

TESTING MODERATION: PHYSICAL PUNISHMENT, PARENTAL WARMTH, AND
AGGRESSION

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ABSTRACT

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Physical punishment is a disciplinary technique that many parents utilize and report as being effective. Nevertheless, researchers continue to debate its usefulness and impact on child adjustment. Many have argued that physical punishment is detrimental to children's socio-emotional functioning, and in particular, that it increases aggression. However, some have argued that whether parents utilize physical punishment is less important than how they use it, citing strong evidence that not all children who are spanked display abnormal levels of aggression. This has led to the theory that various parenting characteristics and techniques may moderate the relationship between physical punishment and aggression. The current study examines parental warmth as a moderator of the relationship between physical punishment and aggression 30 months later. Results of the study yielded no evidence that this relationship exists. Several limitations are believed to have contributed to the null findings. Directions for future research are discussed.

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CHAPTER 1

INTRODUCTION

The use of physical punishment is a topic of considerable interest to social science researchers. A great deal of the existing research on physical punishment has concluded that it is a form of discipline that is detrimental to children's socio-emotional functioning, particularly aggression. Well established theories support these conclusions, and thus, much of the published research has supported this claim. However, the research also shows that not all children who are physically disciplined become aggressive. More recently, however, researchers have begun to focus on other parenting characteristics that potentially play an important role in determining whether spanked children display abnormal levels of aggression. How parents use physical punishment may be just as important as whether they use it. A child who perceives that his parents use this form of discipline out of love and protection may be less likely to exhibit aggressive behavior. Parental warmth may act as a proxy form of love and protection. Whatever the case, one thing is certain – physical punishment is used quite frequently and is not solely responsible for the development of aggression in those children whose parents employ it. Parents who utilize physical punishment while simultaneously providing a warm, protective, and nurturing home environment may be able to protect their children from such maladaptive developmental trajectories. The current study examines parental warmth as a moderator in the relationship between parents' use of physical punishment at 24 months and aggression 30 months later.

Physical Punishment in American Families

Physical punishment, often cited as physically aggressive parenting, harsh discipline practices, coercive disciplinary encounters, punitive parenting, severe punishment, and physically coercive parenting, has been referred to in much of the psychological literature as an inherently negative parenting technique. These descriptions of physical punishment leave the reader with subjectively negative feelings about the potential benefits, if any, of this type of parental discipline. Nonetheless, the prevalence rate of corporal punishment in American families is believed by many researchers to be quite high. Researchers have estimated that almost 97% of American parents have spanked their children by age 2 (Deater-Deckard & Dodge, 1997). Straus and Donnelly (1994) conducted a national study of parenting behaviors and found that 79% of parents had previously spanked or physically punished their 3-year-old child. In this same study, the researchers also found that 50% of parents used corporal punishment on 13 and 14-year-old adolescents. In addition, 20% reported having physically punished their 17-year-old child.

Given these prevalence rates, it is undoubtedly true that not all children whose parents utilize physical punishment display abnormal levels of aggression. Although the above cited studies have some utility in roughly estimating the prevalence of the use of physical punishment in American society, few studies assess how parents typically administer the disciplinary technique. Specifically, these and many other studies focus primarily on whether physical punishment is being administered at these various stages, ignoring potentially important dimensions such as the frequency, intensity, or method of the punishment. Furthermore, even fewer research studies have investigated other parenting factors that may impact the relationship between physical use and children's socio-emotional

adjustment.

Corporal Punishment and Aggression

Researchers have conceptualized corporal punishment as one of the major environmental influences on a child's externalizing behavior problems (e.g., Patterson, Reid, & Dishion, 1992). Social learning theorists have drawn a link between parents' use of corporal punishment and general maladjustment in children, particularly aggression (e.g., Baumrind, 1993; Maccoby & Martin 1983; Patterson et al., 1992). These theorists propose that physical punishment is related to aggression in several ways, two of which will be discussed. First, physical disciplinary practices have been conceptualized as reinforcement for oppositional, noncompliant, and aggressive child behavior (Patterson et al., 1992; Wahler & Dumas, 1986). Furthermore, researchers have conceptualized aggression as an attention-seeking behavior (e.g., Surya-Prakash-Rao, 1977). The primary goal of a reinforcer is to increase a specific behavior and thus, according to many researchers, the physical discipline method believed by many parents to rectify negative behavior becomes counterproductive once the child realizes that attention (negative or positive) can be obtained by exhibiting acting out behaviors. Physical discipline has also been theorized to provide a model of a hostile and punitive interpersonal style (e.g., Eron, 1987; McCord, 1979; Weiss, Dodge, Bates, & Pettit, 1992). Because it has been found that children model their parents' behavior, a physical disciplinary method, in essence, may teach and justify more aggressive and hostile behavior in children and adolescents. Thus, these researchers theorize that children learn to resolve conflict and correct others' behavior by physical means.

Given the proposed theoretical links, it is not surprising that many researchers have looked at the relation between corporal punishment and aggression. In a recent highly

publicized meta-analysis on the effect of physical punishment, Gershoff (2002) reviewed 88 studies that examined the relationship between corporal punishment and 11 different child and adolescent outcomes. Of the studies reviewed in the meta-analysis, 32 used childhood aggression as an outcome variable. Gershoff concluded that physical punishment has negative consequences on child adjustment in general, including aggression. The meta-analysis also suggested that the utility of physical punishment was limited to immediate compliance. However, Gershoff contended that because many children who are spanked later repeat the undesired behavior, the overall utility of physical punishment for correcting noncompliant behavior was not worthwhile given the negative impact on children's overall adjustment. Gershoff concluded from this meta-analysis that physical punishment was unequivocally related to child aggression across multiple contexts.

