Childhood Physical Abuse and Adolescent Poor Peer Relations: A Study of Mediation by Interpersonal Factors in Two Developmental Periods

Erica C. Chin

Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
under the Executive Committee
of The Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2014

© 2014
Erica C. Chin
All Rights Reserved

ABSTRACT

Childhood Physical Abuse and Adolescent Poor Peer Relations: A Study of Mediation by Interpersonal Factors in Two Developmental Periods

Erica C. Chin

Childhood physical abuse has been studied for almost 50 years now, resulting in rich knowledge about the immediate and long-term effects on development. For the most part, research has focused on understanding childhood physical abuse as a risk factor for psychopathology, including depression and antisocial behaviors, as such outcomes have clear consequences and costs for society as a whole. However, outcomes related to general social functioning and, more specifically, intimate relationship functioning are also important to study as they may contribute to perpetuation of violence. Children with histories of physical abuse are more likely to have difficulties with multiple aspects of interpersonal functioning, including how they relate to their parents and peers, how they perceive their social worlds, and how they are perceived by others. Given that preadolescence and adolescence are developmental periods when social relationships are particularly important, examining the role of interpersonal factors during these times may provide new insight into understanding the link between childhood physical abuse and later problems in peer relations. As such, the present study hypothesized that various aspects of interpersonal functioning in preadolescence and adolescence within the domains of attachment, social behavior, social cognition, and social status, mediate the relationship between childhood physical abuse and adolescent social functioning in general and with romantic partners more specifically.

Seventy-five adolescents with a history of childhood physical abuse on the New York City Register and 78 matched classmate controls were studied at age 10.5 years and 16.5 years. During both phases, data were collected from the subjects, teachers, parents, and peers. Problematic attachment to parents, aggression, social misperception, and peer rejection status, all during preadolescence, were expected to partially explain the relationship between childhood physical abuse and adolescent poor peer relations. Changes in problematic attachment to parents and aggression from preadolescence to adolescence were also expected to partially explain this relationship.

Hierarchical and logistic regression analyses indicated that social misperception and aggression were both significant mediators of the relationship between childhood physical abuse and adolescent poor peer relations. Findings indicated social misperception during preadolescence partially explained the association between childhood physical abuse and adolescent social problems in general, and more specifically the association between childhood physical abuse and problematic intimate relationship functioning (i.e., dating violence). Findings also indicated that preadolescent aggression partially mediated the relationship between childhood physical abuse and adolescent general social problems. Contrary to expectations, neither problematic attachment to parents nor peer rejection status was found to significantly mediate the relationship between preadolescent physical abuse and adolescent poor peer relations. Changes from preadolescence to adolescence in problematic attachment and aggression were also found to be nonsignificant mediators. Of note, change in problematic attachment over time predicted dating violence in adolescence. Findings are discussed within the context of implications for intervention and future research directions.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES v

ACKNOWLEDGEMENTS vii

Chapter **Page**

I. INTRODUCTION 1

Theoretical Frameworks 2

Ecological Perspective 4

Attachment Theory 5

Social Learning Theory 6

Social Cognitive Perspective 6

Review of Literature 8

Introduction to Literature Review 8

Definitions 9

Prevalence 9

The Association Between Childhood Physical Abuse and Selected Interpersonal Factors Hypothesized to Serve as Mediators 11

Childhood Physical Abuse and Attachment 11

Childhood Physical Abuse and Aggression 12

Childhood Physical Abuse and Social Cognition 15

Childhood Physical Abuse and Peer Social Status 17

The Association Between Interpersonal Factors Selected as Potential Mediators and Peer Relations 18

Attachment and Peer Relations 18

Aggression and Peer Relations 19

        Social Cognition and Peer Relations 21

        Peer Social Status and Peer Relations 22

    The Association Between Childhood Physical Abuse and Adolescent Poor Peer Relations 23

    Other Factors Associated with Childhood Physical Abuse and Peer Relations 25

        Gender 25

        Race/Ethnicity 26

    Problem Statement 27

    Hypotheses 28

II. METHODS 31

        Subjects 31

        Procedure 35

        Measures 37

            Childhood Physical Abuse 38

            General Social Problems in Adolescence 39

            Dating Violence in Adolescence 39

            Problematic Parent Attachment in Preadolescence 40

            Aggression in Preadolescence 41

            Social Misperception in Preadolescence 41

            Peer Rejection in Preadolescence 42

            Problematic Parent Attachment in Adolescence 43

            Aggression in Adolescence 44

        Associations Among Potentially Confounding Demographic and Response Pattern Factors and Variables of Interest 47

Missing Data Analysis 49

Data Analysis 52

III. RESULTS 55

Bivariate Associations Between Variables of Interest 55

Model 1a: The Mediating Effect of Preadolescent Aggression on the Association between Childhood Physical Abuse and General Social Problems in Adolescence 58

Model 1b: The Mediating Effect of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and General Social Problems in Adolescence 59

Model 1c: The Mediating Effect of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and General Social Problems in Adolescence 60

Model 1d: The Mediating Effect of Preadolescent Aggression on the Association between Childhood Physical Abuse and Dating Violence in Adolescence 61

Model 1e: The Mediating Effect of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and Dating Violence in Adolescence 62

Model 1f: The Mediating Effect of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and Dating Violence in Adolescence 63

Model 2a: The Mediating Effect of Change in Problematic Attachment to Parents from Preadolescence to Adolescence on the Association between Childhood Physical Abuse and General Social Problems in Adolescence 65

Model 2b: The Mediating Effect of Change in Problematic Attachment to Parents from Preadolescence to Adolescence on the Association between Childhood Physical Abuse and Dating Violence in Adolescence 66

IV. DISCUSSION 68

Overview of Findings 68

The Longitudinal Association Between Childhood Physical Abuse and Adolescent Poor Peer Relations 69

Social Misperception as a Hypothesized Mediator 70

Aggression as a Hypothesized Mediator 71

Attachment as a Hypothesized Mediator 74

Peer Rejection as a Hypothesized Mediator 75

Welfare Status and Family Structure 77

Strengths of the Current Study 78

Limitations of the Current Study 79

Future Research and Implications for Intervention 81

REFERENCES 83

APPENDIX A. Measure of General Social Problems in Adolescence 97

APPENDIX B. Measure of Dating Violence in Adolescence 98

APPENDIX C. Measure of Problematic Parent Attachment in Preadolescence 99

APPENDIX D. Measure of Aggression in Preadolescence 100

APPENDIX E. Measure of Social Misperception in Preadolescence 101

APPENDIX F. Measure of Peer Rejection in Preadolescence 102

APPENDIX G. Measure of Problematic Parent Attachment in Adolescence 103

APPENDIX H. Measure of Aggression in Adolescence 105

APPENDIX I. Analyses With Control Variables (Family Structure and Welfare) 106

LIST OF TABLES AND FIGURES

Tables

Table 1: Summary of Hypotheses 30

Table 2: Demographic Characteristics of Child Abusing and Comparison Families 32

Table 3: Demographic Characteristics of Follow-Up Families 34

Table 4: Summary of Measures 44

Table 5a: Descriptives of Variables of Interest 45

Table 5b: Means (SDs) of Variables of Interest by Abuse and Control Groups 47

Table 6: Unadjusted Odds Ratios (95% Confidence Intervals) Representing Bivariate Associations Among Gender and Race/Ethnicity and Variables of Interest 48

Table 7: Bivariate Correlations Between Social Desirability and Variables of Interest that Involved Self-Report 49

Table 8a: Missing Data Analysis for T1 Aggression 51

Table 8b: Missing Data Analysis for T2 Problematic Attachment 51

Table 8c: Missing Data Analysis for T2 Dating Violence 51

Table 9a: Unadjusted Odds Ratios (95% Confidence Intervals) and/or Correlations Representing Bivariate Associations Among Variables of Interest 57

Table 9b: Pearson's Correlations Representing Bivariate Associations Among Childhood Physical Abuse and Change in Attachment/Aggression 58

Table 10: Linear Regression Model Testing for Hypothesized Mediation of Preadolescent Aggression on the Association between Childhood Physical Abuse and Adolescent General Social Problems 59

Table 11: Linear Regression Model Testing for Hypothesized Mediation of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and Adolescent General Social Problems 60

Table 12: Linear Regression Model Testing for Hypothesized Mediation of Preadolescent Peer Rejection on the Association between Childhood Physical Abuse and Adolescent General Social Problems 61

Table 13: Logistic Regression Model Testing for Hypothesized Mediation of Preadolescent Aggression on the Association between Childhood Physical Abuse and Adolescent Dating Violence 62

Table 14: Logistic Regression Model Testing for Hypothesized Mediation of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and Adolescent Dating Violence 63

Table 15: Logistic Regression Model Testing for Hypothesized Mediation of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and Adolescent Dating Violence 64

Table 15a: Logistic Regression Model Testing for Effect of Preadolescent Peer Rejection Status on Dating Violence in Adolescence, Stratified by Abuse 64

Table 15b: Logistic Regression Model Testing for Effect of Preadolescent Peer Rejection Status on Dating Violence in Adolescence, Stratified by Non-Abuse Status 65

Table 16: Linear Regression Model Testing for Hypothesized Mediation of Change in Problematic Parent Attachment on the Association between Childhood Physical Abuse and Adolescent General Social Problems 66

Table 17: Linear Regression Model Testing for Hypothesized Mediation of Change in Problematic Parent Attachment on the Association between Childhood Physical Abuse and Adolescent Dating Violence 67

Figures

Figure 1: Model 1: General Model for Preadolescent Interpersonal Factors as Mediators 3

Figure 2: Model 2: General Model for Adolescent Interpersonal Factors as Mediators 3

ACKNOWLEDGEMENTS

I am deeply grateful to my research mentor, Dr. Suzanne Salzinger, who has taught me immeasurable amounts. I have benefited from her patience, kindness, passion, and extensive knowledge about this line of research and life in general. Her support and confidence in me have guided me through this process, for which I am ever thankful.

Thank you to Dr. Marla Brassard, my dissertation sponsor and professor, who has offered me encouragement and support through my graduate career. Thank you also to Dr. Margaret Rosario, for her constructive feedback and guidance throughout the development of this dissertation. I fully appreciate her willingness to share her insight and time with me. I am also grateful to Dr. Stephen Peverly and Dr. Helen Verdeli for agreeing to be a part of my committee and providing invaluable feedback—thank you.

I would additionally like to thank Dr. Richard Feldman and Dr. Daisy Ng-Mak, in addition to Dr. Salzinger and the original team of researchers, for their commitment to studying child maltreatment and developing a rich database of invaluable information. Without them and their incredible efforts to collect data from hundreds of youth from all neighborhoods of New York, this dissertation would not have been possible. I am honored to have had the opportunity to use their archival data for my current research.

Lastly, thank you to my family whose endless love and support have sustained me throughout this challenging yet rewarding journey. Mom, Dad, Wes, and Elissa have inspired me and instilled in me a love for learning and helping others. And to my husband, Albert, I so lovingly appreciate your unwavering belief in me and your patience with the countless hours I spent dedicated to this work. I know this would not have been possible without you next to me.

Chapter I

INTRODUCTION

Child maltreatment is a significant problem that affects generations of families and communities. Child maltreatment was first exposed as a public health problem almost fifty years ago (Kempe & Helfer, 1968) and since then, studies have revealed that children who experience physical abuse, the form of child maltreatment investigated in this paper, develop maladaptive social relations that tend to reverberate throughout childhood and adolescence and into adulthood. Young children who have experienced physical abuse tend to be less well-liked by their peers, less popular, more aggressive, and more withdrawn (Egeland, Yates, Appleyard, & van Dulmen, 2002). Then, in adolescence, these youth demonstrate less intimacy and more conflict with their friends (Parker & Herrera, 1996), are more likely to display antisocial behaviors (Egeland, Yates, Appleyard, & van Dulmen, 2002), and are more aggressive even with nonfamily members and dating partners (Malinosky-Rummell & Hansen, 1993). These youth have also been found to exhibit social cognition biases in how they perceive their social worlds (Dodge, Pettit, & Bates, 1990; Pollak & Sinha, 2002).

Essentially, physical abuse has a pervasive effect on many aspects of children's interpersonal functioning, suggesting that these youth are at high risk for continued social problems unless intervention is employed. However, much of the extant research and interventions have focused on psychopathology such as anxiety or delinquency rather than interpersonal relationships and social functioning. Thus, it is the hope that findings from empirical studies, such as this one, will more specifically guide the development of interventions tailored to helping physically abused youth establish healthy and nonabusive peer relationships and steer them down a path different from the one in which they were raised.

Theoretical Frameworks

The present study attempts to better understand the longitudinal relationship between childhood physical abuse and later maladaptive peer relations by examining aspects of interpersonal functioning with parents and peers as potential mediators during preadolescence and during adolescence. Relying on an ecological perspective and influenced by theories of attachment, social learning, and social cognition, the proposed mediators include the following interpersonal factors: attachment to parents, aggression, social misperception, and peer rejection. The following figures of the main hypotheses (Figures 1 and 2), which will be described in detail later, are put forth here to help guide the subsequent literature review.

Figure 1

Model 1: General Model for Preadolescent Interpersonal Factors as Mediators

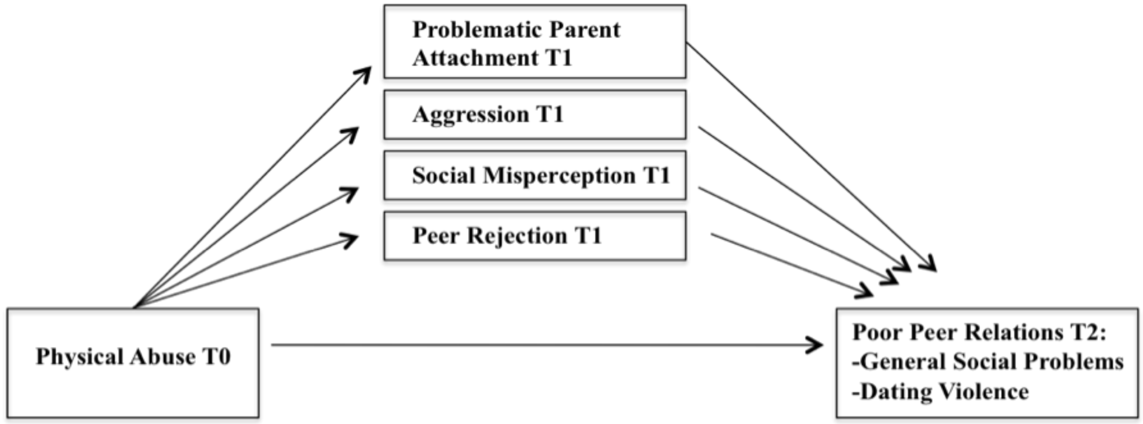
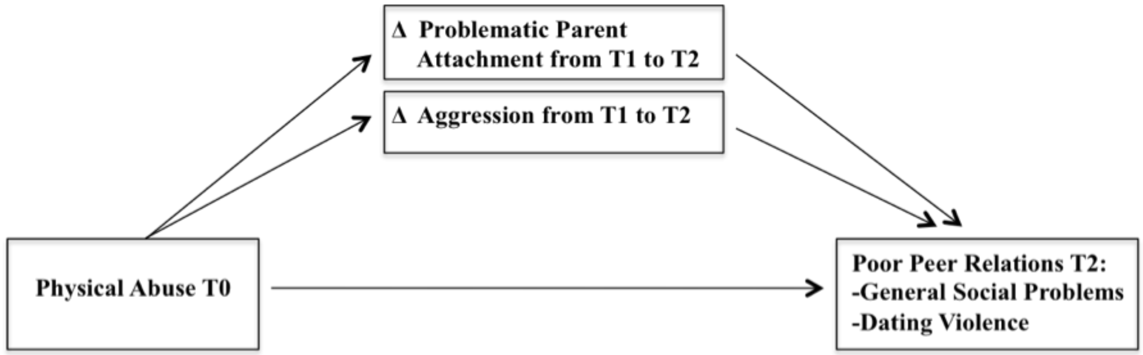

Problematic Parent Attachment T1
Aggression T1
Social Misperception T1
Peer Rejection T1
Physical Abuse T0
Poor Peer Relations T2:
-General Social Problems
-Dating Violence

Figure 2:

Model 2: General Model for Adolescent Interpersonal Factors as Mediators


Δ Problematic Parent Attachment from T1 to T2
Δ Aggression from T1 to T2
Physical Abuse T0
Poor Peer Relations T2:
-General Social Problems
-Dating Violence

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian (1=problematic, 0 = not problematic); Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Δ/Change Prob. Parent Attachment T2 = standardized residual scores from regressing T2 attachment on T1 attachment; ΔChange Aggression from T1 to T2 = standardized residual scores from regressing T2 aggression on T1 aggression; Prob. Parent Attachment from T1 to T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale t-score (CBCL; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Ecological Perspective

Advocates of an ecological framework posit that humans develop within and are influenced by a number of social contexts, including the family and peer microsystems. The ecological perspective recognizes, as stated in a review by Bronfenbrenner (1986), that "although the family is the principal context in which human development takes place, it is but one of several settings in which developmental processes can and do occur" (p. 723). The family serves as proximal influence on child development, while peers, school, and community serve as more distal influences (Bronfenbrenner, 1986). However, proximity of influences in a child's life tends to change with development; peers gain increasingly more importance as a child moves into adolescence while family influence may decrease. Elements of these contexts inevitably interact, as social relations and behaviors with peers are influenced by those which are first established within the family (Olsen, Parra, & Bennett, 2010). Moreover, peer relations, as developed in contexts outside of the family, such as school, have long been known to influence the cognitive and social development of children (Hartup, 1983; Piaget, 1932; Sullivan, 1953). Experiences with peers can be very powerful; positive relations are thought to help protect children from the negative effects of poor biological and environmental circumstances (Cicchetti, Toth, Bush, & Gillespie, 1988), while negative peer experiences may exacerbate those effects. Thus, rather than simply studying the main effects of child abuse on social relations, it seems more important to examine the mechanisms underlying their dynamic association. In particular, viewing interpersonal relations with both parents and peers as mediating variables might allow us to better understand the nature of the association between childhood physical abuse and later social functioning.

Attachment Theory

It would be remiss to conduct a study on child abuse and peer relationships without discussing the role of attachment. Bowlby (1979, p. 135) wrote, “There is a strong causal relationship between an individual’s experiences with his parents [attachments] and his later capacity to make affectional bonds.” Sroufe and Waters (1977) elaborated on Bowlby’s work on attachment (1969), describing basic characteristics of attachment as the formation of an affective bond with caregivers and the establishment of a secure base. They emphasized the role of learning from child-caregiver interactions in the formation of attachment, which is known to develop early on and serve as a working model to guide behavior and interactions with others. In a basic sense, with regard to peer relations, attachment to parents provides a set of expectations about relationships and interactions with others, in addition to a foundation for interpersonal skills and emotion-regulation abilities to successfully relate to peers (Sroufe, Egeland, Carlson, & Collins, 2005). Insecure or problematic attachment to parents has been associated with early child abuse (Carlson, Cicchetti, Barnett, & Braunwald, 1989), and there is evidence for the mediating role of attachment in the association between parent-child interactions and peer relations and later romantic relationship interactions (Roisman et al., 2001). As such, it is important to consider the influence of attachment theory when examining the short and long-term effects of child abuse on social development, particularly with regard to how one interacts with the social world in general and more specifically in intimate relationships.

Social Learning Theory

Social learning theory provides additional support for a more explicit pathway between childhood physical abuse and poor peer relations. Social learning theory states that people learn through modeling and observation; in particular, children have been shown to be susceptible to imitating aggressive behavior after witnessing aggressive behavior in people they admire (Bandura, 1977; Bandura, Ross, & Ross, 1963). This theory implies that children who have been victims of physical abuse may have a greater likelihood of perpetrating physically abusive behaviors towards others and, subsequently, exhibiting overall poor social functioning. From a related perspective, children rejected by their peers early on may lack the essential healthy experiences to develop normal peer relationships. Without the opportunities to observe modeling of and engage in positive interpersonal relations, children who are maltreated and rejected learn maladaptive patterns of relationship. Accepted children, on the other hand, experience more normal patterns of interaction with their peers and are more likely to develop healthy interpersonal skills in adolescence and beyond (Bagwell, Newcomb, & Bukowski, 1998). Accordingly, it seems likely that physically abused children are at increased risk of developing poor relationship patterns, such as aggressive behaviors, that have the potential to be maintained into adolescence and adulthood.

Social Cognitive Perspective

Additionally, it is important to consider the influence of cognitive processes on how physically abused children develop poor social functioning. Children who have been physically abused and children who have been rejected by their peers have been found to possess a social information processing problem, specifically a hostile attribution bias

(Dodge et al., 2003; Dodge, Pettit, Bates, & Valente, 1995;). Hostile attribution bias is a tendency for individuals to attribute hostile intentions to socially ambiguous behavior. For both abused and rejected children, this problem in social cognition has been shown to increase risk for antisocial and externalizing behaviors. Another example of problematic social cognition is unreciprocated social expectations. For example, social misperception may occur when children perceive others as their friends but that sentiment is not reciprocated. Prinsten et al. (2009, p. 561) stated, “Overestimation of their peer status contributes to misinterpretations of social events by youth and inappropriate behavioral responses that further exacerbate peer rejection” and are a detriment to social skills development. Overall, social cognition is an important factor to consider in understanding the development of peer relations. In fact, the “most consistent and fruitful line of inquiry [regarding the role of peer experiences] uses a social-cognitive framework for understanding links between peer reputations and adjustment” (Prinstein, Rancourt, Guerry, & Brown, 2009, p. 553). As such, this study will examine the mediating role of problems in social cognition in the association between child physical abuse and poor peer relations.

