

**PARENTING AND ATTACHMENT:
AN EXAMINATION OF MEDIATION AND MODERATION
IN THE PREDICTION OF ADOLESCENT PSYCHOPATHOLOGY**

by

Andree R. Steiger

B.A., University of British Columbia, 1996

M.A., Simon Fraser University, 2003

**THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
Doctor of Philosophy
IN THE
DEPARTMENT OF PSYCHOLOGY**

© Andree R. Steiger 2008

SIMON FRASER UNIVERSITY

Fall 2008

All rights reserved. This work may not be reproduced in whole or in part, by photocopy or other means, without permission of the author.

APPROVAL

ABSTRACT

The current study investigated relationships between dimensions of parenting style (*acceptance, behavioral control, permissiveness, psychological control*) and youth attachment security (*avoidance, anxiety*) in the prediction of adolescent psychopathology. A series of moderation and mediation models, ranging in complexity, were tested and compared in a sample of at-risk youth (101 males, 85 females, ages 11 to 17). Conditional moderation of maternal acceptance was supported; specifically, results suggest that when youth attachment avoidance and anxiety are both high (consistent with a Fearful attachment style), maternal acceptance predicts significantly fewer externalizing symptoms. Subsequent analyses of simple mediation revealed that attachment avoidance (1) mediated maternal acceptance, and (2) partially mediated maternal psychological control, in the prediction of internalizing symptoms. These findings suggest that associations between maternal acceptance/psychological control and internalizing symptoms are explained, at least in part, by the youth's avoidant attachment strategies in response to negative parenting behaviors. Finally, analyses of moderated mediation provided marginal evidence that simple mediation of parenting by one major attachment dimension (e.g., anxiety) depends on concurrent levels of the second attachment dimension (e.g., avoidance). Findings suggest that more complex models of youth attachment-parenting dynamics, integrating mediation and moderation effects, are required to understand the development of psychopathology and to create effective intervention strategies.

Keywords: attachment; parenting; adolescent psychopathology; adolescent-parent relationship; mediation; moderation

*To my parents, Jim and Juanita,
and my sister Roberta.*

ACKNOWLEDGEMENTS

My sincere thanks and appreciation to my advisor, Dr. Marlene Moretti, for her insight and feedback during the conceptualization and completion of this project. Her guidance and support have been invaluable throughout my graduate career. I am also grateful to Dr.'s Arlene Young, Rachel Fouladi, and Jeremy Carpendale for their expertise and generosity as advisors on this dissertation. They and many other professors, staff members, and students at Simon Fraser University have inspired and supported me during the completion of my degree.

I am grateful, also, to the many individuals at the Maples Adolescent Centre who contributed to this research project, especially the youth participants and their families who volunteered their time and trust. To the members of the Development and Psychopathology Lab, especially Maya Peled and Ingrid Obsuth, thank you for many hours of consultation and encouragement.

Finally, to the mentors, friends, and family members who have supported me in this long journey, I could not have persevered without your optimism, commitment, and love. I share this achievement with you.

Funding for this study was provided by the Canadian Institutes of Health Research (CIHR) Grant (#34216), awarded to Dr. Marlene M. Moretti, and by a Simon Fraser University President's Ph.D. Research Stipend awarded to Andree R. Steiger (2006).

TABLE OF CONTENTS

| | |
|--|------|
| Approval | ii |
| Abstract | iii |
| Dedication | iv |
| Acknowledgements | v |
| Table of Contents | vi |
| List of Figures | viii |
| List of Tables | x |
| Introduction | 1 |
| Parenting and Psychopathology | 2 |
| Moving Beyond Simple Causal Pathways | 5 |
| Attachment Anxiety and Avoidance | 8 |
| Interactions Between Parenting and Adolescent Attachment | 11 |
| A Note on Measurement Issues | 15 |
| Research Objectives | 17 |
| Method | 24 |
| Sample | 24 |
| Procedure | 25 |
| Measures | 25 |
| Analytic Strategy | 27 |
| Results | 27 |
| Data Preparation | 27 |
| Evaluations of Normality | 27 |
| Imputation | 29 |
| Pooling of Data | 34 |
| Assessment of Psychometric Properties of the Measures | 35 |
| Factor Analysis of the CRPBI | 35 |

| | |
|--|-----|
| Factor Analysis of the CAPAI..... | 45 |
| Basic Predictive Analyses..... | 49 |
| Analyses of Simple Moderation..... | 55 |
| Analyses of Complex Moderation..... | 58 |
| Analyses of Simple Mediation..... | 63 |
| Mediation of Parental Acceptance..... | 66 |
| Mediation of Parental Psychological Control..... | 69 |
| Analyses of Moderated Mediation..... | 73 |
| Moderated Mediation of Parental Acceptance..... | 75 |
| Moderated Mediation of Psychological Control..... | 78 |
| Gender as a Moderator..... | 81 |
| Discussion..... | 84 |
| Basic Predictive Relationships..... | 85 |
| Moderation..... | 90 |
| Mediation..... | 92 |
| Mediation of Parental Acceptance..... | 93 |
| Mediation of Psychological Control..... | 95 |
| Limitations and Suggestions for Future Research..... | 98 |
| Conclusion..... | 101 |
| References..... | 106 |
| Appendices..... | 121 |
| Appendix A: Expanded Factor Analysis of the CAPAI..... | 121 |
| Appendix B: Measures..... | 126 |

LIST OF FIGURES

| | | |
|-------------------|---|----|
| <i>Figure 1.</i> | Independent predictors model..... | 12 |
| <i>Figure 2.</i> | Moderation model..... | 13 |
| <i>Figure 3.</i> | Mediation model..... | 15 |
| <i>Figure 4.</i> | Predicted moderation effects | 19 |
| <i>Figure 5.</i> | Predicted three-way interactions..... | 20 |
| <i>Figure 6.</i> | Predicted mediation of parental rejection by attachment avoidance | 21 |
| <i>Figure 7.</i> | Predicted moderated mediation of parental rejection | 22 |
| <i>Figure 8.</i> | Predicted mediation of psychological control by attachment anxiety | 23 |
| <i>Figure 9.</i> | Predicted moderated mediation of psychological control | 23 |
| <i>Figure 10.</i> | Distributions of skewness and kurtosis for CAPAI and CRPBI items..... | 28 |
| <i>Figure 11.</i> | EFA scree plot for the CRPBI | 36 |
| <i>Figure 12.</i> | EFA scree plot for the CAPAI..... | 45 |
| <i>Figure 13.</i> | Graphical representations of simple slopes predicting externalizing symptoms from parental acceptance at conditional values of anxiety and avoidance..... | 62 |
| <i>Figure 14.</i> | General mediation model..... | 63 |
| <i>Figure 15.</i> | Simple representation of first stage moderated mediation. | 74 |
| <i>Figure 16.</i> | Simple representation of second stage moderated mediation..... | 74 |
| <i>Figure 17.</i> | Path diagrams of first stage moderation and second stage moderation models of conditional indirect effects..... | 75 |
| <i>Figure 18.</i> | Simple representation of first and second stage moderated mediation models for parental acceptance..... | 76 |
| <i>Figure 19.</i> | Path model with estimated regression coefficients for second stage moderated mediation of parental acceptance in the prediction of externalizing symptoms. | 77 |
| <i>Figure 20.</i> | Simple representation of first and second stage moderated mediation models for parental psychological control..... | 78 |

| | |
|---|----|
| <i>Figure 21.</i> Path model with estimated regression coefficients for first stage moderated mediation of psychological control in the prediction of internalizing symptoms..... | 80 |
| <i>Figure 22.</i> Path model with estimated regression coefficients for second stage moderated mediation of psychological control in the prediction of externalizing symptoms. | 80 |
| <i>Figure 23.</i> Simple representation of first and second stage moderated mediation of parenting. | 82 |

LIST OF TABLES

| | |
|---|----|
| <i>Table 1.</i> Multivariate skewness and kurtosis of major variables..... | 29 |
| <i>Table 2.</i> Pattern of missing data on major youth self-report measures..... | 30 |
| <i>Table 3.</i> EFA rotated factor pattern for 3-factor solution for the CRPBI..... | 37 |
| <i>Table 4.</i> CFA model and parameter estimates for the CRPBI..... | 39 |
| <i>Table 5.</i> Subsection of EFA rotated 6-factor solution for the CRPBI..... | 41 |
| <i>Table 6.</i> CFA model and parameter estimates for the revised CRPBI..... | 44 |
| <i>Table 7.</i> EFA rotated 2-factor solution for the CAPAI..... | 46 |
| <i>Table 8.</i> CFA model and parameter estimates for the CAPAI..... | 48 |
| <i>Table 9.</i> Variable means across and within gender..... | 49 |
| <i>Table 10.</i> Intercorrelations of major dependent and independent variables..... | 50 |
| <i>Table 11.</i> Hierarchical regressions of attachment predicting internalizing and externalizing symptoms..... | 51 |
| <i>Table 12.</i> Hierarchical regressions of parenting predicting internalizing and externalizing symptoms..... | 53 |
| <i>Table 13.</i> Hierarchical regression of parenting predicting attachment anxiety..... | 54 |
| <i>Table 14.</i> Order of variable entry for evaluating moderation effects..... | 56 |
| <i>Table 15.</i> Values of change in R^2 following addition of interaction terms in the final step of regression analyses..... | 57 |
| <i>Table 16.</i> Order of variable entry for evaluating complex moderation effects..... | 59 |
| <i>Table 17.</i> Values of change in R^2 following addition of interaction terms in the final step of regression analyses..... | 60 |
| <i>Table 18.</i> Results of multiple linear regression analysis of the three-way interaction of avoidance, anxiety, and acceptance in the prediction of externalizing symptoms..... | 60 |
| <i>Table 19.</i> Estimated simple slopes of regression of externalizing symptoms on parental acceptance at conditional values of anxiety and avoidance..... | 61 |

| | |
|---|----|
| <i>Table 20.</i> Direct and total effects for examining the model that attachment avoidance (M) mediates the relationship between parental acceptance (X) and internalizing and externalizing symptoms (Y). | 67 |
| <i>Table 21.</i> Results of the Sobel test and bootstrapping procedure for estimating the indirect effect of parental acceptance | 68 |
| <i>Table 22.</i> Direct and total effects for examining the model that attachment anxiety (M) mediates the relationship between parental psychological control (X) and internalizing and externalizing symptoms (Y). | 70 |
| <i>Table 23.</i> Results of the Sobel test and bootstrapping procedure for estimating the indirect effect of parental psychological control, mediated by attachment anxiety. | 70 |
| <i>Table 24.</i> Results of regression analyses, Sobel test, and bootstrapping procedure for examining the model that attachment avoidance (M) mediates the relationship between parental psychological control (X) and internalizing symptoms (Y). | 72 |
| <i>Table 25.</i> Interaction coefficients of regression analyses for the four proposed models of moderated mediation of parental acceptance. | 76 |
| <i>Table 26.</i> Interaction coefficients of regression analyses for the four proposed models of moderated mediation of parental psychological control. | 79 |
| <i>Table 27.</i> Interaction coefficients of regression analyses of conditional indirect effects moderated by gender. IV=Acceptance; Mediator=Avoidance | 82 |
| <i>Table 28.</i> Interaction coefficients of regression analyses of conditional indirect effects moderated by gender. IV=Psychological Control; Mediator=Anxiety. | 83 |
| <i>Table 29.</i> Interaction coefficients of regression analyses of conditional indirect effects moderated by gender. IV=Psychological Control; Mediator=Avoidance | 83 |

INTRODUCTION

The relationship between parenting and attachment has long been central to developmental theory and research. Bowlby's (1969, 1973, 1980) attachment theory highlighted the importance of parenting sensitivity and responsiveness in shaping both normative and maladaptive development in childhood. Subsequent research has demonstrated that parenting continues to have important consequences for attachment security and psychological adjustment in adolescence and even adulthood (Doyle & Moretti, 2000; Karavasilis, Doyle, & Markiewicz, 2003; Kenny, 1987; Kerns & Stevens, 1996; Rice, 1990; Scharf, Mayseless, & Kivenson-Baron, 2004). However, despite a general consensus that parenting is an important predictor of both attachment security and psychopathology, relatively little research has examined the *interaction* between parenting style and attachment in predicting psychopathology (Doyle & Markiewicz, 2005; Marsh, McFarland, Allen, McElhaney, & Land, 2003). This is particularly true of research in adolescent clinical populations, where the relationship of adjustment to attachment patterns and parenting characteristics remains poorly understood.

Recent research suggests that further investigation of this question is warranted. For example, Muris and his colleagues, in recent investigations of attachment and parenting in adolescent populations, found that attachment orientation and parenting style were each important and unique predictors of internalizing symptoms and adolescent anger and hostility (Muris, Meesters, & van den Berg, 2003; Muris, Meesters, Morren, & Moorman, 2004; Roelofs, Meesters, ter Huurne, Bamelis, & Muris, 2006). Additionally, current research on relationships *between* parenting and attachment in adolescence

suggests that specific aspects of parenting style may predict particular patterns of attachment security in adolescence (Karavasilis et al., 2003). These authors point to a need for future investigations of possible moderated or mediated relationships between these variables. Yet, despite growing interest in the interaction between parenting and attachment in adolescence, few studies have examined directly whether such interactions account for individual differences in symptoms of psychopathology. Notable exceptions exist in recent theoretical and empirical work in the field of adolescent clinical psychology (e.g., Allen, Marsh, McFarland, McElhaney, Land, Jodl, & Peck, 2002; Doyle & Markiewicz, 2005; Marsh et al., 2003) which provides preliminary evidence of important and complex relationships between parenting and attachment in the development of adolescent psychopathology.

The goal of the current study is to expand on previous research by investigating the relationship between parenting and attachment in the prediction of internalizing and externalizing problems in an adolescent clinical sample. Both general and specific models are proposed, describing relationships between dimensions of parenting style (acceptance, behavioral control, psychological control) and adolescent attachment (anxiety and avoidance) that are expected to contribute to internalizing and externalizing symptoms. The current research may not only provide important information regarding individual differences in symptom expression, but also suggest possible alternative pathways to adolescent psychopathology.

Parenting and Psychopathology

For the past several decades, considerable attention has been paid to the link between parenting and developmental outcome (Baumrind, 1971, 1991; Maccoby, 1992;

O'Connor, 2002; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). There is no definitive theory of parenting. However, several key dimensions appear to be central in the study of *parenting style*, a general construct which refers to the typical attitudes and strategies that characterize a parent's approach to discipline and nurturance. These dimensions can be broadly described as (1) *acceptance* versus *rejection*, (2) *behavioral control* versus *permissiveness*, and (3) *autonomy promotion* versus *psychological control* (Schaefer, 1965a, 1965b; Steinberg, Mounts, Lamborn, & Dornbusch, 1991).

Acceptance/rejection refers generally to parental warmth, affection, responsiveness, and approval, or conversely to rejection (e.g., expressions of disapproval and dislike) and/or neglect (e.g., unresponsiveness, emotional disregard, lack of affection) (Khaleque & Rohner, 2002). *Behavioral control* describes the degree to which age-appropriate limits are established and enforced by the parent, and is generally conceptualized (at the control end of the dimension) as an expression of normative, healthy discipline within the parent-child relationship (Barber, 1996; Steinberg, 1990). In contrast, *psychological control* relates to less adaptive responses to perceived misbehavior including strict overcontrol, withdrawal of affection, emotional punitiveness, and inconsistency—coercive behaviors believed to impact negatively on the development of autonomy and identity (Barber, 1996).

General theories of parenting style overlap with these key dimensions. For example, Baumrind's (1971, 1991) categories, or prototypes, of parenting style (*authoritative, authoritarian, permissive, neglectful*)—defined according to patterns of warmth and control—have been particularly influential, stimulating numerous studies in both child and adolescent populations (Gray & Steinberg, 1999). In general, this research

demonstrates that authoritative parenting (characterized by high warmth, behavioral control, and fostering of autonomy) is associated with many positive developmental outcomes in areas of academic competence, social functioning, and psychological adjustment (Maccoby & Martin, 1983; Steinberg et al., 1991). In contrast, both authoritarian style (low warmth, high control, low autonomy promotion) and neglectful style (low on all dimensions) have been linked to a range of developmental difficulties, including poor school performance, low self-esteem, and a range of internalizing and externalizing difficulties (Baumrind, 1972; Steinberg, et al., 1994).

Because parenting research in this tradition has tended to emphasize categorical models of parenting style rather than specific dimensions of parenting, less attention has been paid to the relationship between individual parenting dimensions and developmental outcome (O'Connor, 2002). However, there is accumulating evidence that specific dimensions of parenting independently predict psychopathology (Brown & Whiteside, 2008; Gray & Steinberg, 1999). For example, recent reviews of research on parental acceptance-rejection suggest that the experience of one's caregiver as accepting is a basic requirement for normative social and psychological development, regardless of culture, gender and age (Khaleque & Rohner, 2002). A substantial proportion of variance in psychological adjustment may be explained simply by the degree to which a child perceives his or her parent as responsive or rejecting (Siqueland, Kendall, & Steinberg, 1996).

Regarding dimensions of control, current research demonstrates that specific parental control strategies predict differential outcomes (Barber, 1996; Gray & Steinberg, 1999; Mills & Rubin, 1998; Pettit, Laird, Dodge, Bates, & Criss, 2001). For example, in a

series of joint studies investigating differences between *psychological* and *behavioral* control in adolescent samples, Barber (1996) found that psychological control predicted both internalizing and externalizing symptoms, whereas *lack* of behavioral control related only to externalizing problems. These findings are consistent with Mills and Rubin's (1998) findings that maternal psychological control and behavioral overcontrol were associated with social withdrawal among children, whereas behavioral undercontrol was associated with aggressive behavior. Finally, even more specific characteristics of control behaviors—for example, specific aspects of psychological control (guilt inducement, love withdrawal, intrusiveness, arbitrariness)—may be important to examine individually (Barber, 1996). Although few empirical studies have investigated such components of psychological control, it is reasonable to expect that specific parenting strategies (e.g., *love withdrawal* versus *intrusiveness*) may lead to, or have differential effects depending on, particular attachment vulnerabilities of the child (e.g., the degree to which the particular child is threatened by rejection).

Moving Beyond Simple Causal Pathways

Research on the effects of parenting style, whether operationalized in terms of individual dimensions or prototypical styles, has typically presupposed a direct causal relationship between maladaptive parenting and subsequent problems in children's behaviors (Wood, McLeod, Sigman, Hwang, & Chu, 2003). However, despite substantial evidence linking negative parenting styles to both internalizing and externalizing problems in children, questions remain about the mechanisms through which parenting may influence outcome (O'Connor, 2002). In contrast to early theory and research, contemporary theory in developmental psychopathology emphasizes the importance of

complex interactions between person and context in the development and maintenance of psychopathology (e.g., Cicchetti & Rogosh, 1996; Claes, Lacourse, Ercolani, Pierro, Leone, & Presaghi, 2005). Within this perspective, pathways to maladjustment may be multiply determined, so that children with different parenting histories may display similar levels of externalizing or internalizing symptoms (*equifinality*), while similar parenting styles may lead to a variety of different outcomes (*multifinality*) depending on the influence of other significant variables. From a developmental psychopathology perspective, questions about the “effects” of parenting must account for contextual factors that may mediate or moderate the relationship between parenting and outcome (O’Connor, 2002).

Complex interactions between parenting and other contextual factors may help explain paradoxical findings in the general parenting literature. For example, although parental acceptance and authoritativeness are consistently associated with positive outcomes among normative populations, especially among white middle-class youth (Gray & Steinberg, 1999), evidence for the benefits of authoritative parenting is inconsistent among clinical or culturally diverse samples (Baumrind, 1972; Cummings, Davies, & Campbell, 2000). Recent research suggests that in different ethnic or cultural contexts (e.g., where obedience may be valued above autonomy, or where direct expressions of affection and warmth may be non-normative), authoritative parenting might not be ideal, or even beneficial, for optimal development (Baumrind, 1972; Chao, 1994). In studies of anxious children, parental acceptance is sometimes linked to greater anxiety, perhaps because warmth and support facilitates avoidance in certain contexts (Wood et al., 2003). Similarly, behavioral control has been linked at times to negative

outcomes (e.g., when social interaction is inhibited) and at other times to positive outcomes (e.g., through provision of structure), depending on the context of parenting interventions (Rubin, Cheah, & Fox, 2001; Wood et al., 2003).

Most relevant to the current study is research demonstrating moderation and mediation of parenting effects by other relational variables. For example, Toth and Cicchetti (1996) found that, among children who were maltreated by their mothers, greater mother-child relatedness predicted *worse* psychological outcomes. Andrews, Hops, and Duncan (1997) found that risk for substance use among children of substance users was *positively* related to supportiveness in the parent-child relationship. One proposed explanation for these unexpected results is that the usual positive effects of relatedness and supportiveness are mediated or moderated by a child's identification with, and subsequent emulation of, their unhealthy parent (Toth & Cicchetti, 1996).

Moreover, parenting itself may be viewed as a moderator of other relational and contextual variables that contribute to psychopathology (Marsh et al., 2003; Darling & Steinberg, 1993). Fuhrman and Holmbeck (1995) found that high emotional autonomy among adolescents was associated with better adjustment when maternal warmth was low and parent-child conflict high. In contrast, lower emotional autonomy predicted better functioning in the context of high warmth and low conflict. These authors proposed that parenting may act as a "contextual moderator" of the relationship between adolescent emotional autonomy and adjustment (Fuhrman & Holmbeck, 1995, p. 793). From this perspective, the consequences of emotional autonomy depend on parenting context (Fuhrman & Holmbeck, 1995), a dynamic referred to as "emotional fit" by Lamborn and Steinberg (1993).