The Gershoff (2002) meta-analysis is hotly contended among researchers in the field. Several methodological concerns have been raised about this particular study, as well as meta-analyses, in general. Specifically, Gershoff failed to differentiate "customary" or non-abusive punishment from abusive physical discipline (Holden, 2002). It has been well established that abusive disciplinary practices are disruptive to children's positive socio-emotional development (e.g., Simons, Johnson, & Conger, 1994; Straus & Donnelly, 1994). The methodology of Gershoff's study was further criticized for the problematic synthesis of child and adolescent outcomes. Specifically, Holden (2002) cited substantial evidence suggesting that the impact of physical punishment may be moderated by the developmental stage of the child. That is, spanking may affect children differently based on their age and/or current development. The study also synthesized various measures of physical punishment. Although multiple measures of physical punishment might be viewed as integral to

determining convergent validity, many of the studies dichotomized or otherwise oversimplified the measure of physical punishment, failing to recognize the complex nature of measuring this obviously multidimensional construct. Other significant criticisms were that: 1) the meta-analysis did not establish a temporal sequence, and consequently, directionality of the relation between physical punishment and aggression remains unclear, and 2) one-third of the “aggression” studies were conducted before 1975 and very few of the studies included a diverse sample, leading to concerns about the external validity of Gershoff’s conclusions (Baumrind, Larzelere, & Cowan, 2002). Finally, Gunnoe (2003) further argued that the meta-analysis failed to consider the context in which spanking occurs.

Despite criticisms of the methodology and inherent problems of Gershoff’s meta-analysis, past research has generally conceded that corporal punishment is positively related to aggression in children. Stormshak, Bierman, McMahon, and Lengua (2000) found that physical punishment was linked to child aggression in the home. In addition, other researchers have found that parent-reported harsh discipline style predicted high peer nominations for aggressive behavior and later externalizing problems (e.g., Deater-Deckard, Dodge, Bates, & Pettit, 1996). In a synchronic correlational design examining factors associated with violence in 225 urban adolescents, it was concluded that adolescent self-reported use of violence was related to previous exposure to physical punishment, and this finding held up despite the relatively low internal consistency of the physical punishment scale (Durant, Cadenhead, Pendergrast, Slavens, & Linder, 1994).

Longitudinal studies have also examined the relationship between physical punishment and aggression. Pettit, Bates, and Dodge (1993) studied 165 children and found that coercive parenting (conceptualized as non-abusive physical punishment) not only

predicted initially high levels of externalizing problems, but also predicted the continued increase in these behaviors over time. Other longitudinal research has reached similar conclusions (Strassberg, Dodge, Pettit, & Bates, 1994), and the effects of physical punishment have been found to persist into adulthood (Straus & Yodanis, 1999).

The studies cited examine the effects of corporal punishment across different time designs (e.g., correlational vs. longitudinal), and the results have been consistent across settings (e.g., school vs. home) and across methods (self, parent, and teacher report, as well as behavioral observations and peer nominations). Moreover, the associations have been shown to persist as shown in the Straus and Yodanis (1996) and Pettit and colleagues (1993) studies. Nonetheless, given the high prevalence rates of physical punishment in American household, few researchers have acknowledged the fact that physical punishment does not always lead to aggressive behavior in children. It is clear that physical punishment in and of itself is not decisively linked to aggression, and this is evidenced by the fact that the ratio between spanked children who are aggressive and those who are not aggressive is relatively low. Thus, a more thorough investigation of the specific characteristics of physical punishment is warranted.

Parental Warmth and Links to Aggression

Baumrind (1969, 1991) introduced a four-fold classification of parents based on two parenting behaviors, namely responsiveness and demandingness. Parental responsiveness (also referred to as parental warmth, emotional support, or positive regard) refers to "the extent to which parents intentionally foster individuality, self-regulation, and self-assertion by being attuned, supportive, and acquiescent to children's special needs and demands" (Baumrind, 1991). Despite the various descriptions of parental warmth, all refer to the

general affective quality of the parent-child relationship as well as the level of involvement between the parent and child. Parental demandingness (also referred to as behavioral control) refers to "the claims parents make on children to become integrated into the family whole, by their maturity demands, supervision, disciplinary efforts and willingness to confront the child who disobeys" (Baumrind, 1991). Varying levels of responsiveness and demandingness led Baumrind to develop a typology of four major parenting styles: authoritative, authoritarian, uninvolved, and permissive. Her parenting style typology has produced an impressive body of empirical research that has linked these different parenting styles to children's socio-emotional functioning. Of the four, Baumrind theorizes that the authoritative parenting style promotes positive socio-emotional functioning in children. Authoritative parents are generally characterized as warm, accepting, and encouraging of psychological autonomy, yet firm in establishing behavioral guidelines. Children with authoritative parents show a significant tendency to be more socially and instrumentally competent, as well as display more adaptive psychosocial functioning.

Because demandingness and responsiveness are conceptualized as orthogonal constructs, many researchers have paid substantial attention to how these parenting behaviors function independently of each other, and what consequences they have for children's positive social and emotional development. Accordingly, several researchers have given substantial attention to responsiveness (henceforth referred to as parental warmth) as a predictor of behavior and emotional problems in children and adolescents.