In summary, within an ecological framework, theories of attachment, social learning, and social cognition guide the direction of this study and support the hypotheses regarding mediation by interpersonal factors, including attachment to parents, aggression, social cognition, and peer social status, of the relationship between childhood physical abuse and later poor peer relations. The following review of literature will demonstrate further support of these approaches to understanding the impacts of childhood physical abuse on social functioning and peer relations.

Review of Literature

Introduction to Literature Review

Laid out below is a review of the existing literature on the relationship between child physical abuse, selected interpersonal factors hypothesized to serve as mediators, and poor peer relations. The review begins with a definition of child physical abuse and then an overview of the prevalence of child physical abuse to highlight its magnitude, which is often underestimated. Afterwards research on the associations between abuse and interpersonal factors is laid out, focusing on attachment to parents, aggression, social cognition, and peer social status. The associations between these selected interpersonal factors and later social problems, both in general and more specifically with regard to dating relationships, are then laid out. The review continues with the presentation of longitudinal research regarding the impact of child physical abuse on later adolescent peer relations, again in general and specifically with regard to dating relationships. Finally, research on both gender and race/ethnicity and their associations with childhood abuse and social relations is presented, supporting their role as potential control variables in the study. The literature review concludes with a problem statement and hypotheses for the current study.

It is important to note that after a surge in studies on child maltreatment and peer relations in the 1990s, there appears to have been somewhat of a decline in published research on child physical abuse and peer relationships in more recent years. The most recent related literature mostly focuses on psychopathologies as outcomes such as depression, delinquency, and substance use (Shin, Miller, & Teicher, 2013; Sperry & Widom, 2013), and the advances in understanding the impact of biological factors

(Banny, Cicchetti, Rogosch, Oshri, & Crick, 2013), which are also highly important areas of research to pursue. As a result of this trend, however, much of the literature reviewed in this paper is older although still very relevant to and representative of the social difficulties that maltreated children continue to face.

Definitions

Definitions of child abuse differ by social, political, and scientific contexts, such as cultural expectations and state laws. However, child physical abuse is a type of maltreatment defined by the United States Department of Health and Human Services that refers to "physical acts that caused or could have caused physical injury to a child." (U.S. Department of Health and Human Services, 2013, p. 118). The definition of child physical abuse as discussed in this study is based on the criteria set forth by New York City, from where the present sample was drawn:

> Physical abuse is inflicting or allowing someone to inflict serious physical injury other than by accidental means. In addition, it is considered abuse if a parent creates a condition, or allows the condition to be created, that leads to a child becoming the victim of serious physical injury. This includes shaking, beating, biting, kicking, punching, and burning (Bloomberg & Mattingly, 2008).

Prevalence

Child maltreatment exists in all cultures across all ages, ethnicities, genders, and socioeconomic levels. While data have indicated a decline in child maltreatment in the United States in the past decade (Finkelhor & Jones, 2008; Sedlak et al., 2010), it remains a serious issue for a large number of children. In terms of formal reporting, the United States National Child Abuse and Neglect Data System (NCANDS) tracks reports of maltreatment via social services agencies. Its most recent report (U.S. Department of Health and Human Services, 2013) estimated 3.4 million alleged maltreatment referrals of 6.3 million children. Of those referrals, approximately one fifth of them were substantiated. While neglect was the most prevalent offense (78.3%) and often co-occurred with other forms of abuse, physical abuse rates were also disturbing—18.3% of substantiated cases involved physical abuse. These numbers, however, are considered an underestimate of abuse as most cases of child maltreatment are not reported to state or social service agencies. For example, in an anonymous telephone survey study, Theodore et al. (2005) found that the incidence of mother-reported physical abuse was forty times greater than official child abuse reports. Additionally, results from a retrospective self-report study of 15,197 young adults nationwide indicated that 28.4% reported a history of child maltreatment in the form of physical assault (Hussey, Chang, & Kotch, 2006).

The vast majority of perpetrators of child abuse are parents. The NCANDS report noted that more than 80% of child abuse was perpetrated by at least one parent (U.S. Department of Health and Human Services, 2013). This statistic is disconcerting on many levels but especially because abuse is believed to maintain some intergenerational continuity. While the research on this phenomenon has been mixed with respect to the processes underlying the intergenerational transmission, studies have generally demonstrated that parent history of maltreatment is a risk factor for perpetration of abuse on his or her own children (Dixon, Browne, & Hamilton-Giachritsis, 2005; Egeland, Yates, Appleyard, & van Dulmen, 2002; Pears & Capaldi, 2001; Sidebotham & Heron, 2006). For example, a prospective study of high risk families in the United States found that parents with a history of childhood physical abuse were more than two times as likely to abuse their sons as compared to parents without a history of physical abuse (23% vs 10%) (Pears & Capaldi, 2001). Additionally, a more recent study reported that as compared to mothers without a history of childhood abuse, mothers who experienced childhood physical abuse were 20% more likely to abuse their own children, an association found to be mediated by mothers' social isolation and hostile attribution biases (Berlin, Appleyard, & Dodge, 2011). The study predicted that the rate of abuse within these families will continue to increase as the subjects are followed-up on over the years. In essence, this trend suggests that without healthy models of close relationships and interpersonal functioning, the cycle of abuse has the potential to continue on for generations, maintaining or even increasing prevalence rates of abuse.

The Association Between Childhood Physical Abuse and Selected Interpersonal Factors Hypothesized to Serve As Mediators

Childhood Physical Abuse and Attachment

Early research found that maltreated infants are more likely to develop insecure attachment to their caregivers as compared to nonmaltreated infants (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Crittenden, 1988). Without consistent and appropriate responsiveness from a caregiver, a maltreated infant is unable to develop a sense of efficacy in the relationship which is thought to impede secure attachment (Sroufe & Waters, 1977). Specifically, maltreated infants tend to demonstrate a disorganized/disorientated attachment style or an avoidant-ambivalent attachment style (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Main & Solomon, 1990; Cicchetti, Rogosch, & Toth, 2006). Avoidant attachment has been most characteristic of physically abused children (Finzi, Ram, Har-Even, Shnit, & Weizman, 2001). Infants with insecure attachment are at increased risk for maladaptive development. Several studies have shown that insecure attachment, specifically disorganized/disoriented attachment, is associated with long-term pathological outcomes, including externalizing and dissociative behaviors (Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999; Lyons-Ruth, Easterbrooks, & Cibelli, 1997), which put them at risk for developing unhealthy social relationships.

Although there have been some promising interventions to improve insecure attachment relationships (Cicchetti, Rogosch, & Toth, 2006), attachment is otherwise thought to be a relatively stable construct. Maltreated children continue to demonstrate increased patterns of insecure attachment to caregivers in preschool years as compared to their nonmaltreated counterparts, who remain securely attached throughout toddlerhood (Cicchetti & Barnett, 1991). A study involving self-report data by adolescents in high school also found that a history of maltreatment was significantly correlated with current insecure attachment (Wekerle & Wolfe, 1998). As for adults, in retrospective studies, adults who reported experiencing abuse as a child were more likely to demonstrate current insecure attachment styles (Muller, Sicoli, & Lemieux., 2000; Weinfield, Sroufe, & Egeland, 2000), highlighting the potential long-term effects of childhood maltreatment on attachment style throughout development. Child physical abuse, the form of maltreatment studied in the present paper, has also specifically been linked to insecure attachment in retrospective studies (Muller, Gragtmans, & Baker, 2008), indicating that the influence of attachment is important to consider in the present sample of physically abused youth.

Childhood Physical Abuse and Aggression

The effects of childhood physical abuse on negative social behaviors are often soon evident. One of the earliest studies on social interactions of abused children demonstrated how children as young as one to three years of age with a history of physical abuse were more aggressive towards their peers in a daycare setting, as compared to nonabused toddlers (George & Main, 1979). The study also found that these children were more likely to react negatively to friendly gestures by their peers and exhibit increased avoidance behaviors. These behaviors were also displayed during interactions with caregivers, providing evidence that styles of interaction translate through contexts and are learned early on in a young child's life.

Studies have repeatedly found that physically abused children tend to exhibit increased aggression, as well as some withdrawal, as compared to their nonabused peers throughout childhood (Bousha & Twentyman, 1984; Haskett & Kistner, 1991; Herrenkohl & Herrenkohl, 1981; Hoffman-Plotkin & Twentyman, 1984; Howes, 1984; Howes & Espinosa, 1985; Prino & Peyrot, 1994; Salzinger, Feldman, Hammer, & Rosario, 1993). These studies have utilized a variety of measurement tools—behavior observations, parent reports, teacher reports, peer sociometric ratings, and even projective assessments—and have consistently demonstrated that physically abused children exhibit more aggression and less cooperation with peers as compared to nonabused children. For example, Feldman et al. (1995) examined peer, parent, and teacher ratings of behaviors of 106 physically abused eight to twelve year old children. As compared to nonmaltreated children, physically abused children were rated by their peers as exhibiting more fighting, meanness, and attention-getting behaviors and less leadership and cooperation. Teachers' ratings were found to generally reflect peers' ratings. Although parents' perceptions were less aligned with peer and teacher ratings, abused children were overall, again, found to exhibit elevated levels of behavior problems as reported by parents.

The majority of these well-established findings are based on studies involving preschool or school-aged children. However, a twelve-year prospective study by Lansford et al. (2002) examined the long-term effects of early physical abuse on a range psychological, behavioral, and academic outcomes for adolescents. Findings revealed a persistent effect of abuse over the course of development. In particular, adolescents who had experienced abuse as children had significantly higher levels of aggression, anxiety and depression, social problems, thought problems, and social withdrawal as compared to their nonmaltreated peers. Overall, the 2002 Lansford et al. study exposed long-term effects of physical abuse into adolescence in all realms, contributing to the evidence of the enduring role of abuse on maladaptive social behaviors including aggression.

In terms of externalizing behaviors, physical abuse in childhood has also been identified as a risk factor for antisocial tendencies, including a lack of consideration for others and ineffective social interactions, in adolescence (Malinosky-Rummell & Hansen, 1993; Pollock, Briere, Schneider, & Knop, 1990; Widom, 1989). In a 2002 study (Egeland, Yates, Appleyard, & van Dulmen), physically abused, emotionally neglected, and control children from the Minnesota Longitudinal Study of High-Risk Parents and Children were observed, interviewed or rated during infancy, preschool, early elementary school, and at age 16. Path modeling indicated that alienation between a preschool aged child and his or her parent, a correlate of abusive parenting, linked early physical abuse to aggressive and externalizing behaviors in elementary school, which was associated with antisocial behavior in adolescence. These findings, which have been replicated (Jaffee, Caspi, Moffitt, Taylor, 2004), are particularly important because they demonstrate a significant longitudinal pathway between child physical abuse and later social problems that may be targeted for intervention. These studies address one pathway; however, there are a multitude of factors that may mediate the effect of early abuse on later social difficulties.

Childhood Physical Abuse and Social Cognition

As stated earlier, social cognition refers to the means by which individuals process social information. Problems in social cognition may include biases in one's appraisal of others' behavior, intentions, or feelings. The widely accepted six-stage social information-processing model (Crick & Dodge, 1994, Dodge, 1986) identifies the stages of cognitive processing as encoding of cues, interpretation of cues, classification of goals, response access, response decision, and enactment. Disruption in any of these stages is expected to negatively impact social interactions. As compared to children who have not experienced physical abuse, children with a history of physical abuse have been found to exhibit a hostile attribution bias, meaning that they tend to encode and interpret ambiguous situational cues as hostile, which often then leads to behaviorally aggressive interpersonal responses (Dodge, Bates, & Pettit, 1990; Dodge, Pettit, Bates, & Valente, 1995; Price & Glad, 2003; Teisl & Cicchetti, 2008; Weiss, Dodge, Bates, & Pettit, 1992).

Dodge, Pettit, and Bates (1990) were among the first of researchers to examine hostile attribution bias in maltreated children. Using hypothetical stories of ambiguous social situations with unfamiliar peers to elicit children's reactions, they found that physically abused children were more biased in attributing hostility toward peers and less likely to provide socially appropriate solutions during interpersonal conflicts. Price and Glad (2003) administered a modified version of Dodge's (1980) attributional tendency assessment using additional ambiguous social situations involving adult-child and child-

child interactions, to maltreated and control children. Physically abused children were more likely to attribute hostile intentions to several relationship figures, including parents, teachers, best friends, and unfamiliar peers, demonstrating that these social cognitive biases generalize across interpersonal relationships.

In addition to maintaining a negative or hostile attribution bias, children who have experienced early physical abuse tend to demonstrate additional problems in social cognition, such as difficulties with perspective taking and misperceptions of others' emotions and social expectations. Barahal, Waterman, and Martin (1981) found that maltreated children displayed lower social sensitivity as compared to nonmaltreated youth. Specifically, they were less accurate in identifying appropriate feelings in different contexts and displayed more difficulty in describing social and interpersonal causes of specific emotions. Physically abused children are also known to maintain a hypervigilence to threat and are more likely to misperceive anger when processing others' facial expressions (Pollak, Cicchetti, Hornung, & Reed, 2000; Rieder & Cicchetti, 1989). They have also been found to exhibit deficits in understanding the appropriate reciprocal responses to others' behaviors (Dean, Malik, Richards, & Stringer, 1986). Salzinger et al., (1993) found that as compared to their nonmaltreated peers, physically abused children are less likely to have reciprocated positive relationships with other children. They noted that physically abused children tend to be rejected by children they consider their friends and even those they regard as their best friends, suggesting misperception of others' social cues and behaviors. Overall, physically abused children experience problems in social cognition related to accurately identifying the nature of their relationships with peers which inevitably influences how they behave and continue to navigate in their social worlds, suggesting another pathway between childhood physical abuse and later social problems.

Childhood Physical Abuse and Peer Social Status

As might be expected, physically abused youth who display socially inappropriate behaviors also tend to maintain a more negative social status amongst peers. A sociometric study on physically abused eight to twelve year old children and matched controls identified several negative effects of abuse on peer social status (Salzinger, Feldman, Hammer, & Rosario, 1993). The study found that physical abuse increased the likelihood of negative reputations and peer rejection amongst classmates; in particular, these children were perceived as engaging in more aggressive behavior and less cooperative, positive social behavior, all of which were significantly associated with rejection by peers. A separate paper using the preadolescent sample from the present study found that children's social expectations of their peers and their own aggressive and prosocial behaviors mediated the effect of physical abuse on social status (Salzinger, Feldman, Ng-Mak, Mjoica, & Stockhammer, 2001). Specifically, children who were abused were more withdrawn and expected their peers to rate them less approvingly in a sociometric assessment, behaviors which were associated with overall lower social acceptance. Other studies have replicated the finding that maltreated children tend to be socially rejected by peers (Anthonysamy & Zimmer-Gembeck, 2007; Dodge, Pettit, & Bates, 1994; Rogosch & Cicchetti, 1994). Overall, it appears that children who experienced physical abuse are more likely to exhibit maladaptive behaviors and subsequent rejection by their peers, a status that does not fair well for social relations as is further discussed below.

The Association Between Interpersonal Factors Selected as Potential Mediators and Peer Relations

Attachment and Peer Relations

The association between early attachment to caregivers and competence with peers has been well-established and is often exhibited very early on in childhood. For example, Mueller and Silverman's review (1989) identified several studies in which toddlers and preschoolers with a history of secure attachment were more likely to exhibit successful interactions with same-aged mates (Jacobson & Wille, 1986; LaFreniere & Sroufe, 1985; Sroufe, 1983). Children's secure attachment to a caregiver has been found to predict not only increased competence in establishing close friendships (Freitag et al., 1996) but also more prosocial interactions with peers in general, including higher regard from peers and fewer behavior problems with peers (see Booth-LaForce & Kerns, 2009, for a review). On the other hand, children with insecure attachment have been found to exhibit more hostility, distance, and negative behaviors, including aggression with peers and rejection by peers (LaFreniere & Sroufe, 1985; Sroufe, 1983). These finding has been found to hold true over time, as was found in a study by Simpson et al. (2007). The study followed subjects from infancy to early adulthood and reported that compared to insecurely attached infants, securely attached infants at 12 months of age were more likely to display greater social competence with peers in elementary school, more secure friendships during adolescence, and then more positive daily emotional experiences and less negative affect in conflict resolution with romantic partners during young adulthood (Simpson, Collins Tran, & Haydon, 2007).

In terms of the effects of attachment on other types of peer relationships, such as romantic relationships, in a six-year prospective longitudinal study, attachment style in adolescence was found to predict the nature and quality of intimate relationships in early adulthood (Collins, Cooper, Albino, & Allard, 2002). Adolescents with insecure attachment styles were more likely to report less satisfying and less well-functioning relationships with romantic partners. These individuals experienced interpersonal difficulties in relation to intimacy, communication, and trust with their partners. Consequently, attachment or closeness to parents during adolescence should be considered as an influencing factor when examining the patterns of adolescent intimate relationships.

Aggression and Peer Relations

While the study of aggression and poor peer relations has traditionally focused on physically aggressive children and how they are liked or disliked by classmates, the field has differentiated types of aggression to include physical aggression, verbal aggression, relational aggression, proactive aggression, and reactive aggression (Crick, Murray-Close, Marks, & Mohajeri-Nelson, 2008). Physical and verbal aggression in childhood and in adolescence has been found to be associated with peer rejection (Cillessen, 2009; Coie, Dodge, & Coppotelli, 1982). Relational aggression, which is also known as covert or indirect aggression, has also been found to be predictive of poor peer relations, including peer rejection, particularly for girls (Crick, 1996; Tomada & Schneider, 1997). In terms of friends, Hektner, August, and Realmuto (2000) found that highly verbally/physically aggressive children were more likely to lose friends over the course of a summer program as compared to children who were only moderately verbally/physically aggressive, who were more likely to gain friends over the summer. Notably, nonaggressive children were most preferred for friendship. In terms of friendship quality, as compared to nonaggressive children, aggressive children tend to develop friendships that have higher levels of conflict, coercion, and reactive anger, particularly among boys (Coie, Dodge, Terry, & Wright, 1991; Dodge, Price, Coie, & Christopoulos, 1990). These children are also more likely to experience lower levels of closeness, security, and intimacy in their friendships, and in fact are less likely to place value on these emotional components of friendship (Cillessen, Jiang, West & Laszkowski, 2005; Grotpeter & Crick, 1996). Overall, the links between aggression and many aspects of poor peer relations have been well established in the literature.

As for the influence of aggression on romantic relationships, early aggression with peers during both childhood and early adolescence has been found to be correlated with dating violence in late adolescence (Makin-Byrd & Bierman, 2013). In a longitudinal study of adolescent boys, reactive aggression in early adolescence, and not proactive aggression, was predictive of violence towards a dating partner in late adolescence (Brendgen, Vitaro, Tremblay, & Lavoie, 2001). Foshee et al. (2004) also followed adolescents throughout high school and found that getting into a physical fight with a peer was predictive of serious physical dating violence victimization, particularly for males. In terms of adolescent girls, analyses using data from the 2005 Youth Risk Behavior Survey also found that girls who engaged in physical fights with peers were significantly more likely to report victimization of physical abuse in a dating relationship, potentially suggesting a general tendency towards interpersonal violence (Howard, Wang, & Yan, 2007). In general, there is good evidence for the stability of aggression from childhood through adolescence and even into middle age (Kokko & Pulkkinen, 2005), suggesting that aggression may continue to negatively impact peer relations throughout one's life stages.

Social Cognition and Peer Relations

Social cognition underlies an individual's abilities to make friends and form effective social relationships. Specifically, cognitive functions such as perspective taking, affect recognition, understanding others' intentions and desires, social information processing skills, and social problem solving skills have been found to influence friendship formation in children (Brownell & Brown, 1992; Dunn, 2004; Gifford-Smith & Brownell, 2003). Children who have deficits in areas of social cognition tend to have more interpersonal difficulties and conflicts in their relationships (see Laursen & Pursell, 2009 for a review). For example, with regard to hostile attribution bias, interpretation of antagonistic intent is likely to lead an individual to generate, select, and enact aggressive solutions to social situations and, thus, damage social relations (Dodge at al., 1990). A separate study found that a hostile attribution bias is associated with continued and persistent aggression and externalizing problems across development (Dodge, Pettit, Bates, & Valente, 1995), suggesting long-term social difficulties in general.

There is limited literature on the impact of problems in social cognition on romantic relationship functioning. Much of the current related research examines this issue in the context of intergenerational transmission of relational conflict via interparental conflict. Fite et al. (2008) examined Dodge's (1986) stages of social information processing as mediators between interparental conflict and young adult offspring romantic relationship conflict. Response evaluation and response generation, two stages of the social information processing model, accounted for the association between interparental conflict and offspring relationship conflict, for both perpetrators and victims of aggression in romantic relationships (Fite et al., 2008). In another study involving African American adults, hostile attribution bias during adolescence significantly predicted both perpetration and victimization of verbally and physically aggressive behaviors with a romantic partner in young adulthood (Simons, Simons, Lei, & Landor, 2012). These findings indicate that social cognition is an important factor to consider in understanding partner violence; however, the extant literature lacks a focus on how social cognition might affect romantic relationships for adolescents in particular.