Fuhrman and Holmbeck (1995) note some similarity between the construct of emotional autonomy and “avoidant” attachment. However, their study does not explicitly address interactions between parenting and attachment style. In contrast, Marsh et al. (2003) directly examine interactions between parenting behaviors that facilitate or inhibit autonomy and preoccupied attachment. Their findings show that preoccupation predicts externalizing symptoms when maternal expressions of autonomy are high, but predicts internalizing symptoms when maternal autonomy is low. This research supports the view that negative outcomes can be predicted more accurately when *interactions* between parenting and attachment are accounted for. However, these authors do not examine general dimensions of parenting warmth and control, preferring instead to use direct observations of specific parental behaviors.

The preceding discussion illustrates the potential importance of accounting for complex interactions in studies of parenting effects. Although these studies do not provide evidence that *general* parenting styles or dimensions interact with dimensions of attachment style to predict differences in symptom expression, they do provide conceptual and empirical support for further investigation of this question. Prior to addressing issues of how parenting style may interact with attachment orientation, we provide a brief overview of attachment theory relevant to the current study.

Attachment Anxiety and Avoidance

Attachment theory predicts that, over the course of development, experiences of parental availability and responsiveness are increasingly internalized in the form of expectations about the self and others in close relationships (Bowlby, 1973; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993). These expectations constitute the foundation

of attachment orientation or style—patterns of interpersonal dispositions and strategies that work to maintain one's *felt security* within attachment relationships (Ainsworth, Blehar, Waters, & Wall, 1978; Bartholomew & Horowitz, 1991; Kobak & Sceery, 1988). Although current experiences continue to influence attachment orientation throughout development, attachment in adolescence is probably best understood not as a purely relational construct, but as a combination of intrapsychic processes (e.g., internalized representations based on past relationships) and interpersonal influences (e.g., current experiences in close relationships) (Allen, Boykin, McElhaney, Land, Kuperminc, Moore, O'Beirne-Kelly, & Kilmer, 2003). In short, both theory and empirical evidence support the conceptualization of adolescent attachment orientation in terms of relatively stable intra-personal dimensions that interact with, and change in response to, ongoing interpersonal experiences.

Bowlby's original definition of working models points to two underlying attachment dimensions relating to view of self and view of other:

In the working model of the world that anyone builds a key feature is his notion of who his attachment figures are, where they may be found, and how they may be expected to respond. Similarly, in the working model of the self that anyone builds a key feature is his notion of how acceptable or unacceptable he himself is in the eyes of his attachment figures. (Bowlby, 1973, p. 203)

Many authors now prefer to label these dimensions as *Anxiety* (related to negative view of self in close relationships) and *Avoidance* (related to negative view of close others in relationships), shifting focus to the immediate affective and behavioral aspects of these dimensions rather than the working models presumed to underlie them. Most current

models of attachment are, either implicitly or explicitly, based on these two general dimensions (Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998).

Particularly influential in the field, Bartholomew's four-category model of attachment illustrates how differences in attachment orientation may be described both in terms of general prototypes and as functions of underlying dimensions of anxiety and avoidance (Bartholomew & Horowitz, 1991). Moreover, her theory makes important distinctions between different forms of "avoidant" attachment, predicting different problems in interpersonal and psychological functioning for *Fearful* individuals (whose avoidance occurs in the context of high anxiety) and *Dismissing* individuals (whose avoidance occurs in the context of low anxiety). Based on studies of adolescent and adult attachment, such distinctions appear meaningful (e.g., Lessard & Moretti, 1998; Moretti, Lessard, Scarfe, & Holland, 1999; Simpson & Rholes, 2002).

Although attachment research has generally relied on categorical ratings of attachment style, recent theory suggests that dimensional ratings are preferable (Brennan et al., 1998; Fraley & Waller, 1998). Unfortunately, lack of validated self-report measures designed for dimensional analyses have limited research on the role of anxiety and avoidance in adolescent development. Recently, however, Moretti and her colleagues have developed a new measure of adolescent-parent attachment, the Comprehensive Adolescent-Parent Attachment Inventory (CAPAI; Moretti, McKay, & Holland, 2000), designed for continuous ratings on dimensions of anxiety and avoidance, while at the same time allowing categorization of major attachment styles. The CAPAI (discussed in more detail in subsequent sections) provides new opportunities for studies of attachment dynamics in adolescence.

Interactions Between Parenting and Adolescent Attachment

How parenting style and adolescent attachment anxiety and avoidance are related, and how each of these variables and their interaction may lead to psychopathology, are questions open to investigation. As yet, only limited research has addressed these issues. However, preliminary evidence supports several competing models. These can be categorized as (1) independent predictors models, (2) models of moderation, and (3) models of mediation. The following discussion summarizes some key research supporting these different conceptual views.

The first line of research provides evidence that parenting and attachment each predict adolescent psychopathology independently. As discussed in previous sections, substantial empirical evidence demonstrates that certain parenting styles predict poorer developmental outcomes (e.g., Baumrind, 1971; 1991; Barber, Olsen, & Shale, 1994; Steinberg et al., 1994) and that insecure attachment in adolescence predicts multiple adjustment problems including internalizing and externalizing symptoms (e.g., Doyle & Moretti, 2000; Rice, 1990). Furthermore, a few recent studies examining *both* parenting and attachment in conjunction show that these variables appear to account for unique, significant proportions of variance in both internalizing and externalizing symptoms among adolescents (Doyle & Markiewicz, 2005; Muris et al., 2003). These results support a basic model which states that psychopathology in adolescence is determined by multiple independent risk factors including negative parenting and insecure attachment.

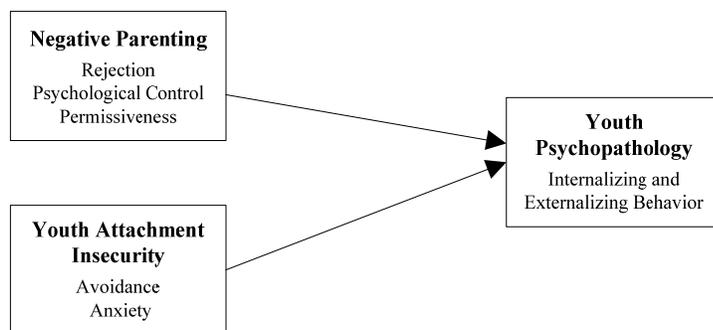


Figure 1. Independent predictors model

It should be noted, however, that these previous studies have not fully investigated the possibility of moderation or mediation effects. In addition, current theory in developmental psychopathology suggests that simple independent-predictors models fail to account for important reciprocal influences between parenting, attachment, and adolescent psychopathology (Pettit & Lollis, 1997). Therefore, it may be that more complex models, accounting for potential interactions between these variables, are more appropriate.

A second line of research provides evidence for the moderating effects of parenting on attachment. These authors, examining the extent to which current parenting behaviors suit the relational needs of the adolescent, generally frame parenting-attachment interactions in terms of optimal environment, or *emotional fit*, between adolescent characteristics and family context. This dynamic is sometimes referred to as parental “sensitivity” or “appropriate responsiveness” (constructs that originated in studies of early parent-child interactions). For example, Allen and his colleagues (Allen et al., 2002; Marsh et al., 2003) provide evidence that attachment preoccupation is associated with internalizing symptoms when maternal expressions of autonomy are low but externalizing symptoms when maternal autonomy is high. Fuhrman and Holmbeck

(1995) demonstrate that adolescent emotional autonomy predicts better outcome in the context of low parental acceptance but worse outcome in the context of high parental acceptance. Such studies support a moderation model which states that *interactions* between parenting and attachment account for significant differences in symptom expression, even where direct relationships between parenting and psychopathology or attachment and psychopathology may be absent.

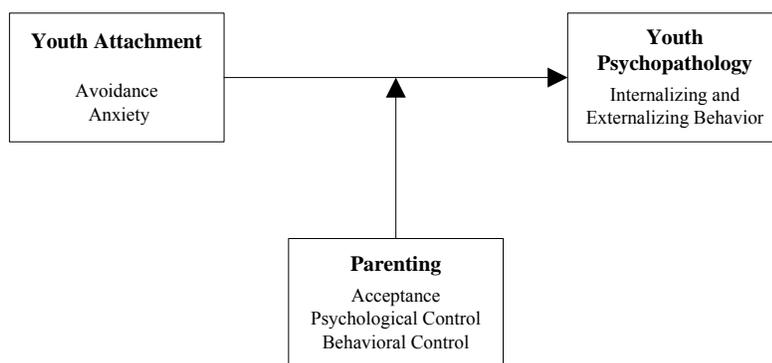


Figure 2. Moderation model

It is important to note that this research does not address directly the issue of whether or not interactions between general dimensions of parenting style and attachment predict psychopathology. Marsh et al. (2003) focus on specific behaviors in adolescent-parent interactions (e.g., maternal expressions of autonomy during structured discussion tasks) rather than on more general styles of parenting. Fuhrman and Holmbeck (1995) examine emotional autonomy, which is related, but not equivalent, to attachment avoidance. However, their results do demonstrate that the “fit” between current parenting practices and adolescents’ needs within their attachment relationships may account for variance in adolescent internalizing and externalizing behaviors. Thus, it seems reasonable to expect that similar interactions between general dimensions of parenting style (i.e., acceptance, psychological control, and behavioral control) and attachment (i.e.,

anxiety and avoidance) may also explain differences in symptom expression. For example, emotional rejection by a parent may be more threatening to a child in the context of higher versus lower attachment anxiety, and may therefore predict greater internalizing or externalizing behavior depending on the child's attachment style. In contrast, parental warmth may interact with attachment security to protect against the development of psychopathology in the face of other precipitating factors.

Although general moderation models may be supported by current theory and empirical research, they ignore potentially important mediated pathways to psychopathology. A third line of research supports the view that parenting styles not only interact with, but also bring about, children's specific attachment strategies, which in turn contribute to the development of internalizing and externalizing difficulties. For example, Karavasilis et al. (2003) found that individual dimensions of parenting style predicted specific attachment styles (e.g., fearful attachment was predicted by lower acceptance and autonomy promotion; dismissing attachment was predicted only by lower acceptance; preoccupied attachment was predicted by lower autonomy promotion and behavioral monitoring). The authors conclude that "psychological autonomy may have important implications for children's views of self whereas warm involvement may play a unique role in their views of the attachment figure" (Karavasilis et al., 2003, p. 153). In subsequent research, Doyle and Markiewicz (2005) provide preliminary evidence that attachment security mediates the relationship between parenting warmth and adolescent self-esteem. Their longitudinal design also allowed them to determine that parental psychological control and low warmth, measured at time 1, predicted greater adolescent psychopathology and attachment insecurity two years later. This provides partial

evidence in support of a mediation model which states that observed relationships between parenting style and psychopathology are explained by the attachment strategies that develop in response to particular parenting strategies. However, further study is required to determine whether such relationships hold true in adolescent clinical populations.

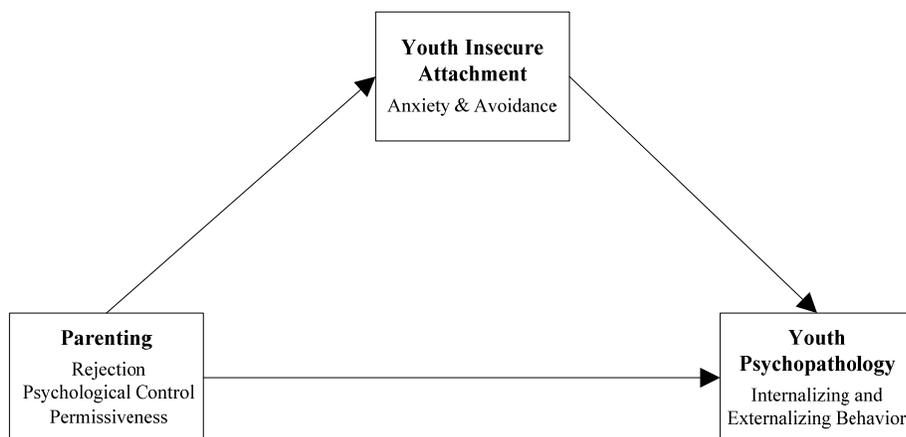


Figure 3. Mediation model

A Note on Measurement Issues

The current data present specific challenges but also unique opportunities. New assessment tools, such as the CAPAI, have been developed to allow more complex, continuous measurement of key constructs. Such advances provide new power and precision to detect important relationships among variables of interest. However, this greater complexity of measurement demands more rigorous evaluations of structural validity. Even when prior evidence supports a particular measurement model, it is important to re-assess dimensional structure of measures when they are applied in new contexts. Therefore, prior to analyses of moderation and mediation, we give considerable attention to factor analyses of key measures.

Another important issue to consider is how measures of parenting are interpreted. Studies of parenting effects in adolescent populations, regardless of whether moderation or mediation is expected, generally rely on self-report measures. However, moderated models are typically concerned with current parenting practices and their impact in the context of established attachment styles. In contrast, mediated models focus on a developmental progression leading from parenting to attachment, and therefore tend to interpret measures of parenting style as representing longitudinally consistent approaches to parenting. Both views are, to some extent, correct. Although typical measures of parenting assess current behaviors, there is evidence that general parenting styles remain fairly consistent over time, and that established measures of parenting style have fair test-retest reliability (e.g., Hetherington, Clingempeel, Anderson, Deal, Hagan, Hollier, & Linder, 1992). Therefore, typical self-report measures of parenting appear to capture information about both past and current parenting.

An added complexity is that self-report measures do not directly assess “true” parenting behaviors, but instead reflect the respondent’s *perceptions* of parenting experiences. Nonetheless, typical questionnaire measures do provide useful information regarding actual parenting. For example, adolescent reports of their parents’ behaviors have been shown to correlate with direct observations (e.g., Moskowitz & Schwarz, 1982). Moreover, youth have been shown to provide more accurate information than their parents on such measures (Schaefer, 1965a), perhaps because social desirability leads parents to underreport their own negative behaviors (Schwarz, Bartho-Henry, & Pruzinsky, 1985). The content of typical parenting measures also focus on what the

parent does (rather than how the adolescent *feels* about what the parent does), which may also account for the relative objective accuracy of youth self-reports.

As Morris and colleagues point out, “both objective and subjective reports of parenting provide important information about the child’s social context; however, it may be the child’s personal subjective interpretation of family context that is most influential in shaping the child’s social and emotional development” (Morris, Steinberg, Sessa, Avenevoli, Silk, & Essex, 2002, p.132). In fact, a child’s subjective experience of a parent’s behaviors and intentions can be more predictive of psychological outcomes than are the parents’ actual behaviors (Boyce, Frank, Jensen, Kessler, Nelson, & Steinberg, 1998; Schaefer, 1965a). Therefore, when psychological and relational processes are in question, youth reports may be preferred.

In part because they provide objectively accurate information, youth self-reports are often used in place of parent ratings or direct observations of parenting behavior (Steinberg, Lamborn, Dornbusch, & Darling, 1992). However, it should not be assumed that these sources of information are equivalent. Further research is required to determine how different sources of information regarding parenting may relate to different outcomes. These and other issues regarding the use of self-report measures and cross-sectional data are discussed in subsequent sections.

Research Objectives

The goal of the current study is to expand on previous research investigating interactions between parenting, attachment, and adolescent maladjustment. Although preliminary evidence supports both moderated and mediated relationships between these variables, further investigation is required to determine the nature of these relationships.

Moreover, questions remain regarding which of these theoretical models accounts best for individual differences in symptom expression. To date, few studies have explored these relationships in clinical populations. Moreover, past research has typically relied on categorical rather than dimensional ratings of adolescent attachment, perhaps obscuring important relationships between parenting and attachment strategies. The current study provides an opportunity to explore moderated and mediated models that deal with dimensions of parenting (acceptance, behavioral control, and psychological control) and attachment (anxiety and avoidance) in an adolescent clinical sample.

The current study investigates several competing models. First, we test general moderation models that specify interactions between individual dimensions of attachment orientation and parenting style in relation to externalizing and internalizing symptoms. It is hypothesized that predictive relationships between attachment insecurity and psychopathology will vary as a function of parental control and nurturance strategies. For example, past research (though limited) suggests that parental rejection and psychological control may be particularly harmful in the context of adolescent attachment anxiety, and may therefore predict greater internalizing and externalizing symptoms. Also, behavioral control may be effective at reducing externalizing behaviors, but only in the context of certain attachment strategies. The basic models to be investigated are depicted below:

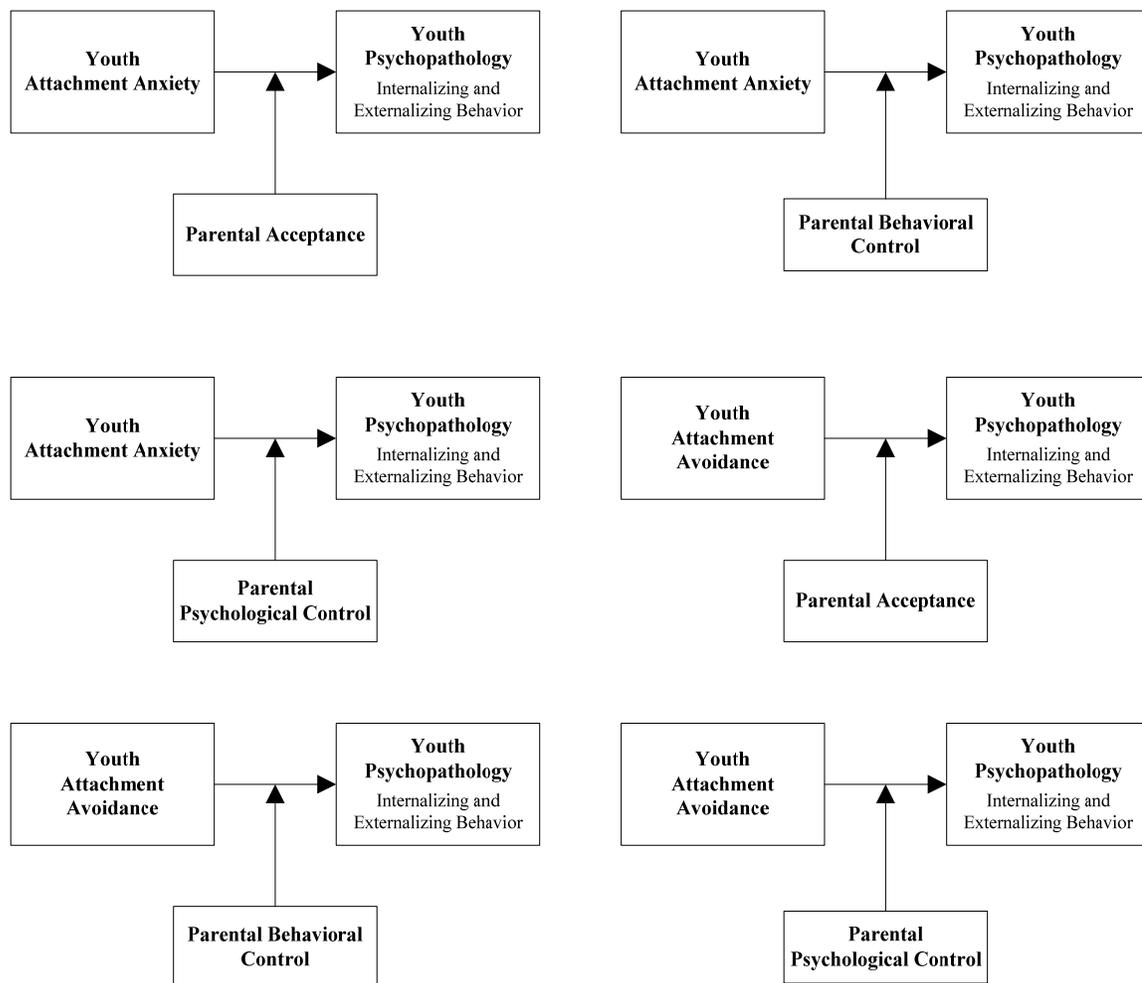


Figure 4. Predicted moderation effects

It is important to note that typical studies of attachment in relationship to maladjustment use categorical ratings of attachment style, which presuppose an interaction between major attachment dimensions. Therefore, parenting may also interact with the *interaction* between anxiety and avoidance. For example, attachment avoidance may act as a protective factor in the context of very negative parenting behaviors, but only when anxiety is concurrently low. The current study explores several more complex moderated models which predict that three-way interactions between parenting and

attachment avoidance and anxiety will account for individual differences in adolescent psychopathology.

