NATURAL MENTOR RELATIONSHIPS AMONG YOUNG ADULTS WITH FOSTER CARE EXPERIENCE: PATHWAYS TO EMERGING ADULTHOOD OUTCOMES

Johanna K. P. Greeson

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Approved by:

Chair: Charles. L. Usher, Ph.D.

Richard P. Barth, Ph.D.

Natasha K. Bowen, Ph.D.

Glen H. Elder, Jr., Ph.D.

Michal Grinstein-Weiss, Ph.D.

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ABSTRACT

JOHANNA K. P. GREESON: Natural Mentor Relationships among Young Adults with Foster Care Experience: Pathways to Emerging Adulthood Outcomes
(Under the direction of Charles L. Usher)

During emerging adulthood, most youth receive family support to help them weather the difficulties associated with transitioning to independence. When foster youth emancipate from the child welfare system, they confront the challenges associated with this developmental stage and are at risk of having to transition without family support. As a result, many former foster youth experience myriad negative long-term outcomes, including depression, delinquency and violence, and a lack of self-sufficiency. A caring adult who offers social support is normative for adolescent development and protective for youth across many risk conditions. Natural mentoring can cultivate such relationships and has been recognized as a promising approach for buffering former foster youth against poor outcomes. Natural mentors are naturally occurring important adults in a youth's existing social network. This research contributes to the knowledge base about how supportive adult relationships may buffer the developmental risks former foster youth face during emerging adulthood. Using data from the National Longitudinal Study of Adolescent Health, this dissertation examines the association between caring adult relationships and emerging adulthood outcomes in both a normative sample of young adults and a sample of young adults identified as former foster youth. Results suggest that specific natural mentor roles are important for specific emerging adulthood outcomes. Results also suggest that the patterns and magnitudes

of the associations between variables differ by sample, indicating that previous foster care experience may moderate the association between natural mentor relationship characteristics and emerging adulthood outcomes. This dissertation extends previous research on natural mentoring by focusing on relationship characteristics. This is one of the first series of analyses to pose questions about specific relationship features and processes. This dissertation also highlights the importance of considering how individual risk (i.e., foster care experience) may shape associations between relationship characteristics and outcomes. Results are discussed within a conceptual framework that highlights how the transitional period from late adolescence into early adulthood for former foster youth is characterized by not only the premature adoption of adult roles and responsibilities, but often takes place without the required help and support available to same age peers in the general population.

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CHAPTER I
INTRODUCTION

The outcomes for former foster youth, both those who emancipate from the child welfare system and those who leave the child welfare system in late adolescence, are well documented. Many youth encounter difficulty with employment, rely on public assistance, endure spells of homelessness, engage in delinquency and violence, suffer mental health problems, experience material hardship, and face young parenthood (e.g., Barth, 1990; Cook, 1994; Courtney & Dworsky, 2006; Courtney et al., 2001; Dworsky, 2005; Kushel, Yen, Gee, & Courtney, 2007; McMillen & Tucker, 1999; Park, Metraux, Brodbar, & Culhane, 2004; Pecora et al., 2006; Reilly, 2003). A striking finding across several studies is the low level of earnings for this group of vulnerable young people. Former foster youth are frequently found to be living well below the poverty threshold (Courtney & Dworsky, 2006; Dworsky; Macomber et al., 2008; Pecora et al., 2006). In sum, upon exit from the child welfare system, these youth abruptly face navigating the transition to adulthood without a secure attachment to a family (Keller, Cusick, & Courtney, 2007) and are at risk for myriad negative long-term outcomes.

Research suggests that a supportive relationship with a nurturing adult can mitigate the negative effects for youth living in high-risk environments (Cowen & Work, 1988; Garmezy, 1985; Rhodes, Ebert, & Meyers, 1994; Rutter, 1987). For example, the presence of at least one caring adult to offer social support has been identified as a protective factor for youth across a variety of risk conditions (Rutter, 1987). Mentoring, or a structured

relationship aimed at developing the competence and character of the young person through guidance, support, and encouragement (MENTOR/National Mentoring Partnership, 2004) is one mechanism for cultivating caring relationships between at-risk youth and nonparental adults. The belief that growth-fostering relationships promote psychological health and well-being (Jordan, Kaplan, Miller, Stiver, & Surrey, 1991) guides the process of mentoring. For youth, the benefits of mentoring include positive effects on emotional and psychological well-being, risky behavior, social competence, academic performance, and employment outcomes (DuBois, Holloway, Valentine, & Cooper, 2007). Natural mentoring, or a supportive relationship with a caring adult that develops naturally in the community and is not arranged or supported by formal programs (Munson & McMillen, 2008), has recently been recognized as a promising approach for buffering former foster youth against poor emerging adulthood outcomes (Ahrens, DuBois, Richardson, Fan, & Lozano, 2008; Courtney & Lyons, 2009).

Few studies have examined the protective effects of natural mentoring among former foster youth, and of those conducted to date, the evidence is somewhat inconclusive. Moreover, although prior research suggests the possibility of certain intervening mechanisms, studies of the processes and characteristics involved in effective natural mentor relationships for youth are relatively scarce. Several studies have demonstrated that social support, or the psychological and informational resources available to individuals through relationships (House, 1981), is one of the ways that natural mentor relationships may protect at-risk youth and promote normative developmental outcomes (Casey-Cannon, Pasch, Tschann, & Flores, 2006; Greeson & Bowen, 2008; Osterling & Hines, 2006). As a result, questions arise about whether the effects of a natural mentor's support are the same across

samples of youth, and how those effects may differ. These questions suggest the possibility of differential effects of the protection provided by natural mentors' social support on youth outcomes (Bowen & Flora, 2002).

Research Aims

This research aims to contribute to the knowledge base about how supportive adult relationships can have a buffering effect on the developmental risks former foster youth face during the emerging adulthood period. Using data from the National Longitudinal Study of Adolescent Health (Add Health), this dissertation examines the association between caring adult relationships and emerging adulthood outcomes in both a normative sample of young adults and a sample of young adults identified as former foster youth. Comparison to young adults in the general population provides an awareness of how well former foster youth are transitioning to adulthood in relation to their peers and can elucidate similarities and differences between the two groups in the patterns of association between caring adult relationships and outcomes.

The data source for this dissertation is Add Health, the largest and most comprehensive survey of adolescents ever undertaken. Compared to other large surveys, Add Health is unique in that it includes specific questions related to natural mentoring. The dataset also includes an adequate subset of youth who report having experienced foster care. Therefore, this data resource makes it possible to compare a sample of naturally mentored young adults who identify themselves as former foster youth to a sample of naturally mentored young adults from the normative population. The natural-mentor variables are able to go beyond the presence or absence of such a relationship to probe the functional roles that the natural mentor fills and the youth's perception of relationship strength. A final advantage of this dataset is the availability of variables related to potential intervening mechanisms

associated with natural mentoring. Accordingly, Add Health makes it possible to assess natural mentorship processes (i.e., natural mentor functional roles, relationship strength), their relationship to emerging adulthood outcomes among former foster youth and a normative sample of youth, and the potential mediating role of mechanisms associated with natural mentoring.

This dissertation uses Add Health data from Waves 1 and 3, when the youth were in 7th to 12th grade, and later, when they were between the ages of 18 and 26, respectively. Therefore, the Wave 3 sample consists of Wave 1 respondents who could be located and re-interviewed 6 years later (Harris et al., 2003). These data are well-suited for addressing this dissertation's research aims. Data collection at Wave 3 is equivalent to the "emerging adulthood" (Arnett, 2000) period, or the transitional stage from late adolescence into adulthood (age 18-25).

The analytic approach employed in this dissertation is structural equation modeling (SEM). The specific SEM approach is multivariate path analysis with continuous and categorical dependent variables using a Maximum Likelihood estimation method with standard errors that are robust to nonnormality and nonindependence of observations. This strategy was selected for several critical reasons. First, path analysis allows for the simultaneous assessment of intervening mechanisms as outcomes of the independent variables (i.e., natural mentoring relationship characteristics) and as predictors of the dependent variables (i.e., emerging adulthood outcomes). To date, research on natural mentoring among youth with foster care experience has been limited to assessments of main-effects models, which provide limited insight into what makes these relationships work (Darling, 2005). An evaluation of intervening mechanisms is able to model the hypothetical

processes of natural mentoring and helps answer questions about how relationship characteristics predict emerging adulthood outcomes. Second, this analytic approach facilitates the investigation of natural mentoring relationship characteristics as independent variables. Natural mentoring research to date has been limited to assessment of the influence of having (or not having) such a relationship on outcomes. The strategy employed in this dissertation makes answering questions about what relationship characteristics predict success in emerging adulthood possible. Third, the Maximum Likelihood estimation method utilized addresses the complex sampling design features of Add Health, including stratification (by census region) and clustering (by school).

Overview of Dissertation

The remainder of this dissertation follows in four chapters. Chapter 2 first describes the theoretical and contextual foundation that frames understanding the hardships that foster youth experience when they emancipate from the child welfare system. Next, the theoretical basis for natural mentoring among foster youth is reviewed using resiliency theory to frame the discussion. The proposed conceptual model is then described, followed by a review of the research on the transition to adulthood among former foster youth and the outcomes they experience as young adults. This discussion leads to the specific set of research questions addressed in this dissertation. Chapter 3 details the methods employed to answer the research questions. Study design, sample, measurement, and analysis procedures are described. Chapter 4 presents the results of the multivariate path analysis for each outcome area: depression, delinquency and violence, material hardship, and asset ownership. Twenty-three path models evaluating the direct and indirect effects of natural mentoring relationship characteristics are described. Chapter 5 concludes this dissertation. This chapter includes a

discussion of the strengths and limitations of this research, implications for social work practice, and directions for future social work research on foster youth and natural mentoring.

CHAPTER II
THE TRANSITION TO ADULTHOOD

This chapter first describes the theoretical and contextual foundation (i.e., life course theory) that frames the understanding of the hardships that foster youth experience when they emancipate from the child welfare system. Next, the theoretical basis for natural mentoring among foster youth is reviewed using resiliency theory to frame the discussion. Then, current research on natural mentoring among foster youth is examined. The proposed conceptual model is then described, followed by a review of the research on the transition to adulthood among former youth and the outcomes they experience as young adults. This discussion leads to the specific set of research questions addressed in this dissertation.

Emerging adulthood is a time when special risks and opportunities exclusive to that period surface. Young adults reach the legal age for many privileges and responsibilities, leave home, enter the workforce and/or higher education, and form long-term romantic relationships (Masten et al., 2004). Yet, for young people who emancipate from (i.e., age out of) the child welfare system, entry into this stage puts them out of sequence with prevailing institutional structures (Collins, 2001). These youth are typically on their own earlier than other young people their age due to the overall extension of youth as a life course phase over the last few decades (Furstenberg, Kennedy, McLloyd, Rumbaut, & Settersen, 2004). That is, the transition to adulthood now typically lasts until 24 to 26 years of age, largely due to economic and social policy factors that influence the likelihood that a young person will

successfully transition to self sufficiency, including, housing costs, available job opportunities, and wage rates (Furstenberg et al.).

A significant result of the extension of the time it takes to transition to adulthood is young people's continued support from their families, primarily in the form of financial assistance. Nearly one quarter of the entire cost of raising children has been estimated to occur after youth reach age 17, and nearly two thirds of young adults in their early 20s receive economic help from parents, whereas about 40% still receive help in their late 20s (Schoeni & Ross, 2004). Moreover, about 40% of youth in their late teens and early 20s move back to their parents' home at least once after leaving (Goldscheider & Goldscheider, 1994). These young people are typically the ones for whom emerging adulthood is characterized by identity exploration together with relative freedom from normative adult responsibilities (Arnett, 2000).

For other young people, including former foster youth, this stage is characterized by the premature adoption of adult roles and responsibilities. This transition often takes place without the required help and support available to same age peers in the general population (Jessor, 1993). This early entry into adulthood is an "off-time" transition, or a role change that occurs at an inopportune time; in this particular case, the change comes too early (Hogan & Astone, 1986). The consequences of off-time or disordered transitions have been linked to negative outcomes (Furstenberg, Brooks-Gunn, & Morgan, 1987; Hogan, 1978). Off-time transitions that occur too early are considered to be somewhat of a crisis because individuals who experience them may be less prepared compared to those who experience the same transitions "on time" (Cooney, Pedersen, Indelicato, & Palkovitz, 1993). Moreover, off-time

transitions may restrict options, exacerbate environmental adversity, and strain coping and social support systems.

Emancipation From the Child Welfare System

Aging out occurs when youth legally emancipate from the child welfare system prior to or without ever being reunified with their birth family, prior to being adopted, or prior to achieving some other permanent placement such as a guardianship arrangement. Although 18 is typically considered the age of emancipation, today many states allow youth to remain in foster care several years following their 18th birthdays (National Child Welfare Resource Center for Youth Development, 2008). States vary with respect to the maximum age beyond 18 and under what circumstances youth are eligible for an extended stay. Currently, 18 is the maximum age youth may remain in foster care in only two states (California and Florida). Most states allow youth to remain in foster care until age 21, and Connecticut is the only state to allow youth to remain until age 23 (National Child Welfare Resource Center for Youth Development, 2008).

During fiscal year (FY) 2006, 26,517 youth nationwide experienced such transitions when they emancipated from the child welfare system because they were no longer eligible to receive services. This represents 9% of the overall child welfare population that exited foster care during FY 2006 (U.S. Department of Health & Human Services, 2008). Moreover, although the total number of children in foster care has decreased, the number who emancipate has grown by 41% since 1998 (Pew Charitable Trusts, 2007). Because of these early, off-time transitions, a bleak portrait emerges for many of the youth who age out of the foster care system without a secure attachment to a family (Keller et al., 2007).

Caring Adult Relationships

An impressive body of research on resilience in at-risk youth suggests that a relationship with at least one supportive adult who is not a parent leads to improved outcomes during the emerging adulthood period (e.g., Garmezy, 1985; Rutter, 1987; Werner & Smith, 2001). These reports are often referred to as the "beating-the-odds" studies (Rhodes & Boburg, 2009). With little regard to location, time, or circumstances, the common element in the stories of youth who have beat the odds is the presence of at least one adult—in addition to parents—who provides guidance and support. This type of relationship with a caring adult has been confirmed as not only protective for at-risk youth (Rutter, 1987; Werner & Smith, 2001), but also normative for healthy adolescent development (Beam, Chen, & Greenberger, 2002).

Mentoring, or a relationship that brings young people together with caring adults who offer guidance, support, and encouragement aimed at developing the competence and character of the young person (MENTOR/National Mentoring Partnership, 2004), is one mechanism for cultivating caring relationships between youth and nonparental adults. The belief that growth-fostering relationships promote psychological health and well-being (Jordan et al., 1991) guides the process of youth mentoring. Natural mentoring has emerged as one way to cultivate these caring relationships between youth and adults, and more recently has been recognized as a promising approach for foster youth (Ahrens, DuBois, Richardson, Fan, & Lozano, 2008; Courtney & Lyons, 2009) facing emancipation and the transition to adulthood.

Theoretically and developmentally, natural mentoring may provide a better fit than other forms of mentoring, such as programmatic. Natural mentoring relationships form gradually and are therefore likely to be less pressured. The natural mentor is familiar to the

youth, and as a result, the youth is less likely to have difficulty trusting the adult and developing an enduring bond (Ahrens et al., 2008; Britner, Balcazar, Blechman, Blinn-Pike, & Larose, 2006). Similarly, both the youth and the natural mentor are already in each other's social networks and are likely to remain there. Consequently, the chances that the relationship will continue over time are better, and the likelihood of positive outcomes increases (Hamilton et al., 2006).

Several studies have examined the impact of natural mentors on the lives of former foster youth. Ahrens and colleagues (2008) used data from Add Health to investigate whether youth in foster care with natural mentors during adolescence had improved young adult outcomes (n = 310). Mentored participants (n = 160) were more likely to report favorable overall health and were less likely to have reported suicidal ideation, to have received received a sexually transmitted infection, and to have hurt someone in a fight in the past year. Similarly, Munson and McMillen (2009) analyzed data from a longitudinal study of older youth transitioning from foster care in Missouri (n = 339). Youth in long-term natural mentoring relationships were less likely to have been arrested at age 19 and reported fewer depression symptoms, less stress, and more satisfaction with life.

Most recently, Courtney and Lyons (2009) used data from the Midwest Evaluation of the Adult Functioning of Former Foster Youth (Midwest Study) to examine whether natural mentoring relationships were associated with outcomes at age 21 for former foster youth making the transition to adulthood (n = 590). Results showed that closeness to an adult mentor was associated with an increase in the estimated odds of having worked in the past year and a large reduction in the odds of recent homelessness. However, unlike the two

previous studies, no association between having a natural mentor and delinquency outcomes (arrests and incarceration) was found.

Although these studies have addressed the effectiveness of natural mentoring in improving outcomes for youth with foster care experience, we know less about the processes and characteristics involved in effective youth-mentor relationships. Research suggests that certain characteristics of caring adults are important for a successful mentor relationship, including affirmation, attention, availability, authenticity, companionship, empathy, respect, and trust (e.g., Greeson & Bowen, 2008; Laursen & Birmingham, 2003; Spencer, 2006). Several studies have demonstrated that social support, or the psychological and informational resources available to individuals through their relationships with family, friends, communities, and professionals (House, 1981), is one of the primary ways that mentor relationships may protect at-risk youth (Casey-Cannon et al., 2006; Greeson & Bowen; Osterling & Hines, 2006).

Because research on natural mentoring relationships is just emerging and the evidence base is just being established (Zimmerman, Bingenheimer, & Behrendt, 2005), previous studies have not been sensitive to the possibility that positive outcomes of natural mentoring relationships may only become evident when certain relationship characteristics are considered (DuBois & Silverthorn, 2005). Put simply, we know relatively little about what makes natural mentoring work, for whom, and under what circumstances.

Future Expectations

One way that supportive adult relationships, such as mentors, may positively influence youth's emerging adulthood outcomes is through the encouragement of positive future expectations. Future expectations refer to the degree to which individuals have optimistic attitudes toward their future, including believing that good outcomes are

achievable for them and feeling a high degree of control over their futures (Robbins & Bryan, 2004). Research suggests that mentors may affect youths' perceptions of their futures (e.g., DuBois & Silverthorn, 2005; Hellenga, Aber, & Rhodes, 2003; Klaw, Fitzgerald, & Rhodes, 2003; Zimmerman, Bingenheimer, & Notaro, 2002). This is an emerging line of inquiry related to how caring adults may help at-risk youth develop resilience and avoid negative outcomes.

Positive future expectations have been linked to fewer risky behaviors and better young adult outcomes among both at-risk and normative samples of adolescents (Aronowitz & Morrison-Beedy, 2004; Klaw & Rhodes, 1995; Peters et al., 2005; Robbins & Bryan, 2004; Somers & Gizzi, 2001). We know much less, however, about the potential of positive future expectations to serve as a protective factor for foster youth. The only study known to the author interviewed 350 adolescents in foster care to assess future expectations (Cabrera & Auslander, 2007). Results showed that positive future expectations were significantly associated with fewer sexual risk behaviors, fewer school behavioral problems, and safer attitudes, greater self-efficacy, and fewer risky intentions related to HIV beliefs and attitudes. Therefore, among foster youth, although there appears to be an association between the development of future orientation and improved outcomes, the direction of this association has not been empirically established.

Conceptual Model

Figure 1 depicts the conceptual model for this dissertation. Because the conceptual model takes into account the relationship between natural mentorship characteristics and young adult outcomes, it is useful in framing research questions about how relationship processes may buffer youth from negative outcomes and promote youth's positive outcomes. Additionally, the model takes into account youth's demographic and young adulthood

characteristics, as well as certain characteristics of the natural mentor relationship. Importantly, the model illustrates the potential influence of former foster youth status on all the associations between variables.

Specifically, the model shows how functional roles of natural mentoring and natural mentor relationship strength may affect future expectations and emerging adulthood outcomes directly. The model also shows the direct relationship between relationship strength and functional role categories, and outcomes, and the possible indirect effect of relationship strength and functional role categories through future expectations. Because the population of interest is defined by certain factors that will affect outcomes, including demographic, young adulthood, and natural mentor relationship characteristics, these attributes are included as covariates.

Emerging Adulthood Outcomes Among Former Foster Youth

This section of the dissertation reviews previous research on the transition to adulthood for former foster youth and the outcomes they experience as young adults. The emerging adulthood outcomes are depression, delinquency and violence, material hardship, and assets. The discussion concludes with the specific set of research questions that guide this dissertation.

Depression

Most people experience their first episode of depression between the ages of 20 and 40 years old. The average age of onset for depression is the mid-20s (American Psychiatric Association, 2000). Point prevalence of depression in the general population of young adults ranges from 4% to 5% for those aged 18 to 24 and from 3% to 5% among those aged 25 to 29 (Child Trends Data Bank, n.d.).

One population of young adults at increased risk of depression compared to their counterparts in the general population is former foster youth (Pecora, White, Jackson, & Wiggins, 2009). Many of the reasons for such risk are the same as for young adults in the general population, including family history, female gender, insecure parent-child attachment, and disruptive family climate. However, life in foster care is often defined by additional risk, including prior trauma (e.g., uncertainty about long-term security, placement instability, child maltreatment), as well as a buildup of traumatic stress in the lives of foster youth (Cook et al., 2007; Walker & Weaver, 2007). As such, the prevalence of depression in former foster youth is greater than in the general population and is one of the most common psychiatric sequelae reported in maltreated youth (Famularo, Kinscherff, & Fenton, 1992; Kaufman, 1991). A recent study identified the stressful life experience of foster care as a putative risk factor specific to the development of depression in both pre-adolescents and adolescents (Shanahan, Copeland, Costello, & Angold, 2008).

Three longitudinal studies of former foster youth provide insight into the epidemiology of depression in this vulnerable population. The Midwest Study has been following a cohort of 732 young adults since they were preparing to emancipate from the child welfare system between May 2002 and March 2003. The lifetime prevalence estimate for depression among this group of young people has ranged between 2.9% (before emancipation; Courtney, Terao, & Bost, 2004) to 8.3% (n = 603 at age 19; Courtney et al., 2005). At age 21, the most recent time point, the 12-month prevalence estimate was 4.6% (n = 590; Courtney et al., 2007).