Peer Social Status and Peer Relations

There is some evidence to suggest that early peer rejection impacts social development into adolescence. Pederson et al. (2007) hypothesized that peer rejection, particularly during a critical period for friendship formation, such as middle childhood, sets the stage for low friendedness in subsequent years. Specifically, they suggested that a rejected child's negative reputation may deter others from approaching or befriending him or her, and with limited opportunities to develop and practice appropriate friendship expectations and behaviors, the rejected child adjusts poorly into adolescence. In fact, while social rejection may contribute to difficulties in establishing the development of high-quality friendships, social acceptance by peers is thought to help foster them (Demir & Urberg, 2004; Nangle, Erdley, Newman, Mason, & Carpenter, 2003; Pedersen, Vitaro, Barker, & Borge, 2007).

There has been limited research on the association between early social status amongst peers and later romantic relationship outcomes in adolescence and beyond. Most of the research has focused on the influence of friendships rather than social status, since friendships are thought to serve as “prototypes of interactions compatible with romantic relationships and as testing grounds for experiencing and managing emotions in the context of voluntary close relationships” (Furman & Collins, 2009, p. 349). However, researchers have hypothesized that individuals who are socially alienated from or rejected by their peers may lack experiences in close relationships, resulting in difficulties establishing appropriate expectations and behaviors with a romantic partner (Connolly & Goldberg, 1999, as cited in Linder, Crick, & Collins, 2002). As such, early social status amongst peers may serve an important function in better understanding the development of healthy and unhealthy romantic relationships in adolescence.

The Association Between Childhood Physical Abuse and Adolescent Poor Peer Relations

Adolescents who have experienced childhood physical abuse are at increased risk for developing poor quality relationships with peers and romantic partners. In terms of friendships and general social functioning, Howe and Parke (2001) found that adolescents who experienced early maltreatment were more negative and less proactive in their friendships. They also reported higher levels of conflict and betrayal and lower levels of caring with their friends. An observational study of the interactions between physically abused youth, matched nonabused controls, and their best friends unveiled the nuances of interpersonal processes in friendships during early adolescence (Parker & Herrera, 1996). After each dyad was observed interacting, a main effect for abuse indicated that friendships including an abused child involved less overall intimacy than friendships without an abused child, with male dyads displaying less intimacy than female dyads.

Friendships with physically abused youth involved more conflict and negative affect and less positive affect when compared to friendships with nonabused children. Increased levels of conflict, specifically verbal and physical abuse, in close friendships and dating relationships were also found in maltreated adolescents' relationships (Wolfe, Wekerle, Reitzel-Jaffe, & Lefevbre, 1998). Moreover, Wolfe et al. (1998) found that adolescents with a history of maltreatment, including physical abuse, were more likely to report increased personal inadequacy and inferiority, increased hostility, more difficulties related to closeness and trust, and a lower sense of self-efficacy in peer relationships. Such studies are particularly important because they identify the very specific difficulties abused children experience in social relationships, which help better clarify the pathway between childhood abuse and adolescent social problems.

Further, based on the intergenerational transmission of violence hypothesis (Straus, Gelles, & Steinmetz, 1980), children who have experienced physical abuse are at greater risk for perpetrating abuse against others later on in their adult romantic relationships, the basis of which develops during adolescent dating experiences. Empirical research, however, has produced mixed support for this hypothesis. Some research has shown that child physical abuse does not predict perpetration of abuse but rather victimization in later intimate relationships (Foshee et al, 2004; Malik et al., 1997), while other studies have shown that child abuse, particularly when perpetrated by the mother, predicts later relationship violence for the child but the role of victim or perpetrator differs according to gender (Hendy et al., 2003; Heyman & Slep, 2002). Specifically females were more likely to be victims of partner violence while males were both victims and perpetrators in romantic relationships. While one study found that child abuse predicted perpetration of abuse in later relationships for females but not for males (Tontodonato & Crew, 1992), another study found that adolescent males with maltreatment history were more likely to be physically violent towards their romantic partners (Wolfe, Scott, Wekerle, & Pittman, 2001). On the other hand, findings by Ehrensaft et al. (2003) revealed a positive association between child abuse and later relationship abuse only when the latter abuse was so severe that it caused injury. Overall, there is some link between child abuse and later unhealthy or abusive romantic relationships and this is believed to be mediated by learned cognitive biases and insecure attachment experiences (see Olsen, Parra, & Bennett, 2010 for an overview). However, the literature provides inconsistent results to support these theories and, thus, the pathways between childhood physical abuse and romantic partner abuse remain only partially understood.

Other Factors Associated with Childhood Physical Abuse and Peer Relations

Gender

The most recent national report of child abuse reported no significant differences between gender: 48.7% boys, 50.9% girls (U.S. Department of Health and Human Services, 2013). However, studies of child physical abuse indicate a higher rate of abuse for boys than for girls. For example, a large national retrospective study found that men were more likely than women to report having experienced childhood physical abuse (52.8% vs. 40.0%) but women were more likely to suffer from long-term sequelae, such as physical health and mental health problems (Thompson, Kingree, & Dessai, 2004). A study by Lansford et al. (2002) reported similar results, finding that adolescent girls who had experienced childhood physical maltreatment were more likely to display greater aggression, anxiety and depression, and social problems as compared to abused boys. In line with this, gender differences also exist in intimate relationship functioning, specifically with regard to dating violence. As reviewed earlier, the role of victim or perpetrator of partner violence has been found to differ by gender but consistency in findings is lacking (Hendy et al., 2003; Heyman & Slep, 2002). However, the fact that gender differences have emerged in past studies suggests that gender has some effect on the association between childhood abuse and later peer relations.

Race/Ethnicity

Demographic differences exist in the prevalence of child maltreatment. In terms of racial or ethnic differences in the United States, the majority of official reports of abuse are comprised of white (44%), Hispanic (21.8%), and African-American (21.0%) youth, although African-American youth have the highest rate of victimization (14.2%) per 1000 children in the population of the same race/ethnicity (U.S. Department of Health and Human Services, 2013). Although prevalence rates vary based on report method, Hispanic and African-American youth are consistently at greater risk for abuse. For example, in a telephone interview of 4,023 adolescents from the National Survey of Adolescents (NSA), Hispanic, African American, and Native American youth were more likely to report a history of child physical abuse, including injurious spanking, compared to Caucasian youth and other racial/ethnic groups (Hawkins et al., 2010). The same findings were revealed in a separate large nationally representative sample of the US adult population (Sugaya et al., 2012).

Surprisingly, while most of the research on peer relations has been conducted in urban contexts, race and ethnicity variables have not been a major focus of study. Of the research that does exist, the overall impact of race/ethnicity is still unclear. It has been suggested that definitions of acceptance and popularity may be different for African American youth as compared to Caucasian youth. For example, a peer nomination study by Coie, Dodge, and Coppotelli (1982) revealed that accepted children were more likely to be perceived as leaders by their peers more so if they were Caucasian than if they were African American. Additionally, some studies have shown aggression to be positively related to popularity for African American youth in particular (Luthar & McMahon, 1996, Meisinger, Blake, Lease, Palardy, & Olejnik, 2007).

Some evidence exists for differences in dating violence in terms of race as well, but it has not been consistent. O'Keefe et al. (1986) found that within a large and diverse sample, Black adolescents were more likely to be involved in dating violence as compared to Caucasian or non-Black adolescents. Foshee et al. (2005) found that family violence predicted dating violence for Black adolescents but not for Caucasian adolescents. Other large scale studies failed to find differences between race/ethnicity and dating violence (Harned, 2002; Simons, Lin, & Gordon, 1998). Overall, race/ethnicity appears to be a potentially relevant factor to consider in the examination of the effects of childhood abuse on social functioning and intimate relationship development.

Problem Statement

As laid out above, there is a large and rich body of research on childhood physical abuse and social functioning. For the most part, however, there has been limited research on the explicit longitudinal pathways between them, particularly with regard to peer relations, including romantic relationships, as a study outcome. Given what has been both theorized and demonstrated regarding the long-term effects of abuse and the intergenerational continuity of abuse, it is critical to uncover explanatory factors which may hopefully inform interventions to help disrupt the cycle of violence. Examining the pathways by which physical abuse affects peer relations poses a promising line of research because "peer relations are not isolated to childhood, but are the basis for dating and romantic relationships in adolescence and adulthood" (Trickett, Negriff, Ji, & Peckins, 2011, p.10) that may be vulnerable to continued patterns of violence. As such, the purpose of this study is to better understand the longitudinal relationship between childhood physical abuse and later maladaptive peer relations by examining aspects of interpersonal functioning with parents and peers as potential mediators. With the hope of better informing content and timing of potential interventions, the main question addressed in this study is: what preadolescent and adolescent factors within the domain of interpersonal functioning mediate the association between child physical abuse and problematic peer relations in adolescence?

Hypotheses

Based on theories of attachment, social learning, and social cognition, it was hypothesized that interpersonal factors, in particular problematic parent attachment, aggression, social misperception, and peer rejection, mediate the relationship between childhood physical abuse and later poor peer relations, including general social problems and, more specifically, dating violence. Specifically, based on theories of child and adolescent development, it was hypothesized that each of these interpersonal factors in both preadolescence and in adolescence mediates the relationship, as attachment, aggression behavior, social cognition, and peer social status continue to have influence throughout the individual's lifespan.

Two overall models are offered to describe these hypothesized longitudinal associations and pathways between physical abuse in childhood and poor peer relations in adolescence. The first model examines potentially mediating factors in preadolescence while the second model examines change in these factors over time from preadolescence to adolescence. See Table 1 for an overview of the hypotheses.

The first model, which represents the first set of hypotheses, examines the proximal or preadolescent effects of childhood physical abuse on poor peer relations in adolescence. More specifically, this set of hypotheses addresses the question: is the longitudinal effect of early physical abuse on poor peer relations in adolescence (i.e., general social problems and, more specifically, dating violence) mediated by problematic parent attachment, aggression, social misperception, or peer rejection in preadolescence? It was hypothesized that the longitudinal effect of childhood physical abuse on poor peer relations in adolescence is mediated by each of the abovementioned interpersonal factors in preadolescence. Each factor was analyzed independently in an individual model.

The second model, representing the second set of hypotheses, examines the effects of changes in potential mediators between preadolescence and adolescence on the relationship between childhood physical abuse and poor peer relations in adolescence. This second set of hypotheses addresses the question: is the longitudinal effect of early physical abuse on poor peer relations in adolescence mediated by change in adolescent problematic parent attachment subsequent to preadolescent attachment or by change in adolescent aggression subsequent to preadolescent aggression? It was hypothesized that the longitudinal effect of childhood physical abuse on poor peer relations in adolescence (i.e., general social problems and, more specifically, dating violence) is mediated by change in parent attachment and adolescent aggression from preadolescence to adolescence. Again, each change factor was analyzed independently in an individual model.

Due to logistical matters during data collection, measures of social misperception and peer rejection were not gathered during the second data collection phase and, as such, the effects of changes in these factors in adolescence were not examined as mediators. Nevertheless, it was hypothesized that the impact of childhood physical abuse is so potent that it should negatively affect attachment to parents, aggression, social misperception, and peer rejection status in preadolescence and subsequently in adolescence, each of which, in turn, should increase risk for experiencing general social problems and, more specifically, being involved in dating violence in adolescence.

Table 1

Summary of Hypotheses

Model	**Independent Variable**	**Mediator Variables (examined individually)**	**Dependent Variables (examined individually)**
1	Physical Abuse T0	• SR Problematic Parent Attachment T1 • TR Aggression T1 • SM Social Misperception T1 • SM Peer Rejection T1	• PR General Social Problems T2 • SR Dating Violence T2
2	Physical Abuse T0	• Δ in Problematic Parent Attachment from T1 to T2 • Δ in Aggression from T1 to T2	• PR General Social Problems T2 • SR Dating Violence T2

Note: T0 = prior to phase 1; T1 = phase 1, preadolescence; T2 = phase 2, adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report. Measures will be described in detail below.

Chapter II

METHODS

Subjects

This study involves physically abused and nonmaltreated comparison children who participated in two phases of data collection, once in preadolescence and once in mid-late adolescence.

Preadolescent subjects

The preadolescent sample consisted of 100 physically abused New York City schoolchildren, ages 9 to 12 years, in fourth through sixth grades, and 100 nonmaltreated classmates, matched case by case for gender, age, and, as closely as possible, for race, ethnicity, and socioeconomic status. Confirmed cases of physical abuse meeting study criteria were identified from among consecutive entries onto the New York State Register for Child Abuse in New York City from 1992 to 1996. Sexually abused children were excluded, but children who were neglected as well as physically abused were included. Exclusion of sexually abused children is based on the fact that empirical examination of physical and sexual abuse suggests that different theoretical models are appropriate for understanding their etiology and effects (Kolko, 1996, 1998; Trickett, 1997; Trickett & McBride-Chang, 1995). The rationale for not excluding neglect is that neglect so often co-occurs with physical abuse in protective service records that disentangling them would be extremely difficult.

The preadolescent sample consisted of 65 physically abused boys, mean age 10.5 years (SD = 1.00), and 35 physically abused girls, mean age 10.6 years (SD = .81); the comparison sample also consisted of the 65 boys and 35 girls, mean ages 10.5 years (SD

= 1.02), and 10.6 years (SD = .91), respectively (see Table 2). The ethnic and sex distributions closely approximate the distributions on the Abuse Register for the urban boroughs of the Bronx, Brooklyn, Manhattan, and Queens in New York City.

Table 2

Demographic Characteristics of Child Abusing and Comparison Families, T1

Demographic characteristics	Abuse families (N = 100)	Comparison families (N = 100)
Gender of children (%)		
Male	65	65
Ethnicity (%)		
Black	50	44
Hispanic	42	49
White	6	7
Other	2	0
Age (years)	M 10.54 (SD 0.94)	M 10.50 (SD 0.98)
Parental Education (years)		
Maternal education	M 11.50 (SD 2.94)	M 11.4 (SD 2.82)
Welfare status (%)*		
Received welfare in last year	61	42
Received public assistance in past year	65	46
Current family structure (%)**		
Two biological parents	10	36
Single parent	74	53
Two parents, only one biological	16	11

* χ^2=4.67, *df*=1, $p \leq .05$
** χ^2=19.09, *df*=2, $p \leq .001$

The matching procedure for the children, which is described below, resulted in the abuse and comparison families being similar in gender, ethnicity, age, and parental education. As shown in Table 2, the abused and comparison children's families were different in two respects. First, significantly more of the abused children's mothers received welfare or other forms of public assistance during the past year. And second, family structure differed: fewer of the abused children than the comparison children lived with two biological parents, and more of the abused children lived with a single parent, either biological or nonbiological. These differences were expected as prior research has demonstrated that poverty and presence of a single parent or a stepfather are significant risk factors for child abuse (Brown, Cohen, Johnson, & Salzinger, 1998). These characteristics of the current sample will, thus, not be controlled for as they are an integral part of how abuse is understood within these families.

Adolescent Subjects

One hundred fifty three students participated in the follow-up study on an average of six years later at a mean age of 16.5 years (SD = 0.53) when the adolescents were expected to be well into high school and at a different developmental stage than during the first data collection period. The length of the follow-up period did not differ for the abused (mean = 6.0 years, SD = 0.90) and nonabused (mean = 5.9 years, SD = 0.91) adolescents.

Of the follow-up sample, 61% was male and 39% female, compared to 65% male and 35% females in the original sample. Comparison of the retained sample to the adolescents lost to follow-up shows that more boys were lost (χ^2=4.328, df=1, $p \leq .05$), resulting in a sample more equally distributed than the original. In a number of other important demographic respects, including ethnicity, maternal education, receipt of public assistance, and family structure at time of recruitment, the follow-up and original families did not differ.

Some differences between the abuse and control groups in the follow-up sample were found in relation to family structure. Similar to trends found during the preadolescent data collection phase, fewer of the abused children than the comparison children lived with two biological parents during adolescence and more of the abused children lived with only one biological parent or one biological parent and one nonbiological parent during adolescence. Of all the adolescents, 43% lived with a single parent, 23% with one biological and one nonbiological parent, 26% with two biological parents, and 8% without either biological parent. The abuse and control groups were similar in all other relevant demographic aspects during adolescence. The follow-up sample is 38% Black, 7% White, 54% Hispanic, and 1% Asian. Of the families, 32% received welfare or other forms of public assistance during the past year. Of the mothers in the follow-up sample, 43% had not completed high school when the families were first recruited (see Table 3 for breakdown of follow-up families by abuse and control).

Table 3
Demographic Characteristics of Follow-Up Families

Demographic characteristics	Abuse families (N = 75)	Comparison families (N = 78)
Gender of adolescent (%)		
Male	60	62
Ethnicity (%)		
Black	43	33
Hispanic	52	56
White	4	9
Asian	1	1
Age (years)	M = 16.45 (SD = 0.55)	M = 16.42 (SD = 0.49)
Parental Education (years)		
Maternal education	M = 11.85 (SD = 3.24)	M = 11.95 (SD = 3.05)
Welfare status (%)		
Received welfare/public assist. in last year	33	31
Current family structure (%)*		
Two biological parents	6	20
Single parent	24	19
Two parents, only one biological	15	8
No biological parent	5	4

* χ^2=16.34, *df*=3, $p \leq .05$

Procedure

Recruitment for Preadolescent Sample

Working from lists of confirmed abuse cases meeting study criteria, families for the original sample were contacted by mail and telephone and asked if they would agree to be interviewed for a study of children's friendships and social development. Once informed consent was obtained from an abused child's guardian and verbal assent was obtained from the child, an interview was conducted at home with the child's major caretaker. The child's school and teacher were identified in order to choose a classmate as a comparison subject. The same letter sent to the abuse sample was sent to the families of all same-gender classmates within one year of age of each recruited abused child. The subsequent recruitment procedure was essentially the same. However, since typically more than one prospective comparison family in a given classroom expressed an interest, the closest match to the target (abused) child with respect to race/ethnicity was selected. Participating comparison families were screened for abuse based on interviews with the children's caretakers about the handling of disputes among members of the household, and by a scan of the Register to ascertain that their names did not appear during the 4 years of recruitment of abuse cases. Informed consent was obtained from that child's major caretaker, who was then interviewed at home. In 95.5% of the participating abuse and control families, the target child's mother was the major caretaker.

Arrangements were then made with the children's school principal and classroom teacher to conduct a sociometric assessment of the entire class. Although main study interests involved data from children of the same gender as the pair of target children, the entire class was included and the data from the other gender were not used for the present analysis. Children were unaware that two classmates were the subjects of interest, and teachers were not told that one of the children had been abused. The teacher completed a standardized behavior rating on each of the two children. The entire procedure was repeated for the 100 pairs of preadolescent subjects.

Recruitment for Adolescent Sample

All families had been asked at the time of the preadolescent study if they could be contacted later when the children were in high school, and all agreed. For the follow-up study, families were contacted again via telephone and mail. There was no differential loss between groups. Of the families lost to follow-up, 21 abuse families and 15 nonabuse families could not be located. Of the families contacted, only 3 abuse families and 7 nonabuse families refused to rejoin the study. The distribution of ratings of severity of verbal and physical abuse on a scale of none, mild, moderate, and severe, based on interviews with the parental guardians of the preadolescent children, showed no significant difference for the children retained and lost to follow-up.

All data were collected by interviewers with some graduate education and experience in research in social science fieldwork. They were trained by the senior investigators in administering the follow-up protocols. All interviews were privately and individually conducted in the homes of parents and adolescents, unless the parent or adolescent preferred to be interviewed in the researchers’ offices or in the adolescent’s school. Interviews with parents lasted about 1.5 hours, and interviews with the adolescents about 2 hours. Parents and adolescents were informed, in the consent process, that the staff were professionally obligated to report any new instances of abuse that were revealed during the course of the interviews. Parents received $150 and adolescents $50 for their participation. At the end of every interview, interviewers, using a standard structured protocol, screened for potentially serious personal or family problems and reported any requests or obvious needs for referrals to the senior investigators. In addition to the full resources of the Department of Psychiatry at the New York State Psychiatric Institute, a list of human resources and mental health services throughout the city was maintained for the duration of the project.

Measures

Tables 4 and 5a present an overview of selected measures and relevant descriptive statistics for the variables of interest that are discussed in this section. Table 5b presents the means and standard deviations of the variables of interest laid out by abuse and control group status. It is important to note that the same measures were not administered during the two phases of data collection, due to some issues of feasibility and developmental appropriateness. For example, peer social status and social cognition as measured by sociometric assessment are difficult to collect in a high school setting in which there are potentially hundreds of classmates with whom a subject interacts in a range of capacities. However, the adolescent-based measures selected for this specific paper are hypothesized to reflect similar theoretical constructs to those during preadolescence, specifically self-reported attachment or closeness to parents and parent-reported aggression. Additionally, it is important to note that a dichotomous rather than an continuous outcome variable was used to represent presence (1) or absence (0) of a trait or behavior representing one aspect of poor peer relations, dating violence, during adolescence. It is acknowledged that dichotomization inevitably results in loss of information about variation within each group. However, based on an understanding that physically abusive behaviors in adolescent relationships are relatively rare, it seems compelling that any individual who has experienced it even once in the past year should be examined in comparison to those who are not in physically abusive dating relationships. As such, one of the outcome variables, dating violence, was dichotomized at a specific cutoff to determine membership or non-membership within the construct, while the other outcome variable, general social problems, was left as a continuous variable, to be analyzed separately as will be further discussed below.

