I was significantly predictive of supervision neglect. In addition, the CES-D Scale at Wave III consistently increased the odds of total child maltreatment across parent age groups. Overall however, the CES-D Scale variables only resulted in an increase in child maltreatment in approximately half of the results.

In addition to depressive symptoms at Wave I and III, other psychological variables were examined as well. These include self-esteem at Waves I and III, and dependency. None of these variables significantly increased or decreased the odds of supervision neglect across parent age groups. Self-esteem at Waves I and III decreased the odds of supervision neglect among younger adolescent and older adolescent parents, however. Although very slight, one percent and two percent, respectively, self-esteem at Waves I and III increased the odds of supervision neglect among young adult parents. Thus, some degree of consistency was observed for the effect of these variables for adolescent versus young adult parents. A similar trend was found for the effect of the dependency variable.

On the outcome variable physical neglect, neither of the self-esteem variables had a significant effect. Among younger adolescents, self-esteem at both waves slightly increased the odds of physical neglect. Among older adolescents, self-esteem slightly decreased the odds of physical neglect. Among young adults, self-esteem at Wave I slightly decreased the odds of physical neglect, while self-esteem at Wave III slightly increased the odds of physical neglect. Dependency also failed to have a significant effect on physical neglect among younger adolescent, older adolescent and young adult parents. Among younger adolescent and older

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adolescent parents however, this variable had a minor increasing effect on physical neglect. Among young adult parents, dependency had a minor decreasing effect on physical neglect. In the total population, self-esteem at Wave I slightly decreased the odds of physical neglect while self-esteem at Wave III resulted in only a very minor increase in the odds of physical neglect. Within the total population, dependency only resulted in a very minor decrease in the odds of physical neglect.

The effects of the self esteem variables (Waves I and III) and dependency variables on physical assault were examined as well. None of the three variables resulted in a significant increase or decrease in the odds of physical assault among younger or older adolescent or young adult parents. Self-esteem at Wave I slightly reduced the odds of physical assault in all three age groups. Self-esteem at Wave III resulted in a very minor decrease in the odds of physical assault for younger adolescent parents and a very minor increase in the odds of physical assault for both older adolescent and young adult parents. Dependency reduced the odds of physical assault for younger adolescent parents and increased the odds of physical assault for older adolescent and young adult parents. Within the total population, no significant effects were found for any of these three variables. Dependency and self-esteem at Wave III increased the odds of physical assault while self-esteem at Wave I slightly reduced the odds of physical assault. For each outcome variable examined thus far, each of these three variables functioned differently, particularly when effects were examined at the subpopulation level.

On the total child maltreatment variable, none of the additional psychological variables had a significant effect. Self-esteem at Wave I had a small negative effect on total child maltreatment for all three parent age groups. Self-esteem at Wave III on the other hand, had a small positive effect on total child maltreatment among younger adolescent and young adult parents. A small negative effect was found for older adolescent parents. Dependency had a small positive effect across all three parent age groups. In the total parent population, self-esteem at Wave III had very small decreasing effects on total child maltreatment while dependency had a very small increasing effect on total child maltreatment.

To summarize the results from the additional psychological variables examined in the regression analyses, none were found to have a significant effect on the four outcome variables. Dependency increased child maltreatment in 50% of the results for younger adolescent parents and increased child maltreatment in 75% of the results for older adolescent and young adult parents. While dependency consistently increased total child maltreatment across parent age groups, this effect was not uniform for the other three outcome variables.

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Self-esteem at Wave I increased child maltreatment in only 25% of the overall results for younger adolescent and young adult parents. Among older adolescent parents, self-esteem at Wave I decreased child maltreatment in 100% of the results. Self-esteem at Wave III increased the odds of child maltreatment in 50% of the results for younger adolescent parents, 25% of the results for older adolescent parents, and 100% of the results for young adult parents. Thus, self-esteem at both waves appeared to be a more consistent protective factor among older adolescent parents.

Living arrangement at Wave III included living with a significant other, one's child or children, parent(s), or other family or non-relatives. This set of variables was particularly salient for older adolescent parents, for whom living with a significant other or in an "other" living arrangement significantly increased the odds of supervision neglect, while living with a parent figure significantly decreased the odds of supervision neglect. This trend was paralleled for younger adolescent parents. The effect of living with a significant other was quite the opposite for young adult parents, although the effect of living in an "other" living arrangement or with a parent figure had a similar effect. Non-significant increases in supervision neglect were observed for all three parent age groups for living with one's child or children. Overall, the effects of the various living arrangements at Wave III were fairly consistent across parent age groups. Three of these, significant other, parent, and other, were particularly pertinent to supervision neglect among older adolescent parents. Only significant other had an opposite effect for young adult versus younger and older adolescent parents.

As it was the case for the outcome variable supervision neglect, the Wave III living arrangement variables were among the most salient predictors of physical neglect for the older adolescent subpopulation of parents. Living with a significant other significantly increased the odds of physical neglect among older adolescent parents. This living arrangement also increased the odds of physical neglect among younger adolescent parents. Living with a significant other only slightly decreased the odds of physical neglect among young adult parents. Living with other family or non-relatives also significantly increased the odds of physical neglect among older adolescent parents. Although the effect was not significant, this trend was found for younger adolescent and young adult parents as well. For younger adolescent parents, living with one's child or children increased the odds of physical neglect, while it decreased the odds of physical neglect among older adolescent and young adult parents. Living with a parent-figure decreased the odds of supervision neglect among younger and older adolescent parents and resulted in a very slight increase in the odds of physical

neglect among young adult parents. In the full model which did not include parent-age interactions, no significant effects were found. Living with a significant other increased the odds of physical neglect as well as living with other family or not relatives. In the total parent population, living with one's child or children and living with a parent-figure decreased the odds of physical neglect. Several of the Wave III living arrangement variables significantly predictive of physical neglect and supervision neglect functioned similarly within the adolescent population in general. For example, living with a significant other as well as living with other family or non-relatives significantly increased the odds of both types of neglect among both adolescent populations. The effect of living with other family or non-relatives functioned similarly for all parent age groups on the two neglect variables examined thus far. This illustrates that with some types of family structures, there are clear age group differences, while with other types of residential living status arrangements the effect may be uniform across developmental stages.

Like the two outcome variables previously discussed, variables included in family structure at Wave III proved to be among the most salient predictors of physical assault. Some of these variables functioned similarly across parent age groups and some of them functioned differently. Living with a significant other significantly reduced the odds of physical assault for younger adolescent parents, but this trend was also evident among older adolescent and young adult parents as well. For young adult and older adolescent parents, the decreasing effect of living with a significant other on the odds of physical assault was opposite of the effect of living with a significant other on the odds of supervision neglect and physical neglect. Living with one's child or children significantly increased the odds of physical assault for younger and older adolescent parents, but also increased the odds of physical assault for young adult parents. The effect of living with one's child or children was most pronounced for younger adolescents. Living with a parent figure had a different effect for adolescent versus young adult parents. Among younger adolescent parents, living with a parent figure significantly reduced the odds of physical assault and among older adolescent parents this living arrangement also reduced the odds of physical assault. In contrast, living with a parent figure significantly increased the odds of physical assault among young adult parents. Lastly, living with other family or non-relatives had a different effect on physical assault for older adolescent and young adult parents versus younger adolescent parents. This living arrangement had an insignificant decreasing effect on the odds of physical assault among younger adolescent parents while it had an insignificant increasing effect on the odds of physical assault among

older adolescent and young adult parents. Among the general parent population, no significant effects were found. Living with one's significant other reduced the odds of physical assault, as did living with a parent figure. Living with one's child or children increased the odds of physical assault as well as living with other family or non-relatives.

A few of the variables included in family structure at Wave III had a significant effect on total child maltreatment among older adolescent parents. The effect of living with a parent had a negative effect on total child maltreatment for younger as well as older adolescent parents, but a significant effect was only found for older adolescent parents. Living with other family or non-relatives had a significant positive effect on total child maltreatment for older adolescent parents and an insignificant positive effect on total child maltreatment for young adult parents. Living with a significant other and living with one's child or children did not significantly affect parents in any age category. Living with a significant other had a positive effect on child maltreatment for older adolescent parents and a negative effect on child maltreatment for younger adolescent and young adult parents. Living with one's child or children only had a small positive effect on total child maltreatment for the youngest group of parents. In the total parent population, none of the Wave III living arrangement variables had a significant effect on total child maltreatment. Living with one's child or children and living with a parent figure had a negative effect on total child maltreatment while living with a significant other or other family/non-relatives had a small positive effect on total child maltreatment.

The results from all three individual forms of child maltreatment suggest that living arrangements at Wave III played a very significant role in multiple forms of child maltreatment. The results varied slightly for each outcome variable however, some consistencies were found for specific parent age groups across outcomes. Furthermore, trends in the effects of the residential status variables on child maltreatment were most consistent among younger and older adolescent parents, although a few variables had a fairly pervasive effect among all parent age groups on the majority of the outcome variables. Living with other family or non-relatives is an example of this type of variable, particularly among older adolescent and young adult parents. In general, adolescent parents derived the greatest benefit from living with a parent figure. Living with a parent figure primarily increased the odds of child maltreatment among young adult parents. Living with one's child or children was least beneficial for younger adolescents as this variable consistently increased the odds of all forms

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of child maltreatment. Living with a significant other consistently decreased the odds of all forms of child maltreatment among young adult parents, but was least beneficial among older adolescent parents. .