Two related studies of former foster youth are the Northwest Study and the Casey Alumni Study, both of which tracked the experiences of youth served by Casey Family

Programs. The Northwest Study examined outcomes for 479 alumni ages 20 to 33 years who were placed in foster care for one year or longer as adolescents (Pecora et al., 2005). The lifetime prevalence estimate for a major depression episode was 41.1%, and the 12-month prevalence estimate was 20.1%. The Casey Alumni Study includes data collected from case records and interviews from more than a thousand Casey foster care alumni served for one year or longer between 1966 and 1998. The 12-month prevalence estimate for a major depressive episode was 15.3 (Pecora et al., 2009). The Casey Alumni were then matched for age, gender, and race/ethnicity to 3,547 adults in the general population. The 12-month prevalence estimate for a major depressive episode in the general population was 10.6.

In sum, the estimates provided by these longitudinal studies make clear that depression rates among former foster youth seem disproportionately high compared to adults in the general population who did not experience foster care. The reasons for the disparity are complex, and causal relationships have yet to be empirically established. Previous research suggests that several factors likely contribute to or intensify emotional problems for which there may already exist a predisposition (Pecora et al., 2005). These factors include the "history of losses" experienced by many foster youth (i.e., relationships, friends, schools, neighborhoods; Greeson & Bowen, 2008), the adversity associated with living in foster care including placement changes, rejection by foster parents or siblings, and the stigma of being in foster care.

Given the salient role of foster youth's environment, it is important to discuss briefly the etiology of depression. The diathesis-stress model of psychopathology offers a useful explanatory framework for understanding the development of depression in former foster youth. This model posits that the combination of genetic and environmental factors increases

the probability of mental health problems. Although an individual may be at risk of developing psychopathology because of family history, the individual's risk increases when environmental stressors are present (Kraemer et al., 1997). Therefore, former foster youth are at risk for depression because of the continuous exposure to stressful environments associated with placement in foster care. These include the experience of maltreatment, multiple placements in foster homes, and transitioning to independence following emancipation. This conceptualization of the development of depression in foster youth is consistent with the increasingly widespread understanding that most major psychiatric disorders, including mood disorders, have both genetic and environmental contributions to their pathogenesis (Nemeroff, 2008).

Delinquency and Violence

Engagement in delinquent and violent acts is also one of the many problematic developmental outcomes experienced by former foster youth. For example, in the Midwest Study, at age 19, when the youth had been "young adults" for one year (n = 603), 53% had been discharged from foster care. Of those, 34% reported being arrested, and about 24% reported being incarcerated since the baseline interview at age 17 or 18. At age 21, 591 of the original 732 baseline participants were re-interviewed about their criminal behavior and criminal justice involvement. Thirty percent reported being arrested, 15% reported being convicted of a crime, and 29% reported being incarcerated since their most recent interview (Courtney et al., 2007).

Prior to the Midwest Study, Courtney and colleagues (2001) found similar results in the Foster Youth Transitions to Adulthood Study, a sample of 141 young adults who left care in Wisconsin in 1995 and 1996. Serious behavior problems included breaking and entering (14%), dealing in stolen goods (17%), stealing a vehicle (11%), attacking someone with the

intent to do serious harm (18%), being drunk in a public place (24%), interfering with the work of law enforcement (28%), selling marijuana (14%), and selling hard drugs (8%). Since 2004, the Casey Young Adult Survey (CYAS) has also been following the experiences of a cohort of young adults who received foster care services from Casey Family Programs (n = 557) in 13 different states (Casey Family Programs, n.d.). As of 2006, approximately 32.2% of the young adults had been arrested since leaving foster care, and more than 1 in 4 (26.3%) had spent at least one night incarcerated. Twenty percent of respondents had been convicted of a crime.

Using administrative data, Reilly (2003) showed that in Nevada, of the 100 youth who had been out of foster care for at least 6 months, 41% had spent time in jail. Similarly, Daining and DePanfilis (2007) examined data from 100 youth who left out-of-home care of a large urban child welfare system during a 1-year period. One third of the sample reported ever being incarcerated or detained in a jail, prison, or juvenile detention facility.

A more recent trend in assessing the difficulties in the transition to adulthood among foster care alumni has been the use of data from nationally representative surveys coupled with more sophisticated analytic techniques, including propensity score matching (PSM). For example, Berzin (2008) examined data from the National Longitudinal Survey of Youth 1997 to understand what makes foster youth vulnerable during the transition to adulthood. Using PSM, she compared youth with foster care experience to youth who did not have foster care experience but shared pre-existing characteristics. Although previous research suggests many transition outcomes are worse for youth with foster care experience as compared to other youth, Berzin (2008) did not find such differences. Instead, results from multivariate analyses suggested that youth with foster care experience and matched youth did not differ to a

statistically significant degree on any of the outcomes measured, including arrests and sentencing to jail. These findings suggest that rather than foster care experience, negative outcomes during the transition to adulthood are associated with a shared set of individual, familial, and community characteristics.

Compared to youth in the general population, former foster youth and other at-risk groups of young adults tend to have higher rates of criminal involvement (Berzin, 2008). However, researchers have also observed and documented delinquent and violent acts among normative samples of young adults, such as in the National Crime Victimization Survey and the National Longitudinal Survey of Youth 1997 (NLSY97). According to the National Crime Victimization Survey, in 2005, the estimated rate (per 100,000 persons) of murders and nonnegligent manslaughter among offenders aged 18 to 24 years was 26.5 (U.S. Department of Justice, 2007). Similarly, in 2006, the estimated percent distributions of violent victimizations by lone offenders aged 18 to 20 years and 21 to 29 years was 10.4% and 24.7%, respectively, and for violent victimizations by multiple offenders, the estimated percent distribution for 21- to 29-year-olds was 11% (U.S. Department of Justice, 2008).

The NLSY97 also provides national estimates for the development of juvenile and young adult problem behaviors among a normative sample of adolescents and young adults. In 2006, the prevalence rates for property and person offenses among 18 to 21 year-olds were 45% and 43%, respectively (McCurley, 2006). The NLSY97 is also tracking the prevalence of specific delinquent and violent acts. Among 18- to 21-year-olds, the 2006 estimates for minor theft, assault, and drug selling were 27% for each act. The prevalence of major theft was 9%, and for carrying a handgun, 19%.

These statistics, for both the at-risk and normative populations, point to a significant problem with long-term consequences for the individuals, their families, and their communities. Given the current prevalence, overall intractability, and lasting effects (e.g., problems in school, in the workforce, and in interpersonal relationships) of delinquency and violence, concerned practitioners, policymakers, and researchers alike are working to identify effective interventions. Theories of juvenile delinquency often stress the role of both positive and negative relationships in a young person's life (see, for example, Hirschi, 1969; Sutherland & Cressey, 1978; Hawkins & Weis, 1985 as cited in Bauldry, 2006). A considerable body of research suggests that "deviancy training" takes place among peers when young adults consistently associate with friends engaged in delinquency and violence (Dishion, McCord, & Poulin, 1999). In contrast, young people supported by caring adults are less likely to engage in such problem behaviors (Beier, Rosenfeld, Spitalny, Zansky & Bontempo, 2000; DuBois & Silverthorn, 2005; Zimmerman et al., 2002).

Material Hardship

Many former foster youth also encounter difficulty with self-sufficiency during the emerging adulthood period. This includes living below the poverty threshold, relying on public assistance, lacking employment, experiencing material hardship, and not possessing a bank account (Courtney & Dworsky, 2006*;* Courtney et al., 2007; Pecora et al., 2006). As early as 1990, Barth documented the self-sufficiency problems experienced by former foster youth. Of the 55 youth interviewed in the San Francisco Bay Area and Sacramento, 47% had problems paying for food or housing, 35% were homeless, and 25% were unemployed.

More recently, several longitudinal studies have revealed a similarly bleak picture with respect to the material hardship experienced by former foster youth. For instance, Courtney et al. (2007) found that former foster youth were more likely than youth in general

to have ever experienced very low food security, been evicted, had their phone service disconnected, had their gas or electricity shut off, not had enough money to pay a utility bill, not had enough money to pay rent, and not had enough money to buy clothing. Both Courtney et al. (2007) and Pecora et al. (2006) found that a history of homelessness after leaving foster care was another risk factor to add to the list. Use of public assistance is likewise common among this vulnerable population. This includes receiving food stamps, Supplemental Security Income, and public housing/rental assistance (Courtney et al., 2007).

Asset Ownership

Given the array of material hardships experienced by former foster youth, it is not surprising that these young people also typically lack assets. Yet, to date, few studies have considered asset-related outcomes among samples of former foster youth. At age 21, only half of the youth in the Midwest Study reported having a bank account, 3% reported owning a residence, and only 39% reported owning a vehicle (Courtney, et al. 2007). To provide some context for these findings, Courtney and colleagues (2007) made comparisons between their sample of young adults who aged out of foster care and a nationally representative sample of 21-year-olds who participated in Add Health. Almost 81% of the Add Health 21-year-olds reported having a bank account, 9% reported owning a residence, and 73% reported owning a vehicle. The homeownership rates for the general population of young adults are much higher. In the first quarter of 2009, 24% of individuals aged 24 or younger reported owning a residence (U.S. Census Bureau's, 2009).

The only other studies known to the author to have examined asset-related outcomes are the Casey National Alumni Study (Pecora et al., 2004) and the Northwest Foster Care Alumni Study (Pecora et al., 2005). In the former, only 27% of the more than a thousand Casey Family Programs foster care alumni reported owning a home. In the later study, of the

almost 500 participants, only 9% reported owing a residence. These percentages are much lower than the 68% of Americans who owned their own home in 2008 (U.S. Census Bureau, 2008).

Although evidence on the assets of former foster youth is scant, the Corporation for Enterprise Development recently extended the positive results of the Downpayments on the American Dream Policy Demonstration (ADD) to this vulnerable population by launching the SEED (Saving for Education, Entrepreneurship, and Downpayment) Initiative in 2003. Building on the lesson from ADD that poor people can save, accumulate assets, buy homes, start businesses, and pursue higher education when provided the right incentives and supports, the SEED Initiative is a 10-year endeavor to develop, test, inform, and promote matched savings accounts and financial education for children and youth. Part of the SEED Initiative is a special foster youth SEED Initiative that is being piloted in Colorado and Oklahoma. At present, there are more than 170 foster youth involved in financial literacy training, who are saving toward asset purchases such as post-secondary education, housing, transportation, and small business development (Rosen, 2007).

Still in its infancy, there are not yet any empirical findings from the foster youth SEED Initiative. However, preliminary lessons have emerged, which support both the wisdom of facilitating asset accumulation for this special population as well as the importance of a relationship with a caring adult for these vulnerable youth. These lessons include (a) the ability of foster youth to save and make wise use of savings incentives; (b) the need for support services for foster youth because of their unique life circumstances; and (c) the necessity for a wider range of eligible uses of accounts to meet the unique needs of this population. The need for support services speaks directly to the critical role of caring adults.

The SEED Initiative refers to such help as "high touch," denoting the importance of hands-on, highly personalized supports to help foster youth succeed in building assets (Rosen, 2007).

In sum, the research on assets highlights the decreased likelihood that former foster youth will become self-sufficient adults. Although evaluated as an end in and of itself, Sherraden (2008) emphasized that asset building is important because it extends beyond the accumulation of tangible assets to having positive effects in the economic, personal, family and household, community, and societal domains. For example, building assets has been linked to greater effort and success in increasing asset values, improved physical health, improved self-regard, better school attendance, more stable household composition, involvement in neighborhood/community affairs, improved social behaviors of one's children (e.g., avoidance of teen pregnancy, fewer arrests), and improved financial well-being of one's children (Page-Adams, Scanlon, Beverly, & McDonald, 2001).

Asset accumulation is a significant part of development during emerging adulthood and directly influences the achievement of self-sufficiency as well as other important noneconomic outcomes. Successful navigation of this developmental process may be especially essential for former foster youth who are less likely than other young adults to have families to whom they can turn for financial support in times of need (Courtney et al., 2007). Therefore, developing strategies that help former foster youth build assets and achieve economic independence is of paramount importance.

Research Questions

The research questions for this dissertation are organized around each of the four emerging adulthood outcomes depicted in the conceptual model: depression, delinquency and

violence, material hardship, and asset ownership. The analysis of the outcome of depression involves the following research questions.

1. Is a natural mentor relationship associated with decreased depression at Wave 3?
2. Among youth with a natural mentor, are relationship strength and the number of roles filled by a natural mentor associated with decreased depression at Wave 3?
3. Among youth with a natural mentor, are relationship strength and the specific individual roles filled by a natural mentor associated with decreased depression at Wave 3?
4. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and depression at Wave 3 and depression and the number of roles at Wave 3?
5. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and depression at Wave 3 and depression and the mentor's specific individual roles at Wave 3?
6. Do the patterns and magnitudes of the associations between the variables differ by sample (i.e., former foster youth vs. nonformer foster youth)?

The analysis of the outcome of delinquency and violence involves the following research questions.

1. Is a natural mentor relationship associated with decreased delinquency and violence at Wave 3?
2. Among youth with a natural mentor, are relationship strength and the number of roles filled by a natural mentor associated with decreased delinquency and violence at Wave 3?

3. Among youth with a natural mentor, are relationship strength and the specific individual roles filled by a natural mentor associated with decreased delinquency and violence at Wave 3?
4. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and delinquency and violence at Wave 3 and delinquency and violence and the number of roles at Wave 3?
5. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and delinquency and violence at Wave 3 and delinquency and violence and the mentor's specific individual roles at Wave 3?
6. Do the patterns and magnitudes of the associations between the variables differ by sample (i.e., former foster youth vs. nonformer foster youth)?

The analysis of the outcome of material hardship involves the following research questions.

1. Is a natural mentor relationship associated with decreased material hardship at Wave 3?
2. Among youth with a natural mentor, are relationship strength and the number of roles filled by a natural mentor associated with decreased material hardship at Wave 3?
3. Among youth with a natural mentor, are relationship strength and the specific individual roles filled by a natural mentor associated with decreased material hardship at Wave 3?

4. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and material hardship at Wave 3 and material hardship and the number of roles at Wave 3?
5. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and material hardship at Wave 3 and material hardship and the mentor's specific individual roles at Wave 3?
6. Do the patterns and magnitudes of the associations between the variables differ by sample (i.e., former foster youth vs. nonformer foster youth)?

The analysis of the outcome of asset ownership involves the following research questions.

1. Is a natural mentor relationship associated with asset ownership at Wave 3?
2. Among youth with a natural mentor, are relationship strength and the number of roles filled by a natural mentor associated with asset ownership at Wave 3?
3. Among youth with a natural mentor, are relationship strength and the specific individual roles filled by a natural mentor associated with asset ownership at Wave 3?
4. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and asset ownership at Wave 3 and asset ownership and the number of roles at Wave 3?
5. Among youth with a natural mentor, do future expectations at Wave 3 mediate the association between relationship strength and asset ownership at Wave 3 and asset ownership and the mentor's specific individual roles at Wave 3?
6. Do the patterns and magnitudes of the associations between the variables differ by sample (i.e., former foster youth vs. nonformer foster youth)?

CHAPTER III
METHODS

This study relies on restricted-use data from Add Health, a cohort study that began in 1994. Add Health explores the causes of health-related behaviors of adolescents and their outcomes in young adulthood. Currently in its fourth wave of data collection, the survey seeks to examine how social contexts (families, friends, peers, schools, neighborhoods, and communities) influence adolescents' health and risk behaviors. A sample of 80 high schools and 52 middle schools from the US was selected with unequal probability of selection. Incorporating systematic sampling methods and implicit stratification into the Add Health study design ensured that the sample was representative of U.S. schools with respect to region of country, degree of urbanization, school size, school type, and ethnicity.

Study Design

This study uses Add Health data from Waves 1 and 3, when the youth were in 7th to 12th grades and when they were between the ages of 18 and 26, respectively. Therefore, the Wave 3 sample consists of Wave 1 respondents who could be located and re-interviewed 6 years later (Harris et al., 2003). Using Add Health as secondary data, this dissertation employs a nonequivalent comparison group design to assess the association between natural mentoring relationship characteristics and emerging adulthood outcomes and to determine whether this association is equivalent across samples of former foster youth and normative youth. The magnitude and mechanism of effects of natural mentoring are compared between young adults with natural mentors that identify themselves as having prior experience in

foster care and a normative sample of young adults with natural mentors (but no foster care experience).

Add Health entails a complex sampling design, including stratification by census region, clustering of students, and unequal probability of selection. To obtain unbiased estimates, these design features must be taken into account when analyzing the data by using analytic methods that can handle such features. The easiest way to address the complex survey design is to utilize statistical software that adjusts for these features (Chantala, 2006).

Another important design feature of Add Health relates to analyzing a subset of a sample (i.e., young adults who report a natural mentoring relationship). Because Add Health is a probability sample, subsetting the data is inappropriate. Instead, a subpopulation represented by part of the sample must be analyzed. Simply subsetting the data can cause an incorrect number of primary sampling units to be used in the variance computation formula. The most straightforward way to address this design feature is also to use statistical software that provides special commands for the subpopulation analysis (Chantala, 2006).

Sample

Data for this dissertation pertain to 15,197 respondents represented in the Wave 3 restricted-use dataset. Of these, 14,823 respondents had valid cluster and stratification variables available to adjust for sampling design features (clustering of students by school, stratification of schools of census region). It is important to note that other than the descriptive statistics, this dissertation's analyses did not exclude respondents who were missing a valid longitudinal sampling weight, which helped adjust for the unequal probability of selection in order to accurately generalize to the larger population. The goal of this exploratory research was to study a very specific population in order to learn something new and guide both future research and intervention development. The goal was not to obtain

national estimates (i.e., generalize to a population). Therefore, in the interest of sample size for the former foster youth, including respondents with and without a valid sampling weight was considered acceptable for all regression and path analyses.

Of the 14,823 respondents, 8,151 reported having a natural mentor at any time since age 14. Respondents who endorsed a younger sibling, friend, or spouse or partner were excluded. Respondents who reported *other* as a natural mentoring role or who were missing an answer to the natural mentorship question were also excluded due to not being able to group them into a social role category. Of the 8,151 respondents with natural mentors, 165 reported at Wave 3 that they had been in foster care (i.e., "Did you ever live in a foster home?"); 7,977 reported that they had not been in foster care; and 9 respondents were missing data for the foster care variable.

Given the great difference in sample size between former foster youth and nonformer foster youth, it is important to note the issue of power in this dissertation, or the probability of rejecting the null hypothesis when there is a real effect in the population (Kline, 2005). Power varies directly with the magnitude of the real-population effect, the sample size, and the *p* value selected for statistical tests. Effects that are present in the former foster youth sample may be undetectable due to the smaller sample size. Conversely, among the nonformer foster youth, the sample size was so large that even small, clinically irrelevant effects may have been statistically significant.

Young-Adult Characteristics at Wave 3

The sample characteristics of the young adults included in this study are shown in Table 1. The descriptive statistics are design-based and take into account the complex sample design of the data, including the unequal probability of selection. Therefore, they are generalizable to a population of young adults with natural mentors. Among the former foster

youth, more than half of the youths in the sample were female (66%). Almost all were nonHispanic (97%), and 74% were White. Participants' average age was 21.5 years (*SD* = 1.5 years). Thirty percent completed high school and the majority of youth reported not being married at the time of the interview (75%). About half (51%) reported being employed full time. Only 9% of the participants were receiving public assistance at the time of data collection. Two fifths (40%) of the sample reported having been placed in more than one foster home during their youth. The former foster youths' average level of depression at Wave 3 was .92 (*SD* = .46) and their average level of delinquency and violence at Wave 3 was 0.46 (*SD* = 1.10). On average, former foster youth reported experiencing less than one indicator of material hardship in the past 12 months (*SD* = .24). Only about 1% of the former foster youth reported owning assets.

Among the nonformer foster youth, about half of the respondents were female (51%). Almost all were nonHispanic (90%), and 80% were White. Participants' average age was 21.3 years (*SD* = 1.6 years). Almost half (47%) completed some college, and the majority of youth reported not being married at the time of the interview (87%). Almost half (46%) reported being employed full time. Only 4% of the participants were receiving public assistance at the time of data collection. The nonformer foster youths' average level of depression at Wave 3 was .72 (*SD* = .46), and their average level of delinquency and violence at Wave 3 was 0.76 (*SD* = 1.85). On average, nonformer foster youth reported experiencing less than one indicator of material hardship in the past 12 months (*SD* = .16). Most youth reported having a bank account (87%) and owning a car (72%). Only 10% reported owning their residence.

Young-Adult Characteristics at Wave 1

Among the former foster youth, about 25% reported that their mother was receiving public assistance at Wave 1. Almost half (48%) had ever received an out-of-school suspension, and 37% had ever received psychological counseling. The majority (90%) of youth reported usually feeling safe in their neighborhood. The majority of youth also reported their mothers caring about them very much (90%) and their friends caring about them very much (90%). The former foster youths' average level of depression at Wave 1 was .88 (*SD* = .56), and their average level of delinquency and violence at Wave 1 was 2.56 (*SD* = 2.95).

Among the nonformer foster youth, fewer than 1 in 10 (9%) reported that their mother was receiving public assistance at Wave 1. About one quarter (23%) of the nonformer foster youth had ever received out-of-school suspension, and 12% had ever received psychological counseling. The majority (91%) of youth reported usually feeling safe in their neighborhood. The majority of youth also reported their mothers caring about them very much (98%) and their friends caring about them very much (87%). The nonformer foster youths' average level of depression at Wave 1 was .60 (*SD* = .45), and their average level of delinquency and violence at Wave 1 was 1.73 (*SD* = 2.80).

Relationship Characteristics at Wave 3

Among the former foster youth, their natural mentors on average filled slightly more than one role (*SD* = .62) in their lives. More than half (56%) reported having a natural mentor who provided guidance or advice, and more than half (56%) reported having a natural mentor who provided emotional nurturance. Receiving practical help from a natural mentor was reported by 13% of the former foster youth. Very few of the former foster youth (1%) reported having a natural mentor who was like a parent, and 8% reported having one who

was a role model. Only 1% reported having a “very close” relationship with their natural mentor, and the average duration of the natural mentoring relationship was 10.54 years (*SD* = 7.89 years). For 83% of the former foster youth, their natural mentors became important in their lives early (between 0 and 17 years). The most common social role filled by the natural mentors was relative (54%), followed by school personnel (25%) and community member (21%). About half (53%) of the former foster youth were introduced to their natural mentors through school. Almost 100% of the former foster youth reported their natural mentors still being important to them at Wave 3. An almost equal proportion of former foster youth reported seeing their natural mentors at least once per month (55%) (compared to less than one time per month), and 60% reported talking to or emailing their natural mentors at least once per month.