Childhood Physical Abuse. New York State Register for Child Abuse CPS documents allegations and substantiations of child maltreatment throughout the state. Included in documentation are demographic information, the alleged and substantiated victims and perpetrators for each specific incident, a narrative description of each alleged abusive incident and family members’ response to the allegation, the child’s placement status, court involvement with the case (e.g., orders of protection), and counseling or referral for services. Often, a particular family has a history of several allegations of abuse. Each substantiated allegation is then entered into the system, which is computerized and provides chronological documentation of the history of abuse within a family.

For the present study, the CPS records were coded by trained study staff, using a manual developed specifically for this purpose. The coding manual provided information on the presence of subtypes of abuse (e.g., physical abuse, physical neglect, verbal abuse), number of reports to CPS, types of physical discipline, injury due to abuse, age of onset of the abuse, number of perpetrators of the abuse, and whether other children or adults in the home were victims of domestic violence. Childhood physical abuse was represented as a dichotomous variable: presence of abuse (1) was based on confirmation of physical abuse on the New York City Child Maltreatment Register. Absence of abuse (0) in the nonabused comparison sample was based on the families not appearing on the Register for any reason in the 4-year period in which recruitment was conducted.

General Social Problems in Adolescence. General social problems in adolescence were measured using a subscale of the Child Behavior Checklist (CBCL; Achenbach, 1991), a parent-report 113 item questionnaire about the adolescent's emotional and behavioral difficulties (see *Appendix A*). Parents rated items as (0) not true, (1) somewhat or sometimes true, (2) very true or often true. The Social Problems subscale consists of 13 items, such as: *Clings to adults or too dependent*, *Complains of loneliness, Doesn't get along with other kids, Gets teased a lot, Not liked by other kids, Prefers being with younger kids.* Mean T-scores for Social Problems were obtained (mean 55.82, SD 6.82) with higher scores representing greater social problems in general and lower scores representing less social problems. Mean score for the abused group was 57.09 (SD 7.15) and 54.60 (SD 6.29) for the control group. For this scale, the low end of scores was truncated such that 50 was the lowest possible T-score that an individual could obtain. One week test-retest reliability for the Social Problems subscale was reported as .90 (Achenbach, 1991).

Dating Violence in Adolescence. In order to determine whether adolescents experienced physical abuse within their relationships with romantic partners, data from The Personal Relationships self-report interview were collected (see *Appendix B*). Adolescents were asked which issues gave rise to the worst disagreements and fights between themselves and a romantic partner, to give a detailed description of the worst disagreement or fight, and then to report the frequency, on a 5-point scale (0, never; 1, once or only a few times; 2, about once per month; 3, about once per week; 4, everyday or almost every day) with which similar disagreements and fights led to physically abusive behavior (i.e., hitting, punching, slapping, anything physical). The mean frequency rating of dating violence was 0.27 (SD 0.82). However, rather than deriving physical abuse with romantic partners as frequency counts, the variable was dichotomized to mark whether or not physically abusive behaviors with romantic partners had ever occurred, as it is hypothesized that such an occurrence is so rare that if it happened just once, it represents an important indicator of poor peer relationship functioning. Dating violence was represented by the indication of any physically abusive behaviors in the specified relationship, either as a perpetrator or a victim (1 = dating violence, 0 = no dating violence). 9.8% or 15 of the 153 adolescents reported experiencing physical abuse in a romantic relationship, a statistic that parallels the national percent of reported teen dating violence (Centers for Disease Control and Prevention, 2012). Of these 15 adolescents who reported experiencing dating violence, 12 had experienced childhood physical abuse and 3 had not.

Problematic Parent Attachment in Preadolescence: Attachment to parents was not measured through a traditional approach (i.e., stranger situation) due to the older age of the subjects; instead, a proxy for attachment was used to assess the quality or closeness of the parent-child relationship rather than the security of attachment to caregivers or a specific attachment style. Attachment to parents during preadolescence was based on the mean rating given by the child during a social network interview to each parent figure living in the household (see *Appendix C*). The ratings were made in response to the question, “When you and (parent figure) are together, is it usually very nice (3), okay (2), or not so nice (1)?” Ratings were reversed and averaged (mean 1.40, SD .55) with higher scores representing “not so nice” relationships with parents and lower scores representing “very nice” relationships with parents. Mean score for the abused group was 1.44 (SD .61) and 1.35 (SD .49) for the control group. Due to skewness (skew = 1.41; std. error = .17), scores were dichotomized such that high scores over 2 were considered to represent problematic attachment whereas scores 2 or lower were not considered problematic attachment.

Aggression in Preadolescence: Aggression was measured by the teachers’ reports of externalizing behaviors on a 113-item questionnaire (TRF; Achenbach, 1991) (see *Appendix D*). Specifically, 34 of the items, to which teachers rated each child as (0) not true, (1) somewhat or sometimes true, (2) very true or often true, were summed to represent the total externalizing scale score. The externalizing behavior scale score was used as it represents a broader definition of aggression, including physical and verbal behaviors directed towards others and in general. Examples of items included are: *Argues a lot, Breaks school rules, Swearing or obscene language, Gets in many fights, Physically attacks people.* Mean T-scores for externalizing behaviors were obtained (mean 57.60, SD 11.39), with higher scores representing greater aggression and lower scores representing less aggression. Mean score for the abused group was 61.87 (SD 11.58) and 55.43 (SD 11.54) for the control group. The externalizing behaviors subscale T-scores were not truncated; as such an individual could receive a T-score less than 50, indicating less reported externalizing behaviors than average. One-week test-retest reliability was reported as .89 for the externalizing subscale (Achenbach, 1991).

Social Misperception in Preadolescence*:* A tendency towards social misperception, a type of problem with social cognition, was measured using data from peer nomination assessments (Salzinger, Feldman, Hammer, & Rosario, 1993) (see *Appendix E*). Data from the peer nomination assessments, during which all of the same-gender children in a classroom nominated who they most liked to be with and who they least liked to be with, were entered into matrices to compute negative reciprocity (i.e., whether the same-gender children whom the target child selected as liking to be with the most returned a negative sentiment). A positive nomination-negative reciprocation (PN) measure was calculated, representing the number of negative choices (least like to be with) received from children chosen positively (most like to be with) by the target child. The score was standardized by class size (mean 0.18, SD 1.08). Mean score for the abused group was .41 (SD 1.15) and -.05 (SD .95) for the control group. Higher scores represent a stronger tendency towards social misperception while lower scores represent a weaker tendency towards social misperception. Due to issues of skewness (skew = 1.18, std. error = .17) and to ensure that the most severely impaired children were most effectively identified, the measure was dichotomized such that any score greater than 2 standard deviations above the mean indicated presence of social misperception while any score 2 standard deviations or below the mean indicated lack of social misperception.

Peer Rejection in Preadolescence*:* Peer social status was measured through sociometric assessments carried out in each classroom using a peer nomination assessment (Salzinger, Feldman, Hammer, & Rosario, 1993) (see *Appendix F*). To measure social status amongst peers, each student, including the physically abused and control children, in the classrooms were individually provided with a list of his or her same-gender classmates and told to first circle the two children they most liked to be with and to then circle the two children they least liked to be with. Scores were calculated for each child from the nominations received from all same-gender children in the class and standardized with z-scores in terms of class size. Liked-least z-scores were subtracted from liked-most z-scores, resulting in a social preference or acceptance score. The computation of peer rejection status involved criteria based on an algorithm comprised of several indicators (Coie & Dodge, 1983): social preference scores less than -1.0 standard deviation, standardized liked-most scores less than zero, and standardized liked-least scores greater than zero (overall mean 0.26, SD 0.44). Children who did not meet these criteria were considered not rejected by peers (1= rejected, 0 = not rejected). This sociometric assessment technique involving peer nominations has been used and validated by many past studies (Asher, 1983; Coie, Dodge, & Kupersmidt, 1990; Salzinger et al., 1993).

Problematic Parent Attachment in Adolescence. Attachment or closeness to parents was assessed using the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), a 25 item self-report questionnaire (see *Appendix G*). Only data from the parent portion of the questionnaire were used for this variable. Adolescents rated their responses to each question on a 5-point Likert response scale from (1) almost never or never true to (5) almost always true or always true. Samples of items include: *My parent respects my feelings, My parent accepts me as I am, Talking over my problems with my parent makes me feel ashamed or foolish,* and *I don't get much attention from my parent*. Negatively worded items were reversed scored (Armsden & Greenberg, 1987). All Likert responses were then reversed and summed, such that higher total scores represented poorer quality of relationship/closeness with parents or problematic parent attachment and lower scores represented better quality or not problematic parent attachment (mean 60.14, SD 20.29). Chronbach's alpha for the parent scale was .93 for the current sample. The measure has shown "substantial reliability and good potential validity as a measure of perceived quality of close relationships in late adolescence" (Armsden & Greenberg, 1987, p. 447). Three-week test-retest reliability was .93 for the parent attachment scale, and validity was demonstrated by correlating the IPPA with Family and Social Self scores from the Tennessee Self Concept Scale and to subscales on the Family Environmental Scale (Armsden & Greenberg, 1987).

In order to measure change in problematic attachment to parents over time, specifically from preadolescence to adolescence, a distinct variable of change in attachment was created using residual scores from a linear regression. Adolescent problematic attachment to parents was regressed on preadolescent problematic attachment to parents, and standardized residual scores were saved as a new variable representing change in attachment to parents from preadolescence to adolescence. Scores of 0 indicated no change in problematic attachment to parents from preadolescence to adolescence; a negative score indicated a decrease in problematic attachment from preadolescence to adolescence; and a positive score indicated an increase in problematic attachment from preadolescence to adolescence. Mean score for the abused group was .20 (SD 1.09) and -.19 (SD .86) for the control group.

Aggression in Adolescence*:* Data on aggressive behaviors were collected by parent-report on the externalizing behaviors scale of the Child Behavior Checklist (CBCL; Achenbach, 1991) (see *Appendix H*). Parents responded to 113 items regarding emotional or behavioral difficulties as (0) not true, (1) somewhat or sometimes true, (2) very true or often true. The externalizing behaviors scale score was comprised of 34 of the items that represent a wide range of aggressive or problematic behaviors towards others, such as: *Argues a lot, Cruelty, bullying, or meanness to others, Destroys things belonging to he/her family or others, Lying or cheating, Threatens people.* Mean T-scores for externalizing behaviors were obtained (mean 53.29, SD 12.45), with higher scores representing greater aggression and lower scores representing less aggression. As before, the externalizing behaviors subscale T-scores were not truncated, so an individual could receive a T-score less than 50, indicating less reported externalizing behaviors than average. One-week test-retest reliability was reported as .92 for the parent-rated externalizing subscale (Achenbach, 1991).

In order capture change in aggression over time, a separate variable was created. Using linear regression, adolescent aggression was regressed on preadolescent aggression and standardized residual scores were saved as a new variable representing change in aggression from preadolescence to adolescence. As a result, a score of 0 indicated no change in aggression from preadolescence to adolescence; a negative score indicated a decrease in aggression from preadolescence to adolescence; and a positive score indicated an increase in aggression from preadolescence to adolescence. Mean score for the abused group was .15 (SD 1.02) and -.14 (SD .96) for the control group.

Table 4
Summary of Measures

Construct	**Measure at T0/T1**	**Measure at T2**
Physical Abuse	ACS records (T0)	--
Problematic Parent Attachment	Social Network Interview- self report of valence with parents	Inventory on Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987)- self report on parent scale

Aggression	Teacher Report Form (TRF; Achenbach, 1991)- Externalizing Behaviors Scale	Parent Report Child Behavior Checklist (CBCL; Achenbach, 1991)- Externalizing Behaviors Scale
Social Misperception	Peer Nomination Assessment (Salzinger, Feldman, Hammer, & Rosario, 1993) –unreciprocated positive nominations in unlimited choice sociometric ratings task	(Not measured at T2)
Peer Rejection	Peer Nomination Assessment (Salzinger, Feldman, Hammer, & Rosario, 1993) – sociometric negative nominations by classmates	(Not measured at T2)
Poor Peer Relations -General Social Problems -Dating Violence	--	- Parent-Report CBCL (Achenbach, 1991)- Social Problems Scale - Personal Relationships Interview (Salzinger et al., 2002)- self report of physical abuse with dating partner

Table 5a

Descriptives of Variables of Interest

	N	Min	Max	Mean	SD	Skew	Kurtosis	α
Predictor variables								
Physical Abuse T0	200	.00	1.00	.50	.50	.00	-2.02	n/a
SR Prob. Parent Attachment T1	199	1.00	3.00	1.40	.55	1.41	1.23	n/a
TR Aggression T1	187	39	91	58.67	11.97	.40	-.51	unavailable
SM Social Misperception T1	200	-1.19	3.45	.18	1.08	1.18	.53	n/a
SM Peer Rejection T1	200	.00	1.00	.26	.44	1.10	-.79	n/a
SR Prob. Parent Attachment T2	148	25	125	60.14	20.29	.54	.13	.93
PR Aggression T2	152	32	89	53.29	12.45	.21	-.29	unavailable
Outcome variable								
PR Social Problems T2	152	50	80	55.82	6.82	1.07	.48	unavailable
SR Dating Violence T2	113	.00	4.00	.27	.824	3.56	12.34	n/a

Note: All descriptives were calculated using raw scores prior to dichotomization, except for Physical Abuse T0 and Peer Rejection T1.

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task; Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Prob. Parent Attachment T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale t-score (CBCL; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner

Note: Unavailable = α could not be calculated due to unavailability of raw scores for individual items

Table 5b

Means (SDs) of Variables of Interest by Abuse and Control Groups

	Abused		**Control**	
	N	Mean (SD)	N	Mean (SD)
Predictor variables				
SR Prob. Parent Attachment T1	100	1.44(.61)	99	1.35(.49)
TR Aggression T1	94	61.87(11.58)	93	55.43(11.54)
SM Social Misperception T1	100	.41(1.15)	100	-.05(.95)
SM Peer Rejection T1	100	.39(.49)	100	.13(.34)
SR Prob. Parent Attachment T2	72	64.42(22.69)	76	56.38(16.88)
PR Aggression T2	74	55.96(12.59)	78	50.76(11.84)
Outcome variable				
PR Social Problems T2	74	57.09(7.15)	78	54.60(6.29)
SR Dating Violence T2	60	.45(1.08)	53	.06(.23)

Note: All descriptives were calculated using raw scores prior to dichotomization, except for Physical Abuse T0 and Peer Rejection T1.

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task; Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Prob. Parent Attachment T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale t-score (CBCL; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner

Associations Among Potentially Confounding Demographic and Response Pattern Factors and Variables of Interest

To determine the bearing of possibly confounding demographic variables, odds ratios representing the bivariate associations among gender and race/ethnicity and the hypothesized variables of interest were calculated (see Table 6). Data from the guardian demographic interview during phase 1 were used to identify membership to racial/ethnic groups as well as welfare status and family structure. In the odds ratios calculations, each race/ethnicity was individually compared to all other groups. There were no significant bivariate associations with regard to race/ethnicity or gender. Thus, neither race/ethnicity nor gender was controlled for in any of the analyses.

Table 6

Unadjusted Odds Ratios (95% Confidence Intervals) Representing Bivariate Associations Among Gender and Race/Ethnicity and Variables of Interest

Variables of Interest	**Gender**	**Black**	**White**	**Hispanic**	**Other**
Predictor variables					
Physical Abuse T0	1.00 (.56-1.79)	1.27 (.73-2.22)	.85 (.28-2.62)	.75 (.43-1.32)	n/a
SR Prob. Parent Attachment T1	.54 (.17-1.73)	.99 (.37-2.69)	n/a	1.08 (.40-2.94)	11.31 (.68-189.51)
TR Aggression T1	.97 (.95-1.00)	1.01 (.98-1.03)	.97 (.91-1.03)	1.00 (.98-1.03)	.94 (.81-1.08)
SM Social Misperception T1	1.69 (.59-4.87)	.74 (.25-2.15)	n/a	1.40 (.49-4.03)	13.14 (.78-221.51)
SM Peer Rejection T1	.69 (.35-1.36)	.86 (.46-1.62)	1.29 (.38-4.37)	1.04 (.55-1.95)	2.88 (.18-46.93)
SR Prob. Parent Attachment T2	1.02 (.998-1.03)	.989 (.97-1.01)	1.01 (.97-1.01)	1.01 (.99-1.03)	1.03 (.94-1.12)
PR Aggression T2	1.00 (.98-1.03)	.99 (.97-1.02)	.97 (.92-1.03)	1.02 (.99-1.05)	.64 (.23-1.77)
Outcome variables					
PR Social Problems T2	.96 (.91-1.01)	.98 (.93-1.02)	.96 (.87-1.07)	1.04 (.99-1.09)	n/a
SR Dating Violence T2	1.66 (.56-4.94)	.69 (.23-2.10)	.80 (.09-6.93)	1.59 (.53-4.73)	n/a

Note: Gender: 1=female, 0=male; Black: 1=Black, 0=Not Black; White: 1=White, 0=Not White; Hispanic: 1=Hispanic, 0=Not Hispanic; Other: 1=Other, 0=Not Other

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian (1=problematic, 0 = not problematic); Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Prob. Parent Attachment T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale t-score (CBCL; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Social desirability bias was measured using the self-report Marlowe-Crowne scale (Crowne & Marlowe, 1960) to assess the extent to which adolescents were providing certain responses in an attempt to be favorably viewed by others. Factor analysis identified 12 items from the scale with loadings greater than a .40 cutoff. Responses to items were summed, with higher scores indicating greater social desirability bias and lower scores indicating lesser social desirability bias. To better understand how social desirability bias may have influenced subjects' responses to measures, bivariate associations were calculated (Table 7). Social desirability was significantly and negatively correlated with self-reported problematic parent attachment in adolescence ($r = -.45$, $p \leq .01$). As such, social desirability was controlled for in models involving problematic parent attachment in adolescence but not in any other models.

Table 7

Bivariate Correlations Between Social Desirability and Variables of Interest that Involved Self-Report

Variables of Interest	**Social Desirability**
Predictor Variables	
Physical Abuse T0	n/a
SR Problematic Parent Attachment T1	-.04
TR Aggression T1	n/a
SM Social Misperception T1	.06
SM Peer Rejection T1	n/a
SR Problematic Parent Attachment T2	-.45**
PR Aggression T2	n/a
Outcome Variables	
PR Social Problems T2	n/a
SR Dating Violence T2	-.05

** $p \leq .01$

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian (1=problematic, 0 = not problematic); Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Prob. Parent Attachment T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale t-score (CBCL; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Missing Data Analysis

The data examined in this paper were collected from 153 of the 200 original participants. At T1 (e.g., phase one: preadolescent phase of data collection), problematic attachment data was missing for one participant, who did not participate in phase two (T2: adolescent phase of data collection) of the study. In contrast, all 13 of the participants for whom T1 aggression data were missing did participate in phase two of the study; thus, it is important to explore these missing data and evaluate if there are differences between the participants for whom data are missing versus present. Dichotomous variables were created to represent data present (0) and data missing (1) as a way to compare groups on several factors, including physical abuse status as well as the outcome variables, general social problems and dating violence. There were no significant differences between those with and without T1 aggression data on childhood physical abuse ($\chi^2 = .08$, $df = 1$ $p>.05$), adolescent general social problems ($t=.96$, $df = 150$, $p>.05$), or adolescent dating violence ($\chi^2 = 1.87$, $df = 1$, $p>.05$). Missing data for problematic attachment in adolescence (missing data n = 5) and aggression in adolescence (missing data n = 1) also did not show any significant differences with regard to childhood physical abuse, T2 social problems, or T2 dating violence, as displayed in Tables 8(a-c). As such, it appears that these data are missing at random. Mean substitution was used to address the issue of the missing data, specifically for T1 aggression, which was missing the most data (13 data points or approximately 8% of the sample). Although mean substitution can distort the distribution and may underestimate associations with other variables, it was deemed adequate for use in this case because it simply served to maintain the sample size and subsequent statistical power. Of note, substitution of missing data with information from a related variable was also considered and resulted in the same overall findings.

In terms of the outcome variables, there was only missing social problems data for one participant. With regard to dating violence, the missing data from 40 participants represents the number of adolescents who were not currently or ever involved in a romantic relationship. Chi-square and t-tests indicated that there were no significant differences between the adolescents who were included as having been in a romantic relationship as compared to those who were not on the variables of interest and gender.

Table 8(a)

Missing Data Analysis for Aggression T1

	Chi-Square/T-test	***df***	***p***
Physical Abuse T0	χ^2 =.05	1	.83
PR Social Problems T2	*t* = .96	150	.40
SR Dating Violence T2	χ^2 = 1.87	1	.17

Note: Aggression T1 data present = 0, data missing = 1

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, PR = parent report; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Table 8(b)

Missing Data Analysis for Problematic Parent Attachment T2

	Chi-Square/T-test	***df***	***p***
Physical Abuse T0	χ^2 =.25	1	.62
PR Social Problems T2	*t* =.54	150	.76
SR Dating Violence T2	χ^2 =1.08	1	.30

Note: Problematic Attachment T2 data present = 0, data missing = 1

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, PR = parent report; Prob. Parent Attachment T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Table 8(c)

Missing Data Analysis for Dating Violence T2

	Chi-Square/T-test	***df***	***p***
Gender	χ^2 = 1.93	1	.17
Physical Abuse T0	χ^2 = 2.88	1	.09
SR Prob. Attachment T1	χ^2 = 3.15	1	.08
TR Aggression T1	*t* =1.49	151	.14
SM Social Misperception T1	χ^2 = .61	1	.44
SM Peer Rejection T1	χ^2 = .66	1	.42
SR Prob. Attachment T2	*t* = .32	146	.75
PR Aggression T2	*t* = 1.37	150	.37

Note: T2 Dating violence data present = 0, data missing = 1
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report; Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian (1=problematic, 0 = not problematic); Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Prob. Parent Attachment T2 = adolescent self-report total score (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale t-score (CBCL; Achenbach, 1991)

Data Analyses

Hierarchical logistic regression models and linear regression models were both employed to examine the longitudinal relationship between childhood physical abuse and poor peer relations in adolescence. Specifically, problematic parent attachment, aggression, social misperception, and peer rejection were considered as each mediating the relationship between childhood physical abuse and adolescent poor peer relations. Two main models were tested, each with two distinct outcomes of poor peer relations in adolescence— general social problems and dating violence. The first model (Model 1) examined whether any of the abovementioned factors in preadolescence mediated the relationship between childhood physical abuse and later poor peer relations in adolescence. The second model (Model 2) examined whether change from preadolescence to adolescence in problematic attachment or aggression mediated the relationship between childhood physical abuse and poor peer relations in adolescence.