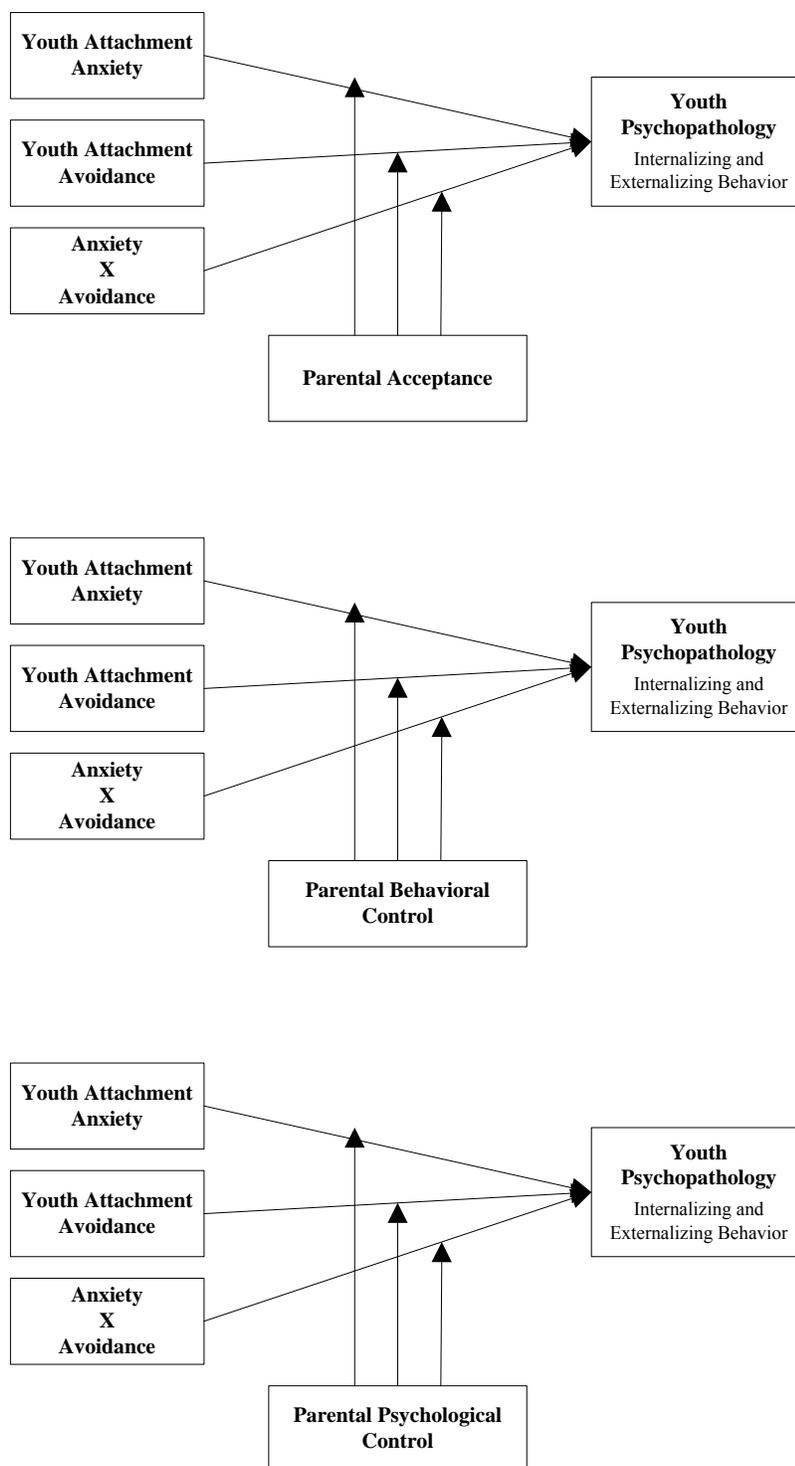


Figure 5. Predicted three-way interactions

Finally, as discussed in previous sections, it may be more accurate to conceptualize the relationship between parenting and attachment in terms of mediation rather than moderation. Therefore, it is predicted that relationships between negative parenting and internalizing and externalizing symptoms may be accounted for by attachment strategies that the adolescent has developed in *response* to negative parenting. Although past research is limited, several specific mediated pathways to internalizing and externalizing behaviors are supported.

As discussed above, evidence suggests that a history of consistent parental rejection may lead to the development of an avoidant attachment orientation. Further evidence suggests that attachment avoidance contributes to the development of both internalizing and externalizing symptoms. Conversely, parental warmth and acceptance may act protectively, increasing the likelihood that the adolescent will approach the parent in times of need, and will therefore be less likely to develop clinical symptomology. Combining these two pathways, our first mediated model predicts that attachment avoidance will mediate the relationship between parental rejection/acceptance and psychopathology.

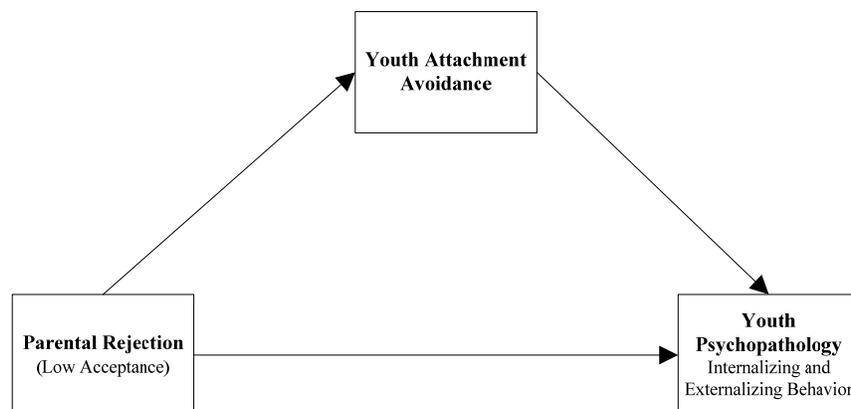


Figure 6. Predicted mediation of parental rejection by attachment avoidance

Because the relationship between attachment avoidance and internalizing and externalizing symptoms may depend on the adolescent's concurrent level of attachment anxiety, a moderated mediated model may also be appropriate. These two models are compared.

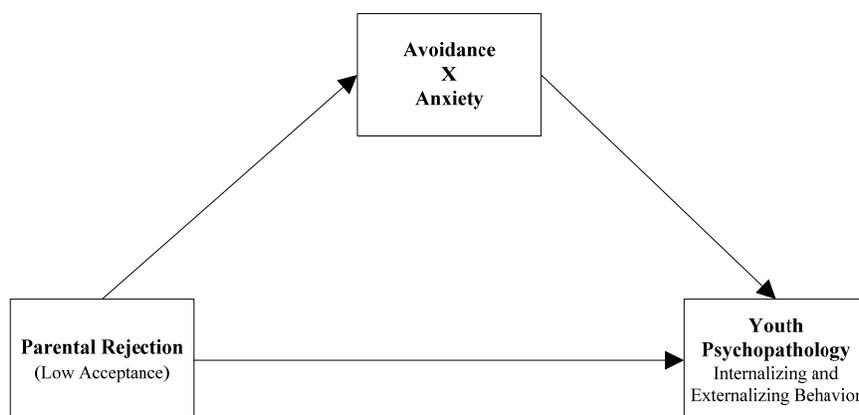


Figure 7. Predicted moderated mediation of parental rejection

Evidence also suggests that parental psychological control, because it impacts negatively on the development of identity and autonomy, may be particularly damaging in adolescence. Preliminary research suggests that psychological control may contribute to the development of attachment anxiety, which is strongly linked to psychopathology. Therefore, our second mediated model predicts that a history of parental psychological control leads to the development of an anxious attachment orientation, which then leads to both internalizing and externalizing symptoms.

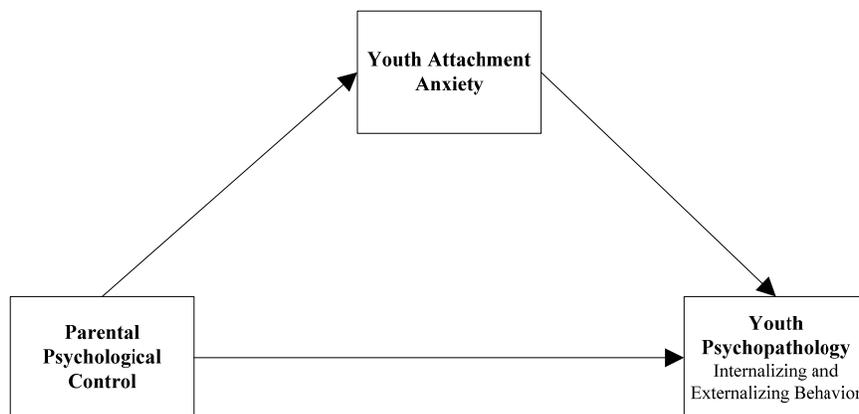


Figure 8. Predicted mediation of psychological control by attachment anxiety

As discussed above, interactions between attachment dimensions are also important to consider. Because attachment avoidance may moderate the effects of anxiety as a mediator between parenting and psychopathology, a moderated mediated model is also investigated.

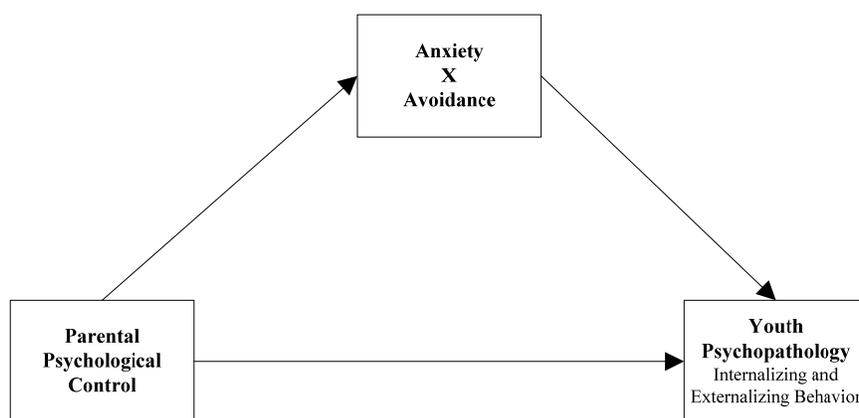


Figure 9. Predicted moderated mediation of psychological control

METHOD

Sample

Data for this study are primarily archival, gathered between 2001 and 2004 as part of ongoing research at a local assessment and treatment center for youth with behavioral difficulties. Participants were 186 adolescents (101 males, 85 females) admitted to the center during this time period. Their ages ranged between 11 and 17 years, with a slightly higher mean age for females ($\bar{X} = 14.4$, $s.d. = 1.3$) than males ($\bar{X} = 14.0$, $s.d. = 1.5$). Ethnicity of the sample was approximately 69% White, 25% Native Canadian, 2% Asian, and 4% other. Data regarding ethnicity were available for only approximately half of the sample; however, the demographic characteristics were consistent with previous samples of youth admitted to the treatment center and to other similar clinical samples from British Columbia's lower mainland (e.g., Moretti, Obsuth, Odgers, & Reebye, 2006; Peled, 2005; Penney & Moretti, 2007; Steiger, 2003).

Most participants identified a female caregiver as their primary attachment figure (approximately 65% Biological Mother, 9% Foster Mother, and 7% Adoptive Mother or Other Female Relative); whereas, only 13% identified a male caregiver (8% Biological Father and $\leq 2\%$ each Foster Father, Adoptive Father, Stepfather, and Other Male Relative). The remainder of participants either did not indicate a particular caregiver or listed more than one caregiver (usually Biological Mother and another caregiver). The primary attachment figure, identified by the youth, was not necessarily the youth's current guardian. However, the youth were asked to report on their relationship with their primary attachment figure across measures, whether or not they currently resided with

this caregiver. The majority of respondents (approximately 55%, based on incomplete demographic data) were living with their Biological parent(s) at the time of admission to the program, 36% lived with Foster parent(s) or Group homes, 2% with Adoptive parent(s) and 7% Other (e.g., in custodial settings).

Procedure

Participants completed a battery of assessment questionnaires as part of ongoing program evaluation research at a treatment center for youth with behavioral difficulties. Administration of measures was overseen by research assistants following standardized administration procedures, with psychology assistants and child care workers facilitating the distribution of questionnaires. Time and sequence of questionnaire completion were not constrained, and thus varied across participants. In almost all cases, however, participants completed measures within a 2 to 3 week period. All measures were completed by participants independently, with verbal instruction and support given by research assistants on an individual basis as required.

Measures

Parenting. Dimensions of parenting style were assessed via a 60-item version of the Children's Report of Parenting Behaviors Inventory (CRPBI) (Schaefer, 1965a). The CRPBI is a self-report questionnaire consisting of three multi-item sub-scales: (1) acceptance versus rejection, (2) firm versus lax behavioral control, and (3) psychological control versus autonomy. Respondents indicate whether a series of descriptive statements are "not like," "somewhat like," or "a lot like" their parent, providing separate ratings for "mother" and "father" (or equivalent female and male caregivers). Scores on these dimensions (*Acceptance*, *Behavioral Control*, and *Psychological Control*) also allow

classification of parenting styles according to Baumrind's (1971) typology of parenting style. Both extended and shorter versions of the measure are widely used. The CRPBI is a well-recognized measure of parenting style, with established reliability and validity (Safford, Alloy, & Pieracci, 2007; Schaefer, 1965a, 1965b; Schludermann & Schludermann, 1970; Schwarz et al., 1985).

Attachment. Attachment orientation was assessed using the Comprehensive Adolescent-Parent Attachment Inventory (CAPAI, Moretti, McKay, & Holland, 2000), a recently-developed measure of adolescent-parent attachment adapted from Brennan, Clark, and Shaver's (1996) unpublished measure of adult romantic attachment. (A shorter version of this measure, the Experiences in Close Relationships questionnaire (ECR, Brennan, Clark, & Shaver, 1998) was published subsequently. The CAPAI consists of two major scales (18 items each, scored on a 7-point Likert-type scale) designed to provide continuous ratings on dimensions of Anxiety and Avoidance. These scores also allow categorization of Preoccupied, Fearful, Dismissing, and Secure orientations according to Bartholomew and Horowitz's (1991) model. Preliminary investigations support the reliability, and structural and convergent validity of the CAPAI (McKay & Steiger, 2003; Steiger & Moretti, 2003; 2005).

Psychopathology. The Youth Self-Report (YSR, Achenbach, 1991, for 11 to 18-year olds) is a 118-item self-report inventory designed to assess psychological symptoms on a range of dimensions. Items are scored on a three-point scale ("not true," "somewhat or sometimes true," or "very true or often true") and generate scores on 8 symptom-based subscales. Of these 8 subscales, three (Withdrawn, Somatic Complaints and Anxious/Depressed) are combined to produce the more general, or broadband,

Internalizing scale, and two (Aggressive Behavior and Delinquent Behavior) comprise the broadband Externalizing scale. The YSR demonstrates good reliability across a number of studies, and has been established as a valid measure of psychological symptomatology in both normative and clinical samples (Achenbach & Edelbrock, 1981; Rosenblatt & Rosenblatt, 2002).

Analytic Strategy

There are four essential components to the analytic strategy for the current study: (1) data preparation, including evaluations of multivariate normality and data imputation, (2) pooling of data, with checks for between-gender heterogeneity of means and covariance matrices, (3) examination of the psychometric properties of key measures (i.e., factorial integrity and reliability), and (4) employment of multiple regression to test for basic predictive relationships, simple and conditional moderation, and simple and complex mediation.

RESULTS

Data Preparation

Evaluations of Normality

Many of the key analyses of moderation and mediation in this study are correlational in nature, and such analyses are susceptible to violations of statistical assumptions. Consequently, as part of our review of basic descriptive statistics, skewness and kurtosis of variables were examined for significant violations of normality. Indices of univariate skewness and kurtosis suggested moderate non-normality on both the CRPBI and CAPAI. The following distributions illustrate the range of observed values:

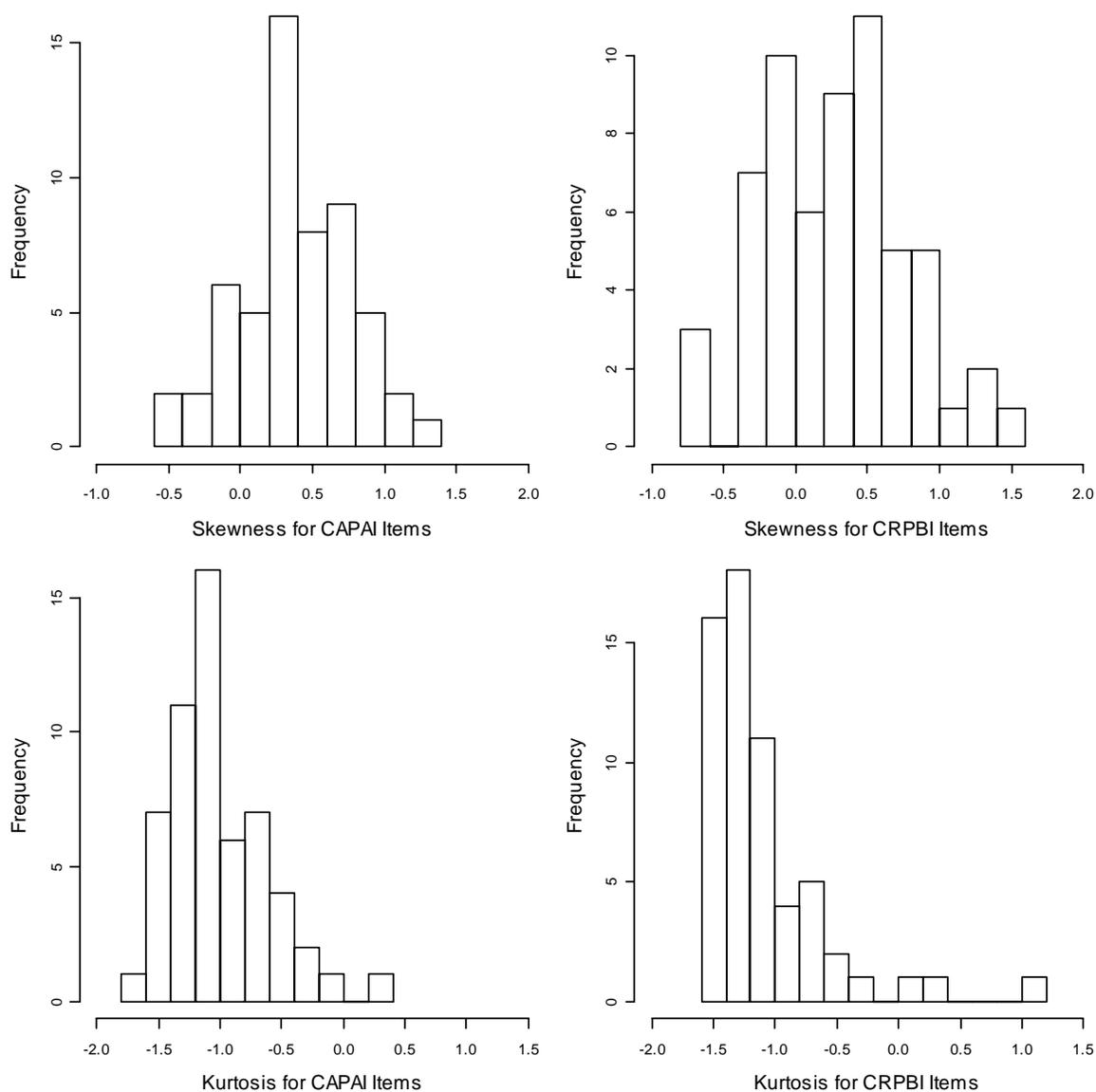


Figure 10. Distributions of skewness and kurtosis for CAPAI and CRPBI items

As seen in the frequency distributions above, a broad range of values was observed for skewness and kurtosis for both measures. This range includes some values that reflect significant non-normality; however, several important points must be considered. First, some of the variability in the distributions of values is attributable to sampling variability. Consequently, extreme values observed may reflect population values that are somewhat less extreme. Moreover, the overall means for skewness and kurtosis do *not* reflect non-

normality. Finally, the data, once linearly combined to produce scale scores, yielded composites that appear well within the bounds of acceptable multivariate normality. The following table summarizes indices of skewness and kurtosis for the main variables of interest:

| | N | Skewness | | Kurtosis | |
|---|-----|-----------|------------|-----------|------------|
| | | Statistic | Std. Error | Statistic | Std. Error |
| CAPAI Avoidance | 186 | .022 | .178 | -.769 | .355 |
| CAPAI Anxiety | 186 | .221 | .178 | -.767 | .355 |
| CRPBI Acceptance | 186 | -.599 | .178 | -.518 | .355 |
| CRPBI Behavioral Control | 186 | -.042 | .178 | -.387 | .355 |
| CRPBI Psychological Control | 186 | .489 | .178 | -.652 | .355 |
| YSR total internalizing problems | 186 | .141 | .178 | -.272 | .355 |
| YSR total externalizing problems | 186 | -.086 | .178 | .276 | .355 |

Table 1. Skewness and kurtosis of major variables

Given this information, it is unlikely that the observed skewness and kurtosis of the current data is a threat to statistical procedures that assume multivariate normality.

Imputation

In complex multivariate analyses, such as those proposed in the current study, it is of particular importance to maximize sample size. The precision that is gained from even small increases in sample size generally outweighs any risk or inconvenience associated with imputing missing data. Although has been common practice to simply delete cases with missing values, more current theory suggests that such procedures may actually introduce *more* bias than would be caused by data substitution (Schafer, 1997). Unfortunately, certain misconceptions (e.g., that substituting for missing values is somehow equivalent to “making up data”) may make researchers hesitant to use

imputation. A current understanding of when, and under what assumptions (detailed below), imputation should be used is therefore invaluable.