Dodge (1991) was among the first to propose a theoretical link between parental warmth and childhood aggression, particularly reactive aggression. Dodge's theory posits that aggression is promoted by negative parenting behaviors, including a lack of warmth, that

result in a poor attachment relationship between the parents and the child. Specifically, Dodge (1991) argued that lower levels of parental warmth foster children's feelings of insecurity, vulnerability, and eventually hostility and aggression in social relationships.

Several researchers have tested Dodge's (1991) theory cross-sectionally. Pettit and colleagues (1993) found that low parent-child warmth contributed to child aggression in 165 families of children transitioning from kindergarten to first grade. Sutton, Cowen, Creasn, and Wymna (1999) later examined the link between parental warmth and aggression among second and third graders, and found that both maternal and paternal warmth were negatively related to aggression among these children. Researchers have also tested this link cross-culturally, and found that maternal warmth was negatively associated with aggression among 4-year-old Chinese children (Chen, Wu, Chen, Wang, & Cen, 2001).

Longitudinal investigations have found that a lack of maternal warmth in early childhood predicts child externalizing and internalizing problems later in life (e.g., Rothbaum, Rosen, Pott & Beatty, 1995). In addition, McClosky, Figuerdo, and Koss (1995) reported that those households where there were higher levels of parental warmth were more likely to consist of children with fewer aggression problems. However, in this study, the researchers studied parental warmth as a dichotomous variable, losing important information about the wide range of warmth across parents. Other researchers (e.g., Viemero, 1996) have failed to find this relationship, but did not adequately explain their null results. Despite Dodge's (1991) theory and the few studies supporting a negative relation between parental warmth and aggression, research examining parental warmth as a predictor of aggression is relatively sparse. Although the majority of the studies on parental warmth do not simultaneously examine physical discipline, these studies introduce the idea that high levels

of parental warmth may protect some children who are at risk for developing aggression. Nevertheless, it is evident that neither parental warmth nor physical punishment works in isolation in predicting maladjustment among children.

Parental Warmth as a Moderator?

Some researchers have theorized that how parents use spanking is more important than whether they use it -- as with any other disciplinary method (Larzelere, 1998). Others have suggested that cultural variations in the way adults and children view parental discipline may moderate the relationship between corporal punishment and aggression, thus minimizing the negative effect of corporal punishment (e.g., Deater-Deckard et al., 1996; Lansford, Dodge, Malone, Bacchini, Zelli, Chaudhary, Manke, Chang, Oburu, Palmerus, Pastorelli, Bombi, Tapanya, Deater-Deckard, & Quinn, 2005). Grusec and Goodnow (1994) were among the first to theorize that the extent to which children accurately perceive the purpose behind their parents' disciplinary practices moderates the relationship between those practices and the child's adjustment. Although these ideas do not refute the claim of social learning theorists that physical punishment is a reinforcing and model-teaching behavior, they do raise the possibility that, if a child does not experience their parent's physical punishment as inherently cold and capricious, perhaps their vulnerability towards maladjustment would be minimized. That is, the sustained effect of the physical punishment may depend on the context in which it is used, and how both the child and parent interpret its purpose. If a child perceives their parents' use of physical punishment as an act of love and concern, as opposed to harsh and unjust treatment, then they may be less likely to exhibit patterns of maladjustment.

Very few published studies have examined parental warmth as a moderator of the

relationship between corporal punishment and externalizing behavior in children. Deater-Deckard and Dodge (1997) proposed that the effects of corporal punishment would be maximized in the context of a cold parent-child relationship; however, the researchers did not empirically test the relationship. In one of the few studies that have empirically tested the relationship, McCord (1979) found no interaction between the two variables in predicting aggression. It should be noted that data collection for this 5 year longitudinal study was completed in 1957, and that sample was fairly homogenous. The homogeneity of the sample leads to significant concerns about external validity, particularly 40 years later. Furthermore, it is noteworthy that some forms of physical punishment in the 1950-1960's might be considered abusive considering today's standard of acceptable forms of corporal punishment. Thus, the findings of the study should be interpreted with caution because physical abuse is universally accepted to have negative effects on child externalizing behavior when compared to normative physical punishment (Baumrind, Larzelere, & Cowan, 2002). It is essential that current researchers clearly define the line between normative physical punishment and that which is undoubtedly abusive in order to examine how normative physical punishment is related to children's socio-emotional functioning.

Several past studies have failed to uncover an interaction effect of normative corporal punishment and perceived caretaker warmth in predicting child psychological maladjustment (e.g., Rohner, Kean, & Cournoyer, 1991). Although the researchers found no significant interaction in predicting maladjustment, physical aggression was not included as an outcome. Interestingly, some researchers have contended that a physical punishment-parental warmth interaction is unlikely, suggesting covariation between the two variables. Wade and Kendler (2001) found that lower levels of maternal warmth predicted the use of physical discipline,

implying that perhaps maternal warmth and corporal punishment covary, making it highly unlikely to find a significant interaction between the two. In this study, however, parents were asked to retrospectively report on their disciplinary practices “when the child was growing up.” In some instances, these parents reported on their parenting styles almost 30 years later. McCord (1979) published similar findings and suggested that corporal punishment and parental warmth covary.