One- and two-parent family structures were examined at Wave I. The two-parent family structure significantly decreased the odds of supervision neglect for younger adolescent parents. Insignificant increasing effects were found for both older adolescent and young adult parents. The one-parent family structure also decreased the odds of supervision neglect among younger adolescent parents, while increasing the odds of supervision neglect among older adolescent and young adult parents. These results demonstrate that family structure at Wave I was particularly important in reducing the odds of supervision neglect among younger adolescent parents.

Neither the two-parent family structure nor the one-parent family structure significantly increased or decreased the odds of physical neglect in the full model with interactions. Both the one- and two-parent family structure decreased physical neglect among younger and older adolescent parents. Among young adult parents, the two-parent family structure had a very slight increase in the odds of physical neglect while the one-parent structure slightly decreased the odds of physical neglect. In the entire parent population, no significant effects were found. Both one and two parent family structures decreased the odds of physical neglect. The effects of family structure at Wave I on physical neglect bear some similarities and differences to the effects of family structure at Wave I on supervision neglect. While neither of the variables had a significant effect on physical neglect, a decreasing effect for the two-parent family structure was found among younger adolescent parents on both variables. Unlike the results from the outcome variable supervision neglect however, the one-parent and two-parent family structures decreased the odds of physical neglect among older adolescent parents as well.

The effects of family structure on physical assault were only significant for older adolescent parents. Among older adolescent parents, the two-parent family structure had a surprisingly significant increasing effect on the odds of physical assault. The two-parent family structure had an insignificant decreasing effect on physical assault among younger adolescent and young adult parents, however. Although no significant effects were found, this pattern was also consistent for the effects of the one-parent family structure on physical assault among the three parent age groups. In the total parent population, the effects for family structure at Wave I were insignificant. The two-parent family structure increased the odds of physical assault while the one-parent family structure decreased the odds of physical assault. Overall, a consistent trend in effect was only observed

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among younger adolescent parents. The increasing effect that the one- and two-parent family structure had on physical assault for older adolescent parents differed from the results found for the two previous outcome variables. The inconsistency in results across parent age groups as well as outcome variables again point to the specificity of these variables in predicting outcomes.

The effects of family structure at Wave I on total child maltreatment were insignificant. Both one- and two-parent family structures had a negative effect on total child maltreatment for younger and older adolescent parents. Both types of family structures had an increasing effect on total child maltreatment among young adult parents. Among the total parent population, the two-parent family structure had a small positive effect on total child maltreatment while the one-parent family structure had a small negative effect on total child maltreatment.

Overall, the two- and one-parent family structures consistently reduce the odds of all forms of child maltreatment for younger adolescent parents. These variables only had a decreasing effect in 50% of the results among older adolescent and young adult parents. Thus, these results clearly show how a one- and two-parent family structure had a more profound effect on the odds of all forms of child maltreatment among younger adolescent parents compared to older adolescent and young adult parents.

Next, child centered variables were examined. These included child birth weight, number of children, and child age. Only child birth weight significantly reduced the odds of supervision neglect for older adolescent parents. A similar trend was found across all three parent age groups, however. Number of children increased the odds of supervision neglect among older adolescent and young adult parents, while this variable decreased the odds of supervision neglect among younger adolescent parents. Although insignificant, child age increased the odds of supervision neglect across all three parent age groups. Thus for the outcome variable supervision neglect, child birth weight and child age had a consistent effect across all of the age groups.

For physical neglect, none of the child-centered variables significantly increased or decreased the odds of physical neglect. Although normal child birth weight had a similar effect across all three parent age groups for the outcome variable supervision neglect, this was not the case for physical neglect. For younger adolescent parents, normal child birth weight increased the odds of physical neglect, while reducing the odds of physical neglect for older adolescent and young adult parents. Also inconsistent with the results of the supervision neglect regression analyses, number of children slightly increased the odds of physical neglect among younger adolescent and young adult parents while it slightly decreased the odds of physical neglect among older

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adolescent parents. The results of the effects of child age on physical neglect were completely opposite those found for supervision neglect as child age slightly decreased the odds of physical neglect across all three parent age groups. In the entire parent population, no significant effects were found. Normal child birth weight slightly reduced the odds of physical neglect, number of children had absolutely no effect on physical neglect, and child age slightly decreased the odds of physical neglect.

The effects of the child centered variables on child physical assault were evaluated as well. It was found that only child age significantly predicted physical assault among older adolescent and young adult parents. Increasing child age significantly increased the odds of physical assault among older adolescent as well as young adult parents. An increasing effect was found for younger adolescent parents as well, however. Interestingly, normal child birth weight, which tended to have a decreasing effect on the previous two outcome variables examined, actually increased the odds of physical assault among all three parent age groups. Also a surprise, an increasing number of children reduced the odds of physical assault among all three parent age groups.

In the examination of the effects of the child centered variables on total child maltreatment, none were found significant. Normal child birth weight had a negative effect on total child maltreatment among older adolescent and young adult parents and an increasing effect on total child maltreatment among younger adolescent parents. Number of children had a negative effect on child maltreatment among younger and older adolescent parents and a small positive effect on child maltreatment among young adult parents. Child age had a slight positive effect across all three parent groups. In the total parent population, child birth weight and number of children negatively affected total child maltreatment, while child age positively affected total child maltreatment.

In summary, the child centered variables generally had an inconsistent effect across parent age groups as well as type of maltreatment. With a few exceptions, this was not the case for the child age variable. Among parents in all age groups and across each form of child maltreatment, child age tended to increase the odds of child maltreatment. This was particularly true among older adolescents and young adults on the physical assault variable. Among younger adolescent parents, normal child birth weight increased the odds of all but one type of child maltreatment. The results for normal child birth weight, more in accordance with expectations, were opposite for older adolescent and young adult parents. Oddly, number of children decreased the odds of

child maltreatment among younger and older adolescent parents while increasing the odds of the majority of child maltreatment outcomes among young adult parents.

Distal social support variables such as school-connectedness and perception of friends caring were examined as well for their effects on individual types of child maltreatment and total child maltreatment. School connectedness increased the odds of supervision neglect across all three parent age groups, but only significantly so for older adolescent parents. Perception of friends caring decreased the odds of supervision neglect across all three parent age groups, but only to a significant degree among younger adolescent and young adult parents.

The effects of the distal social support variables on physical neglect were examined as well. Neither school-connectedness nor perception of friends caring significantly increased or decreased the odds of physical neglect among younger adolescent, older adolescent or young adult parents. In contrast to regression analyses results for supervision neglect previously discussed, school-connectedness decreased the odds of physical neglect across all three age groups. Perception of friends caring decreased physical neglect for both younger adolescent and older adolescent parents. Among the total parent population, both variables slightly decreased the odds of physical neglect. In comparison to the results from the regression analyses for supervision neglect, these distal social support variables were less influential for physical neglect.

Among the two distal social support variables examined, only school connectedness significantly reduced the odds of physical assault among older adolescent parents. This trend was consistent across parent age groups, however. Thus, school connectedness had a similar effect on both physical assault and physical neglect, discussed in the preceding paragraphs. Perception of friends caring reduced the odds of physical assault among younger adolescent and young adult parents, but increased the odds of physical assault among older adolescent parents. In effect, perception of friends caring did not have a consistent effect across parent age or type of maltreatment.

The effects of the distal social support variables on total child maltreatment were also examined. Again, only school-connectedness had a significant effect on total child maltreatment. School-connectedness had a significant negative effect on total child maltreatment for younger adolescent parents. This variable also had a negative effect on total child maltreatment for older adolescent parents. Perception of friends caring had a

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negative effect on total child maltreatment among younger adolescent and young adult parents. Both variables had a small negative effect on total child maltreatment among the total parent population.

In summary, school connectedness had a consistent increasing effect on supervision neglect among parents in all three age groups. This variable however, consistently decreased physical neglect as well as physical assault, particularly among older adolescent parents. Perception of friends caring had the greatest decreasing effect on younger adolescent and young adult parents as this variable consistently reduced the odds of all forms of child maltreatment among these two age groups. These results suggest that it cannot be unequivocally stated that the predictive variables were more alike in their effects on adolescents in general, given that the effect of perception of friends caring was most similar for younger adolescent and young adult parents.

Lastly, financial support variables were examined. All but the second highest level of financial support reduced the odds of supervision neglect among younger and older adolescent and young adult parents. Significant effects were not found among any of these variables, however.

Like the results from the regression analyses for supervision neglect, none of the financial support variables significantly increased or decreased the odds of physical neglect across parent age groups. Among younger adolescent parents, receipt of all three levels of financial support increased the odds of physical neglect. Among older adolescent parents, only the receipt of the two highest levels of financial support increased the odds of physical neglect. Among young adult parents, only receipt of the middle level of financial support increased the odds of physical neglect. In the total population, this was also the case. These results are opposite those found in the regression analyses for supervision neglect as the majority of financial support variables actually increased the odds of physical neglect among the parent age groups whereas the financial support variables generally reduced the odds of supervision neglect.

Again, none of the financial support variables significantly increased or decreased the odds of physical assault among the three parent age groups. Slight decreasing effects were only found for younger adolescents' receipt of the lowest amount of financial support and young adults' receipt of the largest amount of financial support. Among the general parent population, slight increasing effects were seen for each level of financial support.