Among the nonformer foster youth, their natural mentors on average filled slightly more than one role (*SD* = .61) in their lives. More than half (60%) reported having a natural mentor who provided guidance or advice. Forty percent of the nonformer foster youth reported having a natural mentor who provided emotional nurturance. Receiving practical help from a natural mentor was reported by 10% of the former foster youth. Very few of the nonformer foster youth had a natural mentor who was “like a parent,” and 15% reported having a mentor who was a “role model.” About half reported having a very close relationship with their natural mentor, and the average duration of the natural mentoring relationship was 8.94 years (*SD* = 7.07 years). For a little more than three quarters (78%) of the nonformer foster youth, their natural mentors became important in their lives early (between 0 and 17 years). The most common social role filled by the natural mentors was relative (45%), followed by school personnel (33%) and community member (22%). Slightly

more than half (56%) of the nonformer foster youth were introduced to their natural mentors through school. Almost 100% of the former foster youth reported their natural mentors still being important to them at Wave 3. Almost equal proportions of nonformer foster youth reported seeing their natural mentors and talking to or emailing their natural mentors at least one timer per month.

Descriptive Differences Between Former Foster Youth and Nonformer Foster Youth

Chi-square and *t*-tests were conducted to assess differences between the two groups on the demographic and relationship characteristics as well as on the outcome variables (Table 1). Former foster youth were more likely to be nonHispanic ($p < .05$) and married ($p < .05$). Former foster youth reported significantly more depressive symptoms ($p < .001$) and material hardship ($p < .001$) at Wave 3. At Wave 1, the mothers of former foster youth were more likely to receive welfare ($p < .0001$). Former foster youth were also more likely to receive out-of school suspension ($p < .0001$) and psychological counseling ($p < .0001$) at Wave 1. Former foster youth reported significantly more depressive symptoms at Wave 1 ($p < .001$). Former foster youth were more likely to have a natural mentor who provided "emotional nurturance" ($p < .01$).

Nonformer foster youth were more likely to have completed some or all of college ($p < .0001$). Nonformer foster youth were also more likely to report significantly more delinquent or violent behaviors ($p < .05$) and to have a bank account ($p < .0001$) at Wave 3. At Wave 1, nonformer foster youth were more likely to report that their mothers cared about them very much ($p < .001$). Nonformer foster youth were more likely to have a natural mentor who was "like a parent" ($p < .05$).

Measurement

Natural Mentorship

The presence or absence of a natural mentor was based on a single retrospective question from Wave 3. This question asked respondents whether an adult other than a parent/step-parent had made an "important positive difference in [their] life at any time since [they] were 14 years old." Participants who reported younger siblings, spouses, friends, or other as their natural mentors were excluded (Ahrens et al., 2008; DuBois & Silverthorn, 2005; Klaw et al., 2003; Rhodes, Contreras, & Mangelsdorf, 1994). This variable was dummy-coded. A code of one represented an answer of *yes* to this question, and zero represented an answer of *no*.

Natural Mentor Functional Role

Functional roles filled by natural mentors were determined from a retrospective, open-ended question at Wave 3 that asked the respondents what their natural mentors did to help them. Responses were recoded into functional role categories: (a) providing guidance and advice (e.g., "helped guide me in the right direction," "guided me on life decisions"); (b) providing emotional support (e.g., "she's always there for me," "encouraged me to by myself"); (c) providing practical help (e.g., "helped me get a job, write up my resume," "helped me move"); (d) being like a parent (e.g., "acted like a mom to me," "has been like a father figure"); and (e) serving as a role model (e.g., "an inspiration in my life," "I tried to follow in his footsteps"). These categories were not mutually exclusive—an individual's response could be coded in more than one category—and are consistent with the social support typology described by House (1981) and used by Greeson and Bowen (2008). The five individual roles and a composite score created by summing the number of roles together were used as independent variables.

Natural Mentor Relationship Strength

Relationship strength between the natural mentor and young adult was assessed from a question that asks the respondent, "How close do you feel to him/her these days?" Responses were on a five-point Likert scale of closeness ranging from zero (*not close at all*) to four (*very close*). Consistent with previous research using these data (i.e., McDonald, Erickson, Johnson, & Elder, 2007), the responses were recoded to create a dichotomous variable: very close (*very close* and *quite close*) and *not* so close (*somewhat close*, *only a little close*, and *not close at all*) and then dummy coded (1 = *very close*; 0 = *not so close*).

Former Foster Youth

Former foster youth status is a dummy variable created from the answer to a single Wave-3 item, "Did you ever live in a foster home?" A code of one represented *yes*; zero represented *no*. This operationalization is consistent with previous research that has used the same sample of young adults (i.e., Ahrens et al., 2008).

Depression

Depressive symptoms were measured using the average of 9 items from the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), one of the most common screening instruments for depression. Internal consistency reliability estimates were satisfactory for both the former foster youth sample ($\alpha = .79$) and the nonformer foster youth sample ($\alpha = .79$) at Wave 3. Responses to all items were on a four-point Likert scale of frequency ranging from 0 (*never*) to 3 (*most/all of the time*). A lower score on the CES-D is indicative of fewer depressive symptoms. A score of 16 or higher has been used extensively as the cut-off point for high depressive symptoms (Radloff). Examples of items are "I was bothered by things that don't usually bother me" and "I felt that I was just as good as other people." Add Health uses an abbreviated version of the 20-item CES-D that has not been

previously validated. However, other, shortened versions of the scale with as few as 9 items have performed similarly to the full CES-D (Santor & Coyne, 1997).

Delinquency and Violence

Delinquency and violence at both Wave 1 and Wave 3 was measured by summing the 10 delinquency and violence items. Internal consistency reliability estimates for delinquency and violence at Wave 3 were adequate for both the former foster youth sample ($\alpha = .64$) and the nonformer foster youth sample ($\alpha = .69$). Respondents were asked how often in the past 12 months they had gone into a house or building to steal, used or threatened to use a weapon against someone, sold drugs, and committed other delinquent behaviors. All responses were scored on a four-point Likert scale of frequency ranging from *never* (coded as 0) to *more than five times* (coded as 3). Therefore, a higher delinquency and violence value was indicative of more delinquent/violent behavior.

Material Hardship

Material hardship was measured using the average of seven items related to the concept. Internal consistency reliability estimates were adequate for both the former foster youth sample ($\alpha = .68$) and the nonformer foster youth sample ($\alpha = .66$). Responses to all items were dichotomous (*yes* = 1 and *no* = 0), with composite scores ranging from zero to six. A lower score was indicative of less material hardship. Among other questions, respondents were asked if in the past 12 months they had ever been without phone service for any reason or if they had ever been evicted from their house or apartment for not paying the mortgage or rent.

Assets

Three individual items that consider one's property holdings and basic financial characteristics measured assets. Responses to all items were dichotomous (*yes* = 1 and *no* =

0). The items were: “Do you own a residence such as a house, condominium, or mobile home?” “Do you own a car, truck, van, or motorcycle?” and “Do you have a bank account (savings and/or checking)?”

Income Expectations

Income expectations served as a proxy for the construct “future expectations.” The index was created by averaging the two income items (“Chance of middle class income at age 30” and “Chance of more than a middle class income at age 30”) from the six personal future items in Add Health. Responses were scored on a five-point Likert scale of certainty ranging from one (*almost certain*) to five (*almost no chance*). Because of this counter-intuitive response pattern, the variable was recoded such that higher index values were indicative of greater income expectations and lower index values were indicative of poorer income expectations.

The use of income expectations as a proxy for personal future is consistent with the Midwest Study (Courtney et al., 2007), which used the same income questions that asked former foster youth to rate their likelihood of experiencing a particular event. The use of income expectations is also consistent with the National Education Longitudinal Study of 1988 (NELS88). The NELS88 assesses youths’ perceptions of the likelihood of positive outcomes for themselves in the economic domain with the following question, “What is the chance that you will have a job that pays well?”

Covariates

Covariates were selected based on availability in the dataset and a review of the pertinent natural mentoring and foster care literature (Ahrens et al., 2008; Berzin, 2008; Dubois & Silverthorm, 2005; Munson & McMillen, 2009). They included various individual and relationship characteristics. Individual covariates included characteristics measured at

Waves 1 and 3. Wave 3 individual characteristics were gender (1 = *male*, 0 = *female*); age (in years); race (1 = *White*, 0 = *Black* or *other*); marital status (1 = *married*, 0 = *not married*); employment status (1 = *employed full time*, 0 = *not employed full time*); medication use in past 12 months to treat depression (for the depression study only; 1 = *yes*, 0 = *no*); and more than one foster care placement (for former foster youth only; 1 = *yes*, 0 = *no*). Wave 1 individual characteristics were mother's use of welfare (1 = *yes*, 0 = *no*); self-reported quality of mother-child relationship (1 = *mother cares very much*, 0 = *mother does not care so much*); self-perceived relationship with peers (1 = *friends care very much*, 0 = *friends do not care so much*); usually feeling safe in neighborhood (1 = *yes*, 0 = *no*); ever received out-of-school suspension (1 = *yes*, 0 = *no*); and ever received psychological counseling (1 = *yes*, 0 = *no*).

In addition to the individual variables presented above, additional variables affecting mentoring outcomes based on previous literature were included. These are relationship duration (in years); frequency of seeing natural mentor (1 = *once per month or more*; 0 = *less than once per month*); and frequency of talking to or emailing the natural mentor (1 = *once per month or more*; 0 = *less than once per month*).

Analysis Procedures

First, to test the hypothesis that having a natural mentor is associated with emerging adulthood outcomes, each outcome was regressed on having a natural mentor and 18 covariates for the former foster youth sample and 17 covariates for the nonformer foster youth sample using Mplus 5.0 (Muthén & Muthén, 2006). In both samples, depression and delinquency and violence at Wave 1 was also adjusted for in those particular regression models.

Second, to test the hypothesis that natural mentoring relationship characteristics would be associated with emerging adulthood outcomes directly and indirectly through increased income expectations, multivariate path models with continuous and categorical dependent variables were estimated separately for both samples using Mplus 5.0 (Muthén & Muthén, 2006). This strategy was selected because it allowed for the simultaneous assessment of increased income expectations as an outcome of natural mentoring relationship characteristics and as a predictor of emerging adulthood outcomes. Although correlation cannot confirm causation, intervening variables (i.e., changes in future expectations of income) that explain the correlations between natural mentor relationship characteristics and outcomes can reveal important intervention change processes.

A Maximum Likelihood estimation method with standard errors that are robust to nonnormality and nonindependence of observations to compute path coefficients was used in all analyses. This method computes the standard errors using a sandwich estimator. A sandwich estimator is necessary with complex survey data in order to obtain standard errors that account for stratification and clustering (Rabe-Hesketh & Skrondal, 2006).

Several commonly reported fit indices were used to assess how well the path models with continuous dependent variables fit the data. Kline (2005) has recommended reporting values of multiple fit indexes because they reflect different facets of model fit. The χ^2 and the ratio of χ^2 to degrees of freedom (χ^2/df) were both used due to the difference in sample size among the former foster youth and nonformer foster youth groups. According to Kenny (2008), the χ^2 is a reasonable measure of fit for models with about 75 to 200 cases (i.e., the former foster youth sample). However, in models with greater than 200 cases (i.e., the nonformer foster youth sample), the χ^2 is almost always statistically significant. In this case,

the χ^2/df is considered an acceptable way to assess model fit. Values of 3.0 or lower are desirable for the χ^2/df ratio according to Kline.

The Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA) were also used to test model fit. A cutoff of .90 was used for the CFI (Hu & Bentler, 1999), which assesses the improvement of the model over a baseline model and assumes no relationship among variables (Kline, 2005). The RMSEA corrects for model complexity favoring a simpler model over the more complex (Kline). Good models have a RMSEA of .05 or less. Values ranging from .08 to .10 indicate mediocre fit, and values greater than .10 indicate poor fit (Byrne, 2001). Use of these various indices ensured that a variety of statistical approaches to assessing model fit was represented.

Two commonly reported fit indices were used to assess how well the path models with categorical dependent variables fit the data. Akaike's information criterion (AIC) and the Bayesian information criterion (BIC) were both reported. The AIC is a goodness-of-fit measure that reflects the discrepancy between model-implied and observed covariance matrices. The BIC uses sample size to estimate the amount of information associated with a given dataset. For both fit indices, lower values indicate better model fit (Tabachnick & Fidell, 2001).

The original intent of this dissertation involved conducting a multiple-group comparison between former foster youth and nonformer foster youth in order to determine if the patterns and magnitudes of the structural path coefficients varied to a statistically significant degree by sample. However, due to the complex survey design, the option in Mplus to conduct the multiple group comparison was not available (L. Muthén, personal

communication, January 28, 2009). Therefore, I could comment on the significant effects in each model, but not on how the estimates compared in magnitude across groups.

CHAPTER IV
RESULTS

The results are presented by outcome. The results for each outcome start with the former foster youth sample followed by the nonformer foster youth sample. The initial results for each outcome concern the direct effects of natural mentoring. The second set of results addresses the direct and indirect effects of natural mentoring relationship characteristics.

Depression

Natural Mentoring Among Former Foster Youth

Depression was regressed on having a natural mentor relationship while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Table 2). The model accounted for 15% of the variance in depression (R^2 = .15), which was significant. According to conventional standards for variance accounted for in models with multiple predictors, this represents a medium effect (13%–25%; Cohen, 1988). Having a natural mentor did not demonstrate a significant effect on depression among young adults who had previous foster care experience. Three covariates demonstrated significant effects. Medication use at Wave 3 to treat depression was associated with more depressive symptoms, and depression at Wave 1 was associated with more depressive symptoms at Wave 3. Being married at Wave 3 was associated with fewer depressive symptoms.

Natural Mentoring Among Nonformer Foster Youth

Depression was regressed on having a natural mentor relationship while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves

1 and 3 (Table 2). The model accounted for 15% of the variance in depression (R^2 = .15), which was significant. As mentioned above, this represents a medium effect (13%–25%; Cohen, 1988). Having a natural mentor was significantly associated with fewer depressive symptoms at Wave 3. Thirteen covariates also demonstrated significant effects. Among the natural mentor relationship characteristics at Wave 3, a stronger natural mentor relationship was associated with decreased depressive symptoms, whereas young adults talking to or emailing their natural mentors at least once per month was associated with increased depressive symptoms. All young-adult characteristics at Wave 3 demonstrated significant effects. Being male, older, White, married, and employed full time were all associated with decreased depressive symptoms. Among the young-adult characteristics at Wave 1, feeling safe in one's neighborhood and higher self-reported quality of mother-child relationship were also associated with decreased depressive symptoms at Wave 3. Several young-adult characteristics at Wave 1 were associated with increased depressive symptoms at Wave 3: depression, out-of-school suspension, and mother's use of public assistance.

Natural Mentor Roles and Relationship Strength Among Former Foster Youth

The first path model (Figure 2) estimated the direct and indirect effects of the number of roles filled by a natural mentor and self-reported natural mentoring relationship strength on depression at Wave 3, adjusting for Wave-1 depressive symptoms and 16 covariates. According to the goodness-of-fit measures, the model fit the data well. The χ^2 was not significant, $\chi^2(17, N = 165) = 17.4$, $p = .43$, and the RMSEA was .01, less than the target .05 level. The CFI was .98, greater than the target value of .90.

The model accounted for 20% of the variance in depression at Wave 3 (R^2 = .20), which was significant and represents a medium effect (13%–25%; Cohen, 1988), and 1% (R^2 = .01) of the variance in income expectations, which was not significant and represents less

than a small effect (< 2%; Cohen). There were no statistically significant direct or indirect effects. There were three significant covariates: race, marital status, and self-perceived quality of peer relationships at Wave 1. Depressive symptoms at Wave 1 were also significant.

The second path model (Figure3) estimated the direct and indirect effects of the five individual roles (guidance/advice, emotional nurturance, practical help, like a parent, and role model) and self-reported natural mentoring relationship strength on depression at Wave 3, adjusting for Wave 1 depressive symptoms and 15 covariates. According to the goodness-of-fit measures, the model fit the data well. The χ^2 was not significant, $\chi^2(17, N = 165) = 15.8$, $p = .54$, and the RMSEA was .00, less than the target .05 level. The CFI was 1.00, greater than the target value of .90.

The model accounted for 22% of the variance in depression at Wave 3 ($R^2 = .22$), which was significant and represents a medium effect (13%–25%; Cohen, 1988), and 4% of the variance in income expectations ($R^2 = .04$), which was not significant and represents a small effect (2%–12%; Cohen). The direct effect of the role, *like a parent*, on income expectations was significant. There were no other statistically significant direct or indirect effects. There was only one significant covariate: self-perceived quality of peer relationships at Wave 1. Depressive symptoms at Wave 1 were also significant.

Natural Mentor Roles and Relationship Strength Among Nonformer Foster Youth

The third path model (Figure 4) estimated the direct and indirect effects of the number of roles filled by a natural mentor and self-reported natural mentoring relationship strength on depression at Wave 3, adjusting for Wave 1 depressive symptoms and 15 covariates. According to the goodness-of-fit measures, the model fit the data reasonably well after a modification of the model was indicated by the data and was theoretically justifiable,

namely adjusting for the effect of race on income expectations. Due to the large sample size, the χ^2 was significant, $\chi^2(15, N = 7{,}977) = 129.7$, $p = .00$. The χ^2/df was 8.6, greater than the target value of 3.0. The RMSEA was .03, less than the target .05 level. The CFI was .92, greater than target value of .90.

The model accounted for 15% of the variance in depression at Wave 3 ($R^2 = .14$), which represents a medium effect (13%–25%; Cohen, 1988), and 2% of the variance in income expectations, which represents a small effect ($R^2 = .02$). Both effects were significant. The direct effect of number of roles on depression was not significant. The direct effects of relationship strength on depression and of income expectations on depression were statistically significant. There were no statistically significant indirect effects. There were 10 significant covariates: sex, race, employment status, medication use for depression, frequency of talking to or emailing the mentor, self-reported quality of mother-child relationship at Wave 1, out-of-school suspension at Wave 1, feeling safe in neighborhood at Wave 1, and mother's use of welfare at Wave 1. Depressive symptoms at Wave 1 were also significant.

The fourth path model (Figure 5) estimated the direct and indirect effects of the five individual roles (guidance/advice, emotional nurturance, practical help, like a parent, and role model) and self-reported natural mentoring relationship strength on depression at Wave 3, adjusting for Wave 1 depressive symptoms and 16 covariates. According to the goodness-of-fit measures, the model fit the data reasonably well after adjusting for the effect of race on income expectations. Due to the large sample size, the χ^2 was significant, $\chi^2(15, N = 7{,}977) = 126.0$, $p = .00$. The χ^2/df was 8.4, greater than the target value of 3.0. The RMSEA was .03, less than the target .05 level. The CFI was .93, greater than target value of .90.

The model accounted for 16% of the variance in depression (R^2 = .16), which represents a medium effect (13%–25%; Cohen, 1988), and 2% of the variance in income expectations (R^2 = .02), which represents a small effect (2%–12%; Cohen). Both were significant. The direct effects of all individual roles on depression were not significant. The direct effect of relationship strength on depression was significant. The direct effects of all individual roles on income expectations were not statistically significant, except for *role model*. The direct effect of relationship strength on income expectations was not statistically significant, but a trend in the expected direction was observed. The direct effect of income expectations on depression was significant. There were no statistically significant indirect effects. The 10 significant covariates were the same as in the previous model. Depressive symptoms at Wave 1 were also significant.

Delinquency and Violence

Natural Mentoring Among Former Foster Youth

Among young adults with previous foster care experience, delinquent and violent behavior was regressed on having a natural mentor at Wave 3 while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Table 3). The model accounted for 18% of the variance in delinquency and violence (R^2 = .18), which was significant, and represents a medium effect (13%–25%; Cohen, 1988). Having a natural mentor relationship was not associated with delinquency and violence at Wave 3. Five covariates demonstrated significant effects on delinquency and violence at Wave 3. Frequency of seeing one's natural mentor, being male, and engagement in delinquency and violence at Wave 1 were associated with increased delinquency and violence. Being married and employed full time at Wave 3 were associated with decreased delinquency and violence.

Natural Mentoring Among Nonformer Foster Youth

Among young adults without previous foster care experience, delinquent and violent behavior was regressed on having a natural mentor at Wave 3 while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Table 3). The model accounted for 9% of the variance in delinquency and violence (R^2 = .09), which was significant and represents a small effect (2%–12%; Cohen, 1988). Having a natural mentor relationship was not associated with delinquency and violence at Wave 3. Eight covariates demonstrated significant effects. Specifically, being male, engagement in delinquency and violence at Wave 1, out-of-school suspension at Wave 1, counseling at Wave 1, and positive peer relationships at Wave 1 were associated with increased delinquency and violence at Wave 3. Being older, married, and employed full time were associated with decreased delinquency and violence at Wave 3.

Natural Mentor Roles and Relationship Strength Among Former Foster Youth

Figure 6 shows the direct and indirect effects of delinquency and violence at Wave 3 regressed on the number of roles filled by a natural mentor and self-reported natural mentoring relationship strength, adjusting for 15 covariates. According to the goodness-of-fit measures, the model fit the data very well after a modification of the model was indicated by the data and was theoretically justifiable, namely adjusting for the effect of race and employment status on income expectations. The χ^2 was not significant, $\chi^2(14, N = 165) = 11.33$, $p = .66$, and the RMSEA was .00, less than the target .05 level. The CFI was 1.00, greater than the target value of .90.

The model accounted for 27% of the variance in delinquency and violence (R^2 = .27), which was significant and represents a large effect (26%+; Cohen, 1988), and 1% of the variance in income expectations (R^2 = .01), which was not significant and was equivalent to

less than a small effect (< 2%; Cohen). The direct effects of number of functional roles and relationship strength on delinquency and violence were not significant. The indirect effects were also not significant. There were three significant covariates. Having multiple foster care placements and being married were associated with less delinquency and violence at Wave 3. Being male was associated with more delinquency and violence at Wave 3.