Missing data analysis first requires characterization of the pattern of missing values. In the case of the current data, this was a complex task. A number of participants completed only a *subset* of the measures of interest, providing valuable data on some measures and no data on other measures. For all key measures (Youth CAPAI, CRPBI, and YSR) the majority of cases had no missing values. However, of the original 193 participants, 7 did not complete two or more of the three measures of interest. Given their high proportion of missing responses, these participants' data were completely eliminated from further analysis, leaving an N of 186.

Of the remaining 186 participants, approximately 95% were missing no greater than 5% of items on the CAPAI and CRPBI, and 93% had complete YSR profiles. In terms of incomplete data, 8 participants did not complete the CAPAI, 6 did not complete the CRPBI, and 14 did not complete the YSR. The following table summarizes the missing data pattern for the three youth self-report measures:

| | CAPAI | CRPBI | YSR |
|---------------------------|-------------------|-------------------|-------------------|
| # of Missing Items | # of Cases | # of Cases | # of Cases |
| 0 | 148 | 137 | 172 |
| 1 | 18 | 26 | 0 |
| 2 | 9 | 9 | 0 |
| 3 | 2 | 5 | 0 |
| 4 | 1 | 1 | 0 |
| 6 | 0 | 1 | 0 |
| 10 | 0 | 1 | 0 |
| All Items | 8 | 6 | 14 |
| TOTAL N | 186 | 186 | 186 |

Table 2. Pattern of missing data on major youth self-report measures

It is important to note that the above data for the CRPBI are based on responses to the “mother” items (i.e., the items that ask about the youth’s view of their *female* caregiver’s

parenting). Forty-eight participants did not provide responses to the father items of the CRPBI, indicating that there was no male caregiver currently participating in their care and discipline. In contrast, only one participant reported on father's parenting and *not* mother's parenting. Therefore, due to limitations of sample size, we consider only mother items for further missing data imputation and subsequent factor analyses of the CRPBI.

Given the pattern of missing data, several important decisions were required.

First, it was considered whether or not the pattern of missingness was likely to be a threat to the validity of planned analyses. In general, the degree to which missing data are problematic depends largely on the randomness and predictability of missingness. When values are missing for reasons that are *entirely* random, or MCAR (*missing completely at random*, Harrell, 2001; Schafer, 1997), imputation is most straight forward. However, for data to be MCAR requires that the *reason* that a value is missing is *not* related to other variables of interest; moreover, it must be assumed that the value that *would* be present does not depend on the reasons that it is missing (Harrell, 2001). In the current sample, we cannot assume that missing values are MCAR, even when we know the reasons for missingness (e.g., a questionnaire being lost, a participant refusing to complete the battery due to time requirements). In general, even when missingness on a given measure is not predicted by other observed values, one cannot assume that the missing values are MCAR.

For the current study, we make the somewhat less restrictive assumption that our values are MAR (*missing at random*, Harrell, 2001; Schafer, 1997). When data are MAR, the probability that an observed value is missing *may* depend on the observed data; however, the accuracy of predicting missingness is not improved by knowing the missing

values (Schafer, 1997). Therefore, missingness may be related to other observed variables, but as long as the observed variables related to missingness are not *simultaneously* missing, the imputation is both valid and recommended (Harrell, 2001). The assumption that values are MAR is the standard assumption in most modern imputation procedures, with the recognition that, in practice, this is often a matter of judgment and not something that can be proven to be true (Shafer, 1997).

An evaluation was also made of which cases, if any, should be discarded. As described above, the data of seven participants who failed to complete more than one of the three key measures were excluded from the data set (in part to ensure that data conformed to MAR requirements). However, more careful judgment was required for the remaining data. Although it is common practice for cases with more than a small proportion of missing data to be deleted (and in fact, most statistical analysis programs automatically delete cases that are missing even a single value), Harrell (2001, p. 43) points out that, “Casewise deletion results in regression coefficient estimates that can be terribly biased, imprecise, or both.” Consider the following example:

Suppose that the response is death and the predictors are age, sex, and blood pressure, and that age and sex were recorded for every subject. Suppose that blood pressure was not measured for a fraction of 0.10 of the subjects, and the most common reason for not obtaining a blood pressure was that the subject was about to die. Deletion of these very sick patients will cause a major bias (downward) in the model’s intercept parameter. In general, casewise deletion will bias the estimate of the model’s intercept parameter when missingness is dependent on Y in a way that is not explained by the nonmissing X ’s. (Harrell, 2001, p.43)

In addition, casewise deletion unnecessarily decreases sample size, which consequently lowers power and increases standard errors (a substantial threat to the feasibility of our intended analyses). Current consensus in the literature states that, when data are available for a given participant on other variables of interest, it is most often preferable to impute

the data that are missing and thereby retain important information that would otherwise be lost (Harrell, 2001; Rubin, 1987; Schafer, 1997). This holds true even when a substantial proportion of data (e.g., entire questionnaires) are missing for a given individual (Harrell, 2001; Schafer, 1997). For these reasons, we chose to impute missing values rather than delete any of the remaining cases.

Finally, a method of imputation was chosen based on considerations of efficiency and appropriateness given the pattern of missing data. Although the most common approach is substitution of simple conditional means, this artificially reduces variability and may introduce bias (Harrell, 2001). In contrast, the most conservative and ambitious procedures, involving complex estimation algorithms and multiple imputation, offer clear advantages (Rubin, 1987), but are cumbersome and usually unnecessary when the proportion of total missingness is small (less than 15%, according to Harrell, 2001). Given the low proportion of missingness in the current sample (approximately 5 % to 6% overall), the method of imputation was unlikely to matter (Harrell, 2001). Thus, we adopted a moderately conservative approach, employing an EM algorithm and single imputation. Maximum likelihood estimates were generated by Schafer's (1997) freeware program, NORM Version 2.02 for Windows 95/98/NT (available at <http://www.stat.psu.edu/~jls/misoftwa.html>). For replicability, we chose an arbitrary seed value of 12345 and selected the 1000th iteration for single imputation. Imputed values were then substituted for missing data and treated as observed values in subsequent analyses.

Pooling of Data

The relatively low sample sizes available in this study made it desirable to enhance power not only by imputing missing values, but also by combining male and female data. Prior to pooling of data, however, we evaluated the potential for misleading correlations as a result of between-gender heterogeneity of means and covariance matrices. Analyses included standard multivariate tests of equality of mean vectors and covariance matrices, and considerations of clinical significance of observed differences. Hotellings T^2 statistic was used to test differences between vectors of item means for both the CAPAI and the CRPBI. Neither value was significant: CAPAI, $F(56,129) = 1.023$, $p = .447$; CRPBI, $F(60,125) = 1.125$, $p = .288$, supporting the combining of data for males and females. In contrast, Box's test of equality of covariance matrices was significant for both the CAPAI, $F(1596,95931) = 2823.98$, $p < .001$, and the CRPBI, $F(1830,95902) = 3233.63$, $p < .001$, suggesting significant differences between the male and female covariance matrices. However, given the sample size and associated degrees of freedom, statistically significant values were probably not surprising. Moreover, RMSEA's calculated on Box's M (the chi-square equivalent to the observed F statistic) were moderately low: CAPAI, RMSEA CI 90% = .086 to .097; CRPBI, RMSEA CI 90% = .086 to .096. This suggested that that the actual differences between the covariance matrices, although statistically significant, were probably not large in a practical sense. Given these results, it appeared unlikely that combining data for males and females would produce spurious correlations.

Assessment of Psychometric Properties of the Measures

As a precursor to more advanced analyses, we performed standard psychometric evaluations of the factorial structure and reliability of measures of parenting and attachment previously discussed. Although hypothesized factor structures are proposed, we expected, given unique characteristics of the current sample, that factorial structure of these measures might deviate somewhat from the structure found during scale development. This finding, though interesting theoretically, could potentially impact on subsequent analyses that assume unidimensionality of the scales. Therefore, alternative measurement models were considered. In addition, we verified the internal consistency of the scales.

Factor Analysis of the CRPBI

The CRPBI has been validated in a range of populations, with the majority of studies supporting three underlying factors: Acceptance, Behavioral Control and Psychological Control. (A more detailed description of these constructs, along with a summary of the reliability and validity of the CRPBI, is found in the Measures section.) Yet, because some authors have found more than three factors in their analyses of the CRPBI, and given unique characteristics of the current sample, we chose to re-evaluate the factorial structure of the measure before pursuing further analyses. A combination of maximum likelihood exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were employed to investigate the validity of our hypothesized 3-factor model.

The results of EFA provided only moderate support for the proposed measurement model. As expected, three primary factors accounted for approximately 43% of variance in the 60 items, with subsequent factors each accounting for no more

than 3.2 % of variance in the items. This is seen in the corresponding scree plot, which descends quickly after the first factor and then again after the third factor:

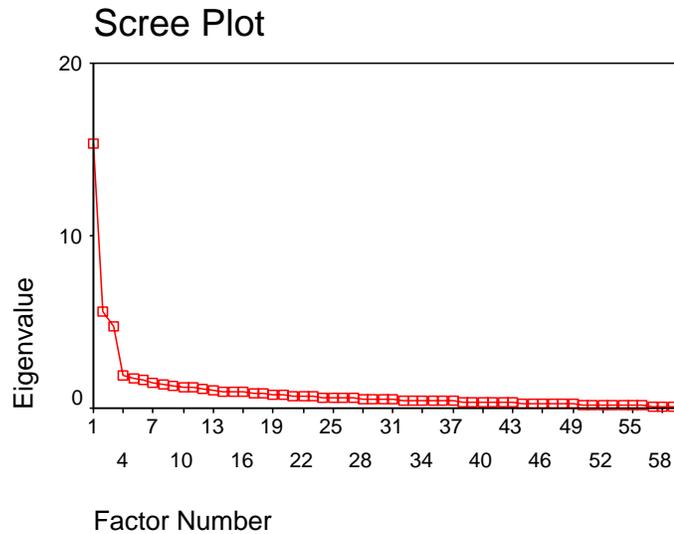


Figure 11. EFA scree plot for the CRPBI

However, subsequent oblique rotation to simple structure (promax, kappa=4) produced a matrix of loadings only partially comparable to the expected pattern:

Pattern Matrix ^a

| | Factor | | |
|---|--------|-------|-------|
| | 1 | 2 | 3 |
| [59] will talk to me again and again about anything bad I do (p+) | .751 | | |
| [49] is always finding fault with me (a-) | .734 | | |
| [46] tells me of all the things she/he has done for me (p+) | .721 | | |
| [32] thinks and talks about my misbehavior long after it is over (p+) | .666 | | |
| [48] thinks that any misbehavior is very serious and will have future consequences (p+) | .663 | | |
| [50] if I have hurt her/his feelings, stops talking to me until I please her/him again (p+) | .654 | | |
| [40] complains that I get on her/his nerves (a-) | .652 | | |
| [51] says, if I really cared for her/him, I would not do things that cause her/him to worry (p+) | .639 | | |
| [56] changes her/his mind to make things easier for herself/himself (p+) | .631 | | .316 |
| [52] is always trying to change me (p+) | .622 | | |
| [47] wants to control whatever I do (p+) | .617 | | |
| [23] says some day I will be punished for my bad behavior (p+) | .612 | | |
| [31] would like to be able to tell me what to do all the time (p+) | .597 | | |
| [08] is always telling me how I should behave (p+) | .570 | | |
| [29] is less friendly with me, if I do not see things her/his way (p+) | .543 | -.346 | |
| [36] only keeps rules when it suits her/him (p+) | .540 | | .307 |
| [37] will avoid looking at me when I have disappointed her/him (p+) | .535 | | |
| [41] insists that I must do exactly as I am told (f+) | .531 | | |
| [13] sometimes when she/he disapproves, does not say anything, but is cold and distant for a while (p+) | .526 | | |
| [39] says, if I love her/him, I would do what she/he wants me to do (p+) | .523 | | |
| [10] believes in having a lot of rules and sticking with them (f+) | .493 | | -.406 |
| [58] has more rules than I can remember (f+) | .487 | | |
| [45] sees to it that I obey when she/he tells me something (f+) | .487 | .356 | |
| [05] will not talk with me when I displease her/him (p+) | .483 | | |
| [07] feels hurt when I do not follow advice (p+) | .480 | .305 | |
| [42] loses her/his temper with me when I do not help around the house (p+) | .462 | | |
| [14] sticks to a rule instead of allowing a lot of exceptions (f+) | .457 | .317 | -.302 |
| [55] when I have certain jobs to do, does not allow me to do anything else until the jobs are done (f+) | .455 | .279 | -.348 |
| [26] depends on her/his mood whether a rule is enforced or not (p+) | .439 | | |
| [11] punishes me for doing something one day, but ignores it the next (p+) | .438 | | |
| [19] believes that all my bad behavior should be punished in some way (f+) | .343 | | -.339 |
| [43] does not insist I obey, if I complain and protest (f-) | .294 | | |
| [18] gives me a lot of care and attention (a+) | | .880 | |
| [34] enjoys doing things with me (a+) | | .871 | |
| [44] cheers me up when I am sad (a+) | | .812 | |
| [21] believes in showing her/his love for me (a+) | | .789 | |
| [53] is easy to talk to (a+) | | .729 | |
| [25] smiles at me very often (a+) | | .726 | |
| [35] makes me feel like the most important person in her/his life (a+) | | .716 | |
| [28] does not show that she/he loves me (a-) | | -.634 | |
| [30] is able to make me feel better when I am upset (a+) | | .624 | |
| [38] often praises me (a+) | | .624 | |
| [01] MOTHER: makes me feel better after talking over my worries with her/him (a+) | | .612 | |
| [09] spends very little time with me (a-) | | -.509 | |
| [16] does not seem to think of me very often (a-) | .290 | -.497 | |
| [04] is easy with me (f-) | | .476 | .280 |
| [02] sees to it that I know exactly what I may or may not do (f+) | | .468 | |
| [22] feels hurt by the things I do (p+) | .328 | .399 | |
| [24] gives me as much freedom as I want (f-) | | | .684 |
| [60] lets me do anything I like to do (f-) | | | .675 |
| [54] lets me go out any evening I want (f-) | | | .667 |
| [12] lets me off easy when I do something wrong (f-) | | | .611 |
| [33] lets me go any place I please without asking (f-) | | | .605 |
| [57] can be talked into things easily (f-) | | | .513 |
| [27] excuses my bad conduct (f-) | .274 | | .511 |
| [06] is very strict with me (f+) | .307 | | -.466 |
| [20] gives hard punishment (f+) | .301 | | -.456 |
| [17] does not tell me what time to be at home when I go out (f-) | | | .439 |
| [03] soon forgets a rule she/he has made (p+) | .301 | | .321 |
| [15] if I break a promise, does not trust me again for a long time (p+) | | | -.294 |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 3. EFA rotated factor pattern for 3-factor solution for the CRPBI. Loadings less than .25 are suppressed for ease of interpretation; A's denote Acceptance items, P's denote Psychological Control items; F's denote Behavioral Control items; +/- indicates direction of keying; Item numbers are in brackets.

In keeping with the proposed model, items hypothesized to measure parental Acceptance loaded primarily on a single factor. However, inconsistent with the hypothesized model, pre-specified Behavioral Control items were split between the two remaining factors. The majority of negatively keyed Behavioral Control items loaded on one factor (suggesting a possible parental “permissiveness” dimension). In contrast, the positively keyed Behavioral Control items (measuring parental limit setting and “strict” behavioral control), loaded on the same factor as the majority of Psychological Control items. Finally, as seen in the pattern matrix, a number of items on each of the three factors showed substantial crossover loadings. Thus, although statistical indices of fit suggested that a three-factor model fit the data reasonably well ($\chi^2(1593) = 2318.47, p < .001$; RMSEA = .050, CI 90% = .045 to .054), the factor pattern suggested that the originally hypothesized measurement model required a degree of modification.

CFA results were similarly mixed. Indices of fit were in the acceptable range ($\chi^2(1707) = 3529.67, p < .001$; RMSEA = .076, CI 90% = .072 to .080) and off-diagonal standardized residuals were generally low. However, a number of residuals were greater than .35, again suggesting areas of model misspecification. The pattern matrix below summarizes the confirmatory model and obtained parameter estimates:

| [manifest variable] | Acceptance | | Behavioral Control | | Psychological Control | |
|---------------------|--------------------|---------|--------------------|---------|-----------------------|---------|
| | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) |
| [ycrm1] | 0.679 | (0.042) | X | | X | |
| [ycrm9] | -0.632 | (0.046) | X | | X | |
| [ycrm16] | -0.687 | (0.041) | X | | X | |
| [ycrm18] | 0.836 | (0.025) | X | | X | |
| [ycrm21] | 0.770 | (0.032) | X | | X | |
| [ycrm25] | 0.725 | (0.037) | X | | X | |
| [ycrm28] | -0.736 | (0.036) | X | | X | |
| [ycrm30] | 0.706 | (0.039) | X | | X | |
| [ycrm34] | 0.809 | (0.028) | X | | X | |
| [ycrm35] | 0.715 | (0.038) | X | | X | |
| [ycrm38] | 0.537 | (0.054) | X | | X | |
| [ycrm40] | -0.358 | (0.066) | X | | X | |
| [ycrm44] | 0.838 | (0.024) | X | | X | |
| [ycrm49] | -0.527 | (0.055) | X | | X | |
| [ycrm53] | 0.770 | (0.032) | X | | X | |
| [ycrm2] | X | | -0.030 | (0.078) | X | |
| [ycrm4] | X | | 0.459 | (0.062) | X | |
| [ycrm6] | X | | -0.730 | (0.039) | X | |
| [ycrm10] | X | | -0.734 | (0.039) | X | |
| [ycrm12] | X | | 0.485 | (0.061) | X | |
| [ycrm14] | X | | -0.507 | (0.059) | X | |
| [ycrm17] | X | | 0.144 | (0.076) | X | |
| [ycrm19] | X | | -0.571 | (0.054) | X | |
| [ycrm20] | X | | -0.701 | (0.042) | X | |
| [ycrm24] | X | | 0.452 | (0.063) | X | |
| [ycrm27] | X | | 0.297 | (0.071) | X | |
| [ycrm33] | X | | 0.416 | (0.065) | X | |
| [ycrm41] | X | | -0.609 | (0.051) | X | |
| [ycrm43] | X | | 0.021 | (0.078) | X | |
| [ycrm45] | X | | -0.433 | (0.064) | X | |
| [ycrm54] | X | | 0.504 | (0.059) | X | |
| [ycrm55] | X | | -0.561 | (0.055) | X | |
| [ycrm57] | X | | 0.331 | (0.070) | X | |
| [ycrm58] | X | | -0.634 | (0.049) | X | |
| [ycrm60] | X | | 0.435 | (0.064) | X | |
| [ycrm3] | X | | X | | 0.256 | (0.071) |
| [ycrm5] | X | | X | | 0.540 | (0.055) |
| [ycrm7] | X | | X | | 0.318 | (0.069) |
| [ycrm8] | X | | X | | 0.579 | (0.052) |
| [ycrm11] | X | | X | | 0.405 | (0.064) |
| [ycrm13] | X | | X | | 0.449 | (0.061) |
| [ycrm15] | X | | X | | 0.374 | (0.066) |
| [ycrm22] | X | | X | | 0.174 | (0.074) |
| [ycrm23] | X | | X | | 0.569 | (0.052) |
| [ycrm26] | X | | X | | 0.377 | (0.066) |
| [ycrm29] | X | | X | | 0.710 | (0.039) |
| [ycrm31] | X | | X | | 0.664 | (0.044) |
| [ycrm32] | X | | X | | 0.644 | (0.046) |
| [ycrm36] | X | | X | | 0.419 | (0.063) |
| [ycrm37] | X | | X | | 0.597 | (0.050) |
| [ycrm39] | X | | X | | 0.487 | (0.059) |
| [ycrm42] | X | | X | | 0.591 | (0.051) |
| [ycrm46] | X | | X | | 0.599 | (0.050) |
| [ycrm47] | X | | X | | 0.712 | (0.039) |
| [ycrm48] | X | | X | | 0.686 | (0.042) |
| [ycrm50] | X | | X | | 0.737 | (0.036) |
| [ycrm51] | X | | X | | 0.562 | (0.053) |
| [ycrm52] | X | | X | | 0.707 | (0.040) |
| [ycrm56] | X | | X | | 0.577 | (0.052) |
| [ycrm59] | X | | X | | 0.670 | (0.043) |

Table 4. CFA model and parameter estimates for the CRPBI

In conclusion, results of preliminary EFA and CFA did not give unequivocal support for the hypothesized 3-factor structure of the CRPBI. Further exploration of the scale, including statistical evaluations of measurement models with greater than three factors, appeared warranted. We sought an alternative measurement model for the CRPBI that would provide increased structural validity while maintaining, as much as possible, the original theoretical distinctions between major parenting dimensions. This involved a combination of statistical and conceptual analyses.