The financial support variables also failed to have a significant effect on total child maltreatment. Among younger adolescent parents, all of the financial support variables had a positive effect on total child maltreatment. Among older adolescent parents as well as young adult parents, only the lowest level of financial support had a negative effect on total child maltreatment. Among the total parent population, only the lowest and highest levels of financial support had a negative effect on total child maltreatment.

The effects of the three financial support variables on each of the three outcome variables were inconsistent across parent age as well as the outcomes themselves. All results from the mid-level of financial support and the majority of the results from the highest level of financial support significantly increased the odds of all child maltreatment. Only the results from lowest level of financial support reduced the majority of child maltreatment outcomes across parent age groups. Given that none of these variables had a significant effect on child maltreatment, they were not judged to be very pertinent to any form of child maltreatment.

Overall, only two variables significantly reduced the odds of supervision neglect among younger adolescent parents. These included the two-parent family structure at Wave I and perception of friends caring. Thus, for younger adolescent parents early social supports, included those provided in the two-parent family structure environment and friendships, are important predictors of child maltreatment. Among young adult parents only the summary assault index significantly increased the odds of supervision neglect and perception of friends caring significantly decreased the odds of supervision neglect. Thus, there was some consistency found in the powerful impact that perception of friends caring had on both younger adolescent and young adult parents. In addition, although the summary assault index was measured at Wave III, the questions posed were in regard to assault that occurred in the past. Thus, among both younger adolescent and young adult parents, historical factors proved to be the most salient predictors of supervision neglect. Among older adolescent parents, many more variables had a significant effect on supervision neglect. These included verbal assault, the summary assault index, depressive symptoms at Wave I, living with a significant other at Wave III, living with a parent figure at Wave III, living with other family or non-relatives at Wave III, child birth weight and school connectedness. Thus, as previously pointed out, the variables selected were more applicable to child maltreatment among older adolescent parents. Also as stated earlier, although significant differences were not found for all variables or parent age groups for supervision neglect, some common themes were identified across parent age group.

Fewer variables significantly predicted physical neglect. Among younger adolescents and young adults, none of the variables significantly predicted physical neglect. It was only among older adolescents that living with a significant other or with other family or non-relatives significantly increased the odds of physical neglect.

A greater number of variables were found to significantly predict physical assault. Among younger adolescents, emotional closeness at Wave III, living with one's significant other, and living with a parent figure significantly reduced the odds of physical assault among younger adolescent parents, while depressive symptoms significantly increased the odds of physical assault. For older adolescent parents, living with one's child or children, a two-parent family structure at Wave I, and child age significantly increased the odds of physical assault while school-connectedness significantly decreased the odds of physical assault. Among young adult parents, living with a parent figure and number of children significantly increased the odds of physical assault.

A very small number of variables were identified that had a significant effect on total child maltreatment. Among younger adolescent parents, only school connectedness had a negative effect on total child maltreatment. Among older adolescent parents, only living with a parent figure at Wave III had a negative effect on total child maltreatment.

To conclude the discussion of the results from the regression analyses, several findings are worth discussing in greater detail. First, the variables selected appear to be most applicable and salient for the adolescent population, particularly older adolescents. With the exception of a few variables, the majority of the significant predictors increased the odds of different forms of child maltreatment. Thus, these predictors should be considered potential risk factors for specific forms of child maltreatment. Fewer variables were found to significantly predict total child maltreatment, a combination of all three individual forms of child maltreatment. This, combined with the different results found across types of child maltreatment, suggests that forms of maltreatment and their predictors are best understood individually. As stated earlier in the discussion, although some consistencies were found across parent age groups, many variables had either a much weaker or stronger effect among parents in specific age groups or a completely opposite effect. Thus, examining child maltreatment without parent age interactions often masks these differences in effect. Analyses conducted without parent age interactions portrayed the majority of predictor variables as negligible or insignificant, when

in fact significant differences were found specific to parent age. In addition, fewer significant effects were found in the individual models, both with and without parent age interactions. This suggests that incorporating the correlated constraints and numerous ecological factors embedded in the parenting environment, implied by the presence the variables in the full model, provided a more rich and accurate way to understand child maltreatment. The examination of sets of variables in isolation failed to provide the context necessary to understand the complexity of child maltreatment. These analyses also made abundantly clear the fallacy that experiences with assault perpetuate child maltreatment. Rather, more pragmatic contextual support variables, such as living arrangement at Wave III, proved to be the most consistently salient predictors of child maltreatment, particularly amongst the older adolescent population.

Discussion Summary

Four sets, or different types, of analyses were conducted, each with the aim of better understanding child maltreatment among parents at different stages of development. These multiple analyses were also conducted in order to obtain a more comprehensive and wholistic perspective on child maltreatment among younger and older adolescent and young adult parents. Cluster analyses revealed that parents could be most easily distinguished from one another based on their individual experiences with assault when individual ordered categorical and binary assault variables were used. Comparatively, there tended to be less variation in emotional closeness across clusters and an even more restricted range of responses on the depressive symptoms variables across clusters. Still, emotional closeness seemed to accord with level of assault in the majority of clusters. This was not true of clusters formed with very low emotional closeness and little or no assault, however. While one cluster like this was found in two of the three cluster solutions which used the individual assault variables, two clusters like this were found in the cluster solution which used the continuous assault variable. Thus, this cluster solution appeared to be balanced by both the continuous assault variable and the emotional closeness variables, whereas the cluster solutions which used individual assault measures were predominantly organized around the assault variables rather than the emotional closeness variables. These results illustrated that the diverse manner in which assault was examined, individually and cumulatively, resulted in different types of cluster solutions. As previously mentioned, the most extreme cases of very low emotional closeness did not correspond as expected with assault experiences. As a result, some unexpected profiles were formed in which extremely low emotional closeness was observed in groups in which individuals

experienced little to no assault. Thus, within the Add Health sample and population of parents there was a subgroup of parents similar to one another in both their minimal experiences with assault as well as extremely low ratings of emotional closeness with a parent figure, at Wave I as well as Wave III.

Follow-up analyses used to describe clusters in four selected cluster solutions, in terms of different types of child maltreatment, total child maltreatment, and parent age, revealed that clusters across cluster solutions with the highest levels of assault had among the lowest proportions and means on the child maltreatment variables. In contrast, clusters characterized by only one type of assault or moderate assault had the highest proportions and means of child maltreatment. Even the largest clusters, which experienced very minimal assault, had higher percentages for different types of child maltreatment than individuals in clusters characterized by the most severe experiences with assault. The "high child maltreatment" clusters only shared similar "assault" profiles in the two cluster solutions which used the ordered categorical assault variables. These findings were completely counter to expectations and suggest that specific types of assault may not be as directly tied to child maltreatment as previously thought. The results bring into question the presumed relationship between child maltreatment, assault, emotional closeness, and depressive symptoms. In addition, differences across clusters were primarily only found for total child maltreatment and this difference was only consistently found in cluster solutions which used the individual assault variables. It was also observed that sexual assault corresponded with low proportions and means on child maltreatment as well as the youngest subpopulation of parents.

Follow-up analyses on additional variables of interest were only conducted for the seven-cluster solution which used the binary assault variables. These analyses were used to identify additional variables which corresponded with the highest and lowest child maltreatment clusters as well as to profile the other unique clusters in this solution. This cluster solution's "high child maltreatment cluster" differed from the other two ordered categorical assault cluster solution's "high child maltreatment" clusters. These analyses also yielded some surprising results. In summary, many negative risk factors coincided with this "high assault," yet "very low child maltreatment" cluster, further suggesting that risk and protective factors may not function in accordance with expectation. A mixture of risk and what are often considered protective factors characterized the "physical assault" cluster which had the highest proportion of total child maltreatment as well as all individual forms of maltreatment.

Also important to this developmental perspective on child maltreatment, were the characteristics of older and younger adolescent and young adult parents. Descriptive characteristics by parent age were generated and then compared to one another. These results were in greater accordance with the expectation that the youngest subpopulation would have most risk factors, including experiences with assault. Although the results were not statistically significant and differences were often quite minor across parent age groups, the youngest parents tended to have the highest proportions and means on the child maltreatment variables. In addition, significant differences were primarily found among younger adolescents and young adults, and these differences were generally found on more contemporaneous Wave III variables. In particular, younger adolescent and young adult parents tended to differ in their living arrangement status at Wave III.

Lastly, four sets of regression analyses were conducted for the outcome variables of interest. The results from these analyses yielded surprising results as well. The assault variables, emotional closeness, and depressive symptoms did not have the effects anticipated. As expected however, variables which significantly affected individual types of child maltreatment as well as total child maltreatment tended to be specific parent age as well as child maltreatment type. The only consistency found was the prominent effect that the cluster of Wave III living arrangement variables had across parent age groups as well as different types of child maltreatment.