Figure 7 shows the direct and indirect effects of delinquency and violence at Wave 3 regressed on the five individual roles (guidance/advice, emotional nurturance, practical help, like a parent, and role model) and self-reported natural mentoring relationship strength, adjusting for 15 covariates. According to the goodness-of-fit measures, the model fit the data very well, after a modification of the model was indicated by the data and was theoretically justifiable, namely adjusting for the effect of race and employment status on income expectations. The χ^2 was not significant, $\chi^2(14, N = 165) = 12.40$, $p = .57$, and the RMSEA was .00, less than the target .05 level. The CFI was 1.00, greater than the target value of .90.

The model accounted for 29% of the variance in delinquency and violence ($R^2 = .29$), which was significant, and equivalent to a large effect (26%+; Cohen, 1988), and 4% of the variance in income expectations ($R^2 = .04$), which was not significant, and equivalent to a small effect (2%–12%; Cohen). There were no significant direct or indirect effects. There were four significant covariates. Having multiple foster care placements, being married, and being employed full time were associated with less delinquency and violence at Wave 3. Being male was associated with more delinquency and violence at Wave 3.

Natural Mentor Roles and Relationship Strength Among Nonformer Foster Youth

Figure 8 shows the direct and indirect effects of delinquency and violence at Wave 3 regressed on the number of roles filled by a natural mentor and self-reported natural mentoring relationship strength, adjusting for 14 covariates. According to the goodness-of-fit

measures, the model fit the data well, after a modification of the model was indicated by the data and was theoretically justifiable, namely adjusting for the effect of race and employment status on income expectations. Due to the large sample size, the χ^2 was significant, $\chi^2(13, N = 7{,}977) = 56.59$, $p = .00$. The χ^2/df was 4.35, greater than the desirable value of 3.0. The RMSEA was .02, less than the target .05 level. The CFI was .95, greater than the target value of .90.

The model accounted for 10% of the variance in delinquency and violence ($R^2 = .10$), which is equivalent to a small effect (2%–12%; Cohen, 1988) and 2% of the variance in income expectations ($R^2 = .02$), which is equivalent to a small effect (2%–12%; Cohen). Both R^2 values were significant. The direct effects of number of functional roles and natural mentor relationship strength on delinquency and violence were not significant. Having greater income expectations was associated with decreased delinquency and violence at Wave 3. There were no significant indirect effects. There were six significant covariates. Specifically, being older, married, and employed full time were associated with decreased delinquency and violence at Wave 3. Being male, receiving counseling at Wave 1, and having positive peer relationships at Wave 1 were associated with increased delinquency and violence at Wave 3.

Figure 9 shows the direct and indirect effects of delinquency and violence at Wave 3 regressed on the five individual roles (guidance/advice, emotional nurturance, practical help, like a parent, and role model) and self-reported natural mentoring relationship strength, adjusting for 14 covariates. According to the goodness-of-fit measures, the model fit the data well after a modification of the model was indicated by the data and was theoretically justifiable, namely adjusting for the effect of race and employment status on income

expectations. Due to the large sample size, the χ^2 was significant, $\chi^2(13, N = 7{,}977) = 56.59$, $p = .00$. The χ^2/df was 4.35, greater than the desirable value of 3.0. The RMSEA was .02, less than the target .05 level. The CFI was .95, greater than the target value of .90.

The model accounted for 10% of the variance in delinquency and violence ($R^2 = .10$), which is equivalent to a small effect (2%–12%; Cohen, 1988) and 2% of the variance in income expectations ($R^2 = .02$), which is equivalent to a small effect (2%–12%; Cohen). Both R^2 values were significant. Having a natural mentor who provided practical help was associated with increased delinquency and violence at Wave 3. Having a natural mentor who was a role model was associated with increased income expectations at Wave 3. The indirect effects of all individual functional roles and relationship strength on delinquency and violence as a function of income expectations were not significant. As with the previous model, there were six significant covariates. Being older, married, and employed full time were associated with decreased delinquency and violence at Wave 3. Being male, receiving counseling at Wave 1, and having positive peer relationships at Wave 1 were associated with increased delinquency and violence at Wave 3.

Material Hardship

Natural Mentoring Among Former Foster Youth

Material hardship was regressed on having a natural mentor relationship while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Table 4). The model accounted for 9% of the variance in material hardship ($R^2 = .09$), which was statistically significant. According to conventional standards for variance accounted for in models with multiple predictors, this represents a small effect (2%–12%; Cohen, 1988). Having a natural mentor did not demonstrate a significant effect on material hardship among young adults who had previous foster care

experience. Three covariates demonstrated significant effects: race, out-of-school suspension at Wave 1, and mother's use of welfare at Wave 1.

Natural Mentoring Among Nonformer Foster Youth

Material hardship was regressed on having a natural mentor relationship while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Table 2). The model accounted for 4% of the variance in material hardship (R^2 = .04), which was significant. According to conventional standards for variance accounted for in models with multiple predictors, this represents a small effect (2%-12%; Cohen, 1988). Having a natural mentor did not demonstrate a significant effect on material hardship among young adults who did not have previous foster care experience.

Ten covariates demonstrated significant effects. Among natural mentor relationship characteristics at Wave 3, a stronger natural mentor relationship was associated with decreased material hardship. Among young-adult characteristics at Wave 3, being male and employed full time were also associated with decreased material hardship. Whereas, being older and married were associated with increased material hardship. Several young-adult characteristics at Wave 1 were also associated with increased material hardship at Wave 3: mother's use of public assistance, out-of-school suspension, and counseling. Higher-quality mother-child relationships and peer relationships at Wave 1 were associated with decreased material hardship at Wave 3.

Natural Mentor Roles and Relationship Strength Among Former Foster Youth

Figure 10 shows the direct and indirect effects of material hardship at Wave 3 regressed on the number of roles filled by a natural mentor and self-reported natural mentoring relationship strength, adjusting for 15 covariates. According to the goodness-of-fit measures, the model fit the data very well, after a modification of the model was indicated by

the data and was theoretically justifiable, namely adjusting for the effect of race, and mother's use of welfare at Wave 1 on income expectations. The χ^2 was not significant, $\chi^2(13, N = 165) = 6.28$, $p = .94$, and the RMSEA was .00, less than the target .05 level. The CFI was 1.00, greater than target .90.

The model accounted for 16% of the variance in material hardship at Wave 3 ($R^2 = .16$), which was significant. According to conventional standards for variance accounted for in models with multiple predictors, this represents a small effect (2%–12%; Cohen, 1988). The model also accounted for 8% of the variance in income expectations ($R^2 = .08$), which was not significant. This represents a small effect (2%–12%; Cohen). The direct effects of number of roles filled by a natural mentor and relationship strength on material hardship were not statistically significant. Having greater income expectations was significantly associated with decreased material hardship at Wave 3. There were no significant indirect effects and no significant covariates.

Figure 11 shows the direct and indirect effects of material hardship at Wave 3 regressed on the five individual roles (guidance/advice, emotional nurturance, practical help, like a parent, and role model) and self-reported natural mentoring relationship strength , adjusting for 15 covariates. According to the goodness-of-fit measures, the model fit the data well. The χ^2 was not significant, $\chi^2(15, N = 165) = 15.8$, $p = .39$, and the RMSEA was .02, less than the target .05 level. The CFI was .93, greater than target .90.

The model accounted for 15% of the variance in depression at Wave 3 ($R^2 = .15$), which was significant. According to conventional standards for variance accounted for in models with multiple predictors, this represents a medium effect (13%–25%; Cohen, 1988). The model also accounted for 4% of the variance in income expectations ($R^2 = .04$), which

was not significant. This represents a small effect (2%–12%; Cohen). Having a natural mentor who was like a parent was associated with greater income expectations at Wave 3. The direct effects of the remaining roles and relationship strength on income expectations were not statistically significant, and the direct effects of all individual roles and relationship strength on material hardship were not significant. As with the previous model, greater income expectations were significantly associated with decreased material hardship at Wave 3. Similar to the previous model, there were no significant indirect effects and no significant covariates.

Natural Mentor Roles and Relationship Strength Among Nonformer Foster Youth

Figure 12 shows the direct and indirect effects of material hardship at Wave 3 regressed on the number of roles filled by a natural mentor and self-reported natural mentoring relationship strength, adjusting for 14 covariates. According to the goodness-of-fit measures, the model fit the data reasonably well after a modification of the model was indicated by the data and was theoretically justifiable, namely adjusting for the effects of race, employment status, and mother's use of welfare at Wave 1 on income expectations. Due to the large sample size, the χ^2 was significant, $\chi^2(11, N = 7{,}977) = 48.86$, $p = .00$. The χ^2/df was 4.44, greater than the desirable value of 3.0. The RMSEA was .02, less than the target .05 level. The CFI was .92, greater than the target value of .90.

The model accounted for 5% of the variance in material hardship ($R^2 = .05$) and 2% of the variance in income expectations at Wave 3 ($R^2 = .02$), both of which were significant. Both represent small effects (2%–12%; Cohen, 1988). The direct effect of number of roles filled by a natural mentor on material hardship was not statistically significant. Having a stronger natural mentor relationship was associated with decreased material hardship at

Wave 3. Having greater income expectations was associated with decreased material hardship at Wave 3. There were no significant indirect effects. There were eight significant covariates. Being male, employed full time, and having a high-quality mother-child relationship at Wave 1 were all associated with decreased material hardship at Wave 3, whereas being older, out-of-school suspension, counseling, and mother's use of welfare at Wave 1 were associated with increased material hardship at Wave 3.

Figure 13 shows the direct and indirect effects of material hardship at Wave 3 regressed on the five individual roles (guidance/advice, emotional nurturance, practical help, like a parent, and role model) and self-reported natural mentoring relationship strength, adjusting for 14 covariates. According to the goodness-of-fit measures, the model fit the data reasonably well after a modification of the model was indicated by the data and was theoretically justifiable, namely adjusting for the effects of race and employment status on income expectations. Due to the large sample size, the χ^2 was significant, $\chi^2(12, N = 7{,}977) = 52.89$, $p = .00$. The χ^2/df was 4.41, greater than the desirable value of 3.0. The RMSEA was .02, less than the target .05 level. The CFI was .92, greater than the target value of .90.

The model accounted for 5% of the variance in material hardship ($R^2 = .05$) and 2% of the variance in income expectations ($R^2 = .02$), both of which were significant. Both represent small effects (2%–12%; Cohen, 1988). Having a natural mentor who provided practical help was associated with increased material hardship. The direct effects of all other individual roles on material hardship were not significant. Having a stronger natural mentor relationship was associated with decreased material hardship at Wave 3. The direct effect of relationship strength on income expectations was not statistically significant, but a trend in the expected direction was observed. Having a natural mentor who was a role model was

associated with greater income expectations at Wave 3. The direct effects of the remaining individual roles were not statistically significant. There were no significant indirect effects. Comparable to the third model, there were seven significant covariates. Being male and employed full time were associated with decreased material hardship at Wave 3, whereas being older, out-of-school suspension, counseling, and mother's use of welfare at Wave 1 were associated with increased material hardship at Wave 3.

Asset Ownership

Natural Mentoring Among Former Foster Youth

Residence, car, and bank account were regressed on having a natural mentor relationship while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Figure 14). The model accounted for 47% of the variance in home ownership (R^2 = .47), 22% of the variance in car ownership (R^2 = .22), and 26% of the variance in having a bank account (R^2 = .26), all of which were significant. According to conventional standards, these represent large effects (≥ 26%; Cohen, 1988). Having a natural mentor did not demonstrate a significant effect on any of the assets among young adults with previous foster care experience.

Four covariates demonstrated significant effects on residence. Young adults who had previous foster care experience were more likely to own their own homes if they were married, employed full time, or had a high-quality mother-child relationship at Wave 1. Frequency of seeing one's natural mentor was associated with the lack of residence ownership.

Two covariates demonstrated significant effects on owning a car. Being employed full time was positively associated with car ownership, whereas mother's use of welfare at Wave 1 was negatively associated with the lack of car ownership.

Three covariates demonstrated significant effects on having a bank account. Being older and employed full time were associated with having a bank account, and mother's use of welfare at Wave 1 was negatively associated with having a bank account.

Natural Mentoring Among Nonformer Foster Youth

Residence, car, and bank account were regressed on having a natural mentor relationship while controlling for relationship characteristics at Wave 3 and individual young-adult characteristics at Waves 1 and 3 (Figure 15). The model accounted for 24% of the variance in home ownership (R^2 = .24), 22% of the variance in car ownership (R^2 = .22), and 15% of the variance in having a bank account (R^2 = .15), all of which were significant. These represent medium effects (13%–25%; Cohen, 1988). Having a natural mentor was associated with having a bank account at Wave 3. Having a natural mentor did not demonstrate a significant effect on owning a residence or having a car.

Eight covariates demonstrated significant effects on residence ownership. Being older, White, married, having a full-time job, seeing one's natural mentor more frequently and having a high-quality mother-child relationship at Wave 1 were associated with residence ownership at Wave 3. Being male and having a natural mentor who filled more roles were associated with lack of residence ownership at Wave 3.

Ten covariates also demonstrated significant effects on owning a car. Being male, White, older, married, employed full time, seeing one's natural mentor more frequently, and positive peer relationships at Wave 1 were associated with car ownership at Wave 3. Mother's use of welfare and out-of- school suspension at Wave 1 were associated with a lack of car ownership at Wave 3.

Twelve covariates demonstrated significant effects on having a bank account. Being White, married, employed full time, talking to or emailing one's natural mentor more

frequently, feeling safe in one's neighborhood at Wave 1, having a high-quality mother-child relationship at Wave 1, and having positive peer relationships at Wave 1 were associated with having a bank account at Wave 3. Mother's use of welfare, out-of-school suspension, and receipt of psychological counseling at Wave 1 were associated with the lack of having a bank account at Wave 3. Natural mentor relationship strength and frequency of seeing one's natural mentor were also associated with the lack of having a bank account at Wave 3.

Natural Mentor Roles and Relationship Strength Among Former Foster Youth

Number of natural mentor functional roles and natural mentor relationship strength were regressed on residence, car, and bank account ownership at Wave 3, adjusting for 15 total covariates (Figure 16). The model accounted for 65% of the variance in home ownership (R^2 = .65), 30% of the variance in car ownership (R^2 = .30), and 40% of the variance in having a bank account (R^2 = .40), all of which were statistically significant. These represent large effects (≥ 26%; Cohen, 1988). The model accounted for none of the variance in income expectations (R^2 = .00). Having greater income expectations was associated with owning a residence at Wave 3. No other direct effects were significant. The indirect effects were not significant.

Three covariates demonstrated significant effects on owning a residence at Wave 3. Being married and employed full time were associated with owning a residence at Wave 3. Frequency of seeing one's natural mentor was associated with lack of owning a residence at Wave 3.

One covariate demonstrated a significant effect on owning a car at Wave 3. Having a high-quality mother-child relationship at Wave 1 was associated with the lack of car ownership at Wave 3.

Four covariates demonstrated significant effects on having a bank account at Wave 3. Being older and employed full time were associated with having a bank account at Wave 3. Out-of-school suspension and mother's use of welfare at Wave 1 were also associated with lack of having a bank account at Wave 3.

Figure 17 shows the direct and indirect effects of residence ownership at Wave 3 regressed on individual natural mentor functional roles and natural mentor relationship strength, adjusting for 15 total covariates among young adults with previous foster care experience. The model accounted for 70% of the variance in home ownership (R^2 = .70), which was significant and represents a large effect (≥ 26%; Cohen, 1988). The model also accounted for 5% of the variance in income expectations (R^2 = .05), which was not significant, and represents a small effect (2%–12%; Cohen). There was only one significant direct effect: Having a natural mentor who acts "like a parent" was associated with greater income expectations at Wave 3. The indirect effects were not significant.

Three covariates demonstrated significant effects on owning a residence at Wave 3. Being married and employed full time were associated with owning a residence at Wave 3. Frequency of seeing one's natural mentor was associated with lack of owning a residence at Wave 3.

Figure 18 shows the direct and indirect effects of car ownership at Wave 3 regressed on individual natural mentor functional roles and natural mentor relationship strength, adjusting for 15 total covariates. The model accounted for 31% of the variance in home ownership (R^2 = .31), which was significant and represents a large effect (≥ 26%; Cohen, 1988), and 5% of the variance in income expectations (R^2 = .04), which was not significant, and represents a small effect (2%–12%; Cohen). There was one significant direct effect:

Having a natural mentor who was like a parent was associated with greater income expectations at Wave 3. The indirect effects were not significant.

One covariate demonstrated a significant effect on owning a residence at Wave 3. Having a high-quality mother-child relationship at Wave 1 was associated with lack of owning a car at Wave 3.

Figure 19 shows the direct and indirect effects of having a bank account at Wave 3 regressed on individual natural mentor functional roles and natural mentor relationship strength, adjusting for 15 total covariates. The model accounted for 84% of the variance in having a bank account (R^2 = .84), which was significant and represents a large effect (≥ 26%; Cohen, 1988), and 5% of the variance in income expectations (R^2 = .05), which was not significant and represents a small effect (2%–12%; Cohen). There were two significant direct effects. Having a natural mentor who was like a parent was associated with greater income expectations at Wave 3, and having a natural mentor who was a role model was associated with having a bank account at Wave 3.

Three covariates demonstrated significant effects on having a bank account at Wave 3. Being older was associated with having a bank account at Wave 3. Mother's use of welfare at Wave 1 and relationship duration at Wave 3 were associated with lack of having a bank account at Wave 3.

Natural Mentor Roles and Relationship Strength Among Nonformer Foster Youth

Figure 20 shows the direct and indirect effects of residence, car, and bank account ownership at Wave 3 regressed on number of natural mentor functional roles and natural mentor relationship strength, adjusting for 14 total covariates among young adults without previous foster care experience. The model accounted for 23% of the variance in home ownership (R^2 = .23), 24% of the variance in car ownership (R^2 = .24), and 16% of the

variance in having a bank account (R^2 = .16), all of which were statistically significant. These represent medium effects (13%–25%; Cohen, 1988). The model accounted for none of the variance in income expectations. Having a natural mentor who filled more functional roles was associated with a lack of residence ownership at Wave 3. Natural mentor relationship strength was associated with a lack of a bank account at Wave 3. Greater income expectations were associated with both car ownership and having a bank account at Wave 3.

The number of statistically significant covariates varied by outcome. Six covariates demonstrated significant effects on residence ownership. Being White, older, married, and employed full time were associated with residence ownership at Wave 3. Seeing one's natural mentor more frequently was also associated with residence ownership at Wave 3. Being male was associated with a lack of residence ownership at Wave 3.

Nine covariates demonstrated significant effects on car ownership at Wave 3. Being male, White, older, married, employed full time, and seeing one's natural mentor more frequently were associated with car ownership at Wave 3. Positive peer relationships at Wave 1 were also associated with car ownership at Wave 3. Mother's use of welfare at Wave 1 and relationship duration were associated with lack of car ownership at Wave 3.

Eight covariates demonstrated significant effects on having a bank account at Wave 3. Being White and employed full time were associated with having a bank account at Wave 3. Positive peer relationships at Wave 1and feeling safe in one's neighborhood at Wave 1 were also associated with having a bank account at Wave 3. Frequency of seeing one's natural mentor was associated with lack of having a bank account at Wave 3. Out-of-school suspension, receipt of psychological counseling, and mother's use of welfare at Wave 1 were also associated with a lack of a bank account at Wave 3.

Figure 21 shows the direct and indirect effects of residence ownership at Wave 3 regressed on individual natural mentor functional roles and natural mentor relationship strength, adjusting for 14 total covariates among young adults without previous foster care experience. The model accounted for 24% of the variance in home ownership (R^2 = .24) and 2% of the variance in income expectations (R^2 = .02), both of which were statistically significant. This represents a medium effect (13%–25%; Cohen, 1988) for the former and a small effect (2%–12%; Cohen) for the latter. A natural mentor who provided guidance or advice, emotional nurturance, or was considered a role model was associated with lack of residence ownership at Wave 3.

There were six significant covariates. Being White, older, married, and employed full time were associated with owning a residence at Wave 3. Seeing one's mentor more frequently was also associated with owning a residence at Wave 3. Being male was associated with the lack of residence ownership at Wave 3.

Figure 22 shows the direct and indirect effects of car ownership at Wave 3 regressed on individual natural mentor functional roles and natural mentor relationship strength, adjusting for 14 total covariates among young adults without previous foster care experience. The model accounted for 24% of the variance in car ownership (R^2 = .24) and 2% of the variance in income expectations (R^2 = .02), both of which were statistically significant. This represents a medium effect (13%–25%; Cohen, 1988) for the former and a small effect (2%–12%; Cohen) for the latter. Having a natural mentor who was like a parent was associated with car ownership at Wave 3. Having greater income expectations was also associated with car ownership at Wave 3. Having a natural mentor who provided guidance or advice was associated with greater income expectations at Wave 3.

There were nine significant covariates. Being male, White, older, married, having a full time job, seeing one's mentor more frequently, and having positive peer relationships at Wave 1 were associated with car ownership at Wave 3. Mother's use of welfare at Wave 1and natural mentor relationship length were associated with lack of car ownership at Wave 3.

Figure 23 shows the direct and indirect effects of having a bank account at Wave 3 regressed on individual natural mentor functional roles and natural mentor relationship strength, adjusting for 14 total covariates among young adults without previous foster care experience. The model accounted for 17% of the variance in having a bank account (R^2 = .17) and 2% of the variance in income expectations (R^2 = .02), both of which were statistically significant and represent medium (13%–25%; Cohen, 1988) and small effects (2%–12%; Cohen), respectively. Natural mentors who provided guidance or advice or who were considered role models were associated with having a bank account at Wave 3. Giving guidance or advice was also associated with greater income expectations at Wave 3. Greater income expectations were associated with having a bank account at Wave 3. Natural mentor relationship strength and practical help were associated with the lack of having a bank account at Wave 3.

There were eight significant covariates. Being White, employed full time, feeling safe in one's neighborhood at Wave 1, and having positive peer relationships at Wave 1 were associated with having a bank account at Wave 3. Mother's use of welfare, out-of-school suspension, and receipt of psychological counseling at Wave 1 were associated with not having a bank account at Wave 3. Frequency of seeing one's natural mentor was also associated with a lack of a bank account at Wave 3.