Hierarchical linear regression modeling was used in analyses involving a continuous outcome (i.e., general social problems) while hierarchical logistic regression modeling was used in analyses involving a dichotomous outcome (i.e., dating violence). Hierarchical regressions were required so that a mediation effect could be observed.

Individual regression analyses, representing the examination of each of the hypothesized mediators on the relationship between childhood physical abuse and problematic peer relations in adolescence, were tested. The first block or step in the analyses included only childhood physical abuse while the second block or step included childhood physical abuse as well as the hypothesized mediator. The third block or step tested for an interaction effect between the mediator and childhood physical abuse. Based on Cohen and Cohen (1983), to eliminate multicollinearity, all continuous variables involved in the interaction were centered about their means.

According to the MacArthur approach, in addition to establishing that an association exists between the predictor and the outcome, three eligibility criteria are required for establishing mediation: 1) the predictor precedes the mediator, 2) the predictor and mediator are associated, and 3) either a main effect of the mediator or an interaction between the predictor and the mediator is demonstrated (Kraemer et al., 2008). This approach was used to determine mediation in both Model 1 and Model 2. In terms of temporal precedence, inclusion criteria for childhood physical abuse was gathered from ACS records that were established prior to participation in phase one (T1) of the study; thus, childhood physical abuse was established at Time 0 (T0) and preceded all hypothesized mediators from phase one (T1) and phase two (T2) of the study. To address MacArthur’s second criteria, the bivariate associations between the hypothesized mediators and the independent variable (childhood physical abuse) were examined to ensure a significant association. Finally, as described above, hierarchical regression analyses tested whether there was a main effect of the mediator or an interaction between the predictor and the mediator. If there was a main effect after the individual predicted mediator was included, mediation was indicated. In Model 1, it was hypothesized that the effect of childhood physical abuse on adolescent poor peer relations was explained, or partially explained, by problematic parent attachment, aggression, social misperception, and peer rejection in preadolescence. In Model 2, it was hypothesized that the effect of childhood physical abuse on later poor peer relations was also explained, or partially explained, by the change in problematic attachment to parents and aggression in adolescence subsequent to preadolescence.

Chapter III

RESULTS

Bivariate Associations Between Variables of Interest

As depicted in Table 9a below, childhood physical abuse was significantly associated with general social problems in adolescence ($r = .18$; $p \leq .05$) and dating violence in adolescence (OR 4.17; $p \leq .05$, CI 1.11-15.69), which confirms that a relationship exists between childhood abuse and later peer relations. Childhood physical abuse wa also significantly associated with all of the hypothesized mediators except for problematic parent attachment in childhood and change in aggression from preadolescence to adolescence, as displayed in Table 9a and Table 9b. Hypotheses involving problematic parent attachment in childhood and change in aggression were, thus, not examined further in this paper.

Overall, in terms of meeting Kraemer et al.'s (2008) eligibility criteria to run mediation analyses, all of the proposed hypotheses were testable except for those that examined preadolescent problematic attachment to parents as a mediator and those that examined change in aggression from preadolescence to adolescence as a mediator. More specifically, preadolescent aggression, social misperception, and peer rejection were examined as potential mediators of the relationship between childhood physical abuse and general social problems in adolescence (Models 1a, 1b, and 1c). These preadolescent factors were also analyzed as potential mediators of the relationship between childhood physical abuse and dating violence in adolescence (Models 1d, 1e, and 1f). With regard to Model 2 (e.g., adolescent mediators), only change in problematic parent attachment over time was considered as a potential mediator of the association between childhood physical abuse and poor peer relations in adolescence, including general social functioning (Model 2a) and dating violence (Model 2b).

Table 9a

Unadjusted Odds Ratios (95% Confidence Intervals) and/or Correlations Representing Bivariate Associations Among Variables of Interest

	1	2	3	4	5	6	7	8	9
1. Physical Abuse T0	–								
2. SR Prob. Attachment, T1	OR=2.56 (.87-7.57)	–							
3. TR Aggression T1	OR=1.05*** (1.02-1.08)	OR=1.03 (.98-1.09)	–						
4. SM Social Mispercep T1	OR=4.41* (1.20-16.14)	OR=3.33 (.62-17.80)	OR=1.07* (1.02-1.13)	–					
5. SM Peer Rejection T1	OR=4.28*** (2.11-8.69)	OR=.83 (.17-4.12)	OR=1.04* (1.01-1.08)	OR=3.86* (1.16-12.86)	–				
6. SR Prob. Parent Attach T2	OR=1.02** (1.00-1.04)	OR=1.02 (.99-1.05)	r=.11	OR=1.01 (.98-1.04)	OR=1.00** (.98-1.02)	–			
7. PR Aggression T2	OR=1.04** (1.01-1.06)	OR=.99 (.95-1.05)	r=.36**	OR=1.07** (1.02-1.13)	OR=1.02 (.99-1.06)	r=.24**	–		
8. PR Social Problems T2	r=.183*	r=.003	r=.21*	r=.195*	r=.146	r=.109	r=.63**	–	
9. SR Dating Violence T2	OR=4.17* (1.11-15.69)	OR=4.87 (.74-31.95)	OR=1.03 (.98-1.08)	OR=5.58* (1.36-22.87)	OR=1.42 (.41-4.93)	OR=1.03* (1.01-1.06)	OR=1.06* (1.01-1.11)	OR=1.08 (1.00-1.18)	–

Note: *p≤.05, **p≤.01, ***p≤.001

Note: OR = odds ratio; r = Pearson's r

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; SR = self report, TR = teacher report, SM = sociometric ratings, PR = parent report; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Prob. Parent Attachment T1 = preadolescent self-rated valence when with parent/guardian (1=problematic, 0 = not problematic); Aggression T1 = teacher-reported externalizing scale (TRF; Achenbach, 1991); Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Prob. Parent Attachment T2 = adolescent self-report (IPPA; Armsden & Greenberg, 1987); Aggression T2 = parent-reported externalizing scale (CBCL; Achenbach, 1991); Social Problems = parent-reported social problems scale (CBCL; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Table 9b

Pearson's Correlations Representing Bivariate Associations Among Childhood Physical Abuse and Change in Attachment/Aggression

	1	2	3
1. Physical Abuse T0	–		
2. Change in Attachment T1 to T2	.20*	–	
3. Change in Aggression T2 to T2	.14	.22**	–

Note: *p≤.05, **p≤.01

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Change in Attachment = standardized residual scores from regressing T2 attachment on T1 attachment; Change in Aggression = standardized residual scores from regressing T2 aggression on T1 aggression

Model 1a: The Mediating Effect of Preadolescent Aggression on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

Model 1a represents the hypothesis that preadolescent aggression mediates the relationship between childhood physical abuse and adolescent general social problems. Table 10 depicts the results from the linear regression analysis following the MacArthur approach (Kraemer et al., 2008). In Step 1, physical abuse was a significant predictor of adolescent social problems (β=.18; $p \leq .05$). According to the MacArthur approach, mediation is established by demonstrating either a main effect of the mediator or an interaction between the mediator and the independent variable. When preadolescent aggression was added in Step 2, it was a significant main effect (β=.18; $p \leq .05$) while childhood physical abuse was no longer significant (β=.15; $p > .05$). This indicates a mediating effect of preadolescent aggression on the relationship between childhood physical abuse and general poor peer relations in adolescence.

Table 10
Linear Regression Model Testing for Hypothesized Mediation of *Preadolescent Aggression* *on the Association between Childhood Physical Abuse and* *Adolescent General Social Problems*

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR^2
Model 1a					
Step 1:	Physical Abuse T0	2.49	1.09	.18*	.03
Step 2:	Physical Abuse T0	2.00	1.10	.15	
	Aggression T1	.11	.05	.18*	.03
Step 3:	Physical Abuse T0 x Aggression T1	.00	.10	-.01	.00

* $p \leq .05$
Note: Continuous predictors were centered before entered into regression equation
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

Model 1b: The Mediating Effect of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

Model 1b analyzes the potentially mediating influence of social misperception in preadolescence on the relationship between childhood physical abuse and social problems in adolescence. Results of the hierarchical linear model are displayed in Table 11 following the MacArthur approach (Kraemer et al., 2008). Again, in Step 1, childhood physical abuse was significantly associated with social problems in adolescence (β=.18; $p \leq .05$). In Step 2, when social misperception was added to the model, social misperception had a main effect (β=.17; $p \leq .05$) and physical abuse was no longer significant (β=.16; $p > .05$). This indicates a significant mediating effect of social misperception on the association between childhood physical abuse and social problems in adolescence.

Table 11
Linear Regression Model Testing for Hypothesized Mediation of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and Adolescent General Social Problems

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR^2
Model 1b					
Step 1:	Physical Abuse T0	2.49	1.09	.18*	.03
Step 2:	Physical Abuse T0	2.14	1.09	.16	
	Social Misperception T1	4.30	2.02	.17*	.03
Step 3:	Physical Abuse T0 x Soc. Misperc. T1	2.46	4.58	.09	.00

* $p \leq .05$
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

Model 1c: The Mediating Effect of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

Model 1c analyzes the potentially mediating influence of peer rejection status in preadolescence on the relationship between childhood physical abuse and social problems in adolescence. Results of the hierarchical linear model are displayed in Table 12 following the MacArthur approach (Kraemer et al., 2008). Again, in Step 1, childhood physical abuse was significantly associated with social problems in adolescence (β=.18; $p \leq .05$). However, in Step 2, when peer rejection was added to the model, neither peer rejection nor physical abuse had a significant main effect. The interaction between physical abuse and peer rejection was also nonsignificant. Overall, this analysis does not indicate a significant mediating effect of peer rejection on the association between childhood physical abuse and social problems in adolescence.

Table 12
Linear Regression Model Testing for Hypothesized Mediation of Preadolescent Peer Rejection on the Association between Childhood Physical Abuse and Adolescent General Social Problems

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR^2
Model 1c					
Step 1:	Physical Abuse T0	2.49	1.09	.18*	.03
Step 2:	Physical Abuse T0	2.13	1.12	.16	
	Peer Rejection T1	1.73	1.33	.11	.01
Step 3:	Physical Abuse T0 x Peer Rejection T1	-4.02	2.80	-.22	.01

* $p \leq .05$
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

Model 1d: The Mediating Effect of Preadolescent Aggression on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

Model 1d analyzes the potentially mediating influence of aggression in preadolescence on the relationship between childhood physical abuse and dating violence in adolescence. Results of the hierarchical logistic model are displayed in Table 13 following the MacArthur approach (Kraemer et al., 2008). In Block 1, childhood physical abuse was significantly associated with dating violence in adolescence (OR= 4.17; $p \leq .05$, C.I. 1.11-15.69). In Block 2, when aggression was added to the model, it did not have a significant effect, but physical abuse continued to have a main effect (OR= 3.88; $p \leq .05$, C.I. 1.01-14.82). Furthermore, the interaction between physical abuse and aggression was insignificant. Overall, this analysis does not indicate a significant mediating effect of preadolescent aggression on the association between childhood physical abuse and dating violence in adolescence. Rather, it indicates that childhood physical abuse has a main effect, above and beyond preadolescent aggression, on adolescent dating violence.

Table 13
Logistic Regression Model Testing for Hypothesized Mediation of *Preadolescent Aggression* *on the Association between Childhood Physical Abuse and* *Adolescent Dating Violence*

		Dating Violence T2	
	Variable	OR	95% CI
Model 1d			
Block 1:	Physical Abuse T0	4.17*	1.11-15.69
Block 2:	Physical Abuse T0	3.88*	1.01-14.82
	Aggression T1	1.02	.97-1.07
Block 3:	Physical Abuse T0 x Aggression T1	1.03	.91-1.17

* $p \leq .05$
Note: OR = odds ratio
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Model 1e: The Mediating Effect of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

Model 1e represents the possible mediating influence of preadolescent social misperception on the association between childhood physical abuse and adolescent dating violence. Table 14 presents the hierarchical logistic regression model that examines this hypothesis. In Block 1, childhood physical abuse was significantly associated with dating violence in adolescence (OR=4.17; $p \leq .05$, CI=1.11-15.69). When social misperception, representing the hypothesized mediating variable, was then added to the model in Block 2, it had a significant main effect (OR=4.89; $p \leq .05$, CI=1.14-21.08), while childhood physical abuse was no longer significant (OR=3.83, $p > .05$, CI=.99-14.76). These results indicate a mediating effect of preadolescent social misperception on the association between childhood physical abuse and dating violence in adolescence.

Table 14

Logistic Regression Model Testing for Hypothesized Mediation of *Preadolescent Social Misperception* *on the Association between Childhood Physical Abuse and* *Adolescent Dating Violence*

		Dating Violence T2	
	Variable	OR	95% CI
Model 1e			
Block 1:	Physical Abuse T0	4.17*	1.11-15.69
Block 2:	Physical Abuse T0	3.83	.99-14.76
	Social Misperception T1	4.89*	1.14-21.08
Block 3:	Physical Abuse T0 x Soc. Misperc. T1	.31	.01-7.83

* $p \leq .05$

Note: OR = odds ratio

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Model 1f: The Mediating Effect of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

Model 1f (Table 15) represents the hypothesis that peer rejection status in preadolescence mediates the association between childhood physical abuse and dating violence in adolescence. In Block 1, childhood physical abuse was significantly associated with dating violence in adolescence (OR = 4.17; p ≤ .05, C.I. 1.11-15.69). When peer rejection was added to the model in Block 2, it did not have a main effect on dating violence (OR = 1.16; p > .05, C.I. .32-4.18), but childhood physical abuse continued to have a significant main effect (OR = 4.09; p ≤ .05, C.I. 1.03-15.77). However, there was a significant interaction effect between childhood physical abuse and preadolescent peer rejection (OR = .03, p ≤ .05, C.I. .002-.69), indicating moderated mediation or differing results for abused and nonabused subjects (Kraemer et al., 2008). As such, the logistic regression analyses were stratified by abuse (Table 15a) and nonabuse status (Table 15b). Overall, stratified analyses indicated that preadolescent peer rejection status significantly increased the odds of adolescent dating violence for control subjects (OR = 14.67, p ≤ .05, 1.15-187.37) but not for abused subjects (OR = .49, p ≤ .05, .09-2.51). These unusually large confidence intervals indicate some concerns with the data. Specifically, there were only three adolescents who did not have a history of childhood physical abuse but did experience dating violence. Of these, two adolescents were rejected by peers in preadolescence and only one was not rejected by peers. This problematic pattern of data suggests that the results unreliable and should not be interpreted.

Table 15
Logistic Regression Model Testing for Hypothesized Mediation of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and Adolescent Dating Violence

		Dating Violence T2	
	Variable	OR	95% CI
Model 1f			
Block 1:	Physical Abuse T0	4.17*	1.11-15.69
Block 2:	Physical Abuse T0	4.09*	1.08-15.77
	Peer Rejection T1	1.16	.32-4.18
Block 3:	Physical Abuse T0 x Peer Rejection T1	.03*	.002-.69

**p* ≤ .05
Note: OR = odds ratio
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Table 15a
Logistic Regression Model Testing for Effect of Preadolescent Peer Rejection Status on Dating Violence in Adolescence, Stratified by Abuse

		Dating Violence T2	
	Variable	OR	95% CI
Model 1f			
Block 1:	Peer Rejection T1	.49	.09-2.51

Table 15b
Logistic Regression Model Testing for Effect of Preadolescent Peer Rejection Status on Dating Violence in Adolescence, Stratified by Non-Abuse Status

		Dating Violence T2	
	Variable	OR	95% CI
Model 1f			
Block 1:	Peer Rejection T1	14.67*	1.15-187.37

* $p \leq .05$

Model 2a: The Mediating Effect of Change in Problematic Attachment to Parents from Preadolescence to Adolescence on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

Model 2a represents the potentially mediating effect of change in problematic attachment to parents from preadolescence to adolescence on the association between childhood physical abuse and general social problems in adolescence. Table 16 displays the results of the linear regression analysis following the MacArthur approach (Kraemer et al., 2008). In Step 1, social desirability was included in the model as a control variable based on its significant association with adolescent-rated attachment to parents, as was discussed above. As expected, childhood physical abuse significantly predicted general social problems in adolescence (β=.21; $p \leq .05$). When change in problematic parent attachment was added to the model in Step 2, it did not have an effect while childhood physical abuse remained a significant main effect (β=.19; $p \leq .05$). The interaction between childhood physical abuse and change in attachment was also not significant. These results indicate that change in attachment from preadolescence to adolescence does not mediate the relationship between childhood abuse and general social problems in adolescence.

Table 16

Linear Regression Model Testing for Hypothesized Mediation of *Change in Problematic Parent Attachment on the Association between Childhood Physical Abuse and* *Adolescent General Social Problems*

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR^2
Model 2a					
Step 1:	Social Desirability	.79	3.72	.02	
	Physical Abuse T0	2.84	1.12	.21*	.04
Step 2:	Physical Abuse T0	2.62	1.14	.19*	
	Δ Problematic Attachment	.67	.64	.10	.01
Step 3:	Physical Abuse T0 x Δ Prob. Attachment	-2.20	1.16	-.25	.02

* $p \leq .05$, *** $p \leq .001$

Note: Continuous predictors were centered before entered into regression equation

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Social Desirability = self-report Marlowe-Crowne scale; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Δ/Change in Attachment = standardized residual scores from regressing T2 attachment on T1 attachment; Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

Model 2b: The Mediating Effect of Change in Problematic Attachment to Parents from Preadolescence to Adolescence on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

Lastly, Model 2b represents the hypotheses regarding change in problematic parent attachment as a potential mediator of the relationship between childhood physical abuse and dating violence in adolescence. Table 17 depicts the results from the logistic regression analysis based on the MacArthur approach (Kraemer et al., 2008). Again, social desirability was controlled for because of its association with adolescent-rated attachment to parents. In Block 1, controlling for social desirability, childhood physical abuse did not significantly increase the likelihood of experiencing dating violence (OR = 3.74; p>.05, C.I. .97-14.35). As such, there is no significant relationship for change in attachment to mediate. However, change in problematic attachment to parents from preadolescence to adolescence did have a significant main effect on dating violence such that greater problematic attachment over time increased the likelihood of experiencing dating violence by almost twofold (OR = 1.93; $p \leq .05$, O.R. 1.02-3.66).

Table 17

Linear Regression Model Testing for Hypothesized Mediation of Change in Problematic Parent Attachment on the Association between Childhood Physical Abuse and Adolescent Dating Violence

		Dating Violence T2	
	Variable	OR	95% CI
Model 2b			
Block 1:	Social Desirability	.55	.01-21.55
	Physical Abuse T0	3.74	.97-14.35
Block 2:	Physical Abuse T0	3.21	.82-12.65
	Δ Problematic Attachment	1.93*	1.02-3.66
Block 3:	Physical Abuse T0 x Δ Problematic Attachment	2.79	.60-13.44

* $p \leq .05$

Note: OR = odds ratio

Note: Continuous predictors were centered before entered into regression equation

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Social Desirability = self-report Marlowe-Crowne scale; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Δ/Change in Attachment = standardized residual scores from regressing T2 attachment on T1 attachment; Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

Chapter IV

DISCUSSION

Overview of Findings

The goal of the present study was to examine how several interpersonal factors at two distinct developmental periods potentially mediate the relationship between childhood physical abuse and adolescent poor peer relations. It was hypothesized that preadolescent problematic attachment to parents, aggression, social misperception, and peer rejection would mediate the relationship between childhood physical abuse and adolescent general social problems and, more specifically, dating violence. It was additionally hypothesized that change from preadolescence to adolescence in problematic attachment to parents and aggression would mediate this relationship.

As expected, childhood physical abuse was predictive of social problems in adolescence and significantly associated with dating violence in adolescence. Furthermore, childhood physical abuse was also predictive of interpersonal factors including aggression, social misperception, and peer rejection in preadolescence, and change from preadolescence to adolescence in problematic attachment to parents. In terms of mediation, as hypothesized, a problem in social cognition or, specifically in this case, social misperception was found to mediate the effect of childhood physical abuse on general social problems in adolescence. It was also found to mediate the effect of childhood physical abuse on dating violence in adolescence. Preadolescent aggression was found to mediate the relationship between childhood physical abuse and general social problems in adolescence. No other mediation effects were found although change in problematic parent attachment over time had a main effect on dating violence. Implications of these findings are discussed below.