To begin, further EFA was pursued, including examinations of fit indices and pattern structures of 4, 5, 6 and 7 factor solutions. Although primarily exploratory in nature, these analyses were also used to determine whether or not Psychological Control and Behavioral Control items would, if permitted, load on separate factors as originally hypothesized. First, increased factoring produced improved indices of fit ($\chi^2(1536) = 2123.86$, $p < .001$, RMSEA = .045 for the 4-factor solution). Moreover, with increased factoring, Psychological Control items and positively keyed Behavioral Control items loaded on separate (though correlated) factors. For example, consider the 2nd and 3rd factors of the 6-factor solution (following oblique rotation to simple structure). The following subsection of the rotated pattern matrix reveals Psychological Control items loading primarily on Factor 2 and Behavioral Control items on Factor 3:

| | Factor | |
|---|--------|-------|
| | 2 | 3 |
| [50] if I have hurt her/his feelings, stops talking to me until I please her/him again (p+) | .742 | |
| [51] says, if I really cared for her/him, I would not do things that cause her/him to worry (p+) | .741 | |
| [59] will talk to me again and again about anything bad I do (p+) | .722 | |
| [13] sometimes when she/he disapproves, does not say anything, but is cold and distant for a while (p+) | .721 | -.293 |
| [37] will avoid looking at me when I have disappointed her/him (p+) | .640 | |
| [40] complains that I get on her/his nerves (a-) | .637 | |
| [49] is always finding fault with me (a-) | .573 | |
| [39] says, if I love her/him, I would do what she/he wants me to do (p+) | .514 | |
| [56] changes her/his mind to make things easier for herself/himself (p+) | .505 | |
| [52] is always trying to change me (p+) | .500 | |
| [48] thinks that any misbehavior is very serious and will have future consequences (p+) | .477 | .250 |
| [23] says some day I will be punished for my bad behavior (p+) | .458 | |
| [32] thinks and talks about my misbehavior long after it is over (p+) | .453 | |
| [46] tells me of all the things she/he has done for me (p+) | .451 | |
| [05] will not talk with me when I displease her/him (p+) | .410 | |
| [29] is less friendly with me, if I do not see things her/his way (p+) | .385 | |
| [42] loses her/his temper with me when I do not help around the house (p+) | .366 | |
| [41] insists that I must do exactly as I am told (f+) | .350 | .273 |
| [11] punishes me for doing something one day, but ignores it the next (p+) | .274 | |
| [10] believes in having a lot of rules and sticking with them (f+) | | .848 |
| [06] is very strict with me (f+) | | .771 |
| [19] believes that all my bad behavior should be punished in some way (f+) | | .721 |
| [14] sticks to a rule instead of allowing a lot of exceptions (f+) | | .662 |
| [20] gives hard punishment (f+) | | .621 |
| [55] when I have certain jobs to do, does not allow me to do anything else until the jobs are done (f+) | | .604 |
| [58] has more rules than I can remember (f+) | | .592 |
| [45] sees to it that I obey when she/he tells me something (f+) | | .474 |
| [31] would like to be able to tell me what to do all the time (p+) | | .436 |
| [47] wants to control whatever I do (p+) | | .392 |
| [08] is always telling me how I should behave (p+) | .295 | .343 |

Table 5. Subsection of EFA rotated 6-factor solution for the CRPBI; Values < .25 suppressed for ease of interpretation

These results are consistent with theoretical distinctions between dimensions of Psychological and Behavioral Control and indicate that the two dimensions can be modeled as separate factors. Finally, increased factoring confirmed that “strict” versus “lax” Behavioral Control items appear to load on separable dimensions.

It is possible that inconsistencies between hypothesized and observed factor structures might be attributable to unique features of the population under investigation.

Consider the factorial separation observed between strict versus lax Behavioral Control items, described above. Historically, “permissiveness” and “strictness” have been conceptualized as opposite ends of the same parenting dimension. Thus, a youth reporting high parental limit setting and rule enforcement would be expected to report *low* permissive parenting. However, results of both preliminary and expanded EFA in the current study show that the two types of Behavioral Control items consistently loaded on different factors. Although this unexpected result may be, in part, the product of random variation and limited sample size, it may also reflect meaningful differences between normative samples and this clinical population. For instance, the significant behavioral problems characteristic of adolescent respondents in the current study may correspond to atypical experiences of parenting (e.g., high parental inconsistency or unpredictability; possible abuse and/or neglect) and perspectives on parental “permissiveness” versus “strictness.” Without further research, we cannot rule out the possibility that special qualities of the current population produce uncharacteristic interpretations of items on the CRPBI and, therefore, unexpected correlations between items. Thus, to impose an inappropriate measurement model on the data may be unwise, potentially obscuring important relationships between dimensions of parenting and other variables of interest.

In sum, results of additional exploratory factor analysis suggested (1) that despite overlap between the Behavioral and Psychological Control scales, theoretical distinctions between these dimensions appear meaningful (2) strict versus lax Behavioral Control should be separated into two scales. Therefore, we proposed a slightly revised factor structure, allowing positively and negatively keyed Behavioral Control items to load on

separate scales, but retaining the original 60 items and separation between dimensions Behavioral Control and Psychological Control.

Subsequent CFA and indices of scale unidimensionality and reliability supported our scale revision. First, indices of fit for the CFA model suggested significant improvement in model-data correspondence ($\chi^2(1704) = 3281.07, p < .001$; RMSEA = .064, CI 90% = .050 to .078). Off-diagonal standardized residuals were generally low, with no value greater than .45. The following table presents the model summary and parameter estimates.

| [manifest variable] | Acceptance | | Psychological Control | | Behavioral Control | | Permissiveness | |
|---------------------|--------------------|---------|-----------------------|---------|--------------------|--------|--------------------|--------|
| | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) |
| [ycrm1] | -0.680 | (0.042) | X | | X | | X | |
| [ycrm9] | 0.631 | (0.046) | X | | X | | X | |
| [ycrm16] | 0.685 | (0.041) | X | | X | | X | |
| [ycrm18] | -0.837 | (0.025) | X | | X | | X | |
| [ycrm21] | -0.770 | (0.032) | X | | X | | X | |
| [ycrm25] | -0.725 | (0.037) | X | | X | | X | |
| [ycrm28] | 0.734 | (0.036) | X | | X | | X | |
| [ycrm30] | -0.706 | (0.039) | X | | X | | X | |
| [ycrm34] | -0.810 | (0.028) | X | | X | | X | |
| [ycrm35] | -0.715 | (0.038) | X | | X | | X | |
| [ycrm38] | -0.538 | (0.054) | X | | X | | X | |
| [ycrm40] | 0.357 | (0.066) | X | | X | | X | |
| [ycrm44] | -0.838 | (0.024) | X | | X | | X | |
| [ycrm49] | 0.526 | (0.055) | X | | X | | X | |
| [ycrm53] | -0.770 | (0.032) | X | | X | | X | |
| [ycrm3] | X | | 0.261 | (0.071) | X | | X | |
| [ycrm5] | X | | 0.540 | (0.055) | X | | X | |
| [ycrm7] | X | | 0.319 | (0.069) | X | | X | |
| [ycrm8] | X | | 0.580 | (0.051) | X | | X | |
| [ycrm11] | X | | 0.411 | (0.064) | X | | X | |
| [ycrm13] | X | | 0.448 | (0.061) | X | | X | |
| [ycrm15] | X | | 0.372 | (0.066) | X | | X | |
| [ycrm22] | X | | 0.164 | (0.074) | X | | X | |
| [ycrm23] | X | | 0.571 | (0.052) | X | | X | |
| [ycrm26] | X | | 0.385 | (0.065) | X | | X | |
| [ycrm29] | X | | 0.712 | (0.039) | X | | X | |
| [ycrm31] | X | | 0.667 | (0.044) | X | | X | |
| [ycrm32] | X | | 0.644 | (0.046) | X | | X | |
| [ycrm36] | X | | 0.429 | (0.063) | X | | X | |
| [ycrm37] | X | | 0.595 | (0.050) | X | | X | |
| [ycrm39] | X | | 0.486 | (0.059) | X | | X | |
| [ycrm42] | X | | 0.589 | (0.051) | X | | X | |

Table Continued

| [manifest variable] | Acceptance | | Psychological Control | | Behavioral Control | | Permissiveness | |
|---------------------|--------------------|--------|-----------------------|---------|--------------------|---------|--------------------|---------|
| | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) |
| [ycrm46] | X | | 0.602 | (0.050) | X | | X | |
| [ycrm47] | X | | 0.709 | (0.039) | X | | X | |
| [ycrm48] | X | | 0.686 | (0.042) | X | | X | |
| [ycrm50] | X | | 0.732 | (0.037) | X | | X | |
| [ycrm51] | X | | 0.562 | (0.053) | X | | X | |
| [ycrm52] | X | | 0.699 | (0.040) | X | | X | |
| [ycrm56] | X | | 0.579 | (0.052) | X | | X | |
| [ycrm59] | X | | 0.673 | (0.043) | X | | X | |
| [ycrm2] | X | | X | | 0.059 | (0.078) | X | |
| [ycrm6] | X | | X | | 0.708 | (0.042) | X | |
| [ycrm10] | X | | X | | 0.764 | (0.036) | X | |
| [ycrm14] | X | | X | | 0.552 | (0.056) | X | |
| [ycrm19] | X | | X | | 0.578 | (0.054) | X | |
| [ycrm20] | X | | X | | 0.678 | (0.045) | X | |
| [ycrm41] | X | | X | | 0.638 | (0.048) | X | |
| [ycrm45] | X | | X | | 0.480 | (0.061) | X | |
| [ycrm55] | X | | X | | 0.583 | (0.053) | X | |
| [ycrm58] | X | | X | | 0.675 | (0.045) | X | |
| [ycrm4] | X | | X | | X | | 0.342 | (0.071) |
| [ycrm12] | X | | X | | X | | 0.606 | (0.054) |
| [ycrm17] | X | | X | | X | | 0.404 | (0.068) |
| [ycrm24] | X | | X | | X | | 0.733 | (0.042) |
| [ycrm27] | X | | X | | X | | 0.434 | (0.066) |
| [ycrm33] | X | | X | | X | | 0.649 | (0.050) |
| [ycrm43] | X | | X | | X | | 0.226 | (0.076) |
| [ycrm54] | X | | X | | X | | 0.699 | (0.045) |
| [ycrm57] | X | | X | | X | | 0.425 | (0.067) |
| [ycrm60] | X | | X | | X | | 0.730 | (0.042) |

Table 6. CFA model and parameter estimates for the revised CRPBI

Values of Cronbach's alpha remained in the acceptable range (despite attenuation of reliability associated with scale reduction): Acceptance $\alpha = .93$; Psychological Control $\alpha = .91$; Behavioral Control $\alpha = .83$, Permissiveness $\alpha = .83$. Finally, inter-item correlations were moderate and consistent: Acceptance $\bar{r}_{interitem} = .47$, s.d.=.14; Psychological Control $\bar{r}_{interitem} = .29$, s.d.=.13; Behavioral Control $\bar{r}_{interitem} = .33$, s.d.=.16; Permissiveness $\bar{r}_{interitem} = .27$, s.d.=.14.

Further evaluations of validity, including replication in a new sample and comparisons to other criterion measures, would be ideal. However, the current exploratory and confirmatory factor analyses and indices of unidimensionality all appear supportive. Therefore, as the revised scale appeared to offer superior structural validity

while largely preserving the theoretical foundations of the original measure, we chose to utilize the revised four-factor model for further examinations of moderation and mediation.

Factor Analysis of the CAPAI

The factor structure of the CAPAI was examined using both maximum likelihood exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Only 36 of the 56 CAPAI items were designed to measure Anxiety and Avoidance; therefore, analyses concentrated on this subset of items.

The results of EFA were largely consistent with our hypothesized factor structure. As seen below, the scree plot declined rapidly following the first two factors, revealing two major dimensions accounting for 43% of variance in the items. The third and subsequent factors each accounted for no more than 4.8% of item variance.

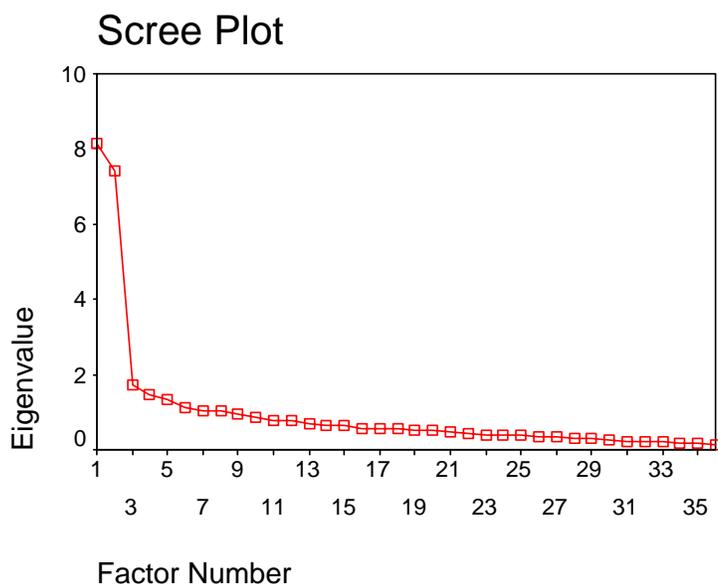


Figure 12. EFA scree plot for the CAPAI

The factor pattern obtained through oblique rotation to simple structure (promax, $\kappa=4$) was consistent with the hypothesized model. As can be seen in the following table, items loaded largely as expected, with the majority of pre-specified Avoidance items loading on Factor 1, and Anxiety items on Factor 2.

Pattern Matrix ^a

| | Factor | |
|---|--------|-------|
| | 1 | 2 |
| (44) I turn to my parent for many things, including comfort and reassurance (v-) | .783 | |
| (38) I don't mind asking my parent for comfort, advice, or help (v-) | .772 | |
| (35) I usually discuss my problems and concerns with my parents (v-) | .753 | |
| (50) It helps to turn to my parent in times of need (v-) | .737 | |
| (28) I tell my parent just about everything (v-) | .714 | |
| (36) I find it relatively easy to get close to my parent (v-) | .711 | |
| (26) I try to avoid getting too close to my parent (v+) | -.685 | |
| (23) I feel comfortable depending on my parent (v-) | .619 | |
| (47) I prefer not to be too close to my parent (v+) | -.615 | |
| (13) I don't feel comfortable opening up to my parent (v+) | -.600 | |
| (07) I find it difficult to depend on my parent (v+) | -.589 | |
| (20) I get uncomfortable when my parent wants to be very close (v+) | -.589 | |
| (04) I am very comfortable being close to my parent (v-) | .581 | |
| (19) I feel comfortable sharing my private thoughts and feelings with my parent (v-) | .569 | |
| (56) I am nervous when my parent gets too close to me (v+) | -.565 | .254 |
| (16) Just when my parent starts to get close to me I find myself pulling away (v+) | -.454 | .448 |
| (01) I prefer not to show my parent how I feel deep down (v+) | -.426 | |
| (22) I often wish that my parent's feelings for me were as strong as my feelings are for my parent (x+) | | .690 |
| (27) I worry a lot about my relationship with my parent (x+) | | .690 |
| (53) I find that my parent doesn't want to get as close as I would like (x+) | | .686 |
| (10) I worry that my parent won't care about me as much as I care about my parent (x+) | | .669 |
| (09) I need a lot of reassurance that I am loved by my parent (x+) | | .666 |
| (32) I want to get close to my parent but I keep pulling back (v+) | | .660 |
| (12) I worry about being abandoned by my parent (x+) | | .646 |
| (29) I often want to be really close to my parent and sometimes this makes my parent back away (x+) | | .643 |
| (25) When my parent disapproves of me if feel really bad about myself (x+) | | .585 |
| (33) I resent it when my parent spends time away from me (x+) | | .582 |
| (43) I worry a fair amount about losing my parent (x+) | | .577 |
| (37) Sometimes I feel that I have to force my parent to show that my parent cares about me (x+) | | .570 |
| (17) I get frustrated when my parent is not around as much as I would like (x+) | .281 | .515 |
| (08) I worry about being away from my parent (x+) | .369 | .499 |
| (05) If I can't get my parent to show interest in me I get upset or angry (x+) | | .466 |
| (02) When I'm away from my parent I feel anxious and afraid (x+) | .350 | .459 |
| (48) I get frustrated if my parent is not available when I need my parent (x+) | | .431 |
| (41) My desire to be very close sometimes scares people away (x+) | | .411 |
| (55) I don't often worry about being abandoned (x-) | | -.303 |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table 7. EFA rotated 2-factor solution for the CAPAI; Loadings less than .25 are suppressed for ease of interpretation; X's denote Anxiety items, V's denote Avoidance items; +/- indicates direction of keying; Item numbers are in brackets

The rotated factors were essentially orthogonal ($r = .019$), in agreement with theoretical predictions of independence between Anxiety and Avoidance dimensions. Finally, statistical fit indices suggested acceptable model fit: $\chi^2(559) = 1062.64$, $p < .001$; RMSEA=.070, CI 90% = .063 to .076. These findings are highly consistent with the results of previous research investigating the validity of the CAPAI in comparable samples (Steiger & Moretti, 2003; 2005).

Despite this clear support for our hypothesized two-factor model, subsequent analyses, including evaluations of scale unidimensionality and CFA, suggested that there might be additional sources of variance in the CAPAI items not accounted for by the two-factor model. First, close investigation of the rotated factor pattern revealed that several items did not load as expected. For example, item 32 (“I want to get close to my parent but I keep pulling back”), a pre-specified Avoidance item, loaded instead on the Anxiety factor. Items 2, 8, 16 and 17 loaded on *both* the Anxiety and Avoidance factors. These results pointed to possible item misspecification and potential conceptual overlap between dimensions of Anxiety and Avoidance. High values for Cronbach’s alpha were obtained for both scales ($\alpha = .91$ for Avoidance; $\alpha = .89$ for Anxiety); however, inter-item correlations were somewhat variable ($r = -.02$ to $.66$ in the Anxiety scale; $r = -.10$ to $.71$ in the Avoidance scale). These results supported only moderate unidimensionality of the scales and pointed to possible sub-dimensions in the original scales. Finally, CFA of our two-factor model indicated only marginal fit ($\chi^2(593) = 1514.82$, $p < .001$; RMSEA=.092, CI 90% = .086 to .097). Parameter estimates for the proposed model are summarized in the following table:

| | Avoidance | | Anxiety | |
|---------------------|--------------------|---------|--------------------|---------|
| [manifest variable] | Parameter Estimate | (S.E.) | Parameter Estimate | (S.E.) |
| [ycap1] | -0.437 | (0.062) | X | |
| [ycap4] | 0.573 | (0.052) | X | |
| [ycap7] | -0.569 | (0.053) | X | |
| [ycap13] | -0.596 | (0.050) | X | |
| [ycap16] | -0.436 | (0.062) | X | |
| [ycap19] | 0.586 | (0.051) | X | |
| [ycap20] | -0.589 | (0.051) | X | |
| [ycap23] | 0.613 | (0.049) | X | |
| [ycap26] | -0.684 | (0.042) | X | |
| [ycap28] | 0.736 | (0.037) | X | |
| [ycap32] | -0.088 | (0.076) | X | |
| [ycap35] | 0.763 | (0.034) | X | |
| [ycap36] | 0.707 | (0.040) | X | |
| [ycap38] | 0.778 | (0.032) | X | |
| [ycap44] | 0.779 | (0.032) | X | |
| [ycap47] | -0.616 | (0.049) | X | |
| [ycap50] | 0.734 | (0.037) | X | |
| [ycap56] | -0.560 | (0.053) | X | |
| [ycap2] | X | | 0.438 | (0.063) |
| [ycap5] | X | | 0.480 | (0.060) |
| [ycap8] | X | | 0.485 | (0.060) |
| [ycap9] | X | | 0.688 | (0.043) |
| [ycap10] | X | | 0.699 | (0.042) |
| [ycap12] | X | | 0.646 | (0.047) |
| [ycap17] | X | | 0.521 | (0.057) |
| [ycap22] | X | | 0.690 | (0.043) |
| [ycap25] | X | | 0.585 | (0.052) |
| [ycap27] | X | | 0.690 | (0.043) |
| [ycap29] | X | | 0.615 | (0.050) |
| [ycap33] | X | | 0.591 | (0.052) |
| [ycap37] | X | | 0.573 | (0.053) |
| [ycap41] | X | | 0.398 | (0.066) |
| [ycap43] | X | | 0.555 | (0.055) |
| [ycap48] | X | | 0.448 | (0.063) |
| [ycap53] | X | | 0.690 | (0.043) |
| [ycap55] | X | | -0.316 | (0.070) |

Table 8. CFA model and parameter estimates for the CAPAI

Off-diagonal standardized residuals were generally low, but a few were as high as .50, again pointing to areas of model misspecification.

Overall, results were sufficiently supportive of the hypothesized factor structure to allow further analyses with the original scales. However, results also suggested that elimination of certain items and/or a more complex factor structure might provide an

improved measurement model. For these reasons, further exploratory analysis of the CAPAI's factor structure was pursued. These results are reported in the Appendix.

Basic Predictive Analyses

Prior to more complex analyses of moderation and mediation, it was important to examine simple predictive relationships between independent and dependent variables. A combination of correlational analyses and hierarchical multiple regressions were used to evaluate simple linear relationships among key variables of interest.