Both the Wade and Kendler (2001) and McCord (1979) studies share three methodological weaknesses, however. Both studies measured a general punishment variable categorically. For example, in the Wade and Kendler study, participants were asked to report on seven different disciplining techniques ranging from “send the child to their room” to “spanking” to “hitting with a brush, stick, or broom.” Responses indicating physical and non-physical forms of punishment were aggregated to create a dichotomous variable that assessed whether the parent used physical punishment. Many would argue that hitting a child with a belt is substantially different from what the researchers classified as “spanking.” The combination on these techniques oversimplifies the measurement of physical punishment. Furthermore, both studies referred to parenting techniques before 1970, a time where harsher disciplining techniques were more acceptable and common. Less attention was paid to other potentially important dimensions of physical punishment, such as severity, method, and frequency. Finally, both studies examined only maternal warmth, disregarding the potential impact of high paternal warmth on child adjustment. This is quite common amongst many studies examining parental warmth, in general.

Although the use of harsh physical punishment is apt to be positively correlated with low levels of parental warmth and support, little is known about how normative physical

punishment is related to parental warmth. Simons and colleagues (2001) found that lack of parental warmth was more strongly associated with maladjustment than was the simple use of physical punishment. In fact, when controlling for the effects of parental warmth, physical punishment was unrelated to aggression, delinquency, or psychological adjustment. Others have found that although physical punishment was slightly correlated with psychological maladjustment, it was negatively associated with children's psychological adjustment when it was perceived by the child to be a cold form of caretaker rejection (Rohner, Kean, & Cournoyer, 1991). Thus, it seems as though methodological and conceptual weaknesses inherent in the Wade and Kendler and McCord studies may have led the investigators to overlook the possibility that physical punishment and parental warmth do not necessarily covary, and may potentially interact with each other in predicting aggression in children.

To date, only one study has reported evidence that maternal warmth (conceptualized as maternal emotional support) moderates the relationship between physical punishment and aggression (McLoyd & Smith, 2002). In this longitudinal study, the researchers followed 2000 children for approximately 6 years (ages 4-5 at wave 1 and ages 10-11 at wave 4). The sample in this study was also ethnically diverse (25% Black, 25% Latino, and 50% White). The researchers found that as parental warmth increased, the impact of physical discipline on externalizing behavior problems decreased. Children who were spanked and whose mothers demonstrated higher levels of warmth had fewer problem behaviors than those children who were also spanked but had mothers who were less warm. In this study, the researchers also saw a general tendency for maternal warmth to serve as a main effect; that is, children of warmer mothers tended to display fewer behavior problems than those with mothers with less warmth. In addition, among children with high levels of maternal support, there was no

significant increase in behavior problems over time. The study elucidates the notion that the affective quality of a parent-child relationship may buffer or exacerbate the effects of physical punishment on child maladjustment.

Extending the Existing Body of Research Literature

Although externalizing behavior problems have been studied extensively, several limitations deriving from sample characteristics exist in the current literature. Much of the research has been conducted using White middle class samples. Little research has been conducted on rural lower income White individuals. Rural populations have historically been ignored in the literature until more recently. The current study examines the relationship among physical punishment, parental warmth, and aggression in an understudied sample that some have theorized would be less susceptible to negative effects imposed by physical punishment, namely lower income rural families. In particular, Deater-Deckard and Dodge (1997) have suggested that the impact of physical punishment may be minimized in lower income families because its potentially higher prevalence in these families may reduce the likelihood that children will react to it with maladjusted behaviors and attitudes.

There is also a dearth of literature examining fathers' parenting characteristics including, but not limited to, use of physical discipline as well as warmth. Rather, most studies on parenting behaviors and characteristics have focused primarily on mothers and their children. Studies examining fathers' contribution to child development are less prevalent, and even fewer studies have examined differences in mothers' and fathers' parenting characteristics and behaviors in predicting child outcomes. Because the majority of the families in the current study are two-parent in structure, a more global examination of both father and mother characteristics is possible. For example, can high paternal warmth

moderate maternal use of physical punishment in predicting aggression? How about high maternal warmth and father's use of physical punishment? The findings of this study will extend the literature in this area by examining the parenting behavior of both mothers and fathers.

In addition to the limitations deriving from sample characteristics, limitations also exist as a result of measurement inadequacies. Many researchers oversimplify the measurement of physical punishment, often electing to examine physical punishment as a dichotomous variable (e.g., used vs. not used), and many others examine the frequency of its use. However, to date, no research has examined physical punishment globally, including important dimensions such as intensity, frequency, and method. This study examines physical punishment as a single global score that reflects these important dimensions.

The primary hypothesis is that parental warmth at 24 months will moderate the relationship between physical punishment at 24 months and aggression at 54 months, while controlling for previously assessed baseline levels of aggression. Specifically, it is hypothesized that, in the presence of high levels of parental warmth, the effects of physical punishment on increased aggression 30 months later will be minimized. In the presence of lower levels of warmth, however, physical punishment is expected to be positively related to child aggression. Tests of the primary hypothesis are based on same-gendered parent data; that is, a mother's use of physical punishment, level of maternal warmth, and her own assessment of her child's aggression, and likewise for the fathers.

A secondary and more exploratory purpose of this study is to examine one parent's level of warmth as a moderator of the relationship between the other parent's use of physical punishment and the child's aggression. In other words, can the presence of high levels of

warmth from one parent buffer the effects of physical punishment administered by the other parent? It was hypothesized that the effects of one parent's physical punishment on child aggression will be minimized in the presence of high levels of parental warmth displayed by the opposite gendered parent.