The Longitudinal Association Between Childhood Physical Abuse and Adolescent Poor Peer Relations

As expected, there was a significant relationship between childhood physical abuse and general social problems in adolescence such that childhood physical abuse predicted greater levels of adolescent social problems as compared to children who had not experienced childhood physical abuse. This finding is consistent with prior research that has examined the association between early maltreatment and later social functioning (Lansford et al., 2002; Howe and Parke, 2001; Parker & Herrera, 1996). There was also a significant association between childhood physical abuse and adolescent dating violence such that adolescents who had experienced childhood physical abuse were over four times as likely to be involved in a physically abusive relationship in adolescence, either as a victim or perpetrator of the abuse. This finding is similar to those in other studies that have examined the long-term impact of childhood maltreatment on later dating violence (Hendy et al., 2003; Heyman & Slep, 2002; Linder & Collins, 2005; Whitfield et al., 2003).

Overall, these significant bivariate associations in the present study are important because they indicate replication of findings that support the long-term negative impact of childhood physical abuse on later social functioning and permit the examination of potentially mediating variables in this study. The fact that physical abuse occurring in childhood predicted poor social functioning at least six years later is a testament to the lasting effects of physical abuse and highlights the importance of studying how these effects are mediated.

Social Misperception as a Hypothesized Mediator

It was hypothesized that social misperception, representing a type of problem in social cognition, in preadolescence would mediate the relationship between childhood physical abuse and later poor peer relations in adolescence, including general social problems and dating violence. These hypotheses were developed based on the existing literature regarding the development of social cognition biases in children who have experienced physical maltreatment (Dodge, Bates, & Pettit, 1990; Dodge, Pettit, Bates, & Valente, 1995; Price & Glad, 2003; Teisl & Cicchetti, 2008; Weiss, Dodge, Bates, & Pettit, 1992). For example, studies have found that children with a history of physical abuse are more likely to possess a hostile attribution bias, which then leads to increased aggression towards others (Dodge, Pettit, and Bates, 1990). As such, it seemed likely that problems in social cognition, which may develop at a young age due to significant relationship difficulties with parents (physical abuse), would continue to negatively impact social and relationship functioning in adolescence. This pattern was found to hold true in the present study; social misperception, best understood as a specific problem in social cognition in which individuals misread social expectations and relationships with peers, mediated or helped explain how childhood physical abuse led to both general social problems and dating violence in adolescence.

These findings shed some light onto one of the mechanisms by which individuals with a history of physical abuse are more vulnerable to later social problems, including dating violence. The fact that children with a history of abuse were more likely to demonstrate increased social misperception suggests the development of problems in accurately assessing social situations, such as managing social expectations and reading social cues, which then led to later poor peer relations. The rationale for why this problem in social cognition develops is still only theorized; however, it seems logical that a child raised in an unstable home environment may develop confusing and conflicting ideas about what to expect from other social relationships outside of the home. Physically abused children may thus approach peers and friendships much like they approach their parents and the parent-child relationship in which he/she is cared for by his/her parent despite being abused by the parent at times; they develop confusing schemas about social relationships that may then lead to social misperception of relationships. This vulnerability then increases risk of involvement in unhealthy relationships. This falls in line with existing research that supports the theory that distorted cognitive schemas mediate the link between childhood maltreatment and intimate partner violence (Ponce, Williams, & Allen, 2004). Overall, these findings highlight the importance of uncovering specific types of problems in early social cognition, how they may develop and how they may impact general social functioning as well as specific intimate relationships even into adolescence.

Aggression as a Hypothesized Mediator

It was hypothesized that preadolescent aggression mediates or helps explain the relationship between childhood physical abuse and general social problems in adolescence. This hypothesis heavily relies on a social learning perspective; children who experience or observe their parents being aggressive are expected to display more aggressive behaviors themselves. The adoption of this hypothesis was also influenced by findings from prior studies that have demonstrated links between physical abuse and aggression and aggression and social maladjustment (Bousha & Twentyman, 1984; Haskett & Kistner, 1991; Herrenkohl & Herrenkohl, 1981; Hoffman-Plotkin & Twentyman, 1984; Howes, 1984; Howes & Espinosa, 1985; Prino & Peyrot, 1994). For example, aggressive and socially inappropriate behaviors have been shown to lead to loneliness and isolation from peers and general social difficulties (Coie et al., 1995; Pope & Bierman, 1999). The hypothesis was supported; preadolescent aggression was found to mediate the relationship between childhood physical abuse and later general social problems in adolescence. This longitudinal finding demonstrates the important mediating role of aggression on poor peer relations in adolescence and a potentially key area for earlier intervention during preadolescence.

It is important to note, however, that preadolescent aggression did not mediate the relationship between childhood physical abuse and dating violence, which represented a more specific type of problematic peer relation in adolescence. There are several methodological issues that may explain this nonsignificant finding, including the longitudinal design and problems with power. Specifically there were, on average, six years between data collection periods, during which significant experiences or interventions may have taken place to address aggressive behaviors and potentially altered the expected trajectory of early aggression to dating violence. Additionally, due to issues of power, the measure of dating violence used in this study included being either victims or perpetrators of physically violent behaviors, which may have further weakened the links between childhood physical abuse, preadolescent aggression, and adolescent dating violence. It is possible that there are differences in the effects of childhood abuse on perpetration of dating violence and victimization of dating violence (Hendy et al., 2003; Heyman & Slep, 2002; Malik et al., 1997). Unfortunately, due to the small number of adolescents who reported being a perpetrator of dating violence (n = 8) or a victim of dating violence (n = 7) in the present sample, low power resulted in no significant associations between childhood physical abuse and either perpetration of dating violence or being a victim of dating violence. Thus, it would have been futile to further explore the potentially different effects of aggression on role in dating violence in this study.

Aside from methodological issues, there are also theoretical explanations for why preadolescent aggression mediated the relationship between childhood physical abuse and adolescent general social problems but not the relationship between childhood physical abuse and adolescent dating violence. For example, it is possible that because general social problems are, by the very nature of the construct, so broad, that there may be a wider range of mediating factors that contribute to explaining the relationship between childhood physical abuse and general social problems in adolescence. In addition to preadolescent aggression and social misperception, other potential mediators that explain the relationship between childhood abuse and later general social problems might range from internal factors such as depression and anxiety (Levendosky, Okun, & Parker, 1995) to more external factors such as positive relationships with adults (Flores, Cicchetti, & Rogosch, 2005). On the other hand, physical violence in adolescent dating relationships is such a specific and rare event that explanatory factors may also be much more specific and targeted. For example, one study found that trauma symptoms, specifically trauma-related anger, mediated the relationship between childhood maltreatment and adolescent dating violence whereas other factors such as attitudes towards dating violence, empathy and self-efficacy in relationships were not mediators (Wolfe et al., 2004).

Attachment as a Hypothesized Mediator

Contrary to what was hypothesized, change from preadolescence to adolescence in problematic attachment to parents did not mediate the relationship between childhood physical abuse and adolescent poor peer relations, including general social problems and dating violence. These results were unexpected as attachment theory supported the hypotheses, and past studies have shown a connection between attachment and poor peer relations (Conger et al., 2000; LaFreniere & Sroufe, 1985; Sroufe, 1983). There are some methodological problems, including most notably a sensitivity issue, that may help explain the lack of significant findings. Problematic attachment to parents during preadolescence was represented by the child's stated impression of his/her relationship with his/her parents based on a simple 3-point Likert scale. Sensitivity of this item was insufficient as it was not even able to discriminate between children who had experienced physical abuse as compared to those who had not, a distinction that has long been established in the literature (Carlson, Cicchetti, Barnett, & Braunwald, 1989). On the other hand, problematic attachment in adolescence was measured by a more valid standard measure, the Inventory of Parent and Peer Attachment, which has been correlated with the Social and Family Self Scores of the Tennessee Self-Concept Scale and subscales on the Family Environmental Scale (IPPA; Armsden & Greenberg, 1987). As such, the created variable representing change in attachment to parents from preadolescence to adolescence may not have adequately captured the construct as it was intended to.

Theoretically, it is possible that change or more specifically an increase in problematic attachment to parents from preadolescence to adolescence did not have a mediating effect on the relationship between childhood abuse and later poor peer relations because of developmental factors. A developmental model might suggest that, while they are still important, parents become less central to the formation of social functioning and relationships as friends and peers become more influential in adolescence. As such, change in attachment to parents, whether an increase or a decrease, might not be expected to have a significant effect on the relationship between childhood abuse and social functioning in adolescence. For example, some research has suggested that peer relationships as measured by peer attachment may be more influential than parent attachment on adolescent adjustment in terms of depression, aggression, and sympathy (Laible, Carlo, & Raffaelli, 2000).

Of note, an increase in problematic attachment to parents from preadolescence to adolescence significantly predicted dating violence but not general social problems in adolescence. Although these main effects were not a focus of the current study, it is an important finding to highlight, as it may suggest that attachment to parents is a significant component of understanding the development of maladaptive intimate relationships rather than more general social functioning in adolescence, regardless of a history of childhood abuse. Similar findings exist in the literature (Collins, Cooper, Albino, & Allard, 2002).

Peer Social Status as a Hypothesized Mediator

Contrary to what was hypothesized, peer rejection, a form of social status amongst peers, during preadolescence did not mediate the relationship between childhood physical abuse and adolescent poor peer relations, including general social problems and dating violence. These results were unexpected given then existing research identifying links between childhood physical abuse and peer rejection (Anthonysamy & Zimmer-Gembeck, 2007; Dodge, Pettit, & Bates, 1994; Rogosch & Cicchetti, 1994; Salzinger, Feldman, Hammer, & Rosario, 1993) and peer rejection and later poor peer relations (Coie & Cillessen, 1993; Demir & Urberg, 2004; Nangle, Erdley, Newman, Mason, & Carpenter, 2003; Parker & Asher, 1987; Pedersen, Vitaro, Barker, & Borge, 2007). These unsupported hypotheses can be explained in several ways. In terms of methodological concerns, the six year gap between phase 1 and phase 2 of data collection resulted in the inability to assess children year by year, which would have been helpful in understanding how social status amongst peers, specifically peer rejection, may have varied for individual children over time. Some research has shown that peer social status can change within a five year period and even more frequently at certain points (Coie & Dodge, 1983; Hardy, Bukowski, & Sippola, 2002). With only one time point of data on peer rejection, it is difficult to fully understand the significance of the index, as it would be expected to change over time.

In addition to the lack of stability of peer social status during childhood and adolescence, there is also the possibility that the hypothesized mediating effects of preadolescent peer rejection were allayed by other intervening processes, such as the development of close relationships with a best friend (Sullivan, 1953) or a trusted adult figure (Pisani et al., 2013). Positive experiences with competent individuals may compensate for the negative effects of peer rejection. Existing research has demonstrated that resilience in high-risk children who have experienced stressful or traumatic experiences is bolstered by a range of factors including having a positive relationship with an adult, being a strong learner and problem-solver, being socially engaging, having some areas of competence, and possessing a sense of self-efficacy (Masten, Best, & Garmezy, 1990). These and other potential factors were not examined in the current study, but they could have been part of the processes that rendered peer rejection as a hypothesized mediator unimportant. Without examining these relationships and personal qualities as potentially intervening factors, it is impossible to fully understand why peer rejection status, in addition to attachment to parents, did not mediate the association between childhood physical abuse and adolescent poor peer relations.

Welfare Status and Family Structure

As discussed earlier, welfare status and family structure were not controlled for in the current study because they were considered important characteristics of the sample, specifically the abuse sample. Children who are raised in poverty and experience fractured family structures are at greater risk for child abuse (Brown, Cohen, Johnson, & Salzinger, 1998); thus, controlling for poverty and family structure would have potentially resulted in the removal of integral components of how abuse is understood within the families that were selected from the New York State register for child abuse. It is also important to be wary of over-control and its potential to mask effects, particularly in this sample of limited size. Nevertheless, it is acknowledged that the effects of significant demographic variables should be considered to explore any potential confounds. As depicted in Appendix I, all analyses were rerun controlling for welfare status (e.g., mother received welfare within past year T1) and family structure (e.g., lived with both biological parents at T1 and T2). When welfare status and family structure were controlled for, childhood physical abuse no longer predicted general social problems in adolescence; as such, there was no relationship for aggression, social misperception, or peer rejection to mediate regarding that general outcome. However, of note, preadolescent aggression and social misperception had main effects on general social problems in adolescence. The only significant mediation effect that remained when controlling for welfare status and family structure was that of preadolescent social misperception on the relationship between childhood physical abuse and adolescent dating violence, which adds strength to the finding that social misperception has a important role in the relationship between childhood abuse and later intimate relationship functioning.

Change from preadolescence to adolescence in problematic attachment to parents was found to have an interaction effect with childhood physical abuse when predicting to general social problems in adolescence. Specifically, when controlling for family structure, welfare status, and social desirability, an increase in problematic attachment to parents from preadolescence to adolescence significantly predicted general social problems in adolescence for the control group but not for the abused group. This finding may suggest that the parent-adolescent relationship has more influence on nonabused youth as compared to abused youth, who may value this relationship less.

Strengths of the Current Study

There are many factors that contribute to the strength of this study in understanding the mechanisms by which childhood physical abuse is associated with later poor peer relations. First, the longitudinal design of the study allows for the examination of influences or effects over time, which makes the findings more meaningful and practical for intervention. Specifically, the data represent three time points and cover distinct developmental periods which reflects the developmental nature of the phenomena. Additionally, the data involved multiple informants, including parents, teachers, peers, and the target child/adolescent, which helped to limit biases and added richness to the data.

Other strengths of the study include the outcomes, which represent important aspects of development that must be better understood in order to most effectively improve lives of individuals who have experienced childhood physical abuse. The present study attempted to examine the development of poor peer relationships with the understanding that poor social functioning and maladaptive relationships may be risk factors for perpetuation of the cycle of abuse (Black, Heyman, & Slep, 2001). The present study also highlights the importance of considering other relational outcome factors that may often be overlooked for psychopathology-based outcomes.

Limitations of the Current Study

There are also several limitations to the present study that are important to acknowledge. Firstly, because random assignment to groups was impossible, the data are not experimental and causal interpretations cannot be made. Additionally, the findings are based on a predominantly Hispanic and African American sample drawn from urban New York City, indicating that generalizability is most appropriate to an urban minority sample. Notably, there were also issues of power that influenced the analyses, specifically those involving dating violence, which only a limited number of participants reported in the present sample. However, even when assessed with a large national sampling pool, dating violence was a very rare event in adolescence (Centers for Disease

Control and Prevention, 2012). While the use of multiple informants is a strength of the study, it is also a limitation in that it may affect the consistency of constructs being measured across time. For example, teachers provided aggression ratings based on interactions and behaviors observed in the classroom during preadolescence while parents provided ratings mainly based on observations made in the home or other settings during adolescence. This can be problematic as aggression may be interpreted differently in each setting and developmental period. Additionally, as mentioned above, there was, on average, a six year gap between the two data collection periods, during which participants were not assessed and potentially intervening factors were not accounted for. As such, the factors examined in this study account for only a small portion of the mediation of the relationship between childhood abuse and adolescent poor peer relationships.

Additionally, it is important to note that the data used in this study were collected over ten years ago. While the damaging effects of childhood physical abuse remain the same regardless of time of the century, there have been shifts in cultural norms surrounding adolescent dating that may complicate the generalizabilty of the findings specifically related to dating violence. For example, there is some evidence that teenage dating is becoming less common than it was in 1990, although differences may also be due to changing terminology and social expectations associated with “dating” (U.S. Department of Health and Human Services, 2008). Nevertheless, social difficulties, whether in general or more specifically with a romantic partner, impact adolescents’ interactions and development of relationships that, in turn, influence formation of intimacy, marriage, and family relations.

Future Research and Implications for Intervention

The short and long term effects of childhood physical abuse have been well established, and now research seeks to better understand the mechanisms by which childhood physical abuse has immediate and longitudinal negative impacts. Through bivariate associations, the present study confirms more immediate effects of childhood physical abuse, including increased aggression, problems in social cognition, and peer rejection, as well as longer-term effects of childhood abuse, including increased aggression, problematic parent attachment, dating violence, and general social functioning in adolescence. However, the contributions of this study to the field include a deeper examination of the mechanisms by which childhood physical abuse is associated with later poor peer relations. Preadolescent aggression as well as preadolescent problems in social cognition, specifically social misperception, were found to be significant mediators of the relationship between childhood physical abuse and poor peer relations in adolescence. These findings are particularly meaningful because they can inform both the focus and the timing of interventions for physically abused youth.

For example, some evidence-based interventions, such as Alternatives for Families- A Cognitive Behavioral Therapy (AF-CBT; Kolko et al., 2011), for physically abused children and their parents have been promising (Kolko, Iselin, & Gully, 2011). AF-CBT in particular attempts to enhance social competence by strengthening interpersonal skills and address cognitive processing issues related to aggression. However, the treatment may benefit from targeting additional specific problems in social cognition which may subsequently result in difficulties with peers, such as the social misperception tendency found in the present study. Furthermore, the age-range for this treatment is from childhood through late adolescence (5 to 17 years old), a broad time span during which significant development occurs. Thus, the treatment and others like it may benefit from better understanding when specific strategies and treatment goals may be most effective based on developmental timing. For example, based on findings from the present study, targeting aggression in adolescence may be more effective than targeting it in preadolescence with regard to preventing general social problems.

Further research is needed to address the questions that these data were unable to answer, specifically with regard to preadolescent attachment to parents and change in aggression from preadolescence to adolescence. Additionally, it is also important to replicate this study with a larger sample, particularly in examining hypotheses related to dating violence and the different trajectories for victims and perpetrators of relationship violence. It would also be beneficial for the development of interventions to examine a more comprehensive set of outcomes related to social functioning in adolescence as there are a multitude of ways to capture healthy and unhealthy social functioning. It is hoped that future research will continue to target the development of poor peer relations in children and adolescents who have experienced childhood physical abuse, in addition to all forms of maltreatment, so that interventions can more effectively help these individuals develop positive and healthy relationships moving forward.

REFERENCES

Achenbach, T. M. (1991). *Manual for the Youth Self-Report and 1991 profile*. Burlington: University of Vermont, Department of Psychiatry.

Anthonysamy, A., & Zimmer-Gembeck, M. J. (2007). Peer status and behaviors of maltreated children and their classmates in the early years of school. *Child Abuse & Neglect, 31*, 971-991.

Armsden, G. C., & Greenberg, M. T. (1987). The Inventory of Parent and Peer Attachment: Relationships to well-being in adolescence. *Journal of Youth and Adolescence, 16* (5), 427-454.

Asher, S.R. (1983). Social competence and peer status: Recent advances and future directions. *Child Development, 54,* 1427-1434.

Bagwell, C. L., Newcomb, A. F., & Bukowski, W. M. (1998). Preadolescent friendship and peer rejection as predictors of adult adjustment. *Child Development, 69* (1), 140-153.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A., Ross, D. & Ross, S. A. (1963). Vicarious reinforcement and imitative learning. *Journal of Abnormal Psychology, 67,* 601-607.

Banny, A. M., Cicchetti, D., Rogosch, F. A., Oshri, A., & Crick, N. R. (2013). Vulnerability to depression: A moderated mediation model of the roles of child maltreatment, peer victimization, and serotonin transporter linked polymorphic region genetic variation among children from low socioeconomic status backgrounds. *Development and Psychopathology*, *25*(03), 599-614.

Barahal, R. M., Waterman, J., & Martin, H. P. (1981). The social cognitive development of abused children. *Journal of Counseling and Clinical Psychology, 49* (4), 508-516.

Berlin, L. J., Appleyard, K., & Dodge, K. A. (2011). Intergenerational continuity in child maltreatment: Mediating mechanisms and implications for prevention. *Child development*, *82*(1), 162-176.

Black, D. A., Heyman, R. E., & Smith Slep, A. M. (2001). Risk factors for child physical abuse. *Aggression and Violent Behavior*, *6*(2), 121-188.

Bloomberg, M. R., & Mattingly, J. B. (2008). *Parent's Guide to New York State Child Neglect and Abuse Laws* [Booklet]. Brooklyn, NY: New York City Children's Services.

Booth-LaForce, C., & Kerns, K. A. (2009). Child-parent attachment relationships, Peer relationships, and peer-group functioning.

Bousha, D. M., & Twentyman, C. T. (1984). Mother-child interactional style in abuse, neglect, and control groups: Naturalistic observations in the home. *Journal of Abnormal Psychology*, *9 3*(1), 106-114.

Bowlby, J. (1969). *Attachment and loss: Vol. 1: Attachment*. New York: Basic Books.

Bowlby, J. (1979). The making and breaking of aflectional bonds. *London: Tavistock*.

Brendgen, M., Vitaro, F., Tremblay, R. E., & Lavoie, F. (2001). Reactive and proactive aggression: Predictions to physical violence in different contexts and moderating effects of parental monitoring and caregiving behavior. *Journal of Abnormal Child Psychology*, *29*(4), 293-304.

Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology 22* (6), 723-742.

Brown, J., Cohen, P., Johnson, J. G., & Salzinger, S. (1998). A longitudinal analysis of risk factors for child maltreatment: Findings of a 17-year prospective study of officially recorded and self-reported child abuse and neglect. *Child Abuse & Neglect*, *22*(11), 1065-1078.

Brownell, C. A., & Brown, E. (1992). Peers and play in infants and toddlers. In *Handbook of social development* (pp. 183-200). Springer US.

Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental psychology*, *25*(4), 525.