Implications

The results from the cluster analyses shed light on how our understanding of parent subpopulations is affected by the manner in which the characteristics that define the population are organized. This, in turn, affects perceptions of the relationships between the variables which characterize them. The parenting population can be grouped according their experiences with assault, emotional closeness with parent figures, and to a lesser degree, depressive symptoms. The ways in which experiences with assault are examined resulted in some cluster profile differences. That is, the cluster profiles formed when the continuous assault variable was used were drastically different from profiles formed when the ordered categorical assault variables were used. Thus, what these variables represented, be it variations in degree of individual forms of assault, variations in degree of total assault, or any experience at all with individual forms of assault, had an important effect on the types of cluster profiles generated. It can be concluded, therefore, that the data provided evidence for the existence of parent subgroups based on their experiences with assault and emotional closeness, but that

these subgroups are highly dependent upon the type of assault variables used, or what they represent. As a result, it is important to understand that parent subgroups are highly dependent upon the very specific variables around which they are organized and that change in variables' construction, or what they represent, will result in changes in parent subgroups. Given the differences found in cluster solution profiles, parent subgroups organized around this collection of variables should be interpreted flexibly and with the make-up of the variables in mind.

Follow-up analyses on four cluster solutions demonstrated that clusters within cluster solutions which used the individual assault variables significantly differed on at least total child maltreatment. That there were no significant differences in child maltreatment among clusters in the cluster solution which used the continuous assault variable shows that the summation of the assault variables, or total assault, did not result in clusters well differentiated in terms of child maltreatment. This does not necessarily mean that total assault is not as strongly associated with child maltreatment compared to individual forms of assault. The use of individual forms of assault in clustering algorithms however, did result in cluster solutions in which clusters were differentiated on child maltreatment. This suggests that one or more forms of individual types of assault may play a greater role in child maltreatment compared to total assault. Only one cluster solution, the seven-cluster solution, had clusters which differed on an individual form of child maltreatment. Thus, cluster profiles generated based on the five or seven variables selected, only tended to differentiate total child maltreatment, rather than individual forms of child maltreatment. In addition, the profile patterns which characterized significant differences among clusters differed for the seven-cluster versus the five-cluster solutions. The differing profile characteristics of clusters with significantly higher and lower means on child maltreatment across cluster solutions suggest that it is important not to examine these profile characteristics in isolation or to attribute total child maltreatment to them. This is not to say that these profile characteristics are not important factors in child maltreatment, rather they cannot be examined in isolation. It is also important to point out the descriptors of child maltreatment and parent age by cluster profiles did not accord with expectations regarding the relationships between experiences with assault, emotional closeness and depressive symptoms and child maltreatment. Thus, the results suggested that subgroups defined by experiences with assault, emotional closeness, and depressive symptoms are not necessarily parent characteristics most relevant to child maltreatment in and of themselves.

The more in-depth follow-up analyses conducted on the seven-cluster solution on additional variables of interest also revealed further cluster profile characteristics contrary to expectations had for maltreating and non-maltreating parents. In total, the results of these follow-up analyses suggested several things. First, there are multiple factors on which parent profiles may be significantly differentiated, some of which may be more pertinent to child maltreatment than the variables used to organize the clusters themselves. Second, it should not be assumed that groups alike in characteristics such as experiences with assault, emotional closeness, or depressive symptoms directly correspond with child maltreatment. It is essential to look beyond blatant profile characteristics that define subgroups and into the rich contextual backgrounds which also define cluster profiles.

The parent age comparisons on a multitude of variables of interest demonstrated that younger adolescent, followed by older adolescent parents, are a more vulnerable population compared to the young adult parent population. Younger adolescent and older adolescent parents should be closely screened for a number of risk factors that may jeopardize their own well-being as well as their ability to be competent caregivers. It should be noted however, that adolescent parents do not have an extraordinarily greater proclivity toward child maltreatment. Thus, age group in and of itself does not necessarily warrant greater prevention or intervention focus on child maltreatment than what is called for in the general population.

Lastly, while parents in different age groups may not necessarily vary tremendously in rates of child maltreatment, predictive factors differ not only across parent age, but also type of maltreatment. The multiple regression analyses conducted highlight these differences and illustrate the importance of risk and protective factors in their contextual framework as very few of the variables within individual models had significant effects. In addition, the significant effects of a number of variables were masked in the general populous. It was only when parent age interactions were examined that the significant effects of predictive variables were revealed. These findings are further evidence of the tremendous developmental differences that characterize younger and older adolescent and young adult parents. In addition, many more significant predictors were found for individual types of child maltreatment compared to total child maltreatment. This suggests that significant predictors are also masked when different types of child maltreatment are compiled in summative type composites such as the one used in this study.

Implications of the regression analyses more specific to child maltreatment prevention and intervention efforts were found as well. Among younger adolescents, the results showed the importance of emotional

closeness at Wave III for younger adolescent parents as it proved to be a significant protective factor for child physical assault. Although insignificant, dependency was a risk factor more salient to older adolescents and young adults and thus prevention and intervention efforts in this area may be best allocated to these subgroups. The results also showed that adolescents tended to be more vulnerable to the negative effects of depressive symptoms. Among younger adolescents, contemporaneous depressive symptoms may be a negative risk factor for physical assault. Among older adolescents, a previous history of depression may be a negative risk factor for physical assault.

Verbal assault tended to be a negative risk factor in the majority of the results and may thus indicate the need to provide additional support for parents who have experienced this type of assault, particularly older adolescents as it significantly increased the odds of supervision neglect among this subpopulation. More importantly however, it may be necessary to explore other risk and protective factors present in the ecology of parents with a history of verbal assault. Given that sexual assault tended to reduce the odds of almost all forms of assault among the majority of parents, it will also be important to explore what may account for the differences in the effects of the assault variables on child maltreatment, such as the generally opposite effects of verbal and sexual assault on child maltreatment.

Perhaps most importantly, the results demonstrated that contemporaneous living arrangements are among the most significant variables for parents in all age groups, although the variables often functioned differently across age groups as well as type of child maltreatment. Among all three parent age groups, living with one's child or children may be an important risk factor for supervision neglect, a significant risk factor for physical assault among younger and older adolescent parents, and a significant risk factor for physical neglect among younger adolescents. Living with a parent figure may be a protective factor for supervision neglect, physical assault, and physical neglect among adolescents in general, but it may be a risk factor for physical assault among young adult parents. It is also important to understand why these variables function differently for adolescent versus young adult parents. Living with a significant other may be a negative risk factor for supervision neglect and physical neglect among older adolescent parents. Lastly, living with other family or non-relatives may be a significant risk factor for physical neglect and supervision neglect among older adolescents. Family structure at Wave I, particularly a two-parent family structure, was an important protective factor for supervision neglect among the youngest population of parents.

Distal social support variables, such as school connectedness and perception of friends caring may also be an important risk or protective factors to examine, depending on parent age and type of child maltreatment. For adolescent parents, particularly younger adolescents, school connectedness may be a protective factor for total child maltreatment. School connectedness may also be an important protective factor for physical assault among the adolescent population in general, and especially among older adolescents. This variable showed however, that even within a parent age group, the same variable may function differently for different types of child maltreatment. For example, among older adolescent parents, school connectedness decreased the odds of physical assault but increased the odds of supervision neglect. Perception of friends caring may be an important protective factor for younger adolescent and young adult parents across all forms of child maltreatment, particularly supervision neglect. When compared to the effects of other relationship variables, such as relationships with caregivers, these results suggest that other types of potentially supportive relationships, such as peer relationships, may be a more important protective factor among some subpopulations of parents, not limited to adolescents. This also illustrates that although adolescent parenting may change aspects of development and maturation for adolescent parents, the peer group continues to play an important role and may even impact parenting outcomes such as child maltreatment.

In general, given the fact that very few assault, emotional closeness, or depressive symptoms variables significantly increased or decreased the odds of child maltreatment as well as the fact that very few consistent trends or patterns were identified across these variables, it is essential that service providers working with parents investigate a more broad array of environmental risk and protective factors for child maltreatment. It should not be assumed parents' experiences with assault or poor interpersonal relationships with caregivers necessarily bear on child maltreatment. Rather, it may be that much more pragmatic and contemporaneous factors, such as living arrangement and social support, are relevant to child maltreatment.

Limitations

One of the limitations of this study was that reports of child maltreatment were based on parents' self-reports as were reports of assault experienced during respondents' childhoods. Thus, the results may be subject to social desirability bias based on respondents' willingness to disclose sensitive personal information. Depressive measures and other mental health measures, such as dependency, were not based on clinical judgment or the judgment of an objective bystander. As mentioned in the results and discussion, means for both

depressive symptoms variables were very low and ranges were restricted, which may also be the result of being collected by self-report. This may also account for the relative insignificance of these variables in the regression analyses. Additionally, repeated measures collected at Wave I and III were not always consistent with one another. Most notably, measures of assault collected at Wave III were not entirely consistent with measures of child maltreatment collected at Wave IV. Only physical assault was queried at Waves I and IV. It is uncertain whether the insignificant results found for many of the assault variables were the result of this inconsistency. Future studies examining factors which predict child maltreatment among younger and older adolescent and young adult parents may want to determine whether specific types of assault experiences are better predictors of the same type of child maltreatment as a point of comparison. In addition, child maltreatment outcome measures were binary due the relatively low incidence of reporting. Thus, the regression analyses conducted only represented whether or not child maltreatment was reported rather than variations in degree of child maltreatment. Future studies may want to examine child maltreatment with this more refined perspective, to better understand predictors which may differentiate all parents on the continuum of child maltreatment, from repeat offenders to individuals who report single offenses. Lastly, the results from the dependent variable Total Child Maltreatment should be interpreted with caution due to its low reliability coefficient. Few significant predictors were identified for this variable. Due to these two concerns, this very could have likely been eliminated from the study entirely.