CHAPTER 2

METHOD

Participants

The study utilized archival data from the National Institute of Mental Health Marriage and Family Study (MAF). The MAF is a completed longitudinal study designed to assess marital relationships and parenting as couples transitioned and adjusted to parenthood. A total of 138 families (mother, father, and child) were included in the study. Participants in the MHSEC were predominately White and from rural areas of North Carolina. Data used in the current study consisted of parental warmth, physical punishment, and child aggression at 24 as well as 54 months (24 and 54 months henceforth interchangeably referred to as Times 1 and 2, respectively). Participants were also predominately low income (M (father) = \$1478.77/month, sd= \$557.37; M (mother) = \$934.34/month, sd = \$635.18)).

Measures

Physical punishment. Parents' use of physical punishment at Time 1 was assessed using a semi-structured interview (Cox, 1993). Physical punishment was conceptualized and coded as a global construct consisting of three dimensions: intensity, frequency, and method of punishment. Although these three dimensions were not coded separately, they were reflected in the rating scale developed by the investigators. Three open-ended questions were used to assess physical punishment. Parents were asked: (a) What kinds of situations lead you to discipline your child?, (b) What kind of discipline do you use?, and (c) How often do

you use each kind of discipline? Based on these questions, coders rated each parent's global use of physical punishment on a 9-point likert-type scale ranging from 1 to 9. Under this coding scheme, parents with ratings of 1 did not endorse using physical punishment to discipline their children. Ratings of 5 were representative of parents who endorsed using moderate level of physical punishment, utilizing physical punishment on a fairly regular basis or with more intense forms of physical punishment. Parents with ratings of 9 were considered to use very high levels of physical punishment; that is, using physical punishment frequently and with high intensity, or a couple of incidents of extreme intensity. Parents in this category clearly lost control of their emotions while utilizing physical punishment (See Appendix A for scoring criteria; Cox, Paley, & Kanoy, 1995). Adequate interrater reliability of this coding schema was established with a Pearson correlation coefficient of .92.

Parental warmth. Parents' level of warmth was coded at Time 1 as parents were videotaped in an interaction task with their children. Specifically, each parent was separately asked to help their children complete an age appropriate children's puzzle. For the purpose of this study, parental warmth was conceptualized as positive regard. Past research has deemed positive regard as an acceptable substitute for parental warmth (Baumrind, 1991). Coders rated the level of positive regard using a 7-point likert-type scale ranging from 1 to 7. Positive regard was considered evident if parents listened to and made frequent eye contact with their child, as well as displayed positive feelings toward their child. Under this coding system (Cox, 1997), ratings of 1 represented a parent-child interaction characterized by very little, if any, parental warmth. Ratings of 1 could also represent a parent who displayed inappropriate, restricted, or flattened affect during the interaction task. Parents rated as 5 predominately displayed positive regard, but not necessarily consistently throughout the

interaction. Parents with ratings of 7 displayed consistent and exceptionally high levels of positivity and warmth towards their child. These parents showed a good range of spontaneous expressions and behaviors, all of which were positive (See Appendix B for scoring criteria; Cox, 1997). Adequate interrater reliability was established with a Pearson correlation coefficient of .85.

Aggression. Aggression was assessed using the aggressive behavior scale on the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) at Times 1 and 2. The 7-item scale measures the amount of physical aggression exhibited by children and utilizes a 4-point Likert-type scale ranging from (0) not at all to (3) very true. The CBCL aggression scale has repeatedly demonstrated adequate internal consistency reliability and construct validity in past studies of both non-psychiatric and psychiatric children and adolescents (Achenbach & Rescorla, 2001). The present study controlled for aggression at Time 1 in order to determine the relative increase in aggression over time resultant of the independent variables.

CHAPTER 3

RESULTS

Preliminary analyses included all variables tested in the regression models.

Descriptive statistics were initially computed to determine the distribution of all variables to be included in the analyses. All variables were normally distributed.

Table 1. Descriptive statistics for study variables

Variable	N	Mean	SD	Range
Aggression (24) – father	128	7.79	4.97	0-24
Aggression (24) – mother	133	7.75	4.47	0-21
Parental warmth (24) – father	135	4.12	1.56	1-7
Parental warmth (24) – mother	135	4.04	1.55	1-7
Physical punishment (24) – father	125	5.36	2.18	1-9
Physical punishment (24) – mother	134	5.15	2.21	1-9
Aggression (54) – father	91	7.21	4.28	0-20
Aggression (54) – mother	105	7.86	4.87	0-26

Independent sample t-tests were also run to determine if mothers and fathers generally differed in their physical punishment and parental warmth ratings, as well as their reports of their child aggression. Results from t-tests revealed no significant differences

between fathers' and mothers' use of physical punishment at 24 months ($t(121)=.32, p=.32$). Similarly mothers and fathers did not exhibit significantly different levels of parental warmth at 24 months ($t(127)=.42, p=.68$). Finally, parents did not differ in the reporting of their children's aggression at 24 ($t(126)=.28, p=.26$) or 54 ($t(91)=.30, p=.29$) months.

A separate set of t-tests was run to determine if parents differed in their scores based on their child's gender. Neither fathers nor mothers reported child gender-related differences in their use of physical punishment at 24 months ($t(123)=.42, p=.67$ and $t(132)=.08, p=.94$, respectively). Similarly, neither fathers nor mothers exhibited gender-related differences in their parental warmth at 24 months ($t(128)=.819, p=.41$ and $t(133)=.86, p=.39$), respectively.