Centers for Disease Control and Prevention (2012). Youth risk behavior surveillance—United States, 2011. *Morbidity and Mortality Weekly Report 61* (4), 1-162.

Cicchetti, D., & Barnett, D. (1991). Attachment organization in maltreated preschoolers. *Development and Psychopathology*, *3*(04), 397-411.

Cicchetti, D., Rogosch, F. A., & Toth, S. L. (2006). Fostering secure attachment in infants in maltreating families through preventive interventions. *Development and psychopathology*, *18*(03), 623-649.

Cicchetti, D., Toth, S. L., Bush, M. A., & Gillespie, J. F. (1988). Stage- salient issues: A transactional model of intervention. *New Directions for Child and Adolescent Development*, *1988* (39), 123-145.

Cillessen, A. H. N. (2009). Sociometric methods. In K. H. Rubin, W. Bukowski, & B.

Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 82-99). New York: Guilford.

Cillessen, A., Jiang, X. L., West, T., & Laszkowski, D. (2005). Predictors of dyadic friendship quality in adolescence. *International Journal of Behavioral Development*, *29*(2), 165-172.

Cohen, J., & Cohen, P. (1983). Applied multiple regression/correlation analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Erlbaum.

Coie, J. D., & Cillessen, A. H. (1993). Peer rejection: Origins and effects on children's development. *Current Directions in Psychological Science*.

Coie, J. D., & Dodge, K. A. (1983). Continuities and changes in children's social status: A five-year longitudinal study. *Merrill-Palmer Quarterly, 29,* 261–282.

Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology, 18,* 557–570.

Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Peer group behavior and social status. In S. R. Asher., & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 17-59). Cambridge: Cambridge University Press.

Coie, J. D., Dodge, K. A., Terry, R., & Wright, V. (1991). The role of aggression in peer relations: An analysis of aggression episodes in boys' play groups. *Child Development*, *62*(4), 812-826.

Coie, J., Terry, R., Lenox, K., Lochman, J., & Hyman, C. (1995). Childhood peer rejection and aggression as predictors of stable patterns of adolescent disorder. *Development and Psychopathology*, *7*(04), 697-713.

Collins, N. L., Cooper, M. L., Albino, A., & Allard, L. (2002). Psychosocial vulnerability from adolescence to adulthood: A prospective study of attachment style differences in relationship functioning and partner choice. Journal of Personality, 70 (6), 965-1008.

Conger, R. D., Cui, M., Bryant, C. M., & Elder, G. H., Jr. (2000). Competence in early adult romantic relationships: A developmental perspective on family influences. *Journal of Personality and Social Psychology, 79*, 224-237.

Connolly, J. & Goldberg, A. (1999). Romantic relationships in adolescence: The role of friends and peers in their emergence and development. In W. Furman, B. Brown, & C. Feiring (Eds.), *The development of romantic relationships in adolescence. Cambridge studies in social and emotional development* (pp. 266–290). New York: Cambridge University Press.

Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child development*, *67*(5), 2317-2327.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children’s social adjustment. *Psychological Bulletin, 115*, 74-101.

Crick, N. R., Murray-Close, D., Marks, P. E., & Mohajeri-Nelson, N. (2009). Aggression and peer relationships in school-age children. In K. H. Rubin, W. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 341 – 360). New York: Guilford.

Crittenden, P. M. (1988). Distorted patterns of relationship in maltreating families: The role of internal representation models. *Journal of Reproductive and Infant Psychology*, *6*(3), 183-199.

Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*, 349-354.

Dean, A. J., Malik, M. M., Richards, W., & Stringer, S. A. (1986). Effects of parental maltreatment on children’s conceptions of interpersonal relationships. *Developmental Psychology, 22* (5), 617-625.

Demir, M., & Urberg, K. A. (2004). Friendship and adjustment among adolescents. *Journal of Experimental Child Psychology*, *88*(1), 68-82.

Dixon, L., Browne, K., & Hamilton- Giachritsis, C. (2005). Risk factors of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (Part I). *Journal of Child Psychology and Psychiatry, 46* (1), 47-57.

Dodge, K.A. (1980). Social cognition and children’s aggressive behavior. *Child Development, 51*, 162-170.

Dodge, K. A. (1986). A social information processing model of social competence in children. In M. Perlmutter (Ed.), *The Minnesota Symposium on Child Psychology* (Vol. 18, pp. 77–125). Hillsdale, NJ: Erlbaum.

Dodge, K. A., Bates, J. E., & Pettit, G. S., (1990). Mechanisms in the cycle of violence. *Science, 250*, 1678-1683.

Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., & Price, J. M. (2003). Peer rejection and social information-processing factors in the development of aggressive behavior problems in children. *Child Development, 74* (2), 374-393.

Dodge, K. A., Pettit, G. S., & Bates, J. E. (1994). Effects of physical maltreatment on the development of peer relations. *Development and Psychopathology*, *6*(01), 43-55.

Dodge, K. A., Pettit, G. S., Bates, J. E., & Valente, E. (1995). Social information-processing patters partially mediate the effect of early physical abuse on later conduct problems. *Journal of Abnormal Psychology*, *104* (4), 632-643.

Dodge, K. A., Price, J. M., Coie, J. D., & Christopoulos, C. (1990). On the development of aggressive dyadic relationships in boys' peer groups. *Human Development*, *33*(4-5), 260-270.

Dunn, J. (2004). *Children's friendships: The beginnings of intimacy*. Blackwell Publishing.

Egeland, B., Yates, T, Appleyard, K., & van Dulmen, M. (2002). The long-term consequences of maltreatment in the early years: A developmental pathway model to antisocial behavior. *Children's Services: Social Policy, Research, and Practice, 5* (4), 249-260.

Ehrensaft, M. K., Cohen, P., Brown, J., Smailes, E., Chen, H., & Johnson, J. G. (2003). Intergenerational transmission of partner violence: A 20-year prospective study. *Journal of Consulting and Clinical Psychology, 71*, 741 – 753.

Feldman, R., Salzinger, S., Rosario, M., Alvarado, L., Caraballo, L., & Hammer, M. (1995). Parent, teacher, and peer ratings of physically abused and nonmaltreated children's behavior. *Journal of Abnormal Child Psychology, 23* (3), 317-334.

Finkelhor, D., & Jones, L. (2008). Good news: Child victimization has been declining. Why. *Child victimization: Violence, crime, & abuse in the lives of young people*, 122-147.

Finzi, R., Ram, A., Har-Even, D., Shnit, D., & Weizman, A. (2001). Attachment styles and aggression in physically abused and neglected children. *Journal of Youth and Adolescence*, *30*(6), 769-786.

Fite, J. E., Bates, J. E., Holtzworth-Munroe, A., Dodge, K. A., Nay, S. Y., & Pettit, G. S. (2008). Social information processing mediates the intergenerational transmission of aggressiveness in romantic relationships. *Journal of Family Psychology*, *22*(3), 367.

Flores, E., Cicchetti, D., & Rogosch, F. A. (2005). Predictors of resilience in maltreated and nonmaltreated Latino children. *Developmental psychology, 41*(2), 338.

Foshee, V. A., Benefield, T. S., Ennett, S. T., Bauman, K. E., & Suchindran, C. (2004). Longitudinal predictors of serious physical and sexual dating violence victimization during adolescence. *Preventive Medicine*, *39*(5), 1007-1016.

Foshee, V. A., Ennett, S. T., Bauman, K. E., Benefield, T., & Suchindran, C. (2005). The association between family violence and adolescent dating violence onset : Does it vary by race, socioeconomic status, and family structure? *Journal of Early Adolescence, 25* (3), 317-344.

Freitag, M. K., Belsky, J., Grossmann, K., Grossmann, K. E., & Scheuerer‐Englisch, H. (1996). Continuity in Parent‐Child Relationships from Infancy to Middle Childhood and Relations with Friendship Competence. *Child Development*, *67*(4), 1437-1454.

Furman , W. , & Collins , W. A. (2008). Adolescent romantic relationships and experiences. In K. H. Rubin, W. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 341 – 360). New York: Guilford.

George, C., & Main, M. (1979). Social interactions of young abused children: Approach, avoidance, and aggression. *Child development, 50* (2), 306-318.

Gifford-Smith, M. E., & Brownell, C. A. (2003). Childhood peer relationships: Social acceptance, friendships, and peer networks. *Journal of School Psychology*, *41*(4), 235-284.

Grotpeter, J. K., & Crick, N. R. (1996). Relational aggression, overt aggression, and friendship. *Child development*, *67*(5), 2328-2338.

Hardy, C. L., Bukowski, W. M., & Sippola, L. K. (2002). Stability and change in peer relationships during the transition to middle-level school. *The Journal of Early Adolescence*, *22*(2), 117-142.

Harned, M. S., (2002). A multivariate analysis of risk markers for dating violence victimization. *Journal of Interpersonal Violence, 17* (11), 1179-1197.

Hartup, W. W. (1983). Peer relations. *Handbook of child psychology, 4,* 103-196.

Haskett, M. E., & Kistner, J. A. (1991). Social interactions and peer perceptions of young physically abused children. *Child Development, 62* (5), 979-990.

Hawkins, A. O., Danielson, C. K., de Arellano, M. A., Hanson, R. F., Ruggiero, K. J., Smith, D. W., Saunders, B. E., & Kilpatrick, D. G. (2010). Ethnic/racial differences in the prevalence of injurious spanking and other child physical abuse in a national survey of adolescents. *Child Maltreatment, 15* (3), 242-249.

Hektner, J. M., August, G. J., & Realmuto, G. M. (2000). Patterns and temporal changes in peer affiliation among aggressive and nonaggressive children participating in a summer school program. *Journal of Clinical Child Psychology, 29*(4), 603-614.

Hendy, H. M., Weiner, K., Bakerofskie, J., Eggen, D., Gustitus, C., & McLeod, K. C. (2003). Comparison of six models for violent romantic relationships in college men and women. *Journal of Interpersonal Violence*, *18* (6), 645-665.

Herrenkohl, R. C., & Herrenkohl, E. C. (1981). Some antecedents and developmental consequences of child maltreatment. *New Directions for Child and Adolescent Development*, *1981* (11), 57-76.

Heyman, R. E., & Smith Slep, A. M., (2002). Do child abuse and interparental violence lead to adulthood family violence? *Journal of Marriage and Family, 64*, 864-870.

Hoffman-Plotkin, D., & Twentyman, C. T. (1984). A multimodal assessment of behavioral and cognitive deficits in abused and neglected preschoolers. *Child development*, 794-802.

Howard, D. E., Qi Wang, M., & Yan, F. (2007). Psychosocial factors associated with reports of physical dating violence among US adolescent females. *Adolescence, 42*(166).

Howe, T. R., & Parke, R. D. (2001). Friendship quality and sociometric status: Between-group differences and links to loneliness in severely abused and nonabused children. *Child Abuse & Neglect, 25,* 585-606.

Howes, C. (1984). Social interactions and patterns of friendships in normal and emotionally disturbed children. In T. Field, J. Roopnarine, & M. Segal (Eds.), *Friendships in Normal and Handicapped Children* (pp. 163-185). Norwood, NJ: Ablex.

Howes, C., & Espinosa, M. P. (1985). The consequences of child abuse for the formation of relationships with peers. *Child Abuse & Neglect, 9,* 397-404.

Hussey, J. M., Chang, J. J., & Kotch, J. B. (2006). Child maltreatment in the United States: Prevalence, risk factors, and adolescent health consequences. *Pediatrics, 118* (3), 933-942.

Jacobson, J. L., & Wille, D. E. (1986). The influence of attachment pattern on developmental changes in peer interaction from the toddler to the preschool period. *Child Development, 57* (2), 338-347.

Jaffee, S. R., Caspi, A., Moffitt, T. E., & Taylor, A. (2004). Physical maltreatment victim to antisocial child: Evidence of an environmentally mediated process. *Journal of Abnormal Psychology*, *113* (1), 44-55.

Kempe, C. H., & Helfer, R. E. (1968). *The battered child* (1st ed.). Chicago, IL: University of Chicago Press.

Kokko, K., & Pulkkinen, L. (2005). Stability of aggressive behavior from childhood to middle age in women and men. *Aggressive Behavior*, *31*(5), 485-497.

Kolko, D. J. (1996). Individual cognitive behavioral treatment and family therapy for physically abused children and their offending parents: A comparison of clinical outcomes. *Child Maltreatment, 1* (4), 322-342.

Kolko, DJ, Brown, EJ, Shaver, ME, Herschell, AD, Baumann, BL. *Alternatives for Families: A Cognitive Behavioral Therapy (AF-CBT) Session Guide, third edition.* November 1, 2011. Pittsburgh: University of Pittsburgh School of Medicine.

Kolko, D. J., Iselin, A. M., Gully, K. (2011). Evaluation of the Sustainability and Clinical Outcome of Alternatives for Families: A Cognitive-Behavioral Therapy (AF-CBT) in a Child Protection Center. *Child Abuse & Neglect, 35*, 105-116.

Kraemer, H.C., Kiernan, M., Essex, M., & Kupfer, D. (2008). How and why criteria defining moderators and mediators differ between the Baron & Kenny and MacArthur approaches. *Health Psychology*, *27*(2), S101-S108.

Laible, D. J., Carlo, G., & Raffaelli, M. (2000). The differential relations of parent and peer attachment to adolescent adjustment. *Journal of Youth and Adolescence, 29*(1), 45-59.

LaFreniere, P. J., & Sroufe, L. A. (1985). Profiles of peer competence in the preschool: Interrelations between measures, influence of social ecology, and relation to attachment history. *Developmental Psychology, 21* (1), 56.

Lansford, J. E., Dodge, K. A., Pettit, G. S., Bates, J. E., Crozier, J., & Kaplow, J. (2002). A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Archives of Pediatrics & Adolescent Medicine, 156*, 824-830.

Laursen, B., & Pursell, G. (2009). Conflict in peer relationships. In K. H. Rubin, W. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 267 – 286). New York: Guilford.

Levendosky, A. A., Okun, A., & Parker, J. G. (1995). Depression and maltreatment as predictors of social competence and social problem-solving skills in school-age children. *Child Abuse & Neglect, 19* (10), 1183-1195.

Linder, J. R., & Collins, W. A. (2005). Parent and peer predictors of physical aggression and conflict management in romantic relationships in early adulthood. *Journal of Family Psychology, 19* (2), 252-262.

Linder, J. R., Crick, N. R., & Collins, W. A. (2002). Relational aggression and victimization in young adults' romantic relationships: Associations with perceptions of parent, peer, and romantic relationship quality. *Social Development, 11* (1), 69-86.

Luthar, S. S., & McMahon, T. J. (1996). Peer reputation among inner-city adolescents: Structure and correlates. *Journal of Research on Adolescence, 6* (4), 581-603.

Lyons-Ruth, K., Easterbrooks, M., & Cibelli, C. D. (1997). Infant attachment strategies, infant mental lag, and maternal depressive symptoms: predictors of internalizing and externalizing problems at age 7. *Developmental Psychology*, *33*(4), 681.

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. *Attachment in the preschool years: Theory, research, and intervention*, *1*, 121-160.

Makin-Byrd, K., & Bierman, K. L. (2013). Individual and family predictors of the perpetration of dating violence and victimization in late adolescence. *Journal of Youth and Adolescence*, *42*(4), 536-550.

Malik, S., Sorenson, S. B., & Aneshensel, C. S. (1997). Community and dating violence among adolescents: Perpetration and victimization. *Journal of Adolescent Health*, *21*(5), 291-302.

Malinosky-Rummell, R., & Hansen, D. J. (1993). Long-term consequences of childhood physical abuse. *Psychological Bulletin, 114* (1), 68-79.

Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology, 2*(04), 425-444.

Meisinger, E. B., Blake, J. J., Lease, A. M., Palardy, G. J., & Olejnik, S. F. (2007). Variant and invariant predictors of perceived popularity across majority-Black and majority-White classrooms. *Journal of School Psychology*, *45* (1), 21-44.

Mueller, E., & Silverman, N. (1989). Peer relations in maltreated children. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment : Theory and research on the causes and consequences of child abuse and neglect* (pp. 529–578). Cambridge: Cambridge University Press.

Muller, R. T., Gragtmans, K., & Baker, R. (2008). Childhood physical abuse, attachment, and adult social support: Test of a mediational model. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*, *40*(2), 80.

Muller, R. T., Sicoli, L. A., & Lemieux, K. E. (2000). Relationship between attachment style and posttraumatic stress symptomatology among adults who report the experience of childhood abuse. *Journal of Traumatic Stress*, *13*(2), 321-332.

Nangle, D. A., Erdley, C. A., Newman, J. E., Mason, C. A., & Carpenter, E. M. (2003). Popularity, friendship quantity, and friendship quality: Interactive influences on children's loneliness and depression. *Journal of Clinical Child & Adolescent Psychology, 32* (4), 546-555.

O'Keeffe, N. K., Brockopp, K., & Chew, E. (1986). Teen dating violence. *Social Work, 31* (6), 465-468.

Olsen, J. P., Parra, G. R., & Bennett, S. A. (2010). Predicting violence in romantic relationships during adolescence and emerging adulthood: A critical review of the mechanisms by which familial and peer influences operate. *Clinical Psychology Review, 30,* 411-422.

Parker, J. G., & Herrera, C. (1996). Interpersonal processes in friendship: A comparison of abused and nonabused children's experiences. *Developmental Psychology, 32* (6), 1025-1038.

Pears, K. C., & Capaldi, D. M. (2001). Intergenerational transmission of abuse: A two-generational study of an at-risk sample. *Child Abuse and Neglect, 25,* 1439 – 1461.

Pedersen, A., Vitaro, F., Barker, E. D., & Borge, A. I. H. (2007). The timing of middle-childhood peer rejection and friendship: Linking early behavior to early-adolescent adjustment. *Child Development, 78* (4), 1037-1051.

Piaget, J. (1932). *The Moral Judgment of the Child.* London: Routledge & Kegan Paul.

Pisani, A. R., Wyman, P. A., Petrova, M., Schmeelk-Cone, K., Goldston, D. B., Xia, Y., & Gould, M. S. (2013). Emotion regulation difficulties, youth–adult relationships, and suicide attempts among high school students in underserved communities. *Journal of Youth and Adolescence, 42*(6), 807-820.

Pollak, S. D., Cicchetti, D., Hornung, K., & Reed, A. (2000). Recognizing emotion in faces: Developmental effects of child abuse and neglect. *Developmental psychology, 36* (5), 679.

Pollak, S. D., & Sinha, P. (2002). Effects of early experience on children's recognition of facial displays of emotion. *Developmental Psychology, 38,* 784–791.

Pollock, V. E., Briere, J., Schneider, L., & Knop, J. (1990). Childhood antecedents of antisocial behavior: Parental alcoholism and physical abusiveness. *The American Journal of Psychiatry, 147* (10), 1290-1293.

Ponce, A. N., Williams, M. K., & Allen, G. J. (2004). Experience of maltreatment as a child and acceptance of violence in adult intimate relationships: Mediating effects of distortions in cognitive schemas. *Violence and Victims, 19* (1), 97-108.

Pope, A. W., & Bierman, K. L. (1999). Predicting adolescent peer problems and antisocial activities: The relative roles of aggression and dysregulation. *Developmental Psychology, 35*(2), 335.

Price, J. M., & Glad, K. (2003). Hostile Attributional Tendencies in Maltreated Children. Journal of Abnormal *Child Psychology, 31* (3), 329-343.

Prino, C. T., & Peyrot, M. (1994). The effect of child physical abuse and neglect on aggressive, withdrawn, and prosocial behavior. *Child Abuse & Neglect, 18* (10), 871-884.

Prinstein, M., Rancourt, D., Guerry, J., *&* Browne, C. (2009). Peer reputations and psychological adjustment. In K. Rubin, W. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 548–567). New York: Guilford.

Rieder, C., & Cicchetti, D. (1989). Organizational perspective on cognitive control functioning and cognitive-affective balance in maltreated children. *Developmental Psychology, 25,* 382– 393.

Rogosch, F. A., & Cicchetti, D. (1994). Illustrating the interface of family and peer relations through the study of child maltreatment. *Social Development, 3* (3), 291-308.

Roisman, G. I., Madsen, S. D., Hennighausen, K. H., Sroufe, A. L., & Collins, A. W. (2001). The coherence of dyadic behavior across parent–child and romantic relationships as mediated by the internalized representation of experience. *Attachment & Human Development, 3* (2), 156-172.

Salzinger, S., Feldman, R., Hammer, M., & Rosario, M. (1993). The effects of physical abuse on children's social relationships. *Child Development, 64* (1), 169-187.

Salzinger, S., Feldman, R. S., Ng-Mak, D. S., Mjoica, E., & Stockhammer, T. F. (2001). The effect of physical abuse on children’s social and affective status: A model of cognitive and behavioral processes explaining the association. *Development and Psychopathology, 13,* 805-825.

Sedlak, A. J., Mettenburg, J., Basena, M., Petta, I., McPherson, K., Greene, A., & Li, S. (2010). *Fourth National Incidence Study of Child Abuse and Neglect (NIS–4): Report to Congress.* Washington, DC: U.S. Department of Health and Human Services, Administration for Children and Families.

Shin, S. H., Miller, D. P., & Teicher, M. H. (2013). Exposure to childhood neglect and physical abuse and developmental trajectories of heavy episodic drinking from early adolescence into young adulthood. *Drug and alcohol dependence, 127*(1), 31-38.

Sidebotham, P., & Heron, J. (2006). Child maltreatment in the "children of the nineties": A cohort study of risk factors. *Child Abuse and Neglect, 30* (5), 497-522.