CHAPTER V
DISCUSSION

Natural mentors, or important nonparental adults who youth know through their existing social networks, are an important resource for both at-risk and normative young people as they transition to adulthood. This dissertation extends previous research on natural mentoring by focusing on relationship characteristics. Natural mentoring research to date has primarily investigated whether having an informal mentor makes a difference vis-à-vis adolescent and young adult outcomes. This is one of the first series of analyses to pose questions about specific relationship features and processes. This dissertation also highlights the importance of considering how individual risk (i.e., foster care experience) may shape associations between relationship characteristics and outcomes.

This final chapter provides a review and discussion of the findings from the four lines of analysis. First, each analysis is individually addressed with respect to interpretations and conclusions. It is important to note that some findings were consistent across multiple lines of analysis. Therefore, to avoid redundancy, such results will be discussed only once and in the first analysis in which they emerged. Then, the overall strengths and limitations of this exploratory research are presented. The chapter concludes with a discussion of implications for social work practice and directions for future research.

Depression

Natural mentoring was significantly associated with depression only among the nonformer foster group. Consistent with previous research, having a strong natural mentor

relationship was associated with decreased depression at Wave 3. The lack of relationship among natural mentoring and later depression among the former foster sample is also consistent with previous research that used the same Add Health sample (i.e., Ahrens et al., 2008).

There are several plausible substantive explanations for the "lack" of a natural mentoring direct effect on former foster youth's depression at Wave 3. Add Health is a limited dataset with respect to its ability to answer questions related to child welfare experiences. Other than the Wave 3 question about ever living in a foster home, the only other "child welfare" question is, "In how many foster homes did you live?" Although this dissertation controlled for several risk factors for entering foster care (e.g., child's use of psychological/emotional counseling and academic failure (suspensions), mother's use of public assistance, and neighborhood safety), we know little about the experiences of the youth once they entered out-of-home care, such as whether they entered care before or during adolescence and whether they exited care before they emancipated.

Youth who enter out-of-home care before adolescence are typically in care because of caregiver maltreatment, whereas youth who enter out-of-home care during adolescence typically enter as status offenders or delinquent minors. Therefore, the Add Health youth who entered out-of-home care in adolescence may have been too troubled for natural mentoring relationships to outweigh completely the significant risk associated with being status offenders or delinquent minors. This hypothesis is consistent with previous research on mentoring that suggests that effects for young people are contingent on the environmental risk factors they face and the extent of their own personal problems (DuBois, Doolittle, Yates, Silverthorn, & Tebes, 2006).

Another possible substantive explanation for the lack of a natural mentoring effect on depression among the former foster youth sample relates to congregate care. Again, because we know little about the out-of-home experiences of the former foster youth sample in Add Health, there is no way to discern the types of placements experienced by these young adults. Similar to the timing of entry into care, the Add Health former foster youth who spent a considerable amount of time in congregate care may also have been too troubled for natural mentoring relationships to ameliorate their difficulties. A central concern about congregate care is the way it aggregates at-risk peers together and the subsequent potential for "iatrogenic effects" (Leve & Chamberlain, 2005). A study by Ryan, Marshall, Herz, and Hernandez (2007) found that experience in group homes significantly increases the likelihood that youth will enter the juvenile justice system relative to similar youth served in foster home settings. Such youth who have substantial personal problems may be in need of more intensive intervention and support than a natural mentor can realistically provide (DuBois et al., 2006). A related and similarly troubling characteristic of group care with important implications for this dissertation is how this setting typically makes forming lasting relationships with caring adults more difficult compared to family-like settings (Courtney & Heuring, 2005).

There was no significant association between natural mentor relationship characteristics and decreased depression among the former foster youth group. However, the conceptual model was supported in that the role of *like a parent* was associated with increased income expectations. The association emerged in both the depression and material hardship/assets analyses. This "like a parent" finding was the most salient result in this dissertation for the former foster youth group and is consistent with previous research on

foster youth and their natural mentors (Greeson & Bowen, 2008). Most families first become involved with the child welfare system due to a report of suspected child maltreatment. For youth who spend time in foster care, maltreatment has been substantiated, and a risk of future maltreatment or ongoing safety concerns is present. As a result, the relationship between parent and child is typically severely compromised. Given this population's typically painful "relational histories" (Rhodes et al., 2006) with caregivers, this result is particularly noteworthy. It suggests that a natural mentor who is like a parent to youth with foster care experience may be able to demonstrate that positive relationships with adults are possible (Rhodes et al., 2006). In this way, to some extent the natural mentor relationship may provide a "corrective emotional experience" for youth who have experienced poor relationships with their parents (Olds, Kitzman, Cole, & Robinson, 1997), such as those who enter foster care.

Delinquency and Violence

The delinquency and violence analysis generally failed to reveal significant associations between natural mentor relationship characteristics and delinquency and violence at Wave 3. Many of the research questions did not bear out, particularly for the former foster youth sample, for which no part of the conceptual model was confirmed. For the nonformer foster youth group, one part of the conceptual model was substantiated; having a natural mentor who was a role model was associated with increased income expectations. Increased income expectations were associated with decreased delinquency and violence. This finding is consistent with previous research on future expectations. Adolescents who have positive future expectations are more likely to regulate their behavior, maintain positive emotions, and create opportunities for growth (Clausen, 1991; Wyman, Cowen, Work, & Kerley, 1993). On the other hand, those who have low or negative expectations of the future

are more likely to participate in risky behaviors such as alcoholism, drug use, delinquency, and early sexual activity (Robbins & Bryan, 2004; Nurmi, 1991; Trommsdorf, 1986).

The absence of statistically significant effects for certain variables can shed important light on both methodological and substantive issues that have the potential to make valuable contributions to future research efforts in this area. Several specific limitations of this research pertain only to the delinquency and violence outcome. Therefore, they are addressed next, not being reserved for the general discussion of this dissertation's strengths and limitations that follows later in this chapter.

To frame this methodological discussion of the delinquency and violence outcome with respect to the former foster youth group, it is important to comment on a previous study that used the same Add Health sample of former foster youth (i.e., Ahrens et al., 2008) to similarly investigate the association between having a natural mentor and young adulthood outcomes. Ahrens and colleagues also examined delinquent and violent behavior using single-item indicators. Their results showed that, compared to nonmentored former foster youth, former foster youth with a natural mentor were less likely to report having hurt someone in a fight in the past year.

This dissertation found no association between former foster youth having a natural mentor and decreased delinquency and violence. One possibility for the discrepancy between the two studies is the approach to measurement. This analysis created an index of delinquency and violence from multiple indicators of the concept. A primary reason for this approach is that scales and indexes will generally be more reliable than any single item would be. Improving reliability is one way to address measurement error, which is more likely when only a single indicator is used (i.e., the Ahrens et al. study). Given that this

dissertation used a more reliable measure of delinquency and violence, it is likely that there is truly no relationship between former foster youth having a natural mentor and decreased delinquency and violence. The issue for measurement error is that it can then lead to larger standard errors, which can affect significance testing. Therefore, the discrepancy in our results may be associated with Ahrens and colleagues' lack of use of a scale or an index, the decreased reliability of the single item, and the increased measurement error. It is also important to note that although there is a discrepancy between these two studies, the results of this dissertation analysis are consistent with the very recent work of Courtney and Lyons (2009), which found no association between having a natural mentor and delinquency outcomes (arrests and incarceration).

Another methodological possibility for the lack of significant results may be the low variability in delinquent and violent behavior. A floor effect was evident in the delinquency and violence measure, which happens when most data hit the bottom end of the distribution due to an absence of the behavior under investigation. At least 88% of the former foster youth and 90% of the nonformer foster youth reported having never engaged in the 10 behaviors in the Add Health questionnaire.

The lack of significant results among the former foster youth is consistent with the view that it may be unrealistic to expect mentors alone to make up for the cumulative effects of multiple sources of risk (Rhodes, 2002). Taking this line of reasoning a step further and in agreement with the current thinking about mentoring interventions, supporting the cultivation of natural mentoring relationships as part of comprehensive, multifaceted child welfare intervention may offer more promise.

Given the inherent limitations of the Add Health dataset, it is impossible to discern in the present investigation whether the lack of significant effects on delinquent and violent behavior among the former foster youth group is attributable to mentoring alone being insufficient to address the needs of these at-risk youth or some other phenomena. Future research should be directed at programs (for both foster youth and the general population) that integrate natural mentoring within the networks of other services and use the appropriate designs, analyses, and measures necessary to tease apart the effects of mentoring in combination with other program or service components (Kuperminc et al., 2005).

Material Hardship and Asset Ownership

The two samples shared one pattern of association among the direct effects in the assets analysis; that is, having a natural mentor who served as a role model was associated with having a bank account. Among the nonformer foster youth sample only, having a mentor who was a role model was also associated with increased income expectations. The importance of role modeling for succeeding in the developmental tasks associated with emerging adulthood is consistent with both theory and previous research. Social learning theory (Bandura, 1977) posits that people learn from one another, via observation, imitation, and modeling, and that learning by doing is most successful when guided by somebody who already knows (Hamilton & Hamilton, 2005).

This analysis suggests that natural mentors have the potential to be the "somebody who already knows" when it comes to having a bank account in young adulthood. The role-model finding also aligns with previous research that has established its centrality to all types of mentoring (Liang, Spencer, Brogan, & Corral, 2008; Rhodes, Spencer, Keller, Liang, & Noam, 2006). Although the results of this analysis did not confirm the mediation hypothesis for "role model," it remains plausible that the pathway by which this natural mentor

functional role achieves positive outcomes is through the development of optimistic future expectations (i.e., greater income expectations) (Rhodes et al., 2006).

Youth in the general population primarily observe, imitate, and model their parents when it comes to succeeding with developmental tasks, including achieving financial literacy. This analysis suggests that a natural mentor may also serve this critical purpose by role modeling. This implication is particularly salient for the former foster youth sample, given the decreased likelihood of them having appropriate adults available for such purposes.

Natural mentoring was not associated with owning one's own residence for either the nonformer foster youth or the former foster youth. A likely substantive explanation for this finding relates to the age range of sample respondents. The young adults in both groups were between the ages of 18 and 26, and only 12% and 11% of the former foster youth and nonformer foster youth owned their own residences, respectively. Similar to the delinquency and violence outcome, these results indicate a floor effect. The small number of respondents reporting residence ownership was in turn associated with difficulty in finding other variables associated with it. The percentage of respondents reporting owning their residence is also consistent with national homeownership data. According to the most recent (2005) America Housing Survey, the average age of first time homebuyers is 33 (Eisenberg, 2008). Therefore, the outcome of owning one's residence may be an unrealistic expectation for the Add Health young adults at Wave 3. It is plausible that replication of this particular analysis using homeownership at Wave 4 might yield a different result.

Turning to results unique to the nonformer foster youth sample, a natural mentor relationship was associated with having a bank account at Wave 3. In addition to the role-model finding discussed previously, the natural mentor role of providing guidance or advice

was also associated with having a bank account. The importance of natural mentors' role modeling and providing guidance advice vis-à-vis the outcome of having a bank account is consistent with asset-building theory. Access to information and education about assets and asset building is considered integral to the adoption of savings behavior (Sherraden, 2008). The results of this analysis suggest that natural mentors who are role models and who provide guidance or advice can facilitate financial literacy.

In addition to being a role model and providing guidance or advice, having a natural mentor who was like a parent was associated with car ownership for the nonformer foster youth group. This may have been a function of the inability to account for the possibility of parental support simultaneously. Although the quality of the mother-child relationship at Wave 1 was adjusted for in all models, how that relationship fared through emerging adulthood (or how parent-adolescent relations fare more generally) is unknown. Car ownership at Wave 3 may then reflect the normative developmental process that most middle- to upper-class teenagers in the general population experience when they have access to parental support and resources.

Increased income expectations were associated with decreased material hardship for both the former foster youth and nonformer foster youth. This finding suggests the universality of believing that good outcomes are achievable and feeling a high degree of control over one's future, and that cultivation of this orientation is a normative experience. Moreover, this finding also suggests that a positive outlook on one's future is a potentially powerful force against negative outcomes during emerging adulthood, even in the face of risk (i.e., previous foster care experience).

Among the nonformer foster youth group, the perception of having a strong relationship with one's natural mentor was associated with decreased material hardship and increased income expectations. Relationship strength was not significantly associated with any emerging adulthood outcomes among the former foster youth group. The lack of this finding is somewhat unexpected given that relationship strength is considered a broad organizing construct for conceptions of relationship quality in the mentoring literature (Rhodes, 2002). Moreover, Courtney and Lyons (2009) showed that among the Midwest Study youth at age 21, closeness to an adult mentor was associated with having worked in the past year and a decreased risk of recent homelessness.

A possible explanation for the discrepancy between this analysis and the work of Courtney and Lyons (2009) relates to sample definition. The Midwest Study (Courtney, Terao, & Bost, 2004) sampled all adolescents in out-of-home care supervised by the public child welfare agency who were between 17 and 17.5 years old and had been in state care at least one year prior to their 17th birthday. Additionally, data on experiences in foster care, including service factors (i.e., age at entry into foster care system, number of placements, type of placements) were collected. Therefore, the sampling frame was well defined by multiple important criteria related to foster care experience. Conversely, the former foster youth included in this analysis were defined by one survey question, which asked whether the respondent had ever lived in a foster home. Compared to the Midwest Study, this is a less precise operationalization of the foster care experience. The implication for how these two samples were defined involves the possibility of introducing bias with respect to the results for the former foster youth group in Add Health. Relationship strength may not have

emerged as a significant predictor of emerging adulthood outcomes for the former foster youth group because the definition of former foster youth may be biased.

Strengths and Limitations of the Research

The strengths and limitations of this research deserve comment. Research on naturally occurring mentoring relationships is in a nascent stage of development, and therefore empirical information is still rather limited. This is particularly true for special populations, such as former foster youth. For this reason, the most significant contribution of this dissertation is a better understanding of the relationship characteristics and processes that may influence emerging adulthood outcomes among both special and normative populations.

To date, most of the mentoring research has focused on whether the presence of such relationships is associated with improved outcomes among youth. We know little about specific relationship characteristics, including the quality of the relationship with and the roles filled by natural mentors, as well as their associations with emerging adulthood outcomes. Moreover, this is the first exploratory paper to compare two distinct populations with plausibly unique "relationship" characteristics and needs in one set of analyses. Although we cannot say whether the differences observed between the former foster youth group and nonformer foster youth group were "statistically significant," the results provide important initial insight into potential areas for future investigation.

Another important strength of this dissertation is the sophisticated, multivariate data analytic procedures employed. The analytic framework allowed for model testing and examination of phenomena that occur at the dyadic level in relationships (DuBois et al., 2006). Although the specific meditational pathway was not supported, this work is a valuable example of the type of mechanistic research that is needed to further advance the field of youth mentoring. The relationship between a caring adult and a young person is at the heart

of natural mentoring. Therefore, understanding how these relationships work and for whom is critical (DuBois & Rhodes, 2006).

Add Health offers a rare opportunity to explore questions at the intersection of child welfare and natural mentoring. Other large, nationally representative datasets that are superior for studying the experiences of children and youth who come in contact with the child welfare system (i.e., National Survey of Child & Adolescent Wellbeing; NSCAW) lack the detail on natural mentoring necessary to advance the knowledge of the field. Add Health provides such detail and facilitates an initial step toward understanding how natural mentorship characteristics may influence emerging adulthood outcomes among a sample of youth with previous foster care experience.

Turning to limitations, it is important to note that even though the results were discussed as an indication of the role of natural mentors for outcomes as protective and promotive, these distinctions are based on the conceptual and theoretical approaches typical of mentoring studies. The analyses cannot indicate cause and effect relationships because the temporal precedence of the predictors is uncertain. Second, because these analyses were based on a secondary dataset, the measurement of the future-expectations construct, although acceptable, was not ideal.

Indeed, the lack of significant indirect effects may be related to the measurement of future expectations. An aim of this dissertation was to elucidate potential mechanisms of change between natural mentor relationship characteristics and outcomes. However, none of the models confirmed the hypothesized mediating pathways. A likely explanation for the nonsignificant results is the less than ideal measurement of future expectations. Given an improved measure of the future-expectations construct, it remains plausible that the pathway

by which natural mentor relationships achieve positive outcomes is through the development of optimistic future expectations (Rhodes et al., 2006).

Another limitation alluded to previously concerns the assets-related measures. Homeownership may not be relevant to the Add Health respondents at Wave 3 because at this wave, respondents are generally too young to own their own homes. There may also be other assets-related indicators that would be more relevant to this age group, yet are unavailable in the Add Health dataset. For example, the main asset building outcome, net worth, was not included. Therefore, an additional limitation in this dissertation involves data constraints with respect to assets-related variables available for analysis.

Another limitation of this research concerns one of the five paradigmatic principles of life course theory, that of timing in lives**.** This principle states that the developmental impact of a succession of life transitions or events is contingent on when they occur in a person's life (Elder, 1998). This principle bears upon the sequencing of events, or in this particular case, the timing of natural mentoring relationships relative to foster care experience. As a dataset, Add Health does not tell us when youth entered foster care. Did foster care occur before or after the onset of mentoring? We do know when natural mentoring occurred. For example, we know that all respondents with mentors began this relationship after the age of 14. Additionally, we can ascertain whether the relationship became important to the respondent "early" (ages 0-17) or "late" (ages 18+). However, without more detailed information about when foster care occurred in the lives of the former foster youth, the issue of causality remains unresolved. This lack of information on timing or sequencing of events is a general limitation of Add Health survey data with respect to the type of information that is available related to specific life transitions or events. It is also important to keep in mind the extent to

which this deficiency limits how far one can take the results of the dissertation with respect to conclusions and implications.

In addition, the regression and path-analytic procedures employed in this dissertation did not make use of valid sampling weights. The option of generalizing the findings was assessed against maintaining the sample size of the former foster youth by including respondents who were missing sampling weights. Even with this weight, the small number of former foster youth in the sample was not of sufficient size to enable reliable generalizations. However, generalization was not an important goal of this research. The goal was to investigate this sub-population of young adults with natural mentors in an effort to advance our understanding of this intervention.

Statistical power was also a concern in this dissertation. Power refers to the probability of rejecting the null hypothesis when there is a real effect in the population (Kline, 2005) and varies directly with the magnitude of the real population effect, the sample size, and the *p* value selected for statistical tests. The implications of this are twofold: (a) effects that are actually present in the former foster youth sample may be undetectable due to the small sample size, and (b) effects that are present in the very large nonformer foster youth sample may be detectable, but are apt to be so small that they are clinically irrelevant. Despite the issues of power inherent in using Add Health to analyze former foster youths' outcomes, this exploratory research provides valuable initial clues regarding directions for future research and intervention development.

With respect to statistical power, an inherent limitation of this research is the disparity in sample sizes for respondents who reported foster care experience compared to other respondents. The primary concern related to this disparity is the analytic complexity that it

creates in trying to make sample comparisons, for example, in the case of unwanted variation between groups. One approach to address this variation would be to create a smaller and more narrowly specified comparison group of nonformer foster youth. However, such a method would still not address the weak power for the analysis of the former foster youth that would only intensify when combining characteristics. Comparisons based on the characteristics indicated to involve significant differences would be unavoidably limited by the size of the subsets of particular cases in the former foster youth group. For example, one of the areas of difference between the two groups was welfare receipt. This difference was based on 15 former foster youth, representing 9% of the sample. Such numbers imply a lack of sufficient power for even bivariate comparisons. This issue underscores the importance of being very cautious about not pushing a dataset beyond its limits and the related potential of a Type-II error, or missing effects that actually exist.

The sample-size disparity also tended to generate statistically significant findings that were rooted in the nonformer foster youth group due to its very large sample size. As exploratory research, this dissertation took advantage of an excellent dataset, but one that was not designed to yield a large number of youth with previous foster care experience. Therefore, it is important to recognize the constraints that this characteristic of the data creates and to acknowledge that this dissertation's results must be interpreted with caution and with the exploratory intent of the research in mind.

Implications

The value of this research lies in its descriptive power. As exploratory research, this dissertation provides valuable initial clues about both directions for future research as well as intervention development. The findings concur with previous research on the beneficial role of a growth-fostering relationship with a caring adult but also extend the research to highlight

the importance of taking into account relationship characteristics as well as sample characteristics, in this particular case, previous foster care experience. The results of this dissertation also extend previous mentoring research by including self-sufficiency and asset-related outcomes. To date, most of the mentoring research has been primarily concerned with psychosocial outcomes. This dissertation suggests the policy relevance of facilitating natural mentoring to encourage car and bank account ownership among both child-welfare and normative populations.

The results on the roles filled by mentors also have implications for both the normative population and young adults with former foster care experience. For both groups, the number of functional roles filled by natural mentors was not significant. This implies that the quantity of roles may not be what matters, rather the nature and quality of them. It may be better for intervention programs to focus their time and resources on helping natural mentors fill specific roles rather than emphasizing a certain number of roles. Results suggest specific natural mentor roles as key to positive emerging adulthood outcomes. For the former foster youth, those roles were “like a parent” and “role model;” for the nonformer foster youth, those roles were “like a parent,” “role model,” and “guidance or advice.”

Additionally, for both groups the association of natural mentoring with increased income expectations emerged as a novel finding. Previous mentor research has primarily focused on psychosocial, academic, health-related, and problem-behavior or high-risk-behavior outcomes. This dissertation suggests that natural mentoring may also influence how youth conceive of their future identities with a particular emphasis on their potential for financial well-being.

For the nonformer foster youth group, the results of this dissertation also underscore the importance of youth developing high-quality relationships with their natural mentors. Young adults' perception of having a strong relationship with their natural mentors was associated with decreased depression and material hardship and increased income expectations. Both previous research and theory support this finding, suggesting that the critical component of mentoring is the quality of the relationship that develops between the youth and the mentor (Rhodes, 2002).

For the former foster group, the results of this dissertation underscore a young individual's need for permanency vis-à-vis the significance of having a natural mentor who is "like a parent." The results also suggest that incorporating natural mentoring into standard permanency planning within foster care agencies may increase opportunities and supports that will more fully prepare the youth for the challenges associated with the transition to adulthood. This approach is consistent with the current thinking about the potential benefit of integrating mentoring into comprehensive programs and services designed to promote positive youth development (Kuperminc et al., 2005). The results were able to tie certain natural mentoring characteristics to improved outcomes, after controlling for a variety of individual and relationship characteristics. This association is a first step in justifying the practice of incorporating natural mentoring relationships into standard permanency planning practices in child welfare in an effort to mitigate the risk associated with aging out of foster care.