Regarding their reports of their child's aggression, neither fathers nor mothers reported gender-related differences in their children's aggression at 24 months ($t(128)=-.04, p=.97$) and $t(131)=-.36, p=.72$, respectively). Although fathers reported no significant gender-related differences at 54 months ($t(89)=-.45, p=.65$), mothers reported marginally significant gender-related differences at 54 months, suggesting that boys ($M=8.78$) were somewhat more likely to be more aggressive than girls ($M=7.14$) at 54 months, although this difference did not reach statistical significance, $t(103)=1.74, p=.09$.

Bivariate Pearson correlations were computed to determine the general relatedness among all variables used in the primary analyses – that is, physical punishment and parental warmth at 24 months and aggression at both 24 and 54 months.

Table 2. Correlations among study variables

Construct	1	2	3	4	5	6	7	8
1. Father punish (24)	—	.43**	-.04	-.24**	.15	.18*	.07	.10
2. Mother punish (24)		—	-.10	-.30**	.16	.30**	.11	.16
3. Father warmth (24)			—	.38**	-.09	-.12	-.03	-.10
4. Mother warmth (24)				—	-.22*	-.22*	-.22*	-.11
5. Father aggr. (24)					—	.47**	.41**	.29**
6. Mother aggr. (24)						—	.29**	.44**
7. Father aggr. (54)							—	.46**
8. Mother aggr. (54)								—

* p<.05 ** p<.01

As shown in the table, fathers' use of physical punishment was positively related to mothers' use of punishment ($r=.43$, $p<.01$) and negatively related to maternal warmth ($r=-.24$, $p<.01$), but not to aggression. Mothers' use of physical punishment was also negatively related to maternal warmth ($r=-.30$, $p<.01$), but was unrelated to child aggression at 54 months. Furthermore, maternal warmth was negatively related to fathers' appraisal of his child's aggression at 54 months ($r=-.22$, $p<.05$). Both parents' level of warmth were positively correlated with each other ($r=.38$, $p<.01$). Finally, mother and father's appraisal of their child's aggression at 54 months were positively correlated ($r=.46$, $p<.01$).

Among those variables assessed at 24 months, both fathers' and mothers' use of physical punishment was positively related to mother's perception of child aggression ($r=.18$,

$p < .05$ and $r = .30$, $p < .01$, respectively). Neither parent's use of physical punishment was related to fathers' perceptions of child aggression, however. Paternal warmth was not significantly related to either parent's report of child aggression. Nevertheless, maternal warmth was related to father and mother report of child aggression ($r = -.22$, $p < .05$ and $r = -.22$, $p < .05$, respectively). Finally, father and mother report of child aggression were positively related ($r = .47$, $p < .01$).

The table also suggests that, per mother and father report, aggression scores at 24 and 54 months were positively related. That is, those children who were rated high on aggression at Time 1 tended to be aggressive at Time 2 as well.

Primary Results

Attrition rates were relatively high, ranging from 21 to 29 percent for mothers and fathers, respectively. Specifically, of the original 133 mothers and 128 fathers at Time 1, aggression data was available for only 105 and 91 of the mothers and fathers at Time 2, respectively. The method used to correct for this attrition was multiple imputation (MI). Multiple imputation is a technique used to predict missing values based on a basic multiple regression model with a random component, while attempting to simultaneously correct for the variance to reduce the bias that is resultant of missingness. Aggression scores at 54 months were imputed. Support for the validity and reliability of MI is strong as long as three basic assumptions are satisfied (Allison, 2001). First, the model used is to be a standard linear model. Second, continuous variables are preferred. Third, MI is best suited when the value of the variables missing is independent of the probability of missingness conditional on the other variables in the imputation model. Thus, proxy variables that might account for the missing variables are helpful to include in the imputation process. In this case, SES was used

as a proxy variable, as individuals with lower SES (relative to the rest of the sample) were more likely to be missing data at Time 2. Thus, given the basic assumptions that underlie this technique, the technique was deemed appropriate and acceptable.

Parental warmth was dummy coded in order to trichotomize the variable, creating low, moderate, and high warmth categories. Those parents who scored within one deviation of the sample mean were referred to as exhibiting “moderate levels” of parental warmth. “Low levels” of parental warmth was defined as those scores that were more than one standard deviation below the mean, and “high levels” of parental warmth was reflected by scores more than one standard deviation above the sample mean. This is a commonly accepted method of trichotomizing a continuous variable. In order to maximize statistical power potentially needed to detect moderation among the given variables, multiple regression analyses were also computed entering parental warmth as a continuous variable. The results of this set of analyses essentially mirrored those of the analyses where parental warmth was trichotomized; thus, only the analyses with the trichotomized parental warmth variable are reported.

To test the primary hypotheses that parental warmth at 24 months will moderate the relation between physical punishment at 24 months and aggression at 54 months, ordinary least squares (OLS) longitudinal multiple regression analyses were conducted. The analyses examined the relationship of the relevant variables using each parent’s data; that is, a given parent’s use of physical punishment, level of parental warmth, and report of child aggression. The hypotheses of the study were not supported. The analyses revealed that paternal warmth did not significantly moderate the fathers’ use of physical punishment in predicting his report of child aggression, $F(7,140) = .37, p = .69$. Likewise, maternal warmth did not significantly

moderate mothers' use of physical punishment in predicting their report of child aggression, $F(2, 92) = .52, p = .59$.