Data for males and females were pooled for all analyses, following examinations of equality of mean vectors and covariance matrices. Similar to previously reported results of gender differences at the item level, Hotelling's T^2 statistic of differences between mean vectors suggested that average scale scores on the major independent variables were not significantly different: $F(6,179) = 1.88$, $p = .086$. The table below summarizes means and standard deviations for the major independent and dependent variables both across and within gender.

| Variable | Total N=186 | | Males N=101 | | Females N=85 | |
|--------------------------------|----------------|-------|----------------|-------|-----------------|-------|
| | Mean | s.d. | Mean | s.d. | Mean | s.d. |
| Internalizing symptoms | 57.58 | 13.19 | 54.63 | 12.67 | 61.08 | 13.01 |
| Externalizing symptoms | 65.98 | 10.35 | 64.74 | 10.80 | 67.46 | 9.65 |
| Attachment Avoidance | 3.62 | 22.43 | 3.63 | 20.17 | 3.60 | 24.98 |
| Attachment Anxiety | 46.74 | 21.81 | 42.44 | 20.66 | 51.85 | 22.16 |
| Parental Acceptance | 8.33 | 8.28 | 7.98 | 7.36 | 8.74 | 9.29 |
| Parental Permissiveness | 6.62 | 4.32 | 6.77 | 4.39 | 6.44 | 4.25 |
| Parental Behavioral Control | 9.11 | 4.90 | 9.27 | 4.95 | 8.93 | 4.87 |
| Parental Psychological Control | 20.92 | 11.13 | 20.69 | 10.95 | 21.19 | 11.40 |

Table 9. Variable means across and within gender

Consistent with previous research, females scored higher than males on measures of internalizing symptoms and attachment anxiety. However, with Bonferroni correction for

multiple contrasts, these mean differences were not significant. Furthermore, Box's test of the homogeneity of covariance matrices for these variables suggested that male and female data were not significantly different in covariance structure, $F(21,117036) = 1.137, p = .299$. Thus, pooling of data appeared unlikely to result in spurious correlations.

As a precursor to regression analyses, bivariate intercorrelations between youth-reported parenting, attachment, and psychopathology were examined. Results were generally consistent with prior research findings, demonstrating that attachment insecurity and negative parenting both predicted psychopathology.

| N=186 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------------------|---------|--------|---------|------|---------|---------|--------|---|
| 1 Internalizing symptoms | — | | | | | | | |
| 2 Externalizing symptoms | .450** | — | | | | | | |
| 3 Attachment Avoidance | .303** | .174* | — | | | | | |
| 4 Attachment Anxiety | .404** | .194** | .060 | — | | | | |
| 5 Parental Acceptance | -.258** | -.179* | -.640** | .088 | — | | | |
| 6 Parental Permissiveness | -.043 | .131 | -.112 | .022 | .224** | — | | |
| 7 Parental Behavioral Control | .166* | .020 | .177* | .025 | -.309** | -.412** | — | |
| 8 Parental Psychological Control | .241** | .206** | .335** | .092 | -.580** | -.086 | .620** | — |

* $p < .05$; ** $p < .01$

Table 10. Intercorrelations of major dependent and independent variables

More specifically, attachment anxiety and avoidance were each positively associated with internalizing and externalizing symptoms. In addition, youth-reported parental psychological control was *positively* associated with both internalizing and externalizing symptoms, while parental warmth/acceptance was *negatively* associated with internalizing and externalizing symptoms. Finally, as expected, parental acceptance was negatively associated with attachment avoidance.

Although results were largely consistent with predictions, several findings were surprising. In particular, although it was hypothesized that psychological control would

predict attachment anxiety, the observed correlation between the variables was small and nonsignificant (as were correlations of other parenting variables with attachment anxiety). Perplexing in itself, this result also presented a potential threat to subsequent mediational analyses that assumed a direct relationship between psychological control and attachment anxiety. Not as surprising, but also unexpected, was the finding that neither parental behavioral control nor permissiveness were significantly related to externalizing symptoms. Possible interpretations of these results are presented in the Discussion section, after further analysis.

Following correlational analyses, specific predictive relationships were examined using hierarchical multiple linear regression. To control for potential effects of gender and age of participants, demographic variables were entered together in the first step of the analyses. The results of regressions of internalizing and externalizing symptoms on attachment insecurity are presented in the following table:

| $R^2 = .26, F(4,179) = 16.00***$ | | | | |
|----------------------------------|----------------------|--------------|-----------|---------|
| Internalizing | | | | |
| Step | Predictor | ΔR^2 | β^a | s_r^2 |
| 1 | Gender | .06** | .15* | .02 |
| | Age | | .06 | .00 |
| 2 | Attachment Avoidance | .20*** | .27*** | .07 |
| | Attachment Anxiety | | .35*** | .12 |
| $R^2 = .07, F(4,179) = 3.55**$ | | | | |
| Externalizing | | | | |
| Step | Predictor | ΔR^2 | β^a | s_r^2 |
| 1 | Gender | .02 | .10 | .01 |
| | Age | | .01 | .00 |
| 2 | Attachment Avoidance | .05** | .17* | .03 |
| | Attachment Anxiety | | .16* | .02 |

^a standardized Beta on last step; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 11. Hierarchical regressions of attachment predicting internalizing and externalizing symptoms

In both analyses, attachment insecurity predicted significant variance in psychopathology. After controlling for the effects of gender and age in the first step of each regression, attachment avoidance and anxiety together predicted significant additional variance in both internalizing symptoms ($\Delta R^2 = .20, p < .001$) and externalizing symptoms ($\Delta R^2 = .05, p < .01$). Next, a comparison of the proportion of variance explained by attachment variables across the two regression analyses suggested that attachment insecurity was particularly important in the prediction of *internalizing* symptoms. Finally, when all variables were included simultaneously in the final step of the regressions, attachment anxiety and avoidance each accounted for unique and significant variance in both internalizing and externalizing symptoms. In contrast, gender significantly predicted only internalizing symptoms, and age was not a significant predictor. Results were consistent with general hypotheses based on previous research.

Next, regressions on the four major parenting variables were examined. The following table summarizes results for both internalizing and externalizing symptoms, with gender and age again entered in the first step of the regressions.

| $R^2 = .14, F(6,177) = 4.70^{***}$ | | Internalizing | | |
|------------------------------------|--------------------------------|---------------|-----------|---------|
| Step | Predictor | ΔR^2 | β^a | s_r^2 |
| 1 | Gender | .06** | .24** | .05 |
| | Age | | .07 | .00 |
| 2 | Parental Acceptance | .07** | -.20* | .02 |
| | Parental Permissiveness | | .05 | .00 |
| | Parental Behavioral Control | | .09 | .00 |
| | Parental Psychological Control | | .05 | .00 |

Table Continued

| $R^2 = .09, F(6,177) = 3.07^{**}$ | | Externalizing | | |
|-----------------------------------|--------------------------------|---------------|------------------|---------|
| Step | Predictor | ΔR^2 | β^a | s_r^2 |
| 1 | Gender | .02 | .15* | .02 |
| | Age | | -.01 | .00 |
| 2 | Parental Acceptance | .08** | -.14 | .01 |
| | Parental Permissiveness | | .16 ^t | .02 |
| | Parental Behavioral Control | | -.04 | .00 |
| | Parental Psychological Control | | .16 | .01 |

^a standardized Beta on last step; ^t $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 12. Hierarchical regressions of parenting predicting internalizing and externalizing symptoms

Even after the effects of age and gender were partialled out, parenting variables together accounted for significant added variance in both internalizing symptoms ($\Delta R^2 = .07, p < .01$) and externalizing symptoms ($\Delta R^2 = .08, p < .01$). In the final step, regression coefficients suggested that, among parenting variables, acceptance was most important in the prediction of internalizing symptoms and permissiveness in the prediction of externalizing symptoms; however, the meaning of specific coefficients are in this case difficult to interpret given significant, and sometimes sizeable, intercorrelations between the parenting variables. Regarding demographic variables, gender and age together significantly predicted only internalizing symptoms. Individually, gender appeared to be a significant predictor, whereas age did not. Again, results were consistent with general hypotheses and previous research findings.

Next, to more fully examine the unexpected low correlation between psychological control and attachment anxiety, a hierarchical regression was performed to test the predictive relationship between the two variables. The current study specifically hypothesized a direct relationship between psychological control and attachment anxiety, but previous research also suggests that acceptance can be predictive of attachment

anxiety; therefore, both parenting variables were entered in the second step of the regression.

| $R^2 = .12, F(4,179) = 6.01^{***}$ | | Attachment Anxiety | | |
|------------------------------------|--------------------------------|--------------------|-----------|---------|
| Step | Predictor | ΔR^2 | β^a | s_r^2 |
| 1 | Gender | .05** | .18* | .03 |
| | Age | | .04 | .00 |
| 2 | Parental Psychological Control | .07*** | .25*** | .06 |
| | Parental Acceptance | | .18* | .03 |

^a standardized Beta on last step; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 13. Hierarchical regression of parenting predicting attachment anxiety

Results of the analysis gave some support to the hypothesis that psychological control predicts attachment anxiety. Together, parental psychological control and acceptance predicted significant variance in attachment anxiety, controlling for gender and age ($\Delta R^2 = .07$; $p < .001$). Moreover, in the final step of the regression, psychological control appeared to be the most important predictor of attachment anxiety ($\beta = .25$, $p < .001$; $s_r^2 = .06$). However, the total proportion of variance explained by the full set of variables was lower than expected ($R^2 = .12$, $F(4,179) = 6.01$, $p < .001$). In addition, parental acceptance was *positively* associated with attachment anxiety, contrary to previous research findings. Again, however, a complex pattern of correlations between the variables made regression weights difficult to interpret.

Overall, results of basic correlational and regression analyses were consistent with previous research and current hypotheses. However, specific unexpected results, particularly in relationships between dimensions of attachment anxiety and parenting, point to a need for more detailed analyses of these dimensions. Possible interpretations of these findings are presented in the Discussion section, following additional analyses.

Analyses of Simple Moderation

Following basic predictive analyses, we examined potential moderation relationships between attachment and parenting dimensions. Hypotheses of moderation assume that one variable affects relationships between other variables (Cohen, Cohen, West, & Aiken, 2003), with the moderator variable specifying “the conditions under which a given effect occurs, as well as the conditions under which the direction or strength of an effect vary” (Holmbeck, 1997, p.599). Previous research results supported hypotheses of moderation, but related only generally to the constructs of the current study; therefore, we adopted a broad theoretical stance. Our general moderation hypothesis—that the degree to which attachment predicts psychopathology *depends* on concurrent discipline and nurturance strategies of the parent—required investigation of a range of potential relationships between attachment and parenting variables. Specific proposed models are presented in the Introduction section.

Tests of moderation, regardless of the analytic strategy, investigate statistical *interactions* between variables. The following equation represents the basic regression model of interaction:

$$\hat{Y} = B_1X + B_2Z + B_3XZ + B_0 \quad (1)$$

The XZ product term represents the joint effect of the independent variable (X) and the moderator (Z) in the prediction of the dependent variable (Y). As Cohen et al. (2003, p. 257) state, “the partialled component of the cross-product [XZ] represents a unique combined effect of the two variables working together, above and beyond their separate effects.” Importantly, moderated relationships may exist even when direct relationships between predictors and dependent variables are absent. Consequently, we examined

interactions *between* parenting and attachment variables for potential predictivity, even when the variables individually failed to predict psychopathology.

For the current analyses, we employed a hierarchical multiple linear regression strategy. The following table presents our general analytic approach:

| General hierarchical regression model | | |
|---------------------------------------|--|---------------------|
| Step | Predictor | ΔR^2 (sig.) |
| 1 | Gender | |
| 2 | Age | |
| 3 | Attachment Variable ^c | |
| 4 | Parenting Variable ^c | |
| 5 | Attachment × Parenting interaction term ¹ | |

^cCentered variable; ¹cross-product of *centered* predictors

Table 14. Order of variable entry for evaluating moderation effects

First, it is important to note that the variables of attachment and parenting were *centered* (i.e. converted to deviation score through subtraction of variable means) prior to analyses of moderation. Centering is strongly recommended in analyses involving interactions of continuous variables in order to correct for potential multicollinearity effects (refer to Cohen et al., 2003 for a more thorough discussion of centering in tests of interaction).

Next, to allow estimation of the independent contribution of each variable (with the effects of preceding variables partialled out), we entered each variable in a separate step of the regression analysis. Demographic variables were entered in the first and second steps of the regression to control for potential effects of gender and age of participants. The independent variable of attachment (anxiety or avoidance) was entered in the third step, followed in the fourth step by the predicted moderator (parental acceptance, permissiveness, behavioral control, or psychological control). In the final step, the interaction term was entered. Thus, the change in R^2 in the last step of the regression represented the independent contribution of the interaction term in predicting

psychopathology. The following table summarizes results of regression analyses predicting both internalizing and externalizing symptoms.

| Interaction Term | Internalizing | | Externalizing | |
|-----------------------------------|---------------|-------------|---------------|-------------|
| | ΔR^2 | <i>sig.</i> | ΔR^2 | <i>sig.</i> |
| Avoidance × Acceptance | .004 | .35 | .000 | .77 |
| Avoidance × Permissiveness | .002 | .52 | .005 | .32 |
| Avoidance × Behavioral Control | .009 | .16 | .003 | .44 |
| Avoidance × Psychological Control | .006 | .25 | .005 | .35 |
| Anxiety × Acceptance | .001 | .58 | .005 | .33 |
| Anxiety × Permissiveness | .007 | .21 | .004 | .37 |
| Anxiety × Behavioral Control | .000 | .97 | .000 | .97 |
| Anxiety × Psychological Control | .006 | .22 | .002 | .56 |

Table 15. Values of change in R^2 following addition of interaction terms in the final step of regression analyses

Contrary to hypotheses, none of the interactions were significant; therefore, the current study does not provide evidence that the relationship between attachment and psychopathology depends on concurrent parenting strategies of the attachment figure. We cannot rule out such relationships, but simple moderation appears to account for only a small proportion of variance in symptom severity.

Of course, lack of statistical significance does not necessarily imply interaction effects do not exist. As McClelland and Judd point out (1993, p. 377, citing Morris et al., 1986), “despite frequently compelling theoretical reasons for expecting moderator effects and despite the widespread knowledge of how to identify such effects statistically, moderator effects are notoriously difficult to detect in field studies.” Reduced efficiency to test interactions in field versus experimental studies appears to rest on larger *residual variances* of interactions in field studies, a phenomenon that cannot be easily overcome (e.g., through increasing sample size or dividing observations into a smaller number of

categories, McClelland & Judd, 1993). In part, lack of significant findings may relate to measurement error in the predictor variables, which can significantly reduce power to detect interactions (Baron & Kenny, 1986). However, the possibility must also be considered that moderation models are less accurate than other models (i.e., direct effects or mediation models) in explaining relationships between attachment, parenting and psychopathology. Further interpretations of these results, in relationship to results of other analyses, are presented in the Discussion section.

Analyses of Complex Moderation

In the next stage of analysis, we investigated complex interactions between dimensions of parenting and attachment. Expanding on earlier analyses of simple moderation, we investigated hypotheses of *conditional moderation* that specified three-way interactions between each of the parenting variables and *both* attachment variables (anxiety and avoidance). More specifically, we hypothesized that the prediction of psychopathology by the interaction between parenting and *one* of the attachment dimensions (e.g., avoidance)—as proposed in our hypotheses of simple moderation—would vary depending on the level of the *second* attachment dimension (e.g., anxiety). Hypothesized models of complex moderation are presented in the Introduction section.

The following equation presents the general model for a three-way interaction, a simple extension of the basic regression model (Cohen et al., 2003):

$$\hat{Y} = B_1X + B_2Z + B_3W + B_4XZ + B_5XW + B_6ZW + B_7XZW + B_0 \quad (2)$$

This equation may be rewritten as

$$\hat{Y} = \hat{a}X + \hat{b} \quad (3)$$

where

$$\hat{a} = (B_1 + B_4Z + B_5W + B_7ZW) \quad (4)$$

and

$$\hat{b} = (B_0 + B_2Z + B_3W + B_6ZW). \quad (5)$$

Consequently, for specific values of the moderator variables, Z and W , the regression of Y on X may be viewed as linear, with “simple slope” \hat{a} and Y -intercept \hat{b} given by equations (4) and (5).

Although a variety of analytic strategies exist for testing conditional moderation, we employed the multiple linear regression system described above, maintaining an analytic framework consistent with previous analyses. The following table summarizes our general analytic procedure.

| Hierarchical regression model for 3-way interactions | | |
|--|---|---------------------|
| Step | Predictor | ΔR^2 (sig.) |
| 1 | Gender, Age | |
| 2 | Attachment and Parenting Variables ^c | |
| 3 | 2-way Interactions ¹ | |
| 4 | 3-way Interaction ¹ | |

^cCentered variables; ¹cross-product of *centered* predictors

Table 16. Order of variable entry for evaluating complex moderation effects

Gender and age were entered in the first step as covariates, followed by the predictor variables in the second step, two-way interactions in the third step, and the three-way interaction in the final step. As in previous analyses of simple moderation, the change in

R^2 in the last step of the regression represents the unique contribution of the complex interaction term. The following table summarizes results of regression analyses for each of the eight models tested:

| Interaction Term | Internalizing | | Externalizing | |
|---|---------------|------|---------------|------|
| | ΔR^2 | sig. | ΔR^2 | sig. |
| Acceptance \times Anxiety \times Avoidance | .009 | .14 | .022* | .04 |
| Permissiveness \times Anxiety \times Avoidance | .008 | .16 | .000 | .99 |
| Behavioral Control \times Anxiety \times Avoidance | .000 | .96 | .003 | .47 |
| Psychological Control \times Anxiety \times Avoidance | .000 | .91 | .013 | .11 |

Table 17. Values of change in R^2 following addition of interaction terms in the final step of regression analyses

As seen in the above table of results, a significant three-way interaction was observed between anxiety, avoidance, and parental acceptance in the prediction of externalizing symptoms. Estimated coefficients and associated significance test results of this model are presented in the table below:

| Regression Model Predicting Externalizing Symptoms | | | | |
|--|---|--------------|-----------------|---------|
| $R^2 = .14, F(9,174) = 3.10^{**}$ | | | | |
| Step | Predictor | ΔR^2 | $\hat{\beta}^a$ | s_r^2 |
| 1 | Gender | .019 | .094 | .01 |
| | Age | | .020 | .00 |
| 2 | Avoidance ^c | .068** | .025 | .00 |
| | Anxiety ^c | | .102 | .01 |
| | Acceptance ^c | | -.129 | .01 |
| 3 | Avoidance \times Acceptance ¹ | .029 | -.098 | .01 |
| | Anxiety \times Acceptance ¹ | | .009 | .00 |
| | Avoidance \times Anxiety ¹ | | -.224* | .02 |
| 4 | Avoidance \times Anxiety \times Acceptance ¹ | .022* | -.217* | .02 |

^aStandardized Beta on last step; * $p < .05$, ** $p < .01$; ^cCentered predictor; ¹Cross-product of centered predictors

Table 18. Results of multiple linear regression analysis of the three-way interaction of avoidance, anxiety, and acceptance in the prediction of externalizing symptoms.

Given significance of the three-way interaction, we pursued further analysis of the model. Simple slopes of the regression were computed at conditional values of the moderating variables, and resulting lines plotted and compared. Preacher, Curran, and Bauer's (2004) online calculators for testing three-way interactions were used to generate point estimates of simple slopes and associated plot diagrams. We chose conditional values one standard deviation above and below the mean of the centered variables. The following table summarizes the estimates for the simple slopes:

| Estimated Simple Slopes at Conditional Values of Moderating Variables | | | | |
|---|-------|------|---------|-----------|
| Conditional Values | Slope | s.e. | t | Sig (two) |
| High Anxiety, High Avoidance | -.461 | .185 | -2.499* | .013 |
| High Anxiety, Low Avoidance | .158 | .286 | .555 | .580 |
| Low Anxiety, High Avoidance | -.088 | .178 | .496 | .621 |
| Low Anxiety, Low Avoidance | -.257 | .229 | -1.122 | .262 |

Table 19. Estimated simple slopes of regression of externalizing symptoms on parental acceptance at conditional values of anxiety and avoidance; "High" values are 1 SD above the means; "Low" values are 1 SD below the mean.

As seen in the table above, the only significant slope was obtained at high values of anxiety and avoidance. Moreover, this slope was negative, suggesting that when anxiety and avoidance are both high, parental acceptance predicts lower externalizing problems. Regression lines corresponding to the estimated simple slopes are shown in the diagrams below, with points calculated at values one standard deviation above and below the mean of acceptance.