An additional limitation of this study is that male and female respondents were grouped together primarily due to the much smaller proportion of male respondents within each of the three age groups, particularly the younger adolescent population which had the smallest proportion of total respondents. Gender was controlled for as a result of this limitation in the sample. Based on research documenting the significant differences between males and females and rates of externalizing versus internalizing behavior, the predictors of child maltreatment among each of the sexes may differ significantly. Thus, examination of predictors by not only age, but also gender may result in significantly different predictors that may change variations in parent age group. With regard to the population of respondents, it is also noteworthy that these results pertain to adolescent parents still in the educational system and is thus not representative of all adolescent parents as it is well documented that a large numbering of parenting adolescents leave school to attend to their childrearing responsibilities.

It should also be noted that because this was an exploratory study, and multiple tests were conducted, there is an increased chance of Type I error rate. That is, there is a greater likelihood that significant results found in this study were false positives and that the null hypothesis, the hypothesis of no effect, is true. According to Sainani (2009), multiple hypothesis testing can be defined as the comparison of multiple groups or the examination of multiple outcomes. Thus, when interpreting the results of statistical analyses, it is prudent to take into consideration how many tests were run, the size of P values, and whether P values were adjusted for multiple comparisons. Sainani reported, however, that the Bonferroni correction is "overly conservative" and that "formal corrections for multiple comparisons are most often used in the context of hypothesis-driven research" (p. 1099). In the case of exploratory analyses, Sainani describes formal corrections for multiple comparisons as "impractical" and instead emphasizes that "it is more important to judge P values cautiously than to try to formally determine their true significance level" (p. 1100). P values closer to the .001 threshold are less likely to be spurious than those at the .05 level. It is also important to consider the pattern of significant risk ratios across multiple comparisons. When no pattern exists, chance may be a more likely explanation.

Appendix A
Measures

Dependent Variables			
Variable	**Questions**	**Scale of Measurement**	**Reliability/Validity**
Child Maltreatment Perpetration			
Supervision neglect	How often have you left your child/children home alone when an adult should have been with him/her/them?	0 = this has never happened; 1 = 1 or more times *Binary variable	
Physical neglect	How often have you not taken care of your child/children's basic needs, such as keeping you clean or providing food or clothing?	0 = this has never happened; 1 = 1 or more times *Binary variable	
Physical assault	How often have you slapped, hit, or kicked your child/any of your children?	0 = this has never happened; 1 = 1 or more times *Binary variable	
Social Services involvement	How often has Social Services investigated how you take care of your child/children or tried to take your child/any of your children away from your family?	0 = this has never happened; 1 = 1 or more times *Binary variable	
Summary maltreatment composite	How often have you left your child/children home alone when an adult should have been with him/her/them? How often have you not taken care of your child/children's basic needs, such as keeping you clean or providing food or clothing? How often have you slapped, hit, or kicked your child/any of your children?	0 = this has never happened; 1 = 1 time; 2 = 2 times; and 3 = 3 or more times Sum responses to all 3 items Range = 0-9 *Continuous variable	$\alpha = .17$

Independent Variables			
Variable	**Question(s)**	**Scale of Measurement**	**Reliability/Validity**
Historical & Current Contextual Factors			
Depressive symptoms Waves I & 3	How often was each of the following things true during the past seven days? You were bothered by things that usually don't bother you. You could not shake off the blues, even with help from your friends and family.	0 = never or rarely; 3 = most of the time or all of the time Sum responses to all 10 items Range = 0-30 *Continuous variable	$\alpha = .80$, Wave I; $\alpha = .82$, Wave III (Meadows et al., 2006, p. 96)

	You felt that you were just as good as other people. You had trouble keeping your mind on what you were doing. You felt depressed. You felt you were too tired to do things. You were happy (Wave I); You were sad (Wave III). You enjoyed life. You felt that people disliked you. In the past 12 months, how often have you cried a lot?		
		0 = never; 1 = just a few times; 2 = about once a week; 3 = almost every day; 4 = every day (Responses 3 & 4 were collapsed in order to more closely match the other items in the scale)	
Perceived parent-child relationship quality (mother-figure & /or father-figure) Wave I	How close do you feel to your {mother-figure}? How much do you think she cares about you? Most of the time, your mother is warm & loving toward you. You are satisfied with the way your mother and you communicate with each other. Overall, you are satisfied with your relationship with your mother.	1 = not at all; 5 = very much 1= strongly disagree; 5 = strongly agree Mean scale Range: 1-5; higher scores indicating closer relationships *Continuous variable (When values for both a mother-figure and a father-figure were provided, the average of the two was used)	α = .83 (mother-figure) α = .86 (father-figure) (Bratter & Heard, 2009, pp. 667-668)
Perceived parent-child relationship quality (mother-figure & /or father-figure) Wave III	You enjoy doing things with {him/her}? Most of the time, {he/she} is warm & loving toward you. How close do you feel to {him/her}?	1= strongly disagree; 5 = strongly agree 1 = not close at all; 5 = extremely close Mean scale Range: 1-5; higher scores indicating closer	α = .83 - .88 (varies by mother-figure type) α = .88 -.91 (varies by father-figure type)

		relationships *Continuous variable (When values for both a mother-figure and a father-figure were provided, the average of the two was used)	
Self-esteem Wave I	You have a lot good qualities. You have a lot to be proud of. You like yourself just the way you are. You feel loved and wanted. You felt that you were just as good as other people.	1 = strongly disagree; 5 = strongly agree 0 = never or rarely; 3 = most of the time or all of the time Responses to each of the 5 statements were summed to create one score Range: 1-23; higher values indicative of higher self-esteem *Continuous variable	α = .86 (Lippincott Williams & Wilkins, 2009)
Self-esteem Wave III	Hour satisfied are you with your life as a whole? Do you agree or disagree that you have many good qualities? Do you agree or disagree that you have a lot to be proud of? Do you agree or disagree that you like yourself just the way you are? Do you agree or disagree that you feel you are doing things just about right?	1 = very dissatisfied; 5 = very satisfied 1 = strongly disagree; 5 = strongly agree Responses to each of the 5 statements were summed to create one score Range: 1-25; higher values indicative of higher self-esteem *Continuous variable	α = .79
Anxiety Wave IV	Has a doctor or nurse ever told you that you have or had anxiety or panic disorder? How old were you when the doctor, nurse or other health practitioner diagnosed you with anxiety or panic disorder?	0 = no; 1 = yes Age in years 0 = never diagnosed; 1 = diagnosed after Wave III; diagnosed before Wave III *Nominal Variable	
Historical Factors			

Maltreatment by Adults			
Verbal assault Wave IV	Before your 18th birthday, how often did a parent or other adult caregiver say things that really hurt your feelings or made you feel like you were not wanted or loved?	0 = this has never happened; 1 = 1 time; 2 = 2 times; 3 = 3 or more times *Ordinal variable	
Physical assault Wave IV	Before your 18th birthday, how often did a parent or adult caregiver hit you with a fist, kick you, or throw you down on the floor, into a wall, or down stairs?	0 = this has never happened; 1 = 1 time; 2 = 2 times; and 3 = 3 or more times *Ordinal variable	
Sexual assault Wave IV	How often did a parent or other adult caregiver touch you in a sexual way, force you to touch him or her in a sexual way, or force you to have sexual relations?	0 = this has never happened; 1 = 1 time; 2 = 2 times; and 3 = 3 or more times *Ordinal variable	
Summary exposure to child maltreatment Wave IV	Verbal assault measure (see above) Physical assault measure (see above) Sexual assault measure (see above)	0 = this has never happened; 1 = 1 time; 2 = 2 times; and 3 = 3 or more times Sum responses to all 3 items Range = 0-9 *Continuous composite variable	$\alpha = .51$
Family Structure Wave I	Family structure will be determined from household roster information. Respondents were asked to list all household members and their relationship to the respondent at the time of the Wave I interview.	1 = two parents; 2 = one parent; 3 = other *Nominal variable	
Connectedness to school Wave I	You feel close to people at your school. You feel like you are part of your school. You are happy to be at your school.	1 = strongly disagree; 5 = strongly agree Mean scale Range = 1-5 *Continuous composite variable	$\alpha = .77$ (Botticello, 2009, p. 228)
Perception of friends caring Wave I	How much do you feel that your friends care about you?	1 = not at all; 2 = very little; 3 = somewhat; 4 = quite a bit; 5 = very much *Ordinal variable	
Retrospective ADHD – Hyperactive type Wave III	Think back to when you were between 5 and 12 years of age. For each of the following statements, which answer best describes your behavior when you were that age. You fidgeted with your hands or feet or squirmed in your seat. You felt restless. You had difficulty doing fun things quietly.	0 = never or rarely; 1 = sometimes; 2 = often; 3 = very often Symptoms considered present if experienced often or very often. Thus, the response "sometimes" was recoded as 0 & responses "often" & "very often" were recoded as 1 Range = 0-8	$\alpha = .86$ (Collins et al., 2005)