Directions for Future Research

This dissertation concerns the intersection of child welfare and natural mentoring. The use of Add Health brings to light an important implication for future research. Namely, there is the need for new survey research at this intersection. This includes new longitudinal

surveys on children and families who have contact with the child welfare system and that also contain prospective questions pertaining to supportive adult relationships, including natural mentors. Such surveys could be exclusive to child welfare (e.g., NSCAW). They also could be of the normative population (e.g., Add Health), but with over-sampling procedures built in so as to include enough former foster youth for a meaningful statistical analysis of this subgroup. The results of this dissertation also emphasize the need for new natural mentoring research with large, representative samples of youth in general and former foster youth in particular in order to maximize sensitivity to relationship dynamics and generalizability of the findings. Furthermore, to test causal relationships between natural mentoring relationship characteristics and emerging adulthood outcomes, future research should model these variables longitudinally or in repeated-measures control-group designs.

Another possible direction for future research in the area of natural mentoring among former foster youth concerns the employment of propensity score matching. This approach could potentially address some of the limitations related to the disparity between sample sizes by creating a comparison between former foster youth and youth who share preplacement characteristics that are associated with both foster care placement and negative transition outcomes. Unfortunately, it is highly unlikely that this approach would be feasible in the present study given the disparity between sample sizes in Add Health.

Using the NLSY97 dataset as an example, Berzin (in press) describes several important limitations of propensity score analysis for understanding foster youth outcomes, all of which have critical implications for any future natural mentoring research using Add Health data. Her discussion of limitations suggests that propensity score matching is least effective for use with national data, such as Add Health. Some of the reasons for this

conclusion include our inability to limit our sample to young adults who have similar care experiences or have experienced a specific child welfare intervention; not having enough former foster youth from any one location, which limits our ability to control for local characteristics; and the fact that hidden bias remains because propensity scoring only controls for observed variables and information on key predictors of foster care is still missing.

In addition to the limitations discussed by Berzin (in press) with respect to foster youth outcomes in particular, recent work by Guo and Fraser (2010) underscores the continued experimental nature of propensity score analysis generally. One of the two key assumptions of propensity score matching is strongly ignorable treatment assignment, or the assumption that response outcomes are independent of the assignment given all covariates. When this assumption is violated, a propensity score analysis will still yield biased results. In light of the limitations discussed by Berzin (in press), the use of propensity score analysis in this dissertation research would likely still have produced biased results.

This dissertation provides a point of departure for future research examining the association between natural mentor relationship characteristics and emerging adulthood outcomes by comparing such outcomes in two groups of young adults that are plausibly only differentiated by risk status (i.e., former foster care experience). By posing this comparison, this dissertation highlights the importance of such research for better understanding how natural mentoring may both ameliorate negative outcomes in at-risk populations and increase the likelihood of thriving in the normative population. Future research that uses primary data specifically collected to answer questions about both supportive adult relationships and foster care experiences will benefit from the groundwork laid here with respect to both important

methodological and substantive issues related to studying well-being in individuals as they transition to adulthood.

This dissertation is consistent with previous descriptive research on natural mentoring for both former foster youth and nonformer foster youth samples. Regarding the former, descriptive results support the work of Munson and McMillen (2008), specifically that youth with foster care experience can develop growth-fostering relationships with caring adults in their social networks. Among the 339 former foster youth in Add Health, almost 50% reported the presence of at least one adult who made an important positive difference in their lives at any time since they were 14 years-old. Results also support natural mentoring as a normative component of adolescent development (Beam et al., 2002), not just a protective factor for at-risk youth. Close to 56% of the nonformer foster youth sample were able to identify a growth-fostering relationship with a caring adult other than a parent. Taken together, these results and the previous research in this area suggest that natural mentoring can potentially serve as both a protective and promotive factor in the lives of youth. Conceptualizing natural mentoring as both protective and promotive can help us better understand how it is that growth-fostering relationships with caring adults help youth successfully transition to adulthood, for instance by either modifying risk or supporting social thriving (i.e., fulfilling one's potential and contributing positively to one's community; Lerner, Fisher, & Weinberg, 2000).

In sum, this research highlights the value of increasing our understanding of the specific features of natural mentoring relationships (e.g., important natural mentor roles) for intervention development. The current evidence base for natural mentoring is nascent and therefore defined by a concern for establishing the effectiveness of such relationships. As

interest in natural mentoring continues to grow, there will be a need for studies that facilitate a more sophisticated understanding of the mechanisms and processes by which natural mentoring achieves positive outcomes among both normative and at-risk samples of young adults. Describing exactly how growth-fostering relationships with caring adults buffer youth from negative outcomes and promote positive outcomes remains a challenge (Rhodes et al., 2006). Future research should continue to probe beyond the question of whether natural mentors make a difference by asking how they make difference, for whom, and under what circumstances. A commitment to achieving this deeper understanding of these relationships will shed light on how having "one adult who is crazy about you" (Darling, 2005) can alter a young individual's life trajectories by opening new opportunities and creating lasting change.

APPENDIX A
TABLES

Table 1

Descriptive Statistics for Former Foster Youth and Nonformer Foster Youth With Natural Mentors (NM)

Variable	Former foster youth %/*M* (*SD*)	Nonformer foster youth %/*M* (*SD*)	χ^2/t
Young-adult characteristics (Wave 3)			
Female	.66	.51	3.37
White	.74	.80	1.27
Non-Hispanic	.97	.90	5.48*
Age (in years)	21.54 (1.51)	21.28 (1.62)	.26
Education level			13.88***
< High school	.41	.11	
High school	.30	.29	
Some college	.23	.47	
College+	.07	.13	
Married	.25	.13	6.03*
Employed full time	.51	.46	.40
Currently receiving welfare	.09	.04	2.38
Placed in 1+ foster homes	.40		

Variable	Former foster youth %/*M* (*SD*)	Nonformer foster youth %/*M* (*SD*)	χ^2/t
Depression	.92 (.46)	.72 (.46)	2.80**
Delinquency/violence	.46 (1.10)	.76 (1.85)	-2.43*
Material hardship	.22 (.24)	.08 (.16)	3.37**
Own residence	.00	.10	.01
Own car	.01	.72	.91
Bank account	.01	.87	30.08***
Young-adult characteristics (Wave 1)			
Mom receives welfare	.25	.09	15.18***
Receive out-of-school suspension	.48	.23	12.54***
Receive psychological counseling	.37	.12	26.14***
Usually feel safe in neighborhood	.90	.91	.05
Mom cares about you very much	.90	.98	9.56**
Friends care about you very much	.90	.87	1.03
Depression	.88 (.56)	.60 (.45)	3.06**
Delinquency/violence	2.56 (2.95)	1.73 (2.80)	1.72
NM relationship characteristics (Wave 3)			
# of NM functional roles	1.37 (.62)	1.29 (.61)	
Guidance/advice	.56	.60	.35
Emotional nurturance	.56	.40	5.04*
Practical help	.13	.10	.56

Variable	Former foster youth %/*M* (*SD*)	Nonformer foster youth %/*M* (*SD*)	χ^2/t
Like a parent	.01	.05	4.64*
Role model	.08	.15	1.51
Very close nm relationship	.01	.54	.93
Length of relationship (in yrs)	10.54 (7.89)	8.94 (7.07)	1.28
NM became important early (0-17 yrs)	.83	.78	.67
NM's social role			.86
Relative	.54	.45	
School personnel	.25	.33	
Community member	.21	.22	
How nm was introduced			.82
Through family	.02	.04	
Through a friend	.21	.11	
Through school	.53	.56	
Through work	.11	.18	
Other	.13	.10	
NM is still important to you	.97	.92	1.07
See NM once/month or more	.55	.51	.23
Talk to/email NM once/month or more	.60	.54	.64

*$p < 0.05$. **$p < 0.01$. ***p <0 .001.

Table 2

Multiple Regression Analyses for Depression at Wave 3 for Former Foster Youth and Nonformer Foster Youth

	Former foster youth *n* = 339				Nonformer foster youth *n* = 14,468			
Variable	*B*	*SE B*	â		*B*	*SE B*	â	
Intercept	0.62	0.54	1.23		0.70	0.07	1.54	**
Natural mentor relationship	-0.09	0.05	-0.09		-0.04	0.02	-0.04	**
Relationship characteristics (Wave 3)								
# of functional roles	0.04	0.05	0.06		0.00	0.01	0.00	
Relationship strength	-0.20	0.11	-0.20		-0.08	0.01	-0.08	**
Relationship length	0.05	0.03	0.11		0.00	0.01	0.00	
See NM at least once/month	0.06	0.07	0.08		0.01	0.01	0.01	
Talk to/email NM at least once/month	0.03	0.08	0.03		0.03	0.01	0.03	**
Young-adult characteristics (Wave 3)								
Medication use to treat depression	0.26	0.09	0.16	**	0.29	0.03	0.13	**
Placed in >1 foster home	0.09	0.06	0.09					
Male	0.01	0.07	0.01		-0.05	0.01	-0.06	**
Age	-0.01	0.02	-0.03		-0.01	0.00	-0.02	*
White	-0.10	0.08	-0.09		-0.06	0.02	-0.07	**

Variable	Former foster youth *n* = 339				Nonformer foster youth *n* = 14,468			
	B	*SE B*	â		*B*	*SE B*	â	
Married	-0.12	0.05	-0.10	**	-0.03	0.01	-0.02	**
Full-time employment	-0.03	0.07	-0.02		-0.04	0.01	-0.04	**
Young-adult characteristics (Wave 1)								
Depression	0.16	0.05	0.18	**	0.27	0.01	0.28	**
Usually feel safe in neighborhood	-0.12	0.08	-0.07		-0.06	0.01	-0.04	**
Receive out-of-school suspension	0.04	0.07	0.04		0.03	0.01	0.03	**
Receive counseling	0.09	0.06	0.08		0.03	0.02	0.02	
Mom gets public assistance	0.02	0.07	0.02		0.07	0.02	0.05	**
Mom cares about you very much	0.12	0.09	0.07		-0.06	0.03	-0.02	*
Friends care about you very much	0.04	0.06	0.03		-0.02	0.01	-0.02	
R^2	0.15**				0.15**			

*p < .05. **p < .01.

Table 3

Multiple Regression Analyses for Delinquency and Violence at Wave 3 for Former Foster Youth and Nonformer Foster Youth

	Former foster youth *n* = 339				Nonformer foster youth *n* = 14,468			
Variable	*B*	*SE B*	â		*B*	*SE B*	â	
Intercept	2.75	1.62	1.48		2.20	0.27	1.24	**
Natural mentor relationship	0.15	0.23	0.04		0.02	0.03	0.01	
Relationship characteristics (Wave 3)								
# of NM functional roles	0.14	0.16	0.05		0.03	0.03	0.01	
Very close relationship with NM	0.27	0.30	0.07		-0.08	0.04	-0.02	
Relationship length	-0.01	0.10	-0.00		-0.02	0.02	-0.01	
See NM at least once/month	0.54	0.30	0.14	**	-0.02	0.05	-0.01	
Talk to/email NM at least once/month	-0.44	0.22	-0.12		-0.03	0.05	-0.01	
Young-adult characteristics (Wave 3)								
Placed in >1 foster home	-0.05	0.18	-0.01					
Male	1.01	0.27	0.27	**	0.60	0.03	0.17	**
Age	-0.13	0.07	-0.12		-0.08	0.01	-0.08	**
White	-0.15	0.22	-0.04		0.01	0.03	0.00	
Married	-0.46	0.16	-0.10	**	-0.32	0.03	-0.07	**
Full-time employment	-0.54	0.17	-0.15	**	-0.10	0.03	-0.03	**

Variable	Former foster youth n = 339				Nonformer foster youth n = 14,468			
	B	*SE B*	â		*B*	*SE B*	â	
Young-adult characteristics (Wave 1)								
Delinquency/violence	0.11	0.04	0.22	**	0.10	0.01	0.17	**
Usually feel safe in neighborhood	0.20	0.24	0.03		-0.04	0.03	-0.01	
Receive out-of-school suspension	-0.34	0.21	-0.09		0.13	0.04	0.03	**
Receive counseling	-0.07	0.19	-0.02		0.14	0.05	0.03	**
Mom receives public assistance	0.17	0.31	0.04		-0.02	0.05	-0.00	
Mom cares about you very much	-0.05	0.23	-0.01		-0.19	0.10	-0.02	
Friends care about you very much	0.18	0.20	0.04		0.10	0.05	0.02	**
R^2	0.18**				0.09**			

*p < .05. **p < .01.

Table 4

Multiple Regression Analyses for Material Hardship at Wave 3 for Former Foster Youth and Nonformer Foster Youth

	Former foster youth *n* = 339				Nonformer foster youth *n* = 14,468			
Variable	*B*	*SE B*	â		*B*	*SE B*	â	
Intercept	0.12	0.17	0.70		0.06	0.02	0.38	*
Natural mentor relationship	-0.00	0.02	-0.00		0.00	0.00	0.00	
Relationship characteristics (Wave 3)								
# of functional roles	-0.01	0.02	-0.02		0.00	0.00	0.01	
Relationship strength	0.03	0.04	0.06		-0.01	0.00	-0.03	**
Relationship length	0.00	0.02	0.00		-0.00	0.00	-0.01	
See NM at least once/month	0.02	0.04	0.04		0.01	0.00	0.02	
Talk to/email NM at least once/month	-0.07	0.04	-0.15		-0.00	0.00	-0.01	
Young-adult characteristics (Wave 3)								
Placed in >1 foster home	0.01	0.02	0.02					
Male	-0.04	0.03	-0.09		-0.02	0.00	-0.07	**
Age	-0.00	0.01	-0.02		0.00	0.00	0.04	**
White	0.05	0.02	0.11	*	0.01	0.00	0.02	
Married	0.05	0.03	0.10		0.01	0.01	0.03	**
Full-time employment	0.01	0.02	0.03		-0.01	0.00	-0.04	**

Variable	Former foster youth n = 339				Nonformer foster youth n = 14,468			
	B	*SE B*	â		*B*	*SE B*	â	
<u>Young-adult characteristics (Wave 1)</u>								
Usually feel safe in neighborhood	0.01	0.03	0.02		-0.01	0.01	-0.02	
Receive out-of-school suspension	0.06	0.03	0.13	*	0.04	0.01	0.11	**
Receive counseling	0.01	0.03	0.03		0.03	0.01	0.07	**
Mom receives public assistance	0.09	0.03	0.17	* *	0.04	0.01	0.07	**
Mom cares about you very much	0.01	0.05	0.01		-0.03	0.01	-0.03	**
Friends Care about you very much	0.02	0.03	0.03		-0.01	0.00	-0.03	**
R^2	0.09**				0.02**			

*p < .05. **p < .01.

APPENDIX B
FIGURES

Figure 1. Conceptual model of relationships among key variables.

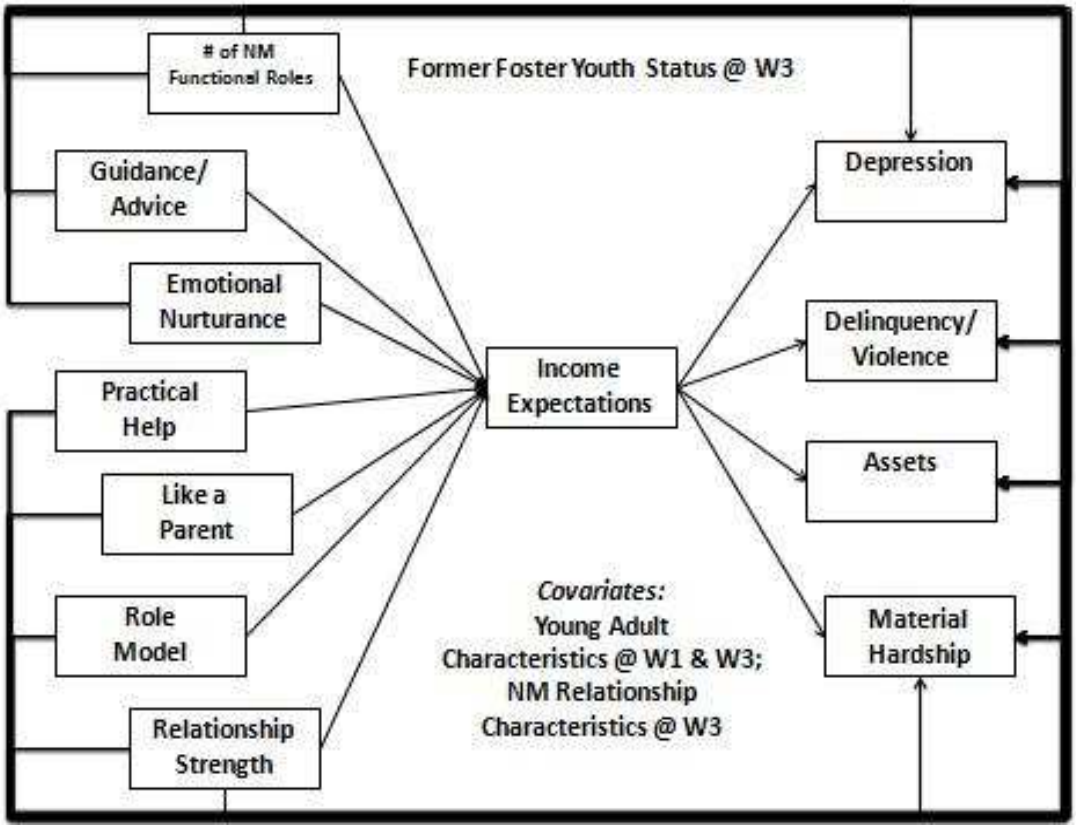


Figure 2. Direct and indirect effects of natural mentor functional role composite and strength of natural mentor relationship on depression at Wave 3, adjusting for Wave 1 depression and 16 total covariates among young adults with previous foster care experience (*n* = 165).

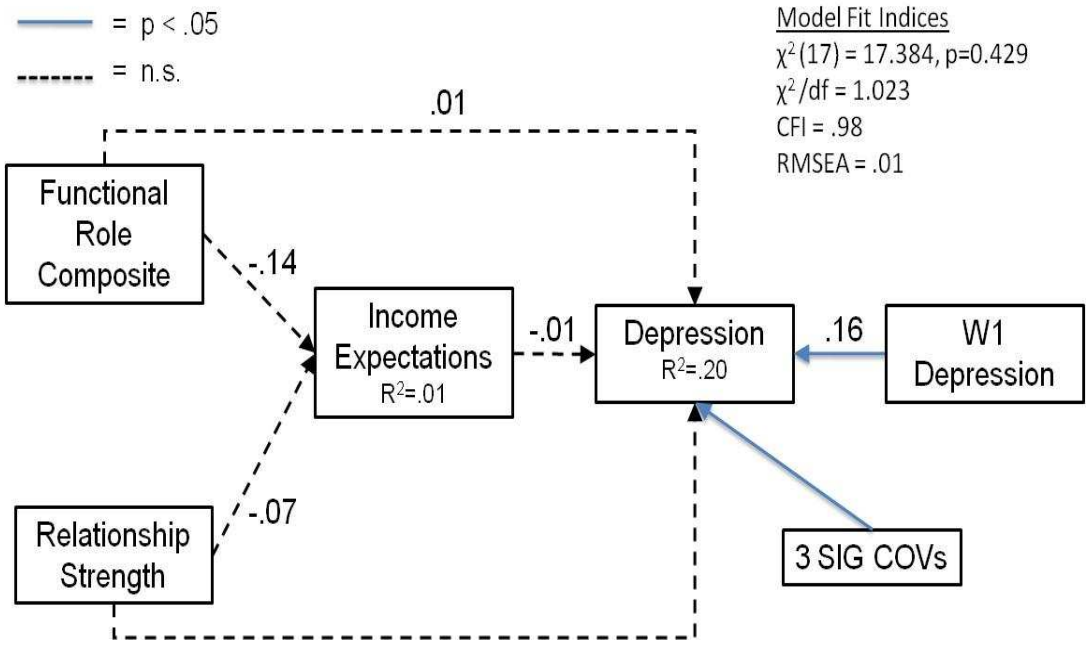


Figure 3. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on depression at Wave 3, adjusting for Wave 1 depression and 15 total covariates among young adults with previous foster care experience (*n* = 165).

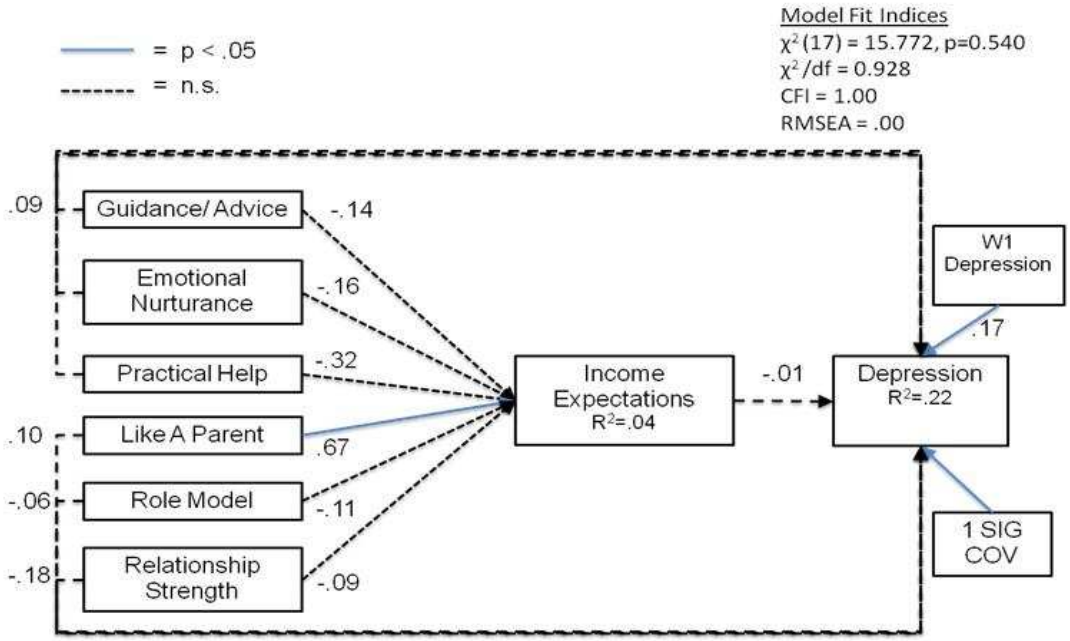


Figure 4. Direct and indirect effects of natural mentor functional role composite and strength of natural mentor relationship on depression at Wave 3, adjusting for Wave 1 depression and 15 total covariates among young adults without previous foster care experience (*n* = 7,977).