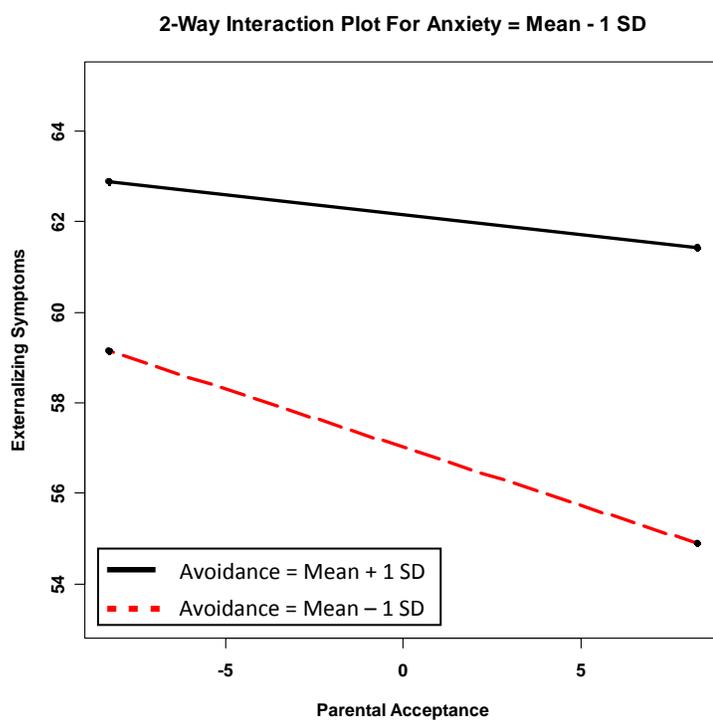
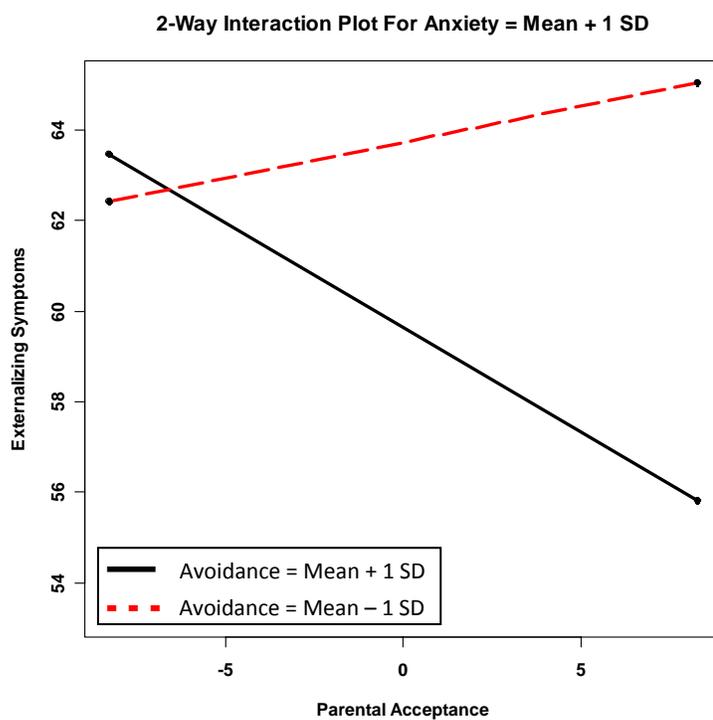


Figure 13. Graphical representations of simple slopes predicting externalizing symptoms from parental acceptance at conditional values of anxiety and avoidance. The first diagram shows regression lines at high levels of Anxiety, and the second at low levels of Anxiety.

The results suggest that when parental acceptance is low, attachment insecurity is not predictive of differences in externalizing symptoms. However, for youth with an attachment style characterized by high avoidance *and* anxiety (consistent with a Fearful attachment style), parental acceptance is associated with significantly lower externalizing symptoms. Although the overall variance explained by this three-way interaction is small, these results point to potentially important complex interactions between parental acceptance and attachment in the prediction of psychopathology.

Analyses of Simple Mediation

The current literature presents a variety of alternative strategies for testing simple mediation (Baron & Kenny, 1986; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004). To summarize competing approaches, we present the following model, adapted from Preacher and Hayes (2004):

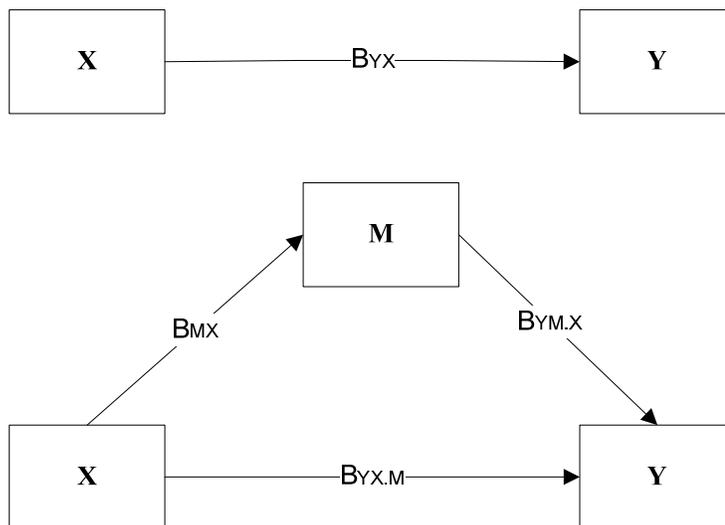


Figure 14. General mediation model

In the first diagram, path B_{YX} represents the *total* effect of the independent variable (X) on the dependent variable (Y). In the second diagram, path B_{MX} represents the direct effect of the independent variable (X) on the mediator (M); path $B_{YM.X}$ represents the direct effect of the mediator (M) on the dependent variable (Y) *controlling* for the independent variable (X); and path $B_{YX.M}$ represents the direct effect of X on Y after the addition of the mediator to the model. The *indirect* or *mediated* effect of X on Y is equal to the product $(B_{MX})(B_{YM.X})$, also equivalent to $(B_{YX} - B_{YX.M})$ in most cases (Preacher & Hayes, 2004).

Baron and Kenny's (1986) multiple regression approach is the most widely used for testing simple mediation. In brief, their strategy requires (1) a significant *total* effect of the independent variable on the dependent variable (path B_{YX} above), (2) a significant direct effect of the independent variable on the mediator (path B_{MX} above), (3) a significant direct effect of the mediator on the dependent variable after controlling for the effects of the independent variable (path $B_{YM.X}$), and (4) a *nonsignificant* direct effect of the independent variable on the dependent variable controlling for the mediator (path $B_{YX.M}$). "Full mediation" requires that all four conditions are met. "Partial mediation" is slightly less restrictive, allowing $B_{YX.M}$ to be significant as long as $|B_{YX.M}| < |B_{YX}|$ (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Notice that the indirect or mediated effect is not tested directly under this approach.

Although Baron and Kenny's method is widely cited, there are several difficulties inherent to their analytical strategy. First, the ultimate measure of mediation (showing that the effect of the independent variable on the dependent variable becomes insignificant when the mediator is added to the equation) is an *accept-support* test.

Therefore, low power (to detect a significant effect of the independent variable on the dependent variable once the mediator is added) actually increases the risk of incorrectly concluding that mediation has occurred. As Preacher and Hayes further explain:

It is possible to observe a change from a significant $X \rightarrow Y$ path to a nonsignificant $X \rightarrow Y$ path upon the addition of a mediator to the model with a very small change in the absolute size of the coefficient [producing Type I error] . . . Conversely, it is possible to observe a large change in the $X \rightarrow Y$ path upon addition of the mediator to the model without observing an appreciable drop in statistical significance [producing Type II error]. (Preacher & Hayes, 2004, p. 719)

In addition, because Baron and Kenny's approach requires multiple hypothesis tests, risk of Type II error may be further inflated. This relates to MacKinnon et al.'s (2002) finding that Baron and Kenny's approach is subject to low statistical power (further elaborated on by Preacher & Hayes, 2004).

Subsequent authors, noting such difficulties in Baron and Kenny's approach, argue for alternative analytic strategies (e.g., Holmbeck, 2002). For example, Preacher and Hayes (2004) recommend a simplified test of mediation with only *two* steps, requiring that (1) the total effect, is significantly different from zero (i.e., the effect to be mediated must *exist*) and (2) the indirect effect is both significantly different from zero and directionally consistent with hypotheses. Under this approach, the question arises how best to test the indirect effect. Most authors recommend the *Sobel test* (Sobel, 1982), as it provides improved power for detecting mediation and is easily calculated (MacKinnon et al., 2002; Preacher & Hayes, 2004). However, the precision and validity of the test is compromised when sample size is small (in part because the assumption that the sampling distribution of the indirect effect is normal under the null hypothesis does not hold true when sample size is small) (Preacher & Hayes, 2004). To correct for this problem, Preacher and Hayes (2004) recommend the use of resampling procedures (e.g.,

bootstrapping) to construct an estimated sampling distribution of the indirect effect. The resulting distribution allows derivation of a confidence interval for the product $(B_{MX})(B_{YM,X})$. For example, if the 95% confidence interval on the bootstrapped sampling distribution does not contain the value zero, then we can be reasonably confident that the indirect/mediated effect is unlikely to be zero. The procedure does not assume normality and does not rely on large sample size (Preacher & Hayes, 2004).

As the above discussion illustrates, there is considerable debate in the literature regarding the best approach for testing mediation. For this reason, the current study report results for *each* of the major approaches discussed above. Analyses are conducted using SPSS macros provided by Preacher and Hayes (2004) which provide (1) unstandardized coefficients for Baron and Kenny's regression-based approach, (2) point estimates and normal distribution confidence intervals for the Sobel test, and (3) confidence intervals for the bootstrapped sampling distribution of the indirect effect.

Mediation of Parental Acceptance

The first model predicted that attachment avoidance would mediate the relationship between parental acceptance and psychopathology. The results of regression analyses relevant to Baron and Kenny's approach to testing simple mediation are presented in the table below. For greater specificity, effects on internalizing and externalizing symptoms are evaluated separately.

| Direct and Total Effects | | | | |
|--------------------------|-------------|------|---------|-----------|
| Internalizing Symptoms | | | | |
| | Coefficient | s.e. | t | Sig (two) |
| B_{YX} | -.411 | .113 | -3.627 | .000 |
| B_{MX} | -1.732 | .153 | -11.288 | .000 |
| $B_{YM.X}$ | .137 | .054 | 2.545 | .012 |
| $B_{YX.M}$ | -.175 | .145 | -1.201 | .231 |
| Externalizing Symptoms | | | | |
| | Coefficient | s.e. | t | Sig (two) |
| B_{YX} | -.224 | .091 | -2.469 | .014 |
| B_{MX} | -1.732 | .153 | -11.288 | .000 |
| $B_{YM.X}$ | .046 | .043 | 1.066 | .288 |
| $B_{YX.M}$ | -.143 | .118 | -1.217 | .225 |

Table 20. Direct and total effects for examining the model that attachment avoidance (M) mediates the relationship between parental acceptance (X) and internalizing and externalizing symptoms (Y).

As seen in the table above, regression coefficients for total effects of parental acceptance were significant for both internalizing symptoms ($B_{YX} = -.41$, $p < .001$) and externalizing symptoms ($B_{YX} = -.22$, $p < .05$). Thus, consistent with hypotheses, youth reporting higher parental acceptance were less likely to report psychopathology. In the next step, the coefficient for the direct effect of parenting on attachment was also significant ($B_{MX} = -1.73$, $p < .0001$). As predicted, youth reporting high parental acceptance were less likely to report attachment avoidance. (Conversely, youth reporting greater parental rejection were *more* likely to report attachment avoidance). In the third step, the coefficient for the direct effect of the attachment avoidance on psychopathology, controlling for parenting style was significant *only* for internalizing symptoms ($B_{YM.X} = .14$, $p < .05$). Therefore, even when the effect of parental acceptance/rejection was accounted for, attachment avoidance predicted higher internalizing symptoms.

Finally, in the last step, the coefficients for the direct effect of parenting on psychopathology, *controlling* for the effect of attachment avoidance were both non-significant ($B_{YX.M(\text{internalizing})} = -.17, p = .231$; $B_{YX.M(\text{externalizing})} = -.14, p = .225$). Thus, when the effect of attachment avoidance was included in the model, parental acceptance no longer predicted psychopathology. Together, these results suggest that attachment avoidance mediates the relationship between parental acceptance and *internalizing* symptoms. A mediational relationship for predicting externalizing symptoms was not supported.

Next, the Sobel test of significance of *indirect/mediated* effects on internalizing and externalizing symptoms was evaluated. As seen in the following table, the point estimate of the indirect effect (“Sobel value”) was significant for internalizing symptoms ($z_{Sobel} = -2.47, p < .05$) but not for externalizing symptoms ($z_{Sobel} = -1.06, p = .291$).

| Indirect Effects | | | | | |
|---------------------------|------|-----------|-----------|--------|----------|
| Internalizing Symptoms | | | | | |
| Sobel value | s.e. | LL 95% CI | UL 95% CI | z | Sig(two) |
| -.237 | .096 | -.424 | -.049 | -2.474 | .013 |
| Bootstrapped Distribution | | | | | |
| Mean | s.e. | LL 95% CI | UL 95% CI | | |
| -.234 | .095 | -.429 | -.054 | | |
| Externalizing Symptoms | | | | | |
| Sobel value | s.e. | LL 95% CI | UL 95% CI | z | Sig(two) |
| -.080 | .076 | -.229 | .069 | -1.057 | .291 |
| Bootstrapped Distribution | | | | | |
| Mean | s.e. | LL 95% CI | UL 95% CI | | |
| -.078 | .070 | -.210 | .067 | | |

Table 21. Results of the Sobel test and bootstrapping procedure for estimating the indirect effect of parental acceptance

In addition, the 95% confidence interval on the normal distribution for the indirect effect did not contain zero; whereas, the confidence interval for externalizing symptoms did contain zero. These results again suggest a mediated relationship for internalizing symptoms but not externalizing symptoms, consistent with regression results. Finally, the bootstrapping procedure, advocated by Preacher and Hayes (2004), was conducted for both internalizing and externalizing symptoms. Results (summarized in the table above) were consistent with findings of regression analyses and the Sobel test. The 95% CI (based on 10000 iterations) did not contain zero for internalizing symptoms, but did contain zero for externalizing symptoms. This supports mediation in the prediction of internalizing symptoms but not externalizing symptoms.

In conclusion, all three approaches for testing simple mediation produced results consistent with our hypothesis that attachment avoidance mediates the relationship between perceived parental acceptance and internalizing symptoms. In contrast, although parental acceptance/rejection predicted both attachment avoidance and externalizing symptoms, there was no evidence that avoidance mediated the prediction of externalizing symptoms.

Mediation of Parental Psychological Control

The second model predicted that attachment anxiety would mediate the relationship between parental psychological control and psychopathology. Results of multiple regression analyses, the Sobel test, and the bootstrapping procedure are presented in the following tables.

| Direct and Total Effects | | | | |
|---------------------------------|-------------|------|-------|-----------|
| Internalizing Symptoms | | | | |
| | Coefficient | s.e. | t | Sig (two) |
| B_{YX} | .286 | .085 | 3.370 | .001 |
| B_{MX} | .181 | .144 | 1.258 | .210 |
| B_{YM.X} | .233 | .040 | 5.810 | .000 |
| B_{YX.M} | .244 | .078 | 3.106 | .002 |
| Externalizing Symptoms | | | | |
| | Coefficient | s.e. | t | Sig (two) |
| B_{YX} | .191 | .067 | 2.850 | .005 |
| B_{MX} | .181 | .144 | 1.258 | .210 |
| B_{YM.X} | .084 | .034 | 2.464 | .015 |
| B_{YX.M} | .176 | .066 | 2.649 | .009 |

Table 22. Direct and total effects for examining the model that attachment anxiety (M) mediates the relationship between parental psychological control (X) and internalizing and externalizing symptoms (Y).

| Indirect Effects | | | | | |
|----------------------------------|------|-----------|-----------|-------|----------|
| Internalizing Symptoms | | | | | |
| Sobel value | s.e. | LL 95% CI | UL 95% CI | z | Sig(two) |
| .042 | .035 | -.026 | .110 | 1.213 | .225 |
| Bootstrapped Distribution | | | | | |
| Mean | s.e. | LL 95% CI | UL 95% CI | | |
| .044 | .038 | -.028 | .124 | | |
| Externalizing Symptoms | | | | | |
| Sobel value | s.e. | LL 95% CI | UL 95% CI | z | Sig(two) |
| .015 | .014 | -.013 | .043 | 1.054 | .292 |
| Bootstrapped Distribution | | | | | |
| Mean | s.e. | LL 95% CI | UL 95% CI | | |
| .016 | .016 | -.010 | .052 | | |

Table 23. Results of the Sobel test and bootstrapping procedure for estimating the indirect effect of parental psychological control, mediated by attachment anxiety

In the first table, regression coefficients of total and direct effects revealed that parental psychological control significantly predicted both internalizing symptoms ($B_{YX} = .29, p < .001$) and externalizing symptoms ($B_{YX} = .19, p < .01$). In addition, controlling for the effects of psychological control, attachment anxiety also significantly predicted internalizing ($B_{YMX} = .23, p < .0001$) and externalizing symptoms ($B_{YMX} = .08, p < .05$). However, in the second step of the multiple regression analysis, parental psychological control did not predict attachment anxiety, contrary to original hypotheses ($B_{MX} = .18, p = .210$). The indirect effect was also nonsignificant for both internalizing symptoms ($z_{Sobel} = 1.21, p = .225$) and externalizing symptoms ($z_{Sobel} = 1.05, p = .292$). Across the three analyses, results did not support a meditated relationship.

Although results contradicted the expected relationship between parental psychological control and attachment anxiety, preliminary analyses revealed that psychological control did predict attachment *avoidance*. Moreover, it was originally hypothesized that attachment avoidance might *interact* with attachment anxiety to mediate the effect of psychological control on psychopathology (moderated mediation). For these reasons, an exploratory analysis was conducted to evaluate whether or not avoidance, alone, would mediate the relationship between psychological control and psychopathology. Results were significant for internalizing symptoms:

| Direct and Total Effects | | | | | |
|---------------------------|-------------|-----------|-----------|-----------|----------|
| | Coefficient | s.e. | t | Sig (two) | |
| B_{YX} | .286 | .085 | 3.370 | .001 | |
| B_{MX} | .675 | .140 | 4.820 | .000 | |
| B_{YM.X} | .147 | .043 | 3.382 | .001 | |
| B_{YX.M} | .187 | .088 | 2.132 | .034 | |
| Indirect Effects | | | | | |
| Sobel value | s.e. | LL 95% CI | UL 95% CI | z | Sig(two) |
| .099 | .036 | .028 | .170 | 2.730 | .006 |
| Bootstrapped Distribution | | | | | |
| Mean | s.e. | LL 95% CI | UL 95% CI | | |
| .099 | .037 | .036 | .179 | | |

Table 24. Results of regression analyses, Sobel test, and bootstrapping procedure for examining the model that attachment avoidance (M) mediates the relationship between parental psychological control (X) and internalizing symptoms (Y).

The first three steps of the regression analysis supported mediation. Psychological control predicted both internalizing symptoms ($B_{YX} = .29, p < .001$) and attachment avoidance ($B_{MX} = .67, p < .0001$); moreover, after controlling for psychological control, avoidance significantly predicted internalizing symptoms ($B_{YM.X} = .15, p < .001$). Also consistent with mediation, results of the Sobel test and bootstrapping procedure both revealed a non-zero indirect effect ($z_{Sobel} = 2.73, p < .01$; bootstrapped 95% CI = .036 to .179). However, although the direct effect of psychological control on internalizing symptoms was reduced when attachment avoidance was included in the model, the regression coefficient remained significant ($B_{YX.M} = .19, p < .05$). This pattern is consistent with Baron and Kenny's definition of *partial* mediation.

In conclusion, one of two original hypotheses of mediation was supported.

Results suggest that attachment avoidance mediates the effect of parental

acceptance/rejection on internalizing symptoms. However, contrary to predictions, attachment anxiety did not appear to mediate the effects of psychological control. Instead, unexpected partial mediation of psychological control by attachment avoidance was observed. Interpretations and potential implications of these results are considered more fully in the Discussion section.

Analyses of Moderated Mediation

Following analyses of simple mediation, we examined hypotheses of *moderated* mediation. Of primary interest at this stage of analysis was whether or not predicted simple mediation relationships, investigated above, would vary as a function of concurrent moderating variables. Our general theoretical models are presented in the Introduction section; however, we expand on these models below, providing more precise path diagrams specifying the exact mechanism of hypothesized moderation.

Current quantitative theory defines a variety of interactions as relationships of “moderated mediation,” also referred to as *conditional indirect effects* (Preacher, Rucker, & Hayes, 2007). For the purposes of this study, we focus on the two general models most parsimonious and consistent with current research. The first of these models, referred to as *first stage moderation* (by Edwards & Lambert, 2007), predicts that the hypothesized moderator variable affects mediation relationship because it impacts the relationship between the independent variable and the mediator. A number of authors (e.g., Edwards & Lambert, 2007; Preacher et al., 2007) use simplified conceptual diagrams to depict moderated mediation relationships. We utilize this type of graphical representation for clarity, but note that these types of diagrams are not formal path diagrams.

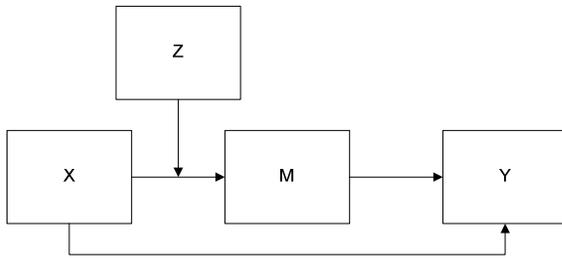


Figure 15. Simple representation of first stage moderated mediation.

The above diagram depicts first stage moderated mediation in simplified form. The effect of the independent variable (X) on the dependent variable (Y) is mediated by an intervening variable (M). This mediation relationship is moderated by a fourth variable (Z) which affects the relationship between the independent variable (X) and the mediator (M). This $X \rightarrow M$ path is the first of two components constituting the indirect effect (described in more detail in analyses of simple mediation above).

The second model, referred to as *second stage moderation*, retains the same basic mediation hypothesis as the first stage moderation model. However, it predicts, instead, that the moderator affects the relationship between the mediator (M) and the dependent variable (Y). The $M \rightarrow Y$ path is the *second* component of the indirect effect.