Simons, R. L., Lin, K. H., & Gordon, L. C. (1998). Socialization in the family of origin and male dating violence: A prospective study. *Journal of Marriage and the Family*, *60* (2), 467-478.

Simons, R. L., Simons, L. G., Lei, M. K., & Landor, A. M. (2012). Relational schemas, hostile romantic relationships, and beliefs about marriage among young African American adults. *Journal of Social and Personal Relationships*, *29*(1), 77-101.

Simpson, J. A., Collins, W. A., Tran, S., & Haydon, K. C. (2007). Attachment and the experience and expression of emotions in romantic relationships: A developmental perspective. *Journal of Personality and Social Psychology, 92* (2), 355-367.

Sperry, D. M., & Widom, C. S. (2013). Child abuse and neglect, social support, and psychopathology in adulthood: A prospective investigation. *Child abuse & neglect*, *37*(6), 415-425.

Sroufe, L. A. (1983). Infant-caregiver attachment and patterns of adaptation in preschool: The roots of maladaptation and competence. In *Minnesota symposium in child psychology* (Vol. 16, pp. 41-81). Hillsdale, NJ: Erlbaum.

Sroufe, L. A., Egeland, B., Carlson, E., & Collins, W. A. (2005). Placing early attachment experiences in developmental context. In K. E. Grossman, K. Grossman, & E. Waters (Eds.), *Attachment from infancy to adulthood: The major longitudinal studies* (pp. 48-70). New York: Guilford Press.

Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. *Child Development*, *48* (4), 1184-1199.

Straus, M. M. A., Gelles, R. J., & Steinmetz, S. K. (1980). *Behind closed doors: Violence in the American family*. Garden City, NY: Doubleday.

Sugaya, L., Hasin D. S., Olfson, M., Lin K., Grant, B. F., Blanco, C. (2012). Child physical abuse and adult mental health: A national study. *Journal of Traumatic Stress 25,* 1-9.

Sullivan, H.S. (1953). *The interpersonal theory of psychiatry*. New York, NY: WW Norton & Company.

Teisl, M., & Cicchetti, D. (2008). Physical abuse, cognitive and emotional processes, and aggressive/disruptive behavior problems. *Social Development*, *17* (1), 1-23.

Theodore, A. D., Change, J. J., Runyan, D. K,. Hunter, W. M., Bangdiwala, S. I., &

Agans, R. (2005). Epidemiologic features of the physical and sexual maltreatment of children in the Carolinas. *Pediatrics, 115* (3), 331-337.

Thompson, M. P., Kingree, J. B., & Desai, S. (2004). Gender differences in long-term health consequences of physical abuse of children: Data from a nationally representative survey. *Journal Information*, *94* (4), 599-604.

Tomada, G., & Schneider, B. H. (1997). Relational aggression, gender, and peer acceptance: Invariance across culture, stability over time, and concordance among informants. *Developmental Psychology*, *33*(4), 601.

Tontodonato, P., & Crew, B. K. (1992). Dating violence, social learning theory, and gender: a multivariate analysis. *Violence and victims*, *7* (1), 3-14.

Trickett, P. K. (1997). Sexual and physical abuse and the development of social competence. In S. Luthar (Ed.), *Developmental psychopathology: Perspectives on adjustment, risk, and disorder* (pp. 390-416). Cambridge: Cambridge University Press.

Trickett, P. K., Negriff, S., Ji, L., & Peckins, M. (2011). Child maltreatment and adolescent development. *Journal of Research on Adolescence, 21* (1), 3-20.

Trickett, P. K., & McBride-Chang, C. (1995). The developmental impact of different forms of child abuse and neglect. *Developmental Review, 15*, 311–337.

U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2013). *Child Maltreatment 2012.*

van Ijzendoorn, M. H., Schuengel, C., & Bakermans–Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology*, *11*(02), 225-250.

Weinfield, N. S., Sroufe, L. A., & Egeland, B. (2000). Attachment from infancy to early adulthood in a high-risk sample: Continuity, discontinuity, and their correlates. *Child development*, *71*(3), 695-702.

Weiss, B., Dodge, K. A., Bates, J. E., & Pettit, G. S. (1992). Some consequences of early harsh discipline: Child aggression and a maladaptive social information processing style. *Child Development, 63* (6), 1321-1335.

Wekerle, C., & Wolfe, D. A. (1998). The role of child maltreatment and attachment style in adolescent relationship violence. *Development and Psychopathology*, *10*(03), 571-586.

Whitfield, C. L., Anda, R. F., Dube, S. R., & Felitti, V. J. (2003). Violent childhood experiences and the risk of intimate partner violence in adults Assessment in a large health maintenance organization. *Journal of Interpersonal Violence*, *18*(2), 166-185.

Widom, C. S. (1989). Child abuse, neglect and adult behavior: Research design and findings on criminality, violence, and child abuse. *American Journal of Orthopsychiatry, 59*, 355 – 367.

Wolfe, D. A., Scott, K., Wekerle, C., & Pittman, A. L. (2001). Child maltreatment: Risk of adjustment problems and dating violence in adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 282 – 289.

Wolfe, D. A., Wekerle, C., Reitzel–Jaffe, D., & Lefebvre, L. (1998). Factors associated with abusive relationships among maltreated and nonmaltreated youth. *Development and Psychopathology*, *10*(01), 61-85.

Wolfe, D. A., Wekerle, C., Scott, K., Straatman, A. L., & Grasley, C. (2004). Predicting abuse in adolescent dating relationships over 1 year: The role of child maltreatment and trauma. *Journal of Abnormal Psychology*, *113*(3), 406.

APPENDIX A

Measure of General Social Problems in Adolescence:
Child Behavior Checklist (*CBCL*; Achenbach, 1991) (parent report)

Items on the Social Problems Scale included:

0 = Not True (as far as you know)
1= Somewhat or Sometimes True
2 = Very True or Often True

1. **Acts too young for his/her age**
11. **Clings to adults or too dependent**
12. **Complains of loneliness**
14. **Cries a lot**
25. **Doesn’t get along with other kids**
33. **Feels or complains that no one loves him/her**
34. **Feels others are out to get him/her**
35. **Feels worthless or inferior**
36. **Gets hurt a lot/accident-prone**
38. **Gets teased a lot**
48. **Not liked by other kids**
62. **Poorly coordinated or clumsy**
64. **Prefers being with younger kids**

APPENDIX B

Measure of Dating Violence in Adolescence:
Personal Relationships Interview (adolescent self report)

Adolescents were asked the same series of questions for their disagreements with their best friend, romantic partner, and parents. The words "best friend" were replaced with "person you are romantically involved with" and "mother and father, or the people who acted as your mother or father, since the time you started high school," respectively.

Good and bad things happen between people who are close to each other. I will be asking you about both kinds of things. I'd like to begin by talking about disagreements. Disagreements and fights always occur, even with people we are close to. I would like to know about the kinds of disagreements you have had with people close to you.

1. **First, between you and your best friend (but not someone you are romantically involved with), around what issues do the worst disagreements and fights occur?**

   [NO = 0 YES = 1]
   Personal habits
   Drugs
   Alcohol
   Loyalty
   Friends
   Disrespect
   Activities
   Other____________________

2. **Please describe the worst disagreement or fight between you and your best friend.** (Probe: **What actually happened? What did each of you say and do?**)

3. **How often do disagreements like this, involving you and your best friend, lead to screaming, yelling, put downs, disrespect, or cursing?**

Every day or almost every day	**=4**
About once a week	**=3**
About once a month	**=2**
Once or only a few times	**=1**
Never	**=0**

4. **How often do disagreements like this, involving you and your best friend, lead to hitting, punching, slapping, or anything physical?**

Every day or almost every day	**=4**
About once a week	**=3**
About once a month	**=2**
Once or only a few times	**=1**
Never	**=0**

APPENDIX C

Measure of Problematic Parent Attachment in Preadolescence:
Social Network Interview, Part II (preadoelscent self report)

Children were each administered a full Social Network interview including three parts related to: friends (Part I), family (Part II), and other adults (Part III). This study will only use data from Part II of the interview.

17. Who lives at home with you?

[Record answers in table. Ask relationship, gender, child or adult, and child's age only if not clear from child's answers. You don't have to ask name if child's answer identifies the person.]

18. When you and___*[adult figure in household]*___are together, is it usually:

[Record rating for each adult figure in table, last column]

(3) **very nice,**
(2) **okay, or**
(1) **not so nice**

APPENDIX D

Measure of Aggression in Preadolescence:
Teacher Report Form (TRF; Achenbach, 1991) (teacher report)

Items on the Externalizing Scale included:

0 = Not True (as far as you know)
1= Somewhat or Sometimes True
2 = Very True or Often True

3. Argues a lot
6. Defiant, talks back to staff
7. Bragging, boasting
16. Cruelty, bullying, or meanness to others
19. Demands a lot of attention
20. Destroys his/her own things
21. Destroys property belonging to others
23. Disobedient at school
24. Disturbs other pupils
26. Doesn’t seem to feel guilty after misbehaving
27. Easily jealous
37. Gets in many fights
39. Hangs around with others who get in trouble
43. Lying or cheating
53. Talks out of turn
57. Physically attacks people
63. Prefers being with older children or youths
67. Disrupts class discipline
68. Screams a lot
74. Showing off or clowning
76. Explosive or unpredictable behavior
77. Demands must be met immediately, easily frustrated
82. Steals
86. Stubborn, sullen, or irritable
87. Sudden changes in mood or feelings
90. Swearing or obscene language
93. Talks too much
94. Teases a lot
95. Temper tantrums or hot temper
97. Threatens people
98. Tardy to school or class
101. Truancy or unexplained absence
104. Unusually loud
105. Uses drugs for nonmedical purposes

APPENDIX E

Measure of Social Misperception in Preadolescence:
Peer Nomination procedure (Salzinger, Feldman, Hammer, and Rosario, 1993)
(socoimetric ratings used in algorithm)

Girls rated girls and boys rated boys. They were administered the same measure except with a list of boys or girls.

On each page are the names of all the girls in your class if you are a girl and the names of all the boys in your class if you are a boy. You will be asked some questions about them. Draw a circle around the names you pick for your answers. We will do this exercise one page at a time. Please do not turn to the next page until you are told to do so. Remember, nobody gets to see anybody else's answer.

LIST OF BOYS OR GIRLS

Which kids do you most like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Which kids do you least like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Which two kids do you most like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Which two kids do you least like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Who is your very best friend in the class?

APPENDIX F

Measure of Peer Rejection in Preadolescence:
Peer Nomination procedure (Salzinger, Feldman, Hammer, and Rosario, 1993)
(socoimetric ratings used in algorithm)

Girls rated girls and boys rated boys. They were administered the same measure except the list of boys was replaced with the list of girls

On each page are the names of all the girls in your class if you are a girl and the names of all the boys in your class if you are a boy. You will be asked some questions about them. Draw a circle around the names you pick for your answers. We will do this exercise one page at a time. Please do not turn to the next page until you are told to do so. Remember, nobody gets to see anybody else's answer.

LIST OF BOYS OR GIRLS

Which kids do you most like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Which kids do you least like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Which two kids do you most like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Which two kids do you least like to be with?

[Page break]

LIST OF BOYS OR GIRLS

Who is your very best friend in the class?

APPENDIX G

Measure of Problematic Parent Attachment in Adolescence:
Inventory of Parent and Peer Attachment, Part I (Armsden & Greenberg, 1987)
(adolescent self report)

This part of the questionnaire asks about your feelings about your mother or father or the person who acted as your mother or father most of the time since you started high school (or turned age 14).

For you, who is this person? (Mother, father, or other)
(write in relationship:) ___________________________

Please answer all the following questions about this person. Circle your answer to each question. Please take your time and consider each one carefully. Make sure you consider all of the choices.

Response Scale:
1 = Almost never or never true
2 = Rarely true
3 = Sometimes true
4 = Often true
5 = Almost always or always true

1. My parent respects my feelings ___

2. I feel my parent does a good job as my parent ___

3. I wish I had a different parent ___

4. My parent accepts me as I am ___

5. I like to get my parent's opinion on things I'm concerned about ___

6. I feel it's no use letting my feelings show around my parent ___

7. My parent can tell when I'm upset about something ___

8. Talking over my problems with my parent makes me feel ashamed or foolish ___

9. My parent expects too much from me ___

10. I get upset easily around my parent ___

11. I get upset a lot more than my parent knows about ___

12. When we discuss things, my parent cares about what I think ___

13. My parent trusts my judgment ___

14. My parent has his/her own problems so I don’t bother him/her with mine ___

15. My parent helps me to understand myself better ___

16. I tell my parent about my problems and troubles ___

17. I feel angry with my parent ___

18. I don’t get much attention from my parent ___

19. My parent helps me to talk about my difficulties ___

20. My parent understands me ___

21. When I am angry about something, my parent tries to be understanding ___

22. I trust my parent ___

23. My parent doesn’t understand what I’m going through these days ___

24. I can count on my parent when I really need to talk about something ___

25. If my parent knows something is bothering me, he/she asks me about it ___

APPENDIX H

Measure of Aggression in Adolescence:
Child Behavior Checklist (*CBCL*; Achenbach, 1991) (parent report)

Items on the Externalizing Scale included:

0 = Not True (as far as you know)
1= Somewhat or Sometimes True
2 = Very True or Often True

3. Argues a lot
7. Bragging, boasting
16. Cruelty, bullying, or meanness to others
19. Demands a lot of attention
20. Destroys his/her own things
21. Destroys property belonging to his/her family or others
23. Disobedient at home
26. Doesn't seem to feel guilty after misbehaving
27. Easily jealous
37. Gets in many fights
39. Hangs around with others who get in trouble
43. Lying or cheating
57. Physically attacks people
63. Prefers being with older kids
68. Screams a lot
74. Showing off or clowning
82. Steals outside the home
86. Stubborn, sullen, or irritable
87. Sudden changes in mood or feelings
90. Swearing or obscene language
93. Talks too much
94. Teases a lot
95. Temper tantrums or hot temper
97. Threatens people
101. Truancy, skips school
104. Unusually loud
105. Uses drugs for nonmedical purposes

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 1a: The Mediating Effect of Preadolescent Aggression on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR²
Model 1a					
Step 1:	Family Structure	-1.03	1.47	-.06	
	Welfare	.43	1.17	.03	
	Physical Abuse T0	2.18	1.15	.16	.04
Step 2:	Physical Abuse T0	1.90	1.14	.14	
	Aggression T1	.11	.05	.17*	.03
Step 3:	Physical Abuse T0 x Aggression T1	.00	.10	.00	.00

* $p \leq .05$

Note: Continuous predictors were centered before entered into regression equation

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 1b: The Mediating Effect of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR^2
Model 1b					
Step 1:	Family Structure	-1.03	1.47	-.06	
	Welfare	.43	1.17	.03	
	Physical Abuse T0	2.18	1.15	.16	.04
Step 2:	Physical Abuse T0	1.89	1.14	.14	
	Social Misperception T1	4.23	2.05	2.06*	.03
Step 3:	Physical Abuse T0 x Soc. Misperc. T1	2.60	4.62	.09	.00

* $p \leq .05$

Note: Continuous predictors were centered before entered into regression equation

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 1c: The Mediating Effect of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and General Social Problems in Adolescence

		Social Problems T2			
	Variable	*b*	SE *b*	β	ΔR^2
Model 1c					
Step 1:	Family Structure	-1.03	1.47	-.06	
	Welfare	.43	1.17	.03	
	Physical Abuse T0	2.18	1.15	.16	.04
Step 2:	Physical Abuse T0	1.86	1.17	.14	
	Peer Rejection T1	1.67	1.35	.10	.01
Step 3:	Physical Abuse T0 x Peer Rejection T1	-4.04	2.81	-.22	.01

Note: Continuous predictors were centered before entered into regression equation

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 1d: The Mediating Effect of Preadolescent Aggression on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

		Dating Violence T2	
	Variable	OR	95% CI
Model 1d			
Block 1:	Family Structure	.63	.12-3.37
	Welfare	.70	.22-2.26
	Physical Abuse T0	4.12*	1.07-15.91
Block 2:	Physical Abuse T0	3.94*	1.01-15.36
	Aggression T1	1.02	.96-1.07
Block 3:	Physical Abuse T0 x Aggression T1	1.03	.91-1.17

* $p \leq .05$

Note: OR = odds ratio

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Aggression T1 = teacher-reported externalizing scale t-score (TRF; Achenbach, 1991); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 1e: The Mediating Effect of Preadolescent Social Misperception on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

		Dating Violence T2	
	Variable	OR	95% CI
Model 1e			
Block 1:	Family Structure	.63	.12-3.37
	Welfare	.70	.22-2.26
	Physical Abuse T0	4.12*	1.07-15.91
Block 2:	Physical Abuse T0	3.95	.99-15.64
	Social Misperception T1	4.78*	1.07-21.22
Block 3:	Physical Abuse T0 x Soc. Misperc. T1	.32	.01-8.39

* $p \leq .05$

Note: OR = odds ratio

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Social Misperception = number of negative choices received from classmates chosen positively in unlimited choice sociometric peer nomination task (1 = social misperception, 0 = no misperception); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 1f: The Mediating Effect of Preadolescent Peer Rejection Status on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

		Dating Violence T2	
	Variable	OR	95% CI
Model 1f			
Block 1:	Family Structure	.63	.12-3.37
	Welfare	.70	.22-2.26
	Physical Abuse T0	4.12*	1.07-15.91
Block 2:	Physical Abuse T0	4.03*	1.04-15.65
	Peer Rejection T1	1.26	.34-4.68
Block 3:	Physical Abuse T0 x Peer Rejection T1	.03*	.001-.65

**p* ≤ .05
Note: OR = odds ratio
Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Peer Rejection = sociometric negative nominations by classmates (1 = rejected, 0 = not rejected); Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)

ABUSE

		Dating Violence T2	
	Variable	OR	95% CI
Model 1f			
Block 1:	Family Structure	.37	.04-3.65
	Welfare	.46	.12-1.78
	Peer Rejection T1	.56	.11-3.01

CONTROL

		Dating Violence T2	
	Variable	OR	95% CI
Model 1f			
Block 1:	Family Structure	2.38	.08-69.61
	Welfare	4.64	.16-135.02
	Peer Rejection T1	14.09*	1.03-192.27

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 2a: The Mediating Effect of Change in Problematic Attachment from T1 to T2 on the Association between Childhood Physical Abuse and General Social Problems in Adolescence, Controlling for Family Structure and Welfare

			Social Problems T2		
	Variable	*b*	SE *b*	β	ΔR^2
Model 2a					
Step 1:	Family Structure	-.81	1.50	-.05	
	Welfare	.22	1.20	.02	
	Social Desirability	.71	3.79	.02	
	Physical Abuse T0	2.59	1.18	.19*	.05
Step 2:	Physical Abuse T0	2.34	1.21	.17	
	Δ Problematic Attachment	.70	.65	.10	.01
Step 3:	Physical Abuse T0 x Δ Prob. Attachment	-2.50	1.19	-.28*	.03

* $p \leq .05$

Note: Continuous predictors were centered before entered into regression equation

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Social Desirability = self-report Marlowe-Crowne scale; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Δ/Change in Attachment = standardized residual scores from regressing T2 attachment on T1 attachment; Social Problems = parent-reported social problems scale t-score (CBCL; Achenbach, 1991)

ABUSE

			Social Problems T2		
	Variable	*b*	SE *b*	β	ΔR^2
Model 2a					
Step 1:	Family Structure	-2.58	3.39	-.10	
	Welfare	-1.65	1.86	-.11	
	Social Desirability	-1.48	6.24	-.03	
	Δ Problematic Attachment	-.62	.94	-.09	.02

* $p \leq .05$

CONTROL

	Variable		Social Problems T2		
		b	SE *b*	β	ΔR^2
Model 2a					
Step 1:	Family Structure	-1.70	1.66	-.13	
	Welfare	1.58	1.51	.13	
	Social Desirability	7.97	6.00	.18	
	Δ Problematic Attachment	2.67	.95	.37*	.12

* $p \leq .05$

APPENDIX I

Analyses with Control Variables (Family Structure and Welfare)

Model 2b: The Mediating Effect of Subsequent Adolescent Problematic Parent Attachment on the Association between Childhood Physical Abuse and Dating Violence in Adolescence

		Dating Violence T2	
	Variable	OR	95% CI
Model 2b			
Block 1:	Family Structure	.31	.04-2.74
	Welfare	.79	.24-2.64
	Social Desirability	.50	.01-19.75
	Physical Abuse T0	3.35	.85-13.23
Block 2:	Physical Abuse T0	2.54	.59-11.00
	Δ Problematic Attachment	1.92	.99-3.73
Block 3:	Physical Abuse T0 x Δ Problematic Attachment	2.41	.46-12.68

Note: OR = odds ratio

Note: T0 = prior to preadolescence, T1 = preadolescence, T2 = adolescence; Family Structure = lived with both biological parents at T1 and T2 (1) and did not live with both biological parents at both T1 and T2 (0); Welfare = mother was received welfare within past year T1 (1) and did not receive welfare within past year T1 (0); Social Desirability = self-report Marlowe-Crowne scale; Physical Abuse T0 = childhood physical abuse (1) and nonabuse (0) determined by NYC Child Maltreatment Register; Δ/Change in Attachment = standardized residual scores from regressing T2 attachment on T1 attachment; Dating Violence = self-reported physical abuse with romantic partner (1 = dating violence, 0 = no dating violence)