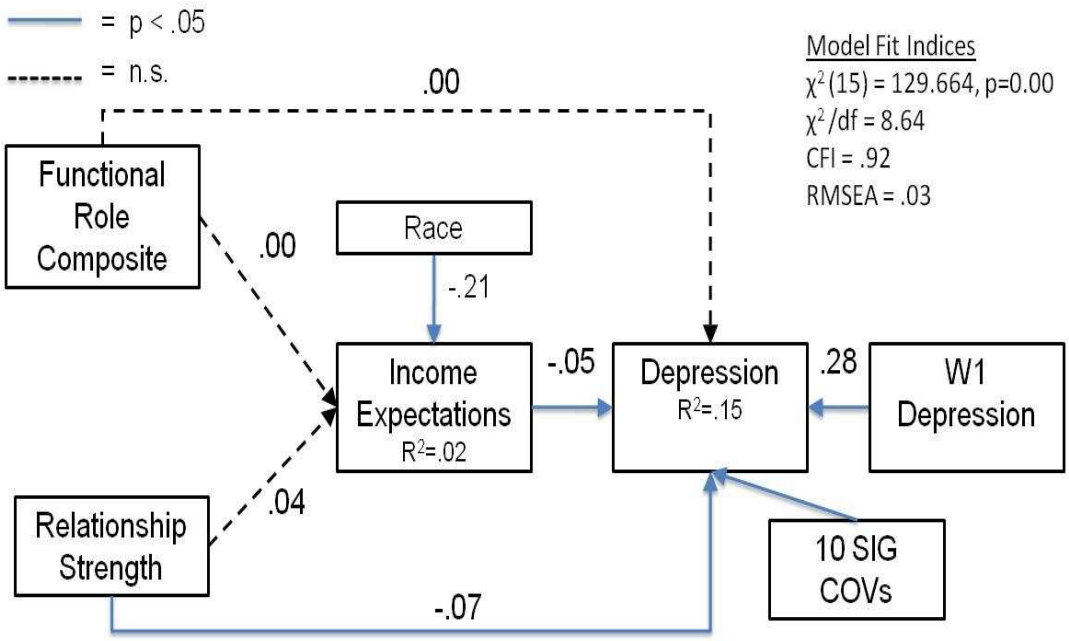


Figure 5. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on depression at Wave 3, adjusting for Wave 1 depression and 16 total covariates among young adults without previous foster care experience (*n* = 7,977).

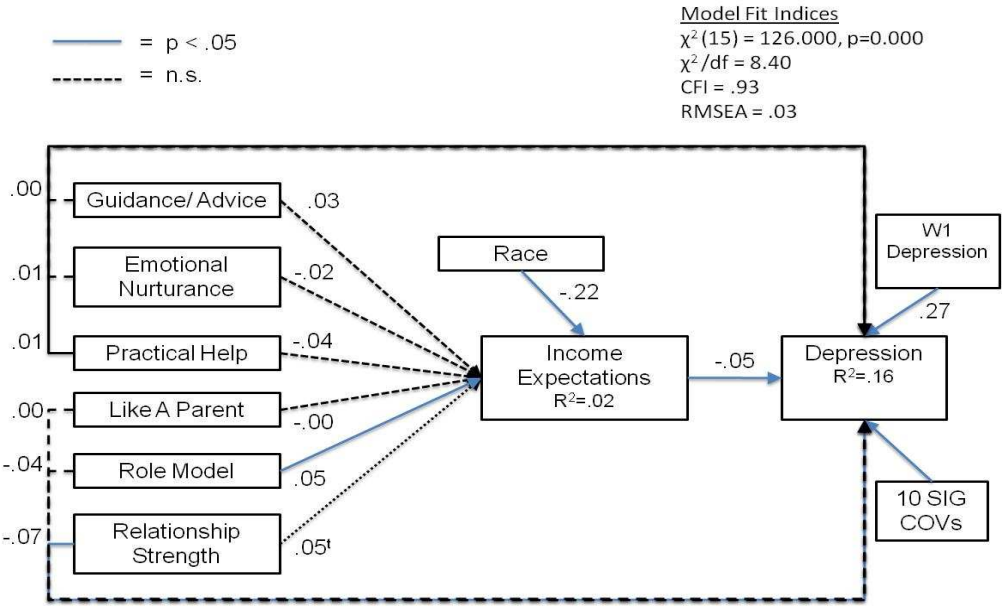


Figure 6. Direct and indirect effects of number of natural mentor functional roles and strength of natural mentor relationship on delinquency and violence at Wave 3, adjusting for Wave 1 delinquency and violence and 15 total covariates among young adults with previous foster care experience (*n* = 165).

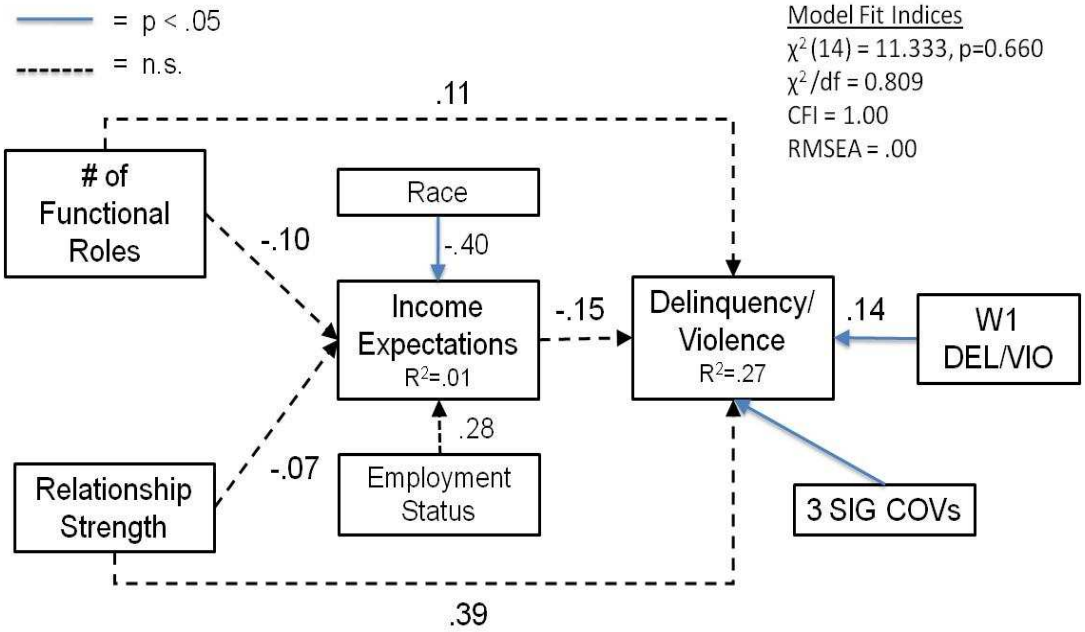


Figure 7. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on delinquency and violence at Wave 3, adjusting for Wave 1 delinquency and violence and 15 total covariates among young adults with previous foster care experience (*n* = 165).

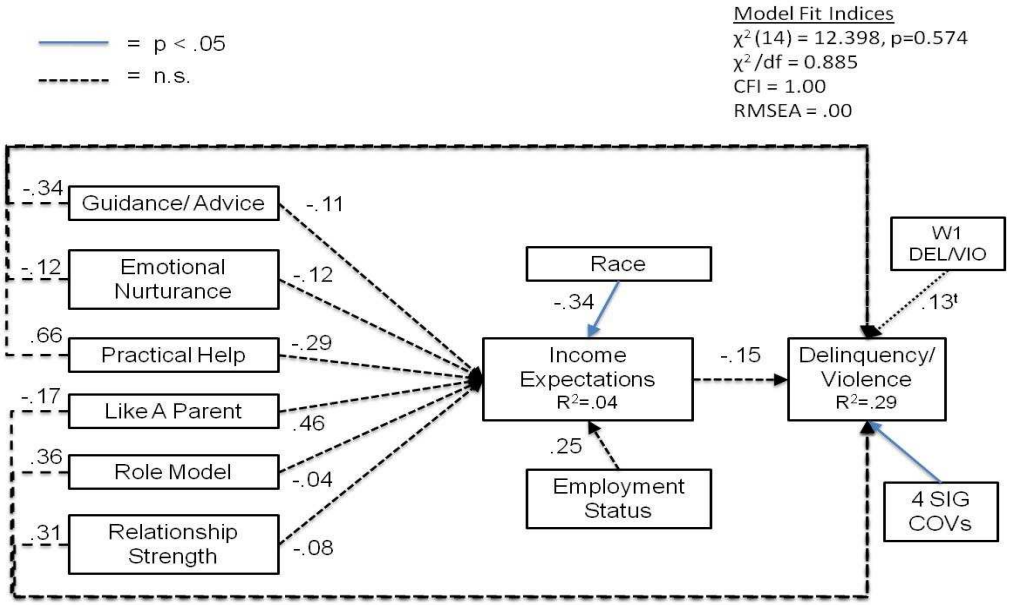


Figure 8. Direct and indirect effects of number of natural mentor functional roles and strength of natural mentor relationship on delinquency and violence at Wave 3, adjusting for Wave 1 delinquency and violence and 15 total covariates among young adults without previous foster care experience (*n* = 7,977).

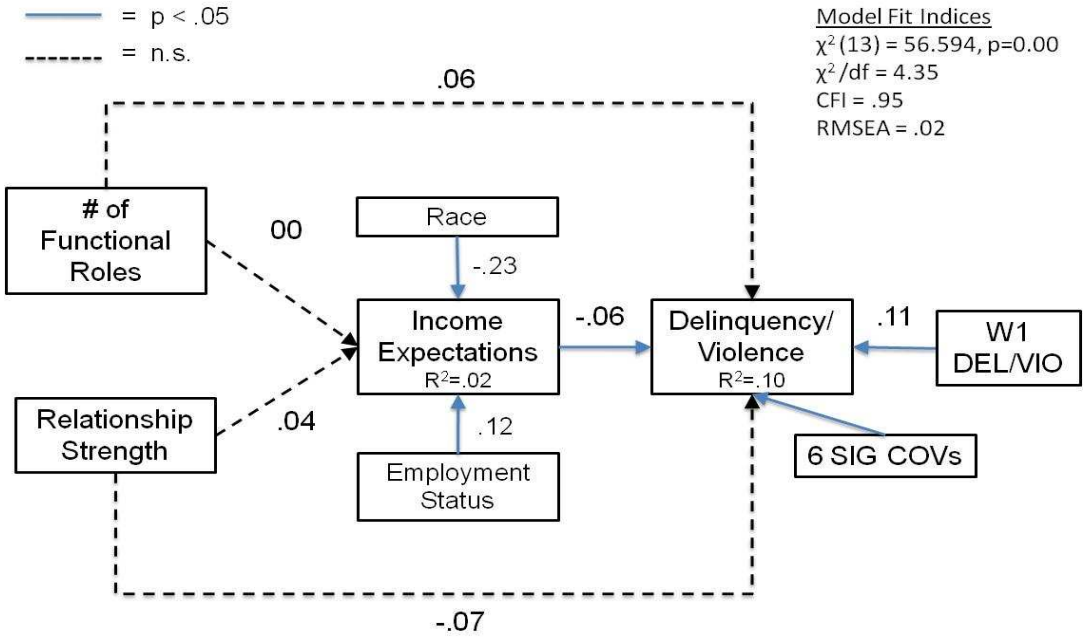


Figure 9. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on delinquency and violence at Wave 3, adjusting for Wave 1 delinquency and violence and 14 total covariates among young adults without previous foster care experience (*n* = 7,977).

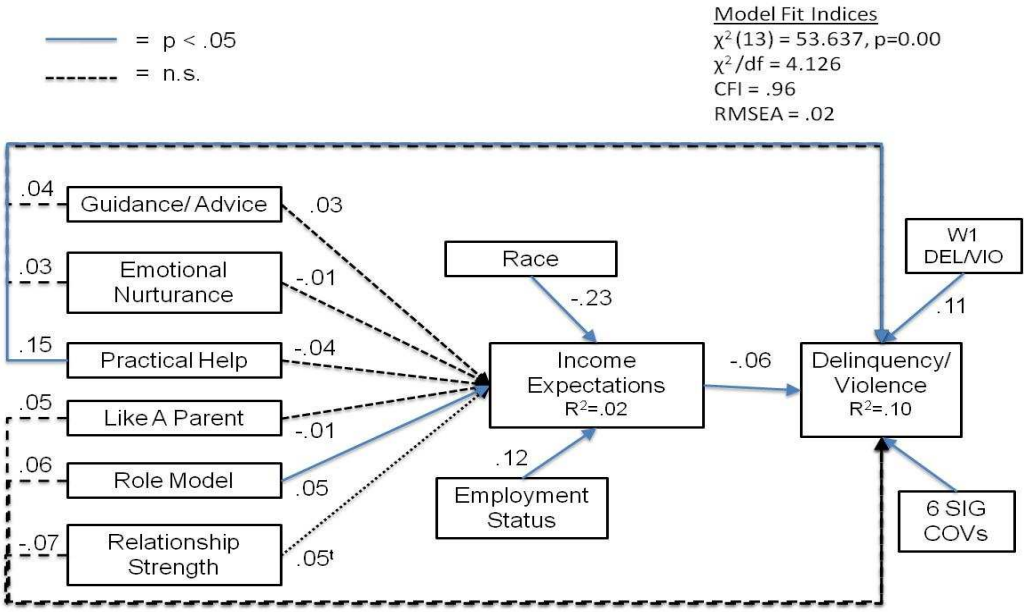


Figure 10. Direct and indirect effects of number of natural mentor functional roles and strength of natural mentor relationship on material hardship at Wave 3, adjusting for 17 total covariates among young adults with previous foster care experience (*n* = 165).

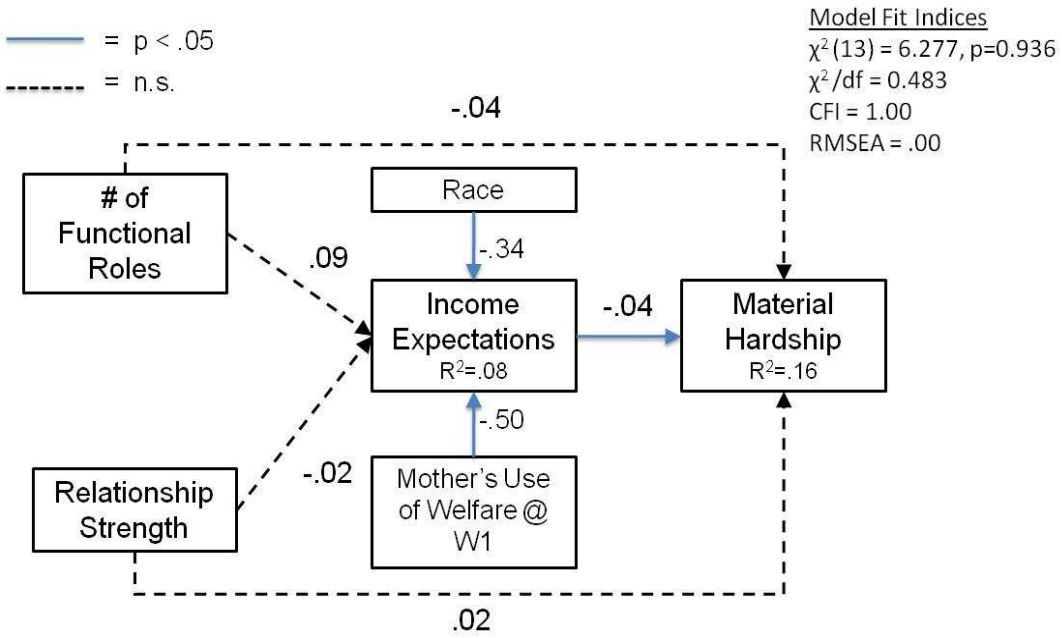


Figure 11. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on material hardship at Wave 3, adjusting for 15 total covariates among young adults with previous foster care experience (*n* = 165).

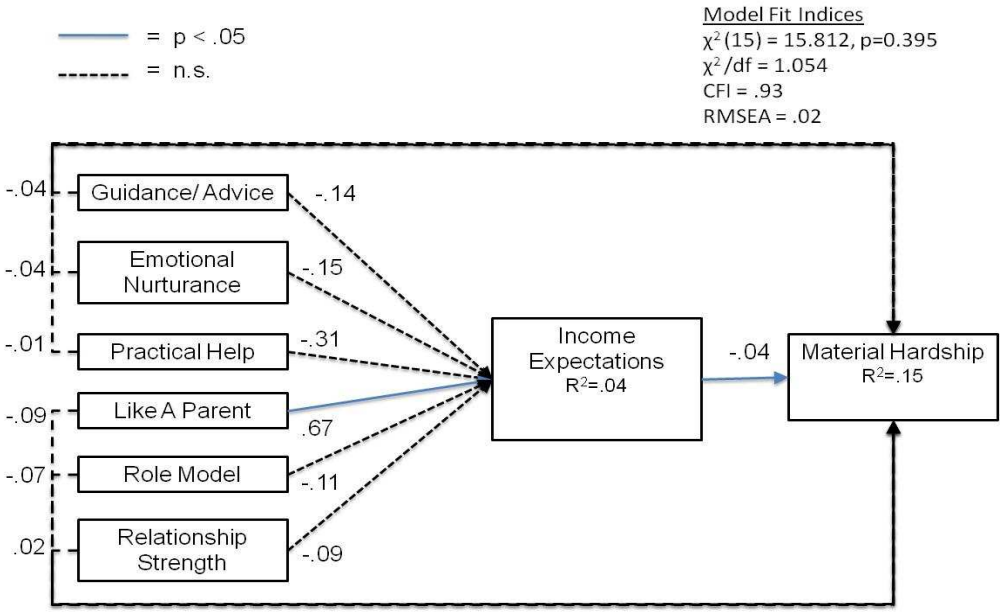


Figure 12. Direct and indirect effects of natural mentor functional role composite and strength of natural mentor relationship on material hardship at Wave 3, adjusting for 16 total covariates among young adults without previous foster care experience (*n* = 7,977).

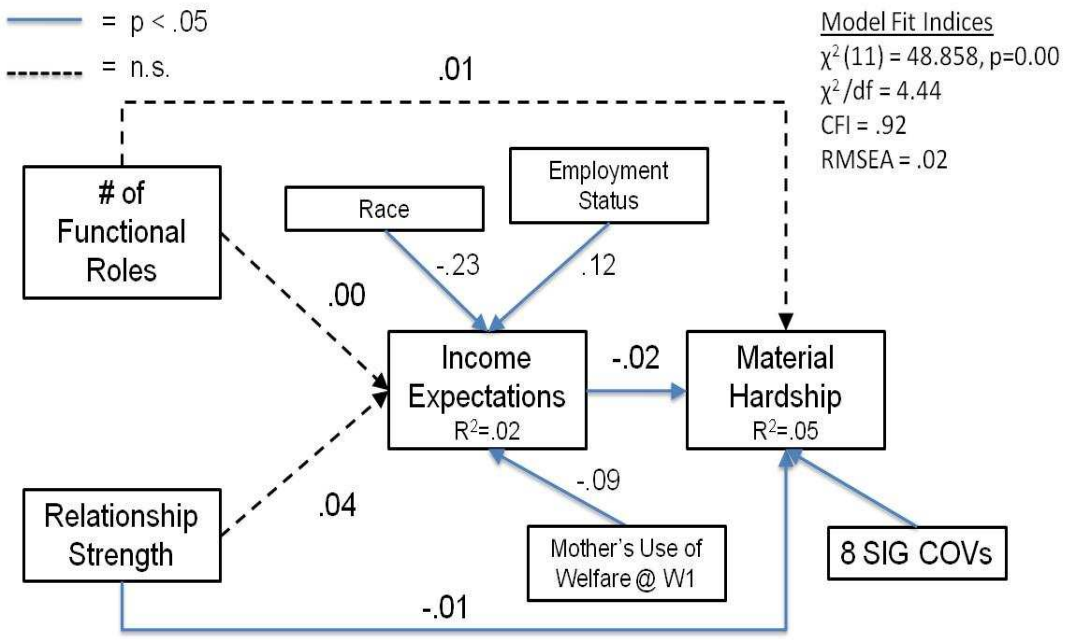


Figure 13. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on material hardship at Wave 3, adjusting for 14 total covariates among young adults without previous foster care experience (*n* = 7,977).

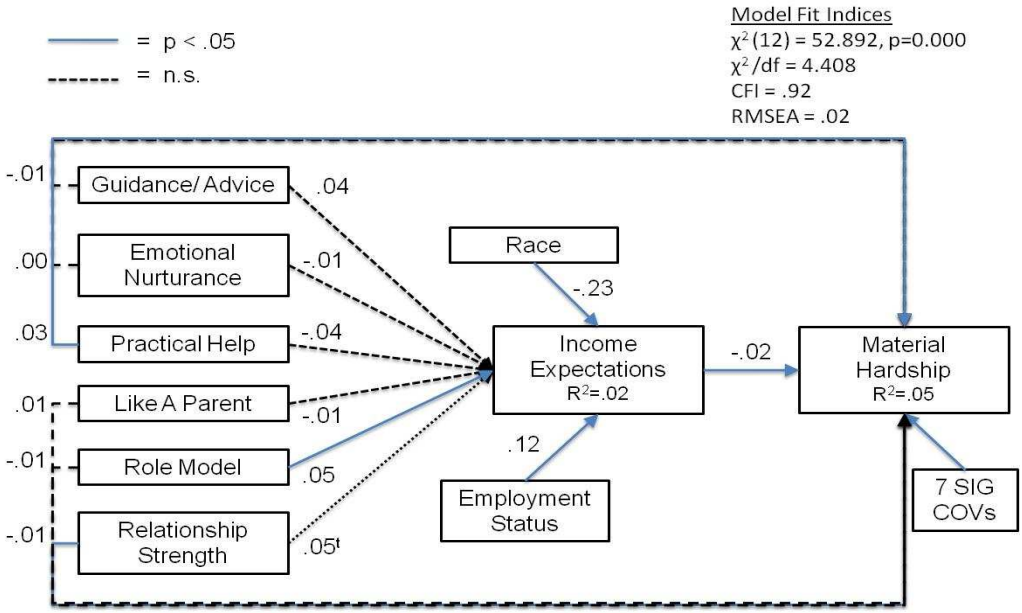


Figure 14. Direct effect of having a natural mentor relationship on assets at Wave 3 among young adults with previous foster care experiences, adjusting for 17 total covariates (*n* = 206).