	You felt "on the go" or "driven by a motor". You talked too much. You blurted out answers before the questions had been completed. You had difficulty awaiting your turn.	Classification into one of two groups based on six symptom cutoff 0 = less than 6 ADHD symptoms present; 1 = 6 or more ADHD symptoms present *Dichotomous variable	
Retrospective ADHD – Inattentive type Wave III	Think back to when you were between 5 and 12 years of age. For each of the following statements, which answer best describes your behavior when you were that age. When you were between 5 and 12, you failed to pay close attention to details or made careless mistakes in your work. When you were between 5 and 12, you had difficulty sustaining your attention in tasks or fun activities. When you were between 5 and 12, you didn't listen when spoken to directly. When you were between 5 and 12, you didn't follow through on instructions and failed to finish work. When you were between 5 and 12, you had difficulty organizing tasks and activities. When you were between 5 and 12, you avoided, disliked, or were reluctant to engage in work requiring sustained mental effort. When you were between 5 and 12, you lost things that were necessary for tasks or activities. When you were between 5 and 12, you were easily distracted. When you were between 5 and 12, you were forgetful.	0 = never or rarely; 1 = sometimes; 2 = often; 3 = very often Symptoms considered present if experienced often or very often. Thus, the response "sometimes" was recoded as 0 & responses "often" & "very often" were recoded as 1 Range = 0-9 Classification into one of two groups based on six symptom cutoff 0 = less than 6 ADHD symptoms present; 1 = 6 or more ADHD symptoms present * Dichotomous variable	α = .86 (Collins et al., 2005)
Current Contextual Factors			
Summary of financial support received from residential or previous residential caregivers	Has he/she given you any money or paid for anything significant for you during the past 12 months? Don't include regular birthdays or holiday gifts. Please give an estimate of this financial help in the past 12 months. Include money given directly to you and the cost of significant items bought for you by <name> (respondents were queried about 6 potential residential	0 = no; 1 = yes 1 = Less than $200; 2 = $200-$499; 3 = $500-$999; 4 = $1,000 or more	

Wave III	or nonresidential mother- and father-figures).	4 dummy variables were created to represent the receipt of each range of financial support. Dummy variables were then summed across their responses for 6 potential residential and nonresidential caregivers to create a variable for the number of 1s endorsed, number of 2s endorsed, etc. *Continuous variable	
Residence Wave III	Respondents were asked a series of questions about their living arrangement and queried about relationship of individuals with whom they live (if anyone): Do you live {here/there} alone or with others? What is {his/her} relationship to you?	Dummy variables = alone, significant other, child, parent-figure (one or two), other (family or non-relative)	
Sub-stance use related problems Wave III	During the past 12 months, how many times has each of the following things happened? You had problems at school or work because you had been drinking. You had problems with your friends because you had been drinking. You had problems with someone you were dating because you had been drinking. Over the past 12 months, how many times: were you hung over? were you sick to your stomach or threw up after drinking? did you get into a sexual situation that you later regretted because you had been drinking? did you get into a physical fight because you had been drinking? were you drunk at school or work? Since June 1995, have you driven while drunk?	0 = never; 1 = once; 2 = twice; 3 = 3 or 4 times; 4 = 5 or more times Responses 2, 3, & 4 were recoded as 1 0 = never; 1 = once; 2 = twice; 3 = 3 or 4 times; 4 = 5 or more times Responses 2, 3, & 4 were recoded as 1 0 = no; 1 = yes Responses summed	Alpha = .74

		Range = 0-9 *Continuous variable	
Child Characteristics			
Child's birth weight Wave IV	What was the baby's birth weight (pounds)? What was the baby's birth weight (ounces)?	Range: 1 to 10 pounds Range: 0 to 15 ounces Recode birth weight (pounds) into ounces & sum the two measures: 0 = Less than normal BW ($\leq$ 87 oz.); 1 = Normal BW ($\geq$88 oz.) *Ordinal composite variable	
Child Age Waves III & IV	Wave III interview date (month & year) – child birthday (month & year)	*Continuous variable	
Number of Children Wave IV	Summary of the number of children that the respondent brought home from the hospital who are reported in the live birth record as being born before the Wave III interview	*Continuous variable	
Interaction Term			
Age at which the respondent began parenting Wave IV	Parent's age was calculated by subtracting the respondent's date of birth from the Wave IV interview date. Child's age was subtracted from the parent's age at Wave IV.	younger adolescent ($\leq$16.99999 years), older adolescent ($\geq$17 & $\leq$19.99999 years), & young adult ($\geq$20 years) *Ordinal variable	
Socio-demographic variables			
Gender Wave III	Self-identified	1 = female, 0 = male *Dichotomous variable	
Race/ethnicity Wave I	Pre-constructed variable: RACE1 Are you of Hispanic or Latino origin?	1 = White; 2 = black; 3 = Native American; 4 = Asian 0 = no; 1 = yes Combined variables to create: 1 = non-Hispanic White; 2 = non-Hispanic Black; 3 = Other non-Hispanic (Native American & Asian); 4 =	

		Hispanic *Nominal categorical variable	
Family history of welfare receipt Wave III	Before you turned 18, did anyone in your household ever receive public assistance or welfare payments?	0 = no; 1 = yes *Dichotomous variable	
Individual welfare receipt Wave III	Are you currently getting AFDC, public assistance, or welfare? Have you ever received any public assistance of welfare payments other than food stamps?	0 = no; 1 = yes 0 = no; 1 = yes Combined both measures to create: 1 = current & past receipt; 2 = current but no past; 3 = past only; 4 = no current or past receipt *Ordinal variable	
Level of educational attainment Wave III	Respondents reports of level of educational attainment	recoded as: 0 = less than high school, 1 = high school graduate, 2 = some college/college graduate/higher education *Ordinal variable	

Appendix B
Cluster Solution Means and SDs

Table 2

Ward's Linkage and Weighted-Average Linkage Cluster Solution for Ordered Categorical Assault Variables, Wave I and III Emotional Closeness Variables, and Waves I and III CES-D Scale Variables

		Verbal Assault Number Mean(SD)	Physical Assault Number Mean(SD)	Sexual Assault Number Mean(SD)	Emotional Closeness I Number Mean(SD)	Emotional Closeness III Number Mean(SD)	CES-D Scale I Number Mean(SD)	CES-D Scale III Number Mean(SD)
3-cluster	Ward's linkage	1132 .89(.16)	1132 .05(.12)	1132 .08(.25)	1132 .76(.26)	1132 .83(.19)	1132 .32(.19)	1132 .26(.18)
		616 .88(.27)	616 .93(.13)	616 .20(.39)	616 .74(.24)	616 .77(.20)	616 .32(.19)	616 .28(.19)
		2402 .06(.13)	2402 .02(.09)	2402 .04(.17)	2402 .82(.22)	2402 .86(.18)	2402 .27(.17)	2402 .21(.16)
	Weighted-average linkage	3256 .29(.39)	3256 .02(.09)	3256 .01(.04)	3256 .81(.23)	3256 .85(.19)	3256 .22(.17)	3256 .28(.18)
		196 .57(.44)	196 .11(.25)	196 .88(.23)	196 .77(.27)	196 .84(.19)	196 .28(.20)	196 .35(.20)
		698 .90(.25)	698 .85(.25)	698 .16(.34)	698 .73(.25)	698 .77(.20)	698 .28(.19)	698 .32(.19)
4-cluster	Ward's linkage	1053 .88(.16)	1053 .05(.12)	1053 .01(.06)	1053 .76(.26)	1053 .82(.19)	1053 .32(.19)	1053 .25(.18)
		504 .87(.29)	504 .93(.14)	504 .03(.11)	504 .75(.22)	504 .78(.20)	504 .32(.19)	504 .28(.19)
		254 .71(.40)	254 .45(.47)	254 .98(.08)	254 .75(.27)	254 .81(.19)	254 .34(.20)	254 .28(.19)
		2339 .06(.13)	2339 .02(.09)	2339 .01(.07)	2339 .82(.22)	2339 .86(.18)	2339 .27(.17)	2339 .21(.16)
	Weighted-average linkage	3231 .29(.39)	3231 .02(.08)	3231 .01(.04)	3231 .81(.22)	3231 .85(.19)	3231 .22(.16)	3231 .28(.18)
		176 .56(.45)	176 .04(.12)	176 .87(.24)	176 .79(.24)	176 .85(.19)	176 .28(.20)	176 .35(.20)
		621	621	621	621	621	621	621

		.89(.26)	.80(.28)	.02(.07)	.72(.26)	.78(.20)	.28(.19)	.33(.19)
		122 .93(.19)	122 .95(.34)	122 .97(.24)	122 .67(.23)	122 .75(.19)	122 .31(.17)	122 .33(.18)
5-cluster	Ward's linkage	966 .88(.16)	966 .05(.11)	966 .01(.06)	966 .83(.14)	966 .82(.20)	966 .31(.19)	966 .25(.17)
		214 .42(.42)	214 .04(.12)	214 .02(.10)	214 .05(.13)	214 .83(.19)	214 .33(.21)	214 .25(.21)
		503 .87(.29)	503 .93(.14)	503 .03(.11)	503 .75(.22)	503 .78(.20)	503 .32(.19)	503 .28(.19)
		253 .71(.40)	253 .45(.47)	253 .98(.08)	253 .75(.26)	253 .81(.19)	253 .34(.20)	253 .28(.19)
		2214 .06(.13)	2214 .02(.09)	2214 .01(.07)	2214 .86(.12)	2214 .86(.18)	2214 .27(.17)	2214 .21(.16)
	Weighted-average linkage	2327 .06(.13)	2327 .02(.09)	2327 .01(.05)	2327 .82(.22)	2327 .86(.18)	2327 .21(.16)	2327 .27(.17)
		1054 .88(.16)	1054 .05(.12)	1054 .01(.07)	1054 .76(.26)	1054 .82(.19)	1054 .25(.18)	1054 .32(.19)
		151 .49(.45)	151 .05(.13)	151 .95(.12)	151 .82(.19)	151 .87(.16)	151 .26(.18)	151 .34(.20)
		496 .87(.29)	496 .93(.14)	496 .02(.07)	496 .75(.22)	496 .78(.20)	496 .28(.19)	496 .32(.29)
		122 .93(.19)	122 .95(.15)	122 .97(.10)	122 .67(.31)	122 .75(.19)	122 .31(.19)	122 .33(.20)