To test the exploratory and secondary hypotheses that one parent's level of parental warmth will moderate the relationship between the other parent's level of physical punishment and their child's aggression, multiple regression analyses were also conducted. Maternal warmth did not moderate the relationship between fathers' use of physical punishment in predicting fathers' perception of child aggression, $F(2, 126) = .04, p = .97$. This same model was used to predict mothers' perception of child aggression, and produced similar results, $F(2, 148) = .38, p = .68$.

Results further revealed that paternal warmth did not moderate the relationship between mothers' use of physical punishment and father's reports of child aggression, $F(2, 174) = .23, p = .37$. This same model was used to predict mothers' perception of her child's aggression, and produced similar results, $F(2, 201) = .18, p = .83$.

Table 3. Regression analyses predicting parent report aggression scores from physical punishment and parental warmth interaction

Variable	Parent-report CBCL aggression scores	
	Father	Mother
PP (F) x PW (F)	.37 (.33)	--
PP (M) x PW (M)	--	.52 (.59)
PP (F) x PW (M)	.04 (.03)	.38 (.34)
PP (M) x PW (F)	.23 (.19)	.18 (.23)

Note. Analyses control for aggression at 24 months. Tabled values are unstandardized regression coefficients and standard errors (in parentheses)

PP= Physical punishment; PW = Parental Warmth
F= Father; M=Mother

CHAPTER 4

DISCUSSION

The current investigation yielded no evidence that parental warmth moderates the relationship between physical punishment and young children's aggression. Individual effects of physical punishment on aggression were negligible. These null findings persisted despite various combinations of parent gender-specific techniques and characteristics. Originally, it was thought that the dummy coding of the variables potentially reduced power so that the differences were too difficult to detect. However, the lack of significance was also revealed in later analyses where parental warmth was measured as a continuous variable.

Analyses testing the main effects of physical punishment and parental warmth at 24 months on aggression at 54 months were not statistically significant. Perhaps this suggests that normative physical punishment and parental warmth at two years old do not have effects that can be detected 30 months later. Nevertheless, this stands in striking contrast with many of the existing studies that have detected effects and suggested casual links lasting well into adulthood (Straus & Yodanis, 1996). The main effects found in this study were fairly small, and would be difficult to detect even with substantial power. Even with significant findings, the effect size would merit interpretive caution when determining the true meaningfulness of such findings.

Although the primary and secondary hypotheses were not supported, several preliminary findings merit attention. The popular thought that parents who use physical

punishment are more likely to display lower levels of parental warmth (McCord, 1979; Wade & Kendler, 2001) was not fully supported in the findings. In fact, there was no significant relationship between fathers' use of physical punishment and level of warmth. This suggests that parents can, in fact, be warm and nurturing while still utilizing a disciplinary method that includes physical punishment. Despite this, mothers who used higher of physical punishment generally exhibited lower levels of warmth as well. Furthermore, fathers' use of physical punishment was negatively related to mothers' level of warmth. While this relationship is concerning, results of the primary analyses suggest no significant effects of such paternal use of physical punishment and maternal warmth. Similarly, the level of parental warmth displayed by fathers was positively related to that displayed by mothers. Together, this combination of results provides some empirical evidence that father-mother pairs concurrently vary greatly in their parenting characteristics and techniques.

Another interesting finding was that fathers and mothers tended to use comparable levels of physical punishment. However, neither physical punishment nor parental warmth was related to the child aggression at 54 months, and this was true for both parents. This finding did not hold true for aggression at 24 months, however. Fathers and mothers who exercised higher levels of physical punishment tended to have children who displayed higher levels of aggression, according to mothers. Furthermore, results suggested that mothers who were warmer had children who were rated by both parents as less aggressive. The time-specific discrepancy in these results suggests that, although there may be no association between physical punishment or parental warmth and child aggression 30 months later, the relationship may be more contemporaneously significant. Although premature, an argument might be made that the relationship among these variables when physical punishment is not

abusive may diminish over time.

Limitations and Directions for Future Research

Several limitations of the current investigation may have contributed to the predominately null findings and thus, need to be acknowledged. First, there was a substantial amount of missing data in the longitudinal models tested. Although multiple imputation was used to correct for this problem, it has been noted that this process does increase the variance (e.g., Allison, 2002), therefore making it less likely to find significant results in the face of the small effect sizes. The current hypotheses overestimated the predicted effect sizes. With smaller effect sizes and greater variance, significant interaction effects are difficult to detect.

Measurement of the independent variables, specifically physical punishment, might have also contributed to the lack of findings in the current study. Although the physical punishment measure considered the multidimensionality of physical punishment, it did not allow for these dimensions to operate independently of and in unexpected directions from each other. For example, higher scores represented more intense and frequent use of physical punishment with objects such as a hand or belt. However, the coding scheme makes it difficult to categorize a parent who administers physical punishment more frequently, but with lower intensity. Many researchers contend that the multidimensionality of physical punishment is difficult to adequately capture and measure (Simons, Johnson, & Conger, 1994), and consequently, multidimensional measures of physical punishment are scarce.

Third, the sample consists of rural, lower SES White families in North Carolina. Thus, the findings may lack external validity. Past researchers have suggested that the effects of physical punishment may vary across ethnicity or SES (Deater-Deckard & Dodge,

1997). It has been postulated that the effects are less visible in lower SES samples, and the small individual effects of physical punishment in this low SES sample may have made it more difficult to detect interaction effects.