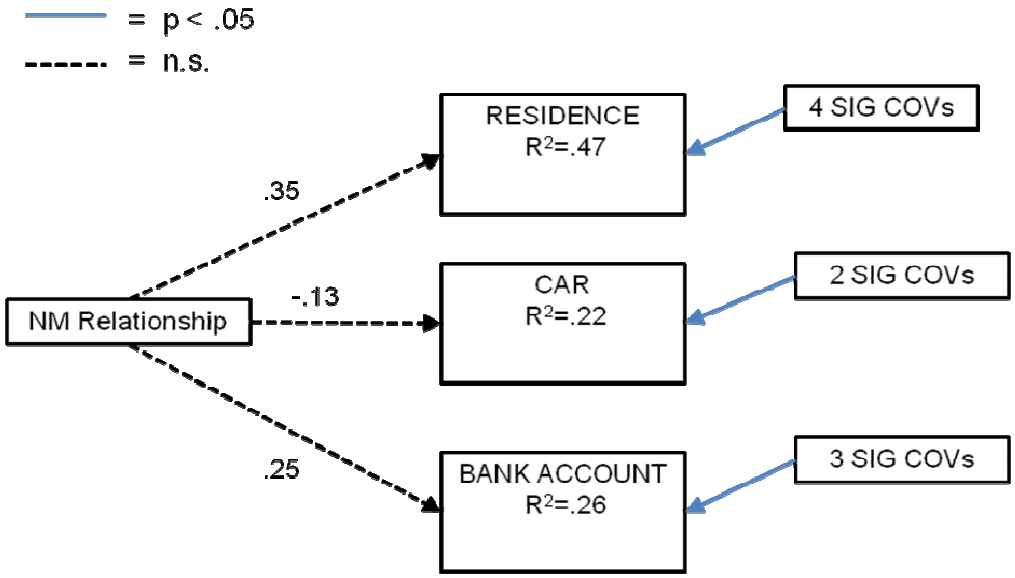


Figure 15. Direct effect of having a natural mentor relationship on assets at Wave 3 among young adults without previous foster care experiences, adjusting for 17 total covariates (*n* = 9,373).

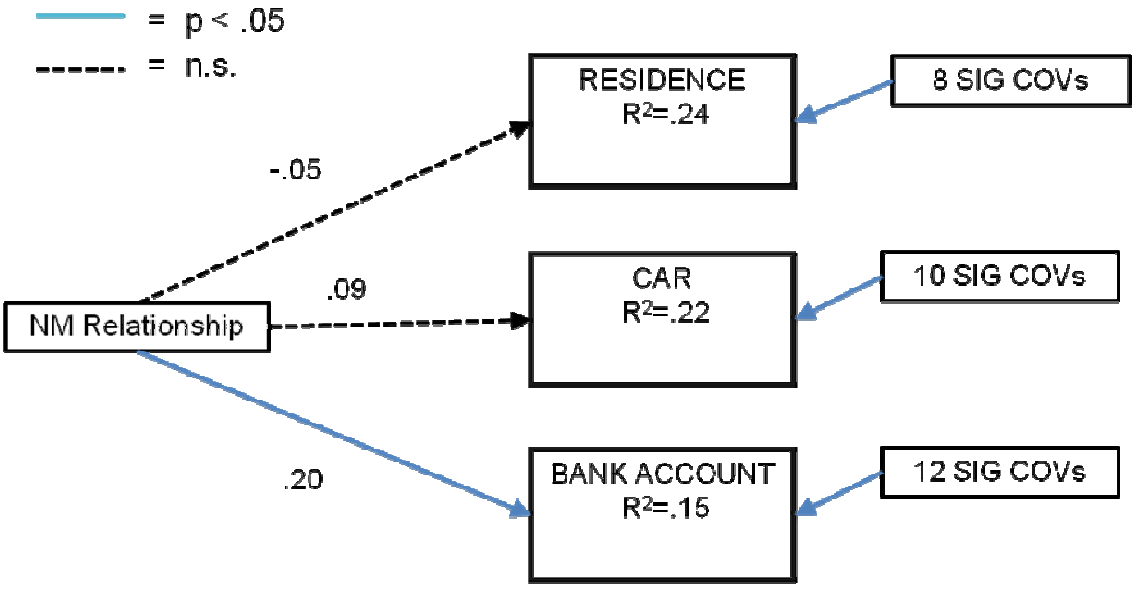


Figure 16. Direct and indirect effects of number of natural mentor functional roles and strength of natural mentor relationship on assets at Wave 3, adjusting for 17 total covariates among young adults with previous foster care experience (*n* = 134).

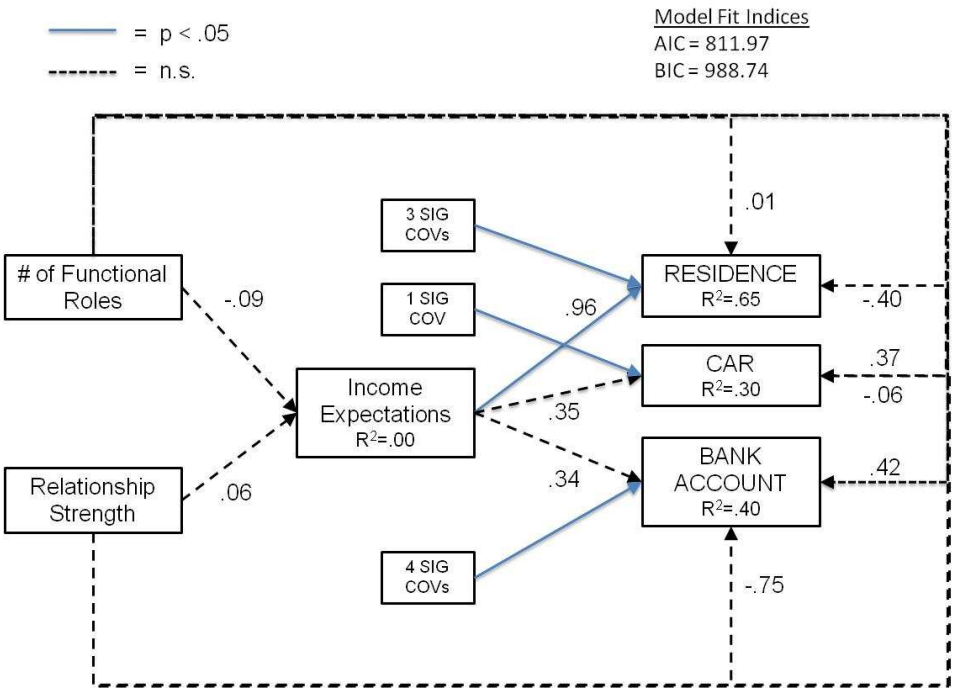


Figure 17. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on residence ownership at Wave 3, adjusting for 17 total covariates among young adults with previous foster care experience (*n* = 134).

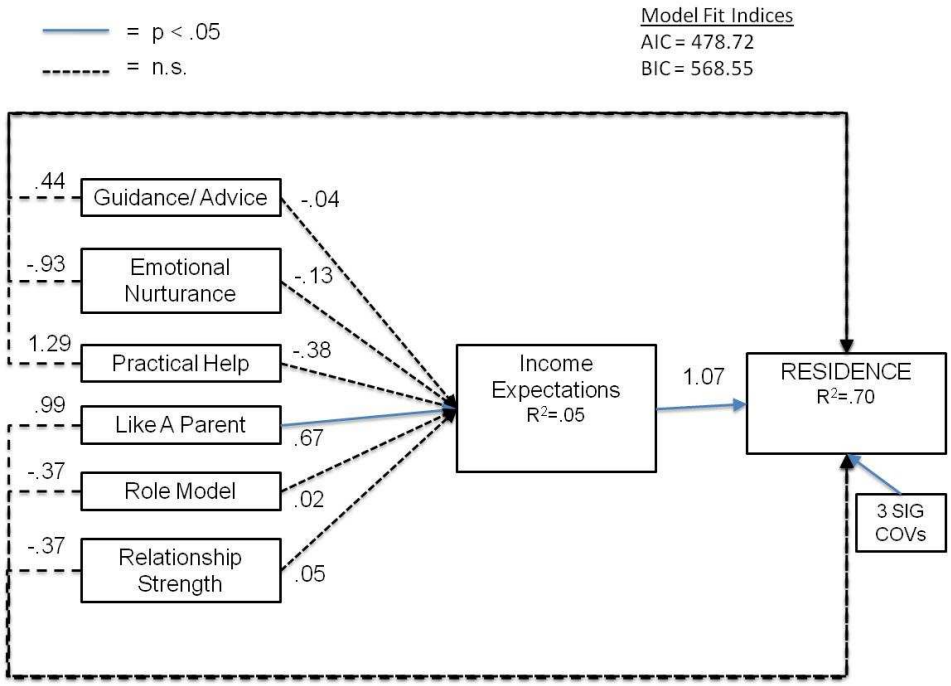


Figure 18. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on car ownership at Wave 3, adjusting for 17 total covariates among young adults with previous foster care experience (*n* = 134).

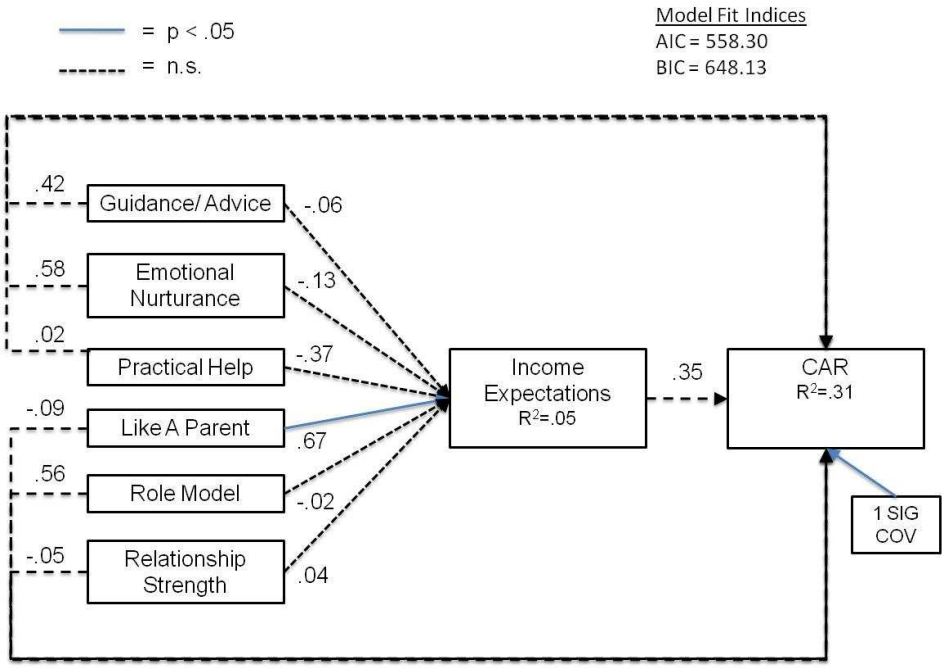


Figure 19. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on bank account ownership at Wave 3, adjusting for 17 total covariates among young adults with previous foster care experience (*n* = 134).

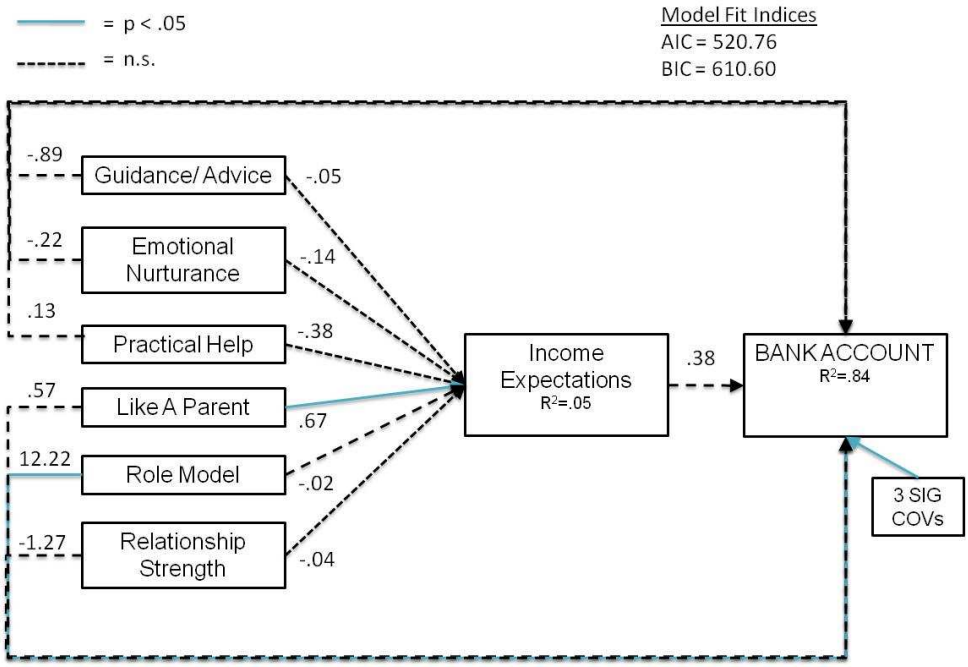


Figure 20. Direct and indirect effects of number of natural mentor functional roles and strength of natural mentor relationship on assets at Wave 3, adjusting for 16 total covariates among young adults without previous foster care experience (*n* = 6,889).

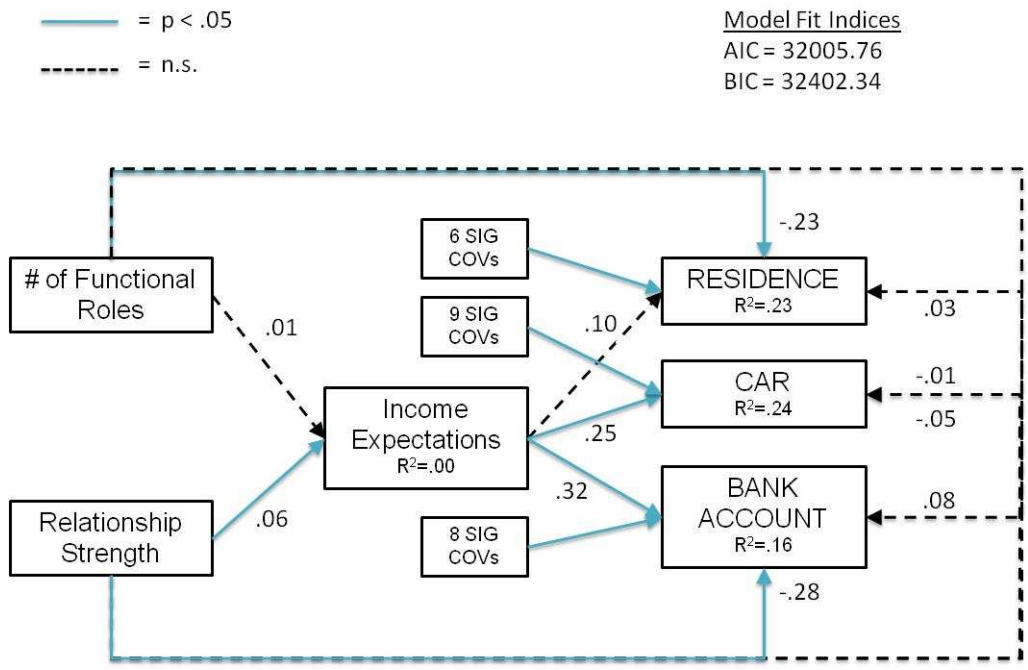


Figure 21. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on residence ownership at Wave 3, adjusting for 16 total covariates among young adults without previous foster care experience (*n* = 6,887).

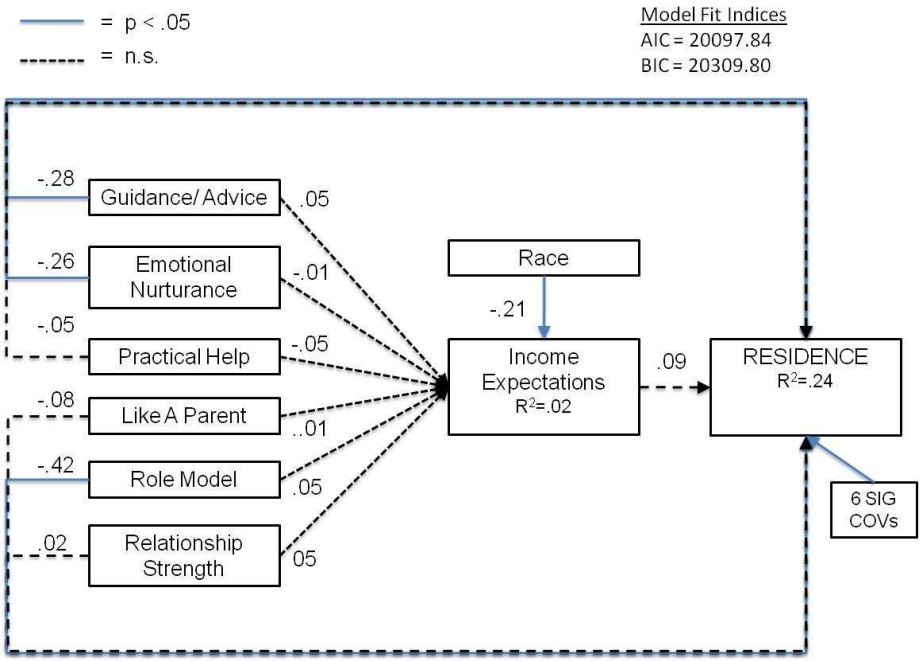


Figure 22. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on car ownership at Wave 3, adjusting for 16 total covariates among young adults without previous foster care experience (*n* = 6,889).

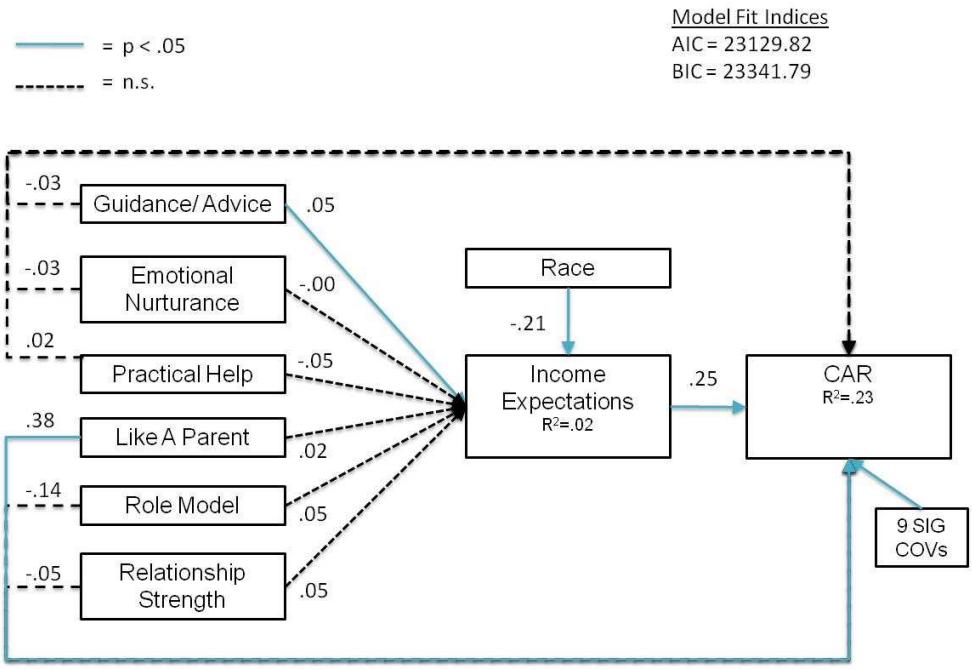
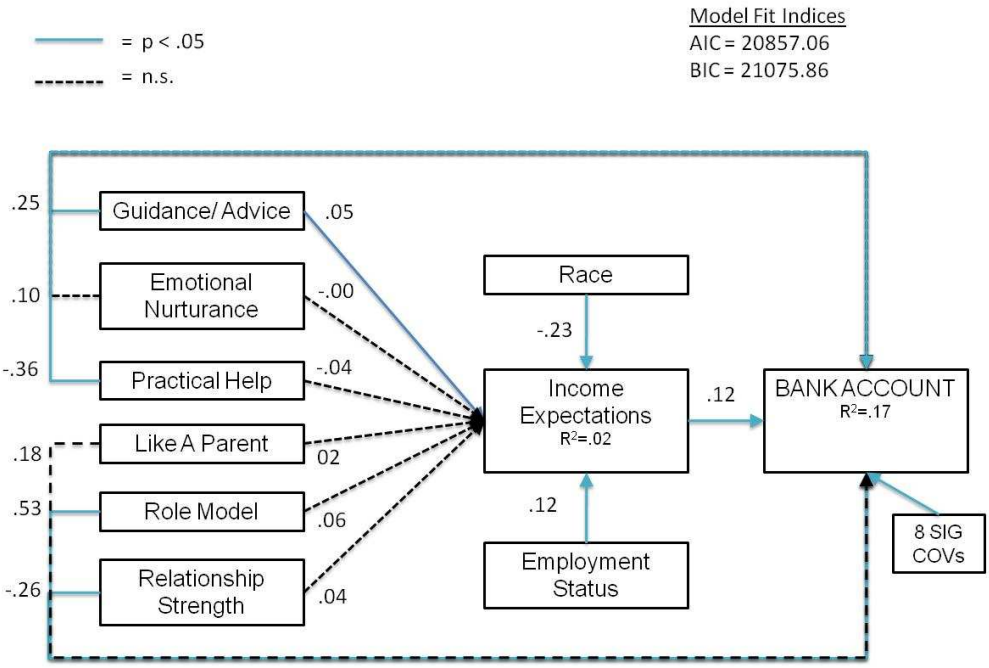


Figure 23. Direct and indirect effects of individual natural mentor functional roles and strength of natural mentor relationship on bank account ownership at Wave 3, adjusting for 16 total covariates among young adults without previous foster care experience (*n* = 6,889).



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