Table 3

Ward's Linkage and Weighted-Average Linkage Cluster Solutions for Ordered Categorical Assault Variables and Waves I and III Emotional Closeness Variables

		Verbal Assault Number Mean(SD)	Physical Assault Number Mean(SD)	Sexual Assault Number Mean(SD)	Emotional Closeness I Number Mean(SD)	Emotional Closeness III Number Mean(SD)
3-cluster	Ward's linkage	1132 .89(.16)	1132 .05(.12)	1132 .08(.25)	1132 .76(.26)	1132 .83(.19)
		616 .88(.27)	616 .93(.13)	616 .20(.39)	616 .74(.24)	616 .77(.20)
		2402 .06(.16)	2402 .02(.12)	2402 .04(.25)	2402 .82(.26)	2402 .86(.19)
	Weighted-average linkage	2371 .09(.13)	2371 .03(.14)	2371 .01(.06)	2371 .82(.22)	2371 .86(.18)
		1516 .90(.17)	1516 .31(.42)	1516 .01(.07)	1516 .75(.25)	1516 .80(.20)
		263 .72(.40)	263 .47(.47)	263 .97(.10)	263 .75(.27)	263 .81(.19)
4-cluster	Ward's linkage	1053 .88(.16)	1053 .05(.12)	1053 .01(.06)	1053 .76(.25)	1053 .82(.19)
		504 .87(.29)	504 .93(.14)	504 .03(.11)	504 .74(.20)	504 .78(.22)
		254 .71(.40)	254 .45(.47)	254 .98(.08)	254 .75(.27)	254 .81(.19)
		2339 .06(.13)	2339 .02(.09)	2339 .01(.07)	2339 .82(.21)	2339 .86(.18)
5-cluster	Ward's linkage	1031 .89(.16)	1031 .05(.12)	1031 .01(.06)	1031 .78(.23)	1031 .82(.19)
		158 .16(.25)	158 .04(.12)	158 .01(.09)	158 .07(.15)	158 .82(.21)
		503 .87(.29)	503 .93(.14)	503 .03(.11)	503 .75(.22)	503 .78(.20)
		253 .71(.40)	253 .45(.47)	253 .98(.08)	253 .75(.19)	253 .81(.26)

		2205 .06(.13)	2205 .02(.09)	2205 .01(.07)	2205 .87(.12)	2205 .86(.18)		

Table 4

Ward's Linkage and Weighted-Average Linkage Cluster Solutions Using Binary Assault Variables, Waves I and III Emotional Closeness Variables, and Waves I and III CES-D Scale Variables

		Verbal Assault Number Mean(SD)	Physical Assault Number Mean(SD)	Sexual Assault Number Mean(SD)	Emotional Closeness I Number Mean(SD)	Emotional Closeness III Number Mean(SD)	CES-D Scale I Number Mean(SD)	CES-D Scale III Number Mean (SD)
3-cluster	Ward's linkage	903 .90(.30)	903 1(0)	903 .21(.41)	903 .74(.25)	903 .79(.19)	903 .32(.19)	903 .27(.18)
		1337 1(0)	1337 1(0)	1337 .08(.28)	1337 .78(.24)	1337 .84(.19)	1337 .31(.19)	1337 .25(.18)
		1910 0(0)	1910 0(0)	1910 .04(.20)	1910 .82(.21)	1910 .86(.19)	1910 .27(.17)	1910 .21(.16)
4-cluster	Ward's linkage	712 .88(.33)	712 1(0)	712 0(0)	712 .75(.24)	712 .80(.19)	712 .32(.19)	712 .26(.18)
		380 .78(.41)	380 .50(.50)	380 1(0)	380 .76(.27)	380 .81(.21)	380 .33(.20)	380 .28(.19)
		1227 1(0)	1227 0(0)	1227 0(0)	1227 .79(.24)	1227 .84(.19)	1227 .24(.18)	1227 .30(.17)
		1831 0(0)	1831 0(0)	1831 0(0)	1831 .82(.22)	1831 .86(.19)	1831 .27(.17)	1831 .21(.16)
	Weighted-average linkage	712 .88(.33)	712 1(0)	712 0(0)	712 .75(.24)	712 .80(.19)	712 .32(.19)	712 .26(.18)
		3058 .40(.49)	3058 0(0)	3058 0(0)	3058 .81(.23)	3058 .85(.19)	3058 .28(.18)	3058 .22(.17)
		298 1(0)	298 .63(.48)	298 1(0)	298 .72(.29)	298 .79(.21)	298 .34(.20)	298 .29(.19)
		82	82	82	82	82	82	82

		0(0)	.04(.19)	1(0)	.88(.14)	.85(.18)	.29(.19)	.25(.18)
5-cluster	Ward's linkage	678 .87(.34)	678 1(0)	678 0(0)	678 .79(.17)	678 .80(.19)	678 .32(.19)	678 .27(.18)
		380 .78(.41)	380 .50(.50)	380 1(0)	380 .76(.27)	380 .81(.20)	380 .33(.20)	380 .28(.19)
		1132 1(0)	1132 0(0)	1132 0(0)	1132 .84(.13)	1132 .84(.19)	1132 .30(.19)	1132 .24(.20)
		129 1(0)	129 .26(.44)	129 0(0)	129 .06(.13)	129 .80(.19)	129 .36(.19)	129 .25(.20)
		1831 0(0)	1831 0(0)	1831 0(0)	1831 .82(.22)	1831 .86(.19)	1831 .27(.17)	1831 .21(.16)
	Weighted-average linkage	712 .88(.33)	712 1(0)	712 0(0)	712 .75(.24)	712 .80(.19)	712 .32(.19)	712 .26(.18)
		1227 1(0)	1227 0(0)	1227 0(0)	1227 .79(.24)	1227 .84(.19)	1227 .30(.18)	1227 .24(.17)
		1831 0(0)	1831 0(0)	1831 0(0)	1831 .82(.22)	1831 .86(.19)	1831 .27(.17)	1831 .21(.16)
		298 1(0)	298 .63(.48)	298 1(0)	298 .72(.29)	298 .79(.21)	298 .34(.20)	298 .29(.19)
		82 0(0)	82 .04(.19)	82 1(0)	82 .88(.14)	82 .85(.18)	82 .29(.19)	82 .25(.18)

Table 5

Weighted-Average Linkage 7-Cluster Solution Using Binary Assault Variables and Wave I and III Emotional Closeness Variables

	Verbal Assault Number Mean SD	Physical Assault Number Mean SD	Sexual Assault Number Mean SD	Emotional Closeness (I) Number Mean SD	Emotional Closeness (III) Number Mean SD
7-cluster Weighted-average	623 1(0)	623 1(0)	623 0(0)	623 .74(.19)	623 .79(.24)

linkage				
1227 1(0)	1227 0(0)	1227 0(0)	1227 .79(.24)	1227 .84(.19)
298 1(0)	298 .63(.48)	298 1(0)	298 .72(.29)	298 .79(.21)
89 0(0)	89 1(0)	89 0(0)	89 .82(.17)	89 .84(.15)
82 0(0)	82 .04(.19)	82 1(0)	82 .88(.14)	82 .85(.18)
1765 0(0)	1765 0(0)	1765 0(0)	1765 .82(.22)	1765 .89(.11)
66 0(0)	66 0(0)	66 0(0)	66 .86(.18)	66 .09(15)

Table 6

Ward's Linkage and Weighted-Average Linkage Cluster Solutions for the Summary Assault Index, Emotional Closeness at Waves I and III Variables, and Wave I and III CES-D Scale Variables

		Summary Assault Index Number Mean SD	Emotional Closeness (I) Number Mean SD	Emotional loseness (III) Number Mean SD	CES-D Scale (I) Number Mean SD	CES-D Scale (III) Number Mean SD
3-cluster	Ward's linkage	1176 .52(.21)	1176 .78(.16)	1176 .77(.22)	1176 .37(.20)	1176 .31(.19)
		271 .24(.26)	271 .07(.15)	271 .82(.19)	271 .33(.21)	271 .25(.20)
		2703 .08(.12)	2703 .87(.11)	2703 .87(.17)	2703 .26(.16)	2703 .20(.15)
4-cluster	Ward's linkage	1128 .53(.21)	1128 .78(.15)	1128 .81(.15)	1128 .37(.19)	1128 .31(.19)
		137 .18(.23)	137 .80(.22)	137 .10(.17)	137 .31(.20)	137 .22(.13)
		266	266	266	266	266