Also, the time between Times 1 and 2 (approximately 30 months) may have been too long to detect effects of normative physical punishment clearly short of abuse. Simons and colleagues (1994) noted that much of the research on physical punishment and aggression has been conducted with abused and neglected children, increasing the likelihood that the children are already aggressive. As such, it is completely feasible to posit that the effects of “normative” physical punishment are not long lasting. However, in the face of normative, non-abusive punishment, perhaps the effects are minimal and therefore not apparent 30 months later.

Another factor that may have contributed to the null findings of the current study is the fact that the regression models controlled for aggression at Time 1 in order to predict aggression at Time 2, deeming the tests inherently more stringent in nature. The hypotheses of the study were not to examine the relationship of physical punishment and parental warmth in predicting aggression, but rather to determine how these two independent variables related to each other to impact aggression above and beyond the aggression assessed by parents at Time 1. Given the overall small effect sizes, significant rises or declines in aggression were difficult to detect. Furthermore, because aggression generally tends to be stable, the likelihood that these small effect sizes would significantly impact aggression was unlikely. Given this, it is not surprising that null results dominated the findings.

Strengths and Conclusions

Despite its limitations, this study has some strengths, both methodologically and theoretically. The physical punishment scale used in the current study is among the first to conceptualize, incorporate, and measure various dimensions of the construct. Although it may be appropriate to measure these dimensions separately to determine their incremental effect, such a measure sets a higher operational standard for future researchers. This study also builds upon a growing body of literature that proposes that other parenting variables may account for the physical punishment-childhood aggression link. Not all children whose parents utilize physically punishment become aggressive. This study is among the various studies that are currently examining other process variables to account for that discrepancy.

In the future, researchers should consider constructing valid, more sophisticated measures of physical punishment in order to disentangle the individual and joint effects of intensity, frequency, and method of punishment. It is likely that the varied findings in the literature are due in part to measurement and conceptual difficulties. Relatedly, future researchers may wish to consider the adolescent's perception of the child's warmth. While this study has an excellent objective measure of parental warmth, research has suggested that it is the child's own attributions that guide their behavior (e.g., Grusec & Goodnow, 1994; Lansford et al., 2005; Simons, Johnson, & Conger, 1994). Thus, despite being rated "warm" by the objective viewer, if a child perceives his parents as cold and capricious, that child is more likely to respond in ways consistent with that interpretation. Given that, using a child-report form of parental warmth may offer unique and meaningful advantages to future researchers in uncovering links among parents' use of physical punishment, parental warmth, and childhood aggression.

Finally, future researchers might also want to include a more diverse sample to determine if other demographics, such as ethnicity or SES, are at all related to the relevant variables. This study's sample population is extremely limited demographically. Deater-Deckard and Dodge (1997) proposed that the physical punishment-aggression link may be moderated by demographic variables. It is also likely that demographic-related process variables mediate the relationship. The lack of diverse samples may also account for the inconsistencies in the findings across researchers.

Appendix A:

Coding schema for physical punishment variable

1 = No evidence

2 = Parent using a very mild form of physical punishment once or twice

3 = Low; Parent acknowledges use of some mild form of physical punishment but may use them more frequently or with less explanation OR one incident that was intense but has decided not to use physical punishment anymore.

4 = Parent uses physical punishment more frequently (2 times a month) or with a little more intensity. Explanations may occur more sporadically.

5 = Medium; Parents reports using a more intense form of physical punishment or on a fairly regular basis

6 = Parent acknowledges the regular use of physical techniques and may reveal anger or frustration during punishment episodes

7 = High; Parent acknowledges that spanking or some other form of physical punishment is the most common form of punishment and that one or more forms are used regularly.

8 = Physical punishment is used frequently and often accompanied by anger from the parent. Harshness is evident

9 = Very High; Parent uses physical punishment techniques regularly and with high intensity OR a couple of incidents of extreme intensity. Parents may use objects. Parent has lost control over his/her emotions.

Appendix B:

Coding schema for positive regard (parental warmth) variable

This scale rates the parents positive feelings towards the child, expressed during interaction with him/her. Positive feelings are shown by: (a) speaking in a warm tone of voice; (b) hugging or other expressions of physical affection (c) an expressive face; (d) smiling; (e) laughing with the child; (f) enthusiasm about the child; (g) praising the child; and (h) general enjoyment of the child. Positive regard is evident when parent listens, watches attentively, looks into the child's face when talking to him/her, has affectionate physical contact and is playful.

1 = Not at all characteristic. This rating should be used for parents who show little, if any of the markers above. This rating can also be used for positive expressions (laughing, smiling) that appear to be inappropriate to the situation or an inaccurate reflection of the parent's feelings. The parent may be expressionless or flat, or negative

2

3 = Minimally characteristic. This rating should be given to parents who display infrequent or weak signals of positive regard. The intensity and frequency of behavioral indicators of positive regard are both low.

4

5 = Moderately characteristic. This rating should be given to the parent who predominately displays positive regard. More frequently and intense positive affect is shown than in the 3 rating, but parent is not consistently positive as those scored as a 7.

6

7 = Very characteristic. This rating should be give to parents who are exceptionally positive, in terms of facial and vocal expressiveness and behavior. Affect is positive and spontaneous. The parent shows a range of expressions and behaviors which are all clearly positive. He/she clearly "delights" in the child.

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