		.24(.26)	.07(.15)	.83(.15)	.33(.21)	.25(.20)
		2619	2619	2619	2619	2619
		.08(.12)	.87(.11)	.89(.11)	.26(.16)	.20(.15)
	Weighted-average linkage	1129	1129	1129	1129	1129
		.53(.21)	.78(.15)	.81(.15)	.37(.19)	.32(.19)
		141	141	141	141	141
		.18(.23)	.80(.22)	.11(.17)	.32(.21)	.22(.13)
		266	266	266	266	266
		.24(.26)	.07(.15)	.83(.15)	.33(.21)	.25(.20)
		2614	2614	2614	2614	2614
		.08(.12)	.87(.11)	.89(.11)	.26(.16)	.20(.15)
5-cluster	Ward's linkage	586	586	586	586	586
		.60(.23)	.74(.17)	.77(.16)	.46(.19)	.39(.19)
		143	143	143	143	143
		.18(.22)	.81(.22)	.11(.18)	.31(.20)	.22(.15)
		264	264	264	264	264
		.24(.26)	.83(.14)	.06(.15)	.33(.21)	.25(.20)
		1122	1122	1122	1122	1122
		.36(.14)	.85(.12)	.87(.12)	.25(.14)	.20(.13)
		2035	2035	2035	2035	2035
		.02(.05)	.87(.11)	.89(.11)	.27(.17)	.21(.16)
	Weighted-average linkage	701	701	701	701	701
		.65(.16)	.78(.16)	.80(.16)	.33(.18)	.28(.18)
		137	137	137	137	137
		.19(.23)	.8(.22)	.1(.17)	.30(.18)	.22(.15)
		234	234	234	234	234
		.26(.27)	.02(.09)	.84(.15)	.30(.18)	.23(.29)
		1038	1038	1038	1038	1038
		.15(.15)	.79(.15)	.85(.13)	.47(.15)	.36(.19)
		2040	2040	2040	2040	2040
		.09(.13)	.88(.10)	.90(.11)	.19(.11)	.16(.11)

Table 7

Ward's Linkage Cluster Solutions Using the Summary Assault Index and Wave I and III Emotional Closeness Variables

	Total Assault Index Number Mean(SD)	Emotional Closeness I Number Mean(SD)	Emotional Closeness III Number Mean(SD)
3-cluster	2746 .08(.11)	2746 .87(.11)	2746 .88(.17)
	268 .24(.26)	268 .06(.14)	268 .82(.19)
	1136 .53(.20)	1136 .78(.16)	1136 .76(.21)
4-cluster	2399 .05(.08)	2399 .86(.12)	2399 .89(.11)
	147 .19(.23)	147 .80(.22)	147 .12(.18)
	264 .25(.26)	264 .07(.14)	264 .83(.15)
	1340 .50(.20)	1340 .81(.15)	1340 .83(.15)

Appendix C

Results for Socio-demographic Factors Controlled for in Regression Analyses

Table 36

Socio-Demographic Variables in the Full Model for Outcome Variable Supervision Neglect

	Without Parent Age Interactions			With Parent Age Interactions		
	OR	Coefficient(SE)	95%CI	OR	Coefficient(SE)	95%CI
Older adolescent	1.29	.26(.39)	-.52-1.03	.06	-2.85(8.06)	-18.80-13.10
Young Adult	1.98	.69(.52)	-.35-1.72	.06	-2.79(7.34)	-17.32-11.75
High School	.50	-.69(.35)*	-1.39-.003	.52	-.65(.37)	-1.38-.08
College	.34	-1.07(.65)	-2.36-.23	.35	-1.06(.65)	-2.34-.22
Current/Past Welfare Receipt Yes/no No/yes No/no	1.59 1.58 1.44	.46(.70) .46(.62) .36(.52)	-.92-1.85 -.77-1.68 -.66-1.39	1.68 1.54 1.40	.52(.70) .43(.60) .33(.47)	-.86-1.90 -.75-1.62 -.60-1.26
Race/Ethnicity African Am. Other Hispanic	1.91 2.38 2.73	.65(.45) .87(.92) 1.00(.42)*	-.25-1.55 -.95-2.69 -.15-1.86	1.81 2.05 2.79	.59(.49) .72(1.02) 1.02(.44)*	-.38-1.57 -1.29-2.73 .16-1.89
Gender Female	.70	-.35(.38)	-1.10-.40	.64	-.45(.40)	-1.23-.33
Family History of Welfare Receipt Yes	.95	-.05(.35)	-.75-.65	.92	-.09(.38)	-.83-.66

Note: * $p \le .05$, ** $p \le .01$, *** $p \le .001$.

Table 37

Socio-Demographic Variables in Full Model for Outcome Variable Physical Neglect

	Without Parent Age Interactions			With Parent Age Interactions		
	OR	Coefficient(SE)	95%CI	OR	Coefficient(SE)	95%CI
Older adolescent	.81	-.20(.26)	-.71-.30	489.06	6.19(4.31)	-2.35-14.73
Young Adult	.63	-.46(.34)	-1.13-.22	189.62	5.25(4.12)	-2.91-13.40
High School	.86	-.15(.26)	-.66-.35	.86	-.16(.24)	-.64-.33
College	.88	-.12(.42)	-.95-.70	.92	-.09(.41)	-.90-.73
Current/Past Welfare Receipt	.47	-.76(.56)	-1.87-.35	.53	-.64(.54)	-1.70-.42
Yes/no	.72	-.32(.29)	-.89-.25	.75	-.29(.28)	-.84-.26
No/yes	.55	-.60(.26)*	-1.12-.09	.55	-.59(.26)*	-1.09-.10
No/no						
Race/Ethnicity	1.57	.45(.25)	-.04-.95	1.55	.45(.26)	1.55
African Am.	1.40	.33(.64)	-.94-1.61	1.38	.32(.62)	1.38
Other	.92	-.09(.32)	-.71-.54	.91	-.10(.31)	.91
Hispanic						
Gender	.87	-.14(.23)	-.60-.31	.86	-.16(.24)	-.63-.31
Female						
Family History of Welfare Receipt	.97	-.03(.23)	-.58-.51	.96	-.04(.26)	-.55-.48
Yes						

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 38

Socio-Demographic Variables in Full Model for Outcome Variable Physical Assault

	Without Parent Age Interactions			With Parent Age Interactions		
	OR	Coefficient(SE)	95%CI	OR	Coefficient(SE)	95%CI
Older adolescent	1.60	.47(.29)	-.10-1.04	.06	-2.76(4.14)	-10.95-5.44
Young Adult	1.64	.50(.38)	-.27-1.26	.02	-3.92(4.69)	-13.21-5.36
High School	1.23	.21(.37)	-.52-.94	1.22	.20(.36)	-.52-.92

College	1.91	.65(.50)	-.34-1.64	2.07	.73(.50)	-.27-1.72
Current/Past Welfare Receipt	.46	-.77(.60)	-1.94-.41	.46	-.78(.54)	-.85-.30
Yes/no	1.36	.30(.33)	-.34-.95	1.44	.36(.34)	-.31-1.03
No/yes	.49	-.71(.42)	-1.54-.12	.48	-.73(.41)	-1.55-.08
No/no						
Race/Ethnicity	.83	-.19(.39)	-.96-.59	.76	-.27(.38)	-1.04-.49
African Am.	.93	-.07(.68)	-1.41-1.27	.80	-.22(.78)	-1.76-1.32
Other	1.28	.25(.29)	-.33-.83	1.14	.13(.31)	-.49-.74
Hispanic						
Gender	.89	-.12(.31)	-.73-.48	.84	-.18(.32)	-.80-.45
Female						
Family History of Welfare Receipt	1.16	.15(.22)	-.41-.52	1.22	.20(.23)	-.26-.66
Yes						

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 39

Socio-Demographic Variables in Full Model for Outcome Variable Total Child Maltreatment

	Without Parent Age Interactions		With Parent Age Interactions	
	Coefficient(SE)	95%CI	Coefficient(SE)	95%CI
Older adolescent	.04(.09)	-.13-.22	.97(1.44)	-1.88-3.82
Young Adult	-.03(.11)	-.24-.18	.31(1.38)	-2.41-3.04
High School	-.002(.09)	-.19-.18	-.009(.09)	-.18-.17
College	-.01(.13)	-.27-.26	.006(.13)	-.25-.26
Current/Past Welfare Receipt	-.30(.16)	-.27-.26	-.29(.15)	-.60-.01
Yes/no	-.07(.13)	-.32-.18	-.06(.13)	-.31-.19
No/yes	-.25(.12)*	-.48-(-.02)	-.25(.11)*	-.47-(-.03)
No/no				
Race/Ethnicity	.19(.10)	-.01-.38	.17(.10)	-.02-.36
African Am.	.08(.18)	-.27-.44	.08(.19)	-.29-.44
Other	.03(.09)	-.15-.21	.03(.09)	-.15-.21
Hispanic				
Gender	-.05(.07)	-.19-.09	-.06(.07)	-.19-.08
Female				

| Family History of Welfare Receipt | .03(.08) | -.14-.19 | .02(.08) | -.14-.18 |
| Yes | | | | |

Note: * $p \le .05$, ** $p \le .01$, *** $p \le .001$.

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