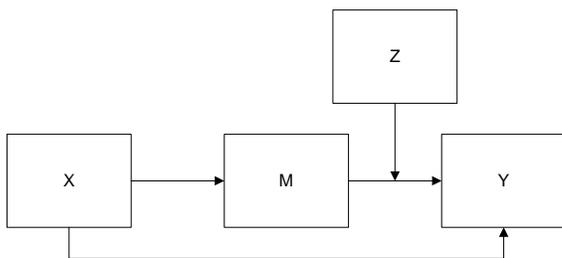
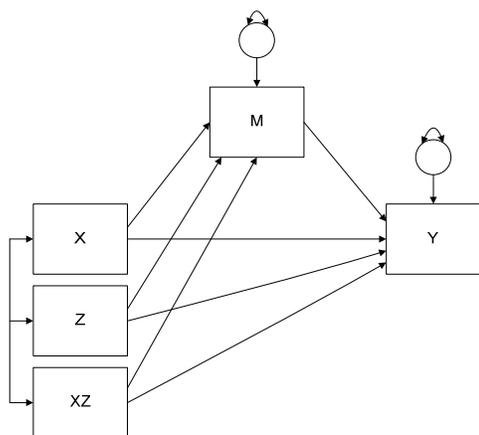


Figure 16. Simple representation of second stage moderated mediation.

The following path analytic diagrams, adapted from Preacher et al. (2007), are more formally correct, and allow more detailed comparison of the two general models:

First Stage Moderated Mediation:



Second Stage Moderated Mediation:

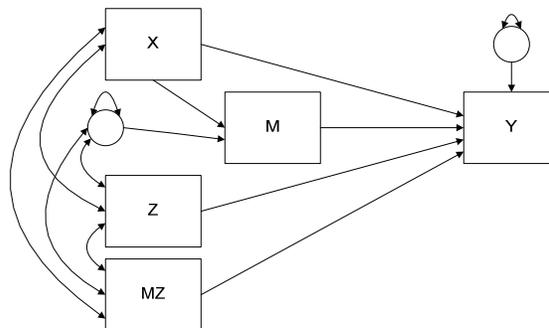


Figure 17. Path diagrams of first stage moderation and second stage moderation models of conditional indirect effects. X is the independent variable, M the mediating variable, Y the dependent variable, and Z the hypothesized moderating variable.

Estimates of model coefficients in the current study were obtained using Preacher et al.'s (2007) multiple regression approach and accompanying SPSS macros for testing conditional indirect effects.

Moderated Mediation of Parental Acceptance

Our first hypothesis predicted that mediation of parental acceptance by attachment avoidance, in the prediction of psychopathology, would be moderated by attachment anxiety. Previous research and theory supported both a first stage model (with anxiety moderating the relationship between acceptance and avoidance) and a second stage model (with anxiety moderating the relationship between avoidance and psychopathology). The following simple conceptual diagrams summarize these two models.

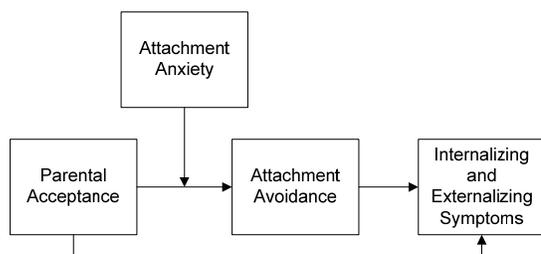
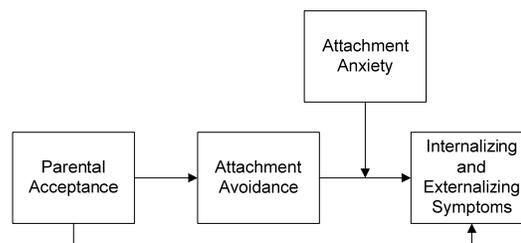
First Stage Moderated Mediation:**Second Stage Moderated Mediation:**

Figure 18. Simple representation of first and second stage moderated mediation models for parental acceptance.

As in analyses of simple mediation, internalizing and externalizing symptoms were tested separately. The following table summarizes path coefficient estimates and significance test results for the interaction term in each of the four models tested:

| Conditional Indirect Effects | | | | | |
|------------------------------|------------------------|-------------------------|-------|-------|----------|
| Model | Dependent Variable | Interaction Coefficient | s.e. | t | Sig(two) |
| First Stage | Internalizing Symptoms | .0017 | .0045 | .37 | .71 |
| | Externalizing Symptoms | .0037 | .0040 | .94 | .35 |
| Second Stage | Internalizing Symptoms | -.0018 | .0018 | -1.04 | .30 |
| | Externalizing Symptoms | -.0032* | .0015 | -2.07 | .04 |

Table 25. Interaction coefficients of regression analyses for the four proposed models of moderated mediation of parental acceptance.

Results revealed a significant interaction between anxiety and avoidance in the prediction of externalizing symptoms, supporting the hypothesis of second stage moderation by anxiety. The following diagram summarizes estimated coefficients of this model:

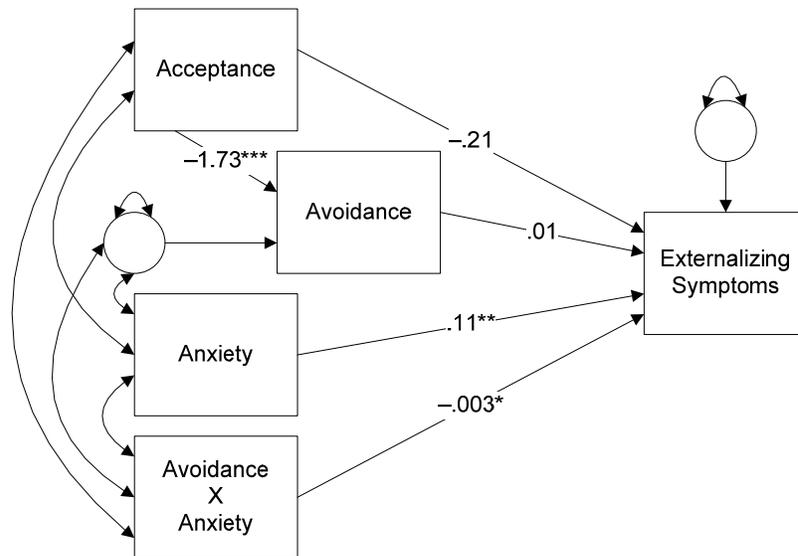


Figure 19. Path model with estimated regression coefficients for second stage moderated mediation of parental acceptance in the prediction of externalizing symptoms.

As shown above, a strong direct relationship was observed between acceptance and avoidance ($\beta = -1.73$, $p < .001$); however, the direct effect of avoidance on externalizing symptoms was small and non-significant ($\beta = .01$, $p = .81$). Nonetheless, the interaction coefficient *was* significant, suggesting that the indirect effect varied significantly depending on the level of the moderator variable. More specifically, in terms of second stage moderation, the relationship between avoidance and externalizing symptoms (in the context of mediation) varied significantly as a function of attachment anxiety.

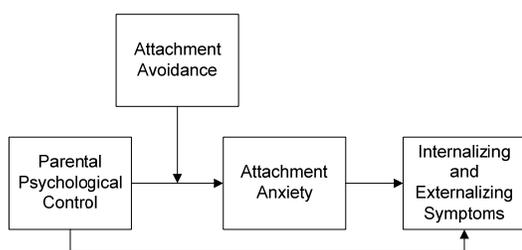
To further explore this relationship, we evaluated the conditional indirect effect at specific values of the moderating variable. At lower levels of anxiety (one standard deviation below the mean), the conditional indirect effect was negative ($-.14$, $z = -1.59$, $p = .11$), whereas at higher levels of anxiety (one standard deviation above the mean), the conditional indirect effect was positive ($.10$, $z = .97$, $p = .33$). Given that the relationship between acceptance and avoidance was strongly negative, it appears that

avoidance, when mediating parental acceptance, is *less* likely to predict externalizing symptoms when anxiety is high and *more* likely to predict externalizing symptoms when anxiety is low. Despite support for a hypothesis of moderated mediation, the interaction effects appear of small magnitude; therefore, a degree of caution is warranted in the interpretation and generalization of these findings.

Moderated Mediation of Psychological Control

Next, we tested the hypothesis that the indirect effect of psychological control on psychopathology (mediated by attachment anxiety) would be moderated by attachment avoidance. Again, both first stage moderation (affecting the relationship between psychological control and anxiety) and second stage moderation (affecting the relationship between anxiety and psychopathology) were evaluated. Internalizing and externalizing symptoms were tested independently. The following diagrams summarize the general models:

First Stage Moderated Mediation:



Second Stage Moderated Mediation:

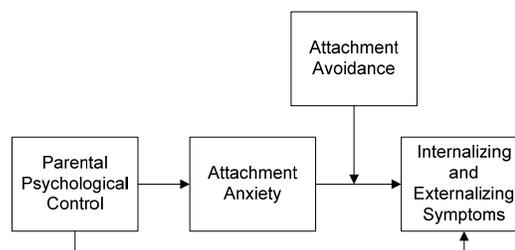


Figure 20. Simple representation of first and second stage moderated mediation models for parental psychological control.

Of the four models tested, two were significant. The following table summarizes path coefficients and significance test results for the interaction term of the conditional indirect effect for each of the four proposed models:

| Conditional Indirect Effects | | | | | |
|------------------------------|------------------------|-------------------------|-------|-------|----------|
| Model | Dependent Variable | Interaction Coefficient | s.e. | t | Sig(two) |
| First Stage | Internalizing Symptoms | .0073* | .0034 | 2.18 | .03 |
| | Externalizing Symptoms | .0039 | .0029 | 1.33 | .17 |
| Second Stage | Internalizing Symptoms | -.0016 | .0018 | -.91 | .36 |
| | Externalizing Symptoms | -.0030* | .0015 | -1.98 | .05 |

Table 26. Interaction coefficients of regression analyses for the four proposed models of moderated mediation of parental psychological control.

As shown above, results revealed significant first stage moderation in the prediction of *internalizing* symptoms and second stage moderation in the prediction of *externalizing* symptoms. The following path diagrams summarize the estimated model coefficients for each of these models:

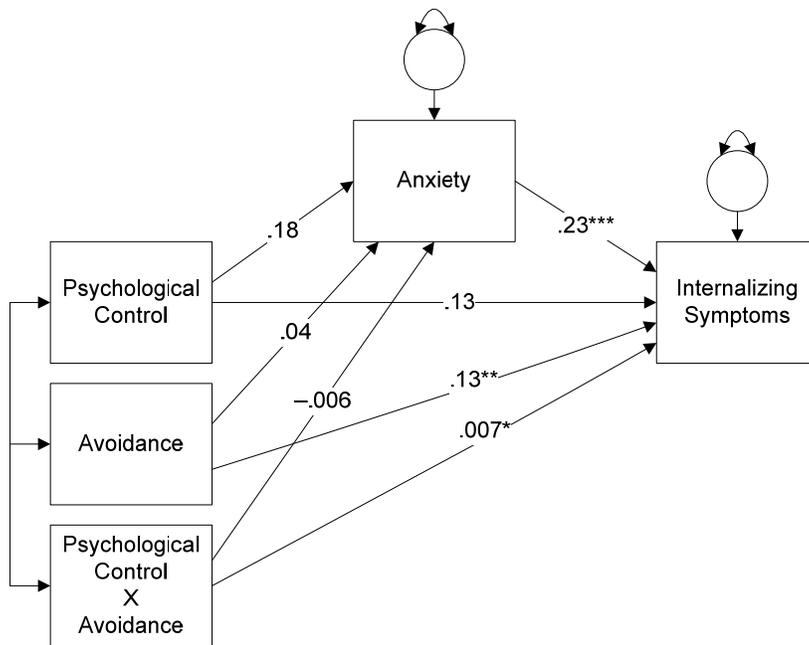


Figure 21. Path model with estimated regression coefficients for first stage moderated mediation of psychological control in the prediction of internalizing symptoms.

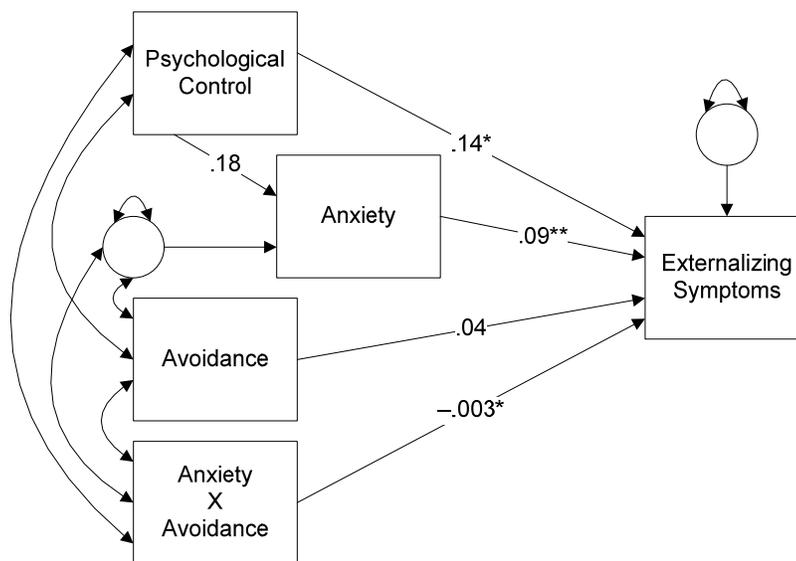


Figure 22. Path model with estimated regression coefficients for second stage moderated mediation of psychological control in the prediction of externalizing symptoms.

As shown above, attachment anxiety significantly predicted psychopathology in both models; however, psychological control did not significantly predict attachment anxiety, reducing the potential magnitude of each of the indirect effects. To further explore these models, we evaluated conditional indirect effects at specific values of the moderator. In the first stage model, psychological control predicted greater attachment anxiety (and, indirectly, greater internalizing symptoms) when avoidance was low (indirect effect at -1 SD = .08, $z = 1.37$, $p = .17$). In contrast, psychological control was less predictive of anxiety when avoidance was high (indirect effect at $+1$ SD = .009, $z = .19$, $p = .85$). In the second stage model, attachment anxiety was related to greater externalizing symptoms when avoidance was low (indirect effect at -1 SD = .03, $z = 1.12$, $p = .26$), but as avoidance increased, anxiety was less likely to predict externalizing symptoms (indirect effect at $+1$ SD = .004, $z = .37$, $p = .71$). Therefore, in both models, lower avoidance in the context of psychological control was related to *greater* psychopathology. However, despite statistically significant moderation effects and statistically significant prediction of both internalizing and externalizing symptoms by attachment anxiety, the indirect effects were not significant at a reasonable range of conditional values of avoidance. Therefore, as with moderated mediation of parental acceptance, the observed moderating effects are interpreted with caution.

Gender as a Moderator

As a final step in analyses of moderated mediation, we explored possible moderating effects of gender. As reported above, current results supported hypotheses of simple mediation of both parental acceptance and psychological control. However, before

generalizing these results, it was important to explore possible gender differences in these relationships. Thus, gender was added as a moderator to each of the proposed simple mediation models. Both first and second stage models were tested:

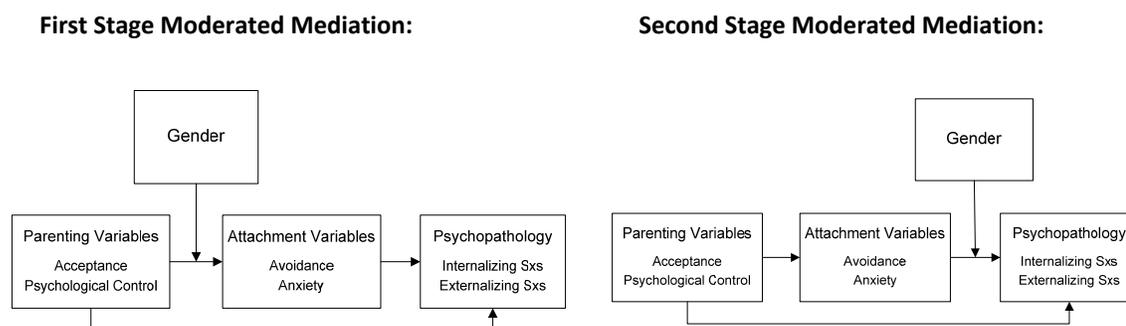


Figure 23. Simple representation of first and second stage moderated mediation of parenting.

Results of did not show significant moderation by gender. The following tables summarize the interaction terms for the tested models.

| Conditional Indirect Effects | | | | | |
|---|---------------------------|--------------------------------|-------------|----------|-----------------|
| Acceptance Mediated by Avoidance | | | | | |
| Model | Dependent Variable | Interaction Coefficient | s.e. | t | Sig(two) |
| First Stage | Internalizing Symptoms | -.10 | .22 | -.48 | .63 |
| | Externalizing Symptoms | .33 | .18 | 1.79 | .07 |
| Second Stage | Internalizing Symptoms | .10 | .10 | 1.26 | .21 |
| | Externalizing Symptoms | -.06 | .07 | -.94 | .35 |

Table 27. Interaction coefficients of regression analyses of conditional indirect effects moderated by gender. IV=Acceptance; Mediator=Avoidance

| Conditional Indirect Effects Psychological Control Mediated by Anxiety | | | | | |
|---|---------------------------|--------------------------------|-------------|----------|-----------------|
| Model | Dependent Variable | Interaction Coefficient | s.e. | t | Sig(two) |
| First Stage | Internalizing Symptoms | .06 | .16 | .37 | .71 |
| | Externalizing Symptoms | -.05 | .13 | -.37 | .71 |
| Second Stage | Internalizing Symptoms | -.03 | .08 | -.34 | .74 |
| | Externalizing Symptoms | .06 | .07 | .90 | .37 |

Table 28. Interaction coefficients of regression analyses of conditional indirect effects moderated by gender. IV=Psychological Control; Mediator=Anxiety

| Conditional Indirect Effects Psychological Control Mediated by Avoidance | | | | | |
|---|---------------------------|--------------------------------|-------------|----------|-----------------|
| Model | Dependent Variable | Interaction Coefficient | s.e. | t | Sig(two) |
| First Stage | Internalizing Symptoms | -.09 | .16 | -.56 | .57 |
| | Externalizing Symptoms | -.10 | .13 | -.76 | .45 |
| Second Stage | Internalizing Symptoms | .11 | .08 | 1.38 | .17 |
| | Externalizing Symptoms | -.06 | .07 | -.83 | .41 |

Table 29. Interaction coefficients of regression analyses of conditional indirect effects moderated by gender. IV=Psychological Control; Mediator=Avoidance

None of the interactions were significant. Therefore, results offer no convincing evidence that simple mediation relationships differ for girls and boys.

DISCUSSION

The goal of the current study was to investigate relationships between parenting and attachment in the prediction of adolescent psychopathology. We conducted a series of analyses, beginning with tests of basic predictive relationships, followed by investigations of simple and complex moderation, and ending with analyses of simple mediation and moderated mediation. In the first stages of analysis, evaluations of both the structural validity of the key measures and basic predictive relationships between the main variables were largely consistent with predictions. Only two hypotheses were contradicted: (1) dimensions of behavioral control did not significantly predict externalizing symptoms and (2) psychological control did not consistently predict attachment anxiety. Possible explanations of these findings, and implications for further research, are considered below. In the next stage of analysis, none of our hypotheses of simple moderation were supported; however, marginal support was found for one model of conditional moderation. In the final stage of analysis, results were consistent with two of three general hypotheses of simple mediation. Findings suggest that attachment avoidance mediates parental acceptance, and partially mediates psychological control, in the prediction of internalizing symptoms. In addition, although the magnitude of the interaction effects was small, results provided marginal support for three of our proposed moderated mediation models. In the following sections, we consider in detail results at each stage of analysis. Strengths and limitations of the current study, potential clinical implications of our findings, and suggested areas for further research are discussed.

Basic Predictive Relationships

In the first stage of analysis, results of both linear regression and correlational analyses of basic predictive relationships between the main variables agreed with the majority of our predictions. First, investigations of the relationship between attachment and psychopathology revealed that dimensions of attachment anxiety and avoidance were each associated with greater self-reported internalizing and externalizing symptoms. These results are consistent with previous research establishing attachment insecurity as a significant and reliable predictor of psychopathology (Carlson & Sroufe, 1995; Doyle & Moretti, 2000; Greenberg, 1999). In particular, our analyses revealed attachment anxiety to be an important predictor of internalizing symptoms, consistent with prior research linking anxious attachment to a range of internalizing behaviors such as social withdrawal, anxiety, and depressive symptoms (Allen, Moore, Kuperminc, & Bell, 1998; Rosenstein & Horowitz, 1996; Moretti, Lessard, Scarfe, & Holland, 1999). Next, investigations of the relationship between parenting and psychopathology demonstrated maternal acceptance to be associated with *lower* internalizing and externalizing symptoms, and psychological control with *higher* internalizing and externalizing symptoms. Again, these results are consistent with previous research linking parental warmth/acceptance to better adjustment among adolescents (Khaleque & Rohner, 2002; Siqueland, Kendall, & Steinberg, 1996) and psychological control to poorer adolescent adjustment (Barber & Harmon, 2002). Third, analysis of attachment in relation to parenting demonstrated a strong, significant relationship between parental acceptance and attachment avoidance. This is consistent with previous research demonstrating a link between parental rejection/lack of warmth and the development of avoidant attachment

strategies (Karavasilis et al., 2003). Finally, although gender differences were observed in self-reported attachment anxiety and internalizing symptoms (with females reporting greater frequency and severity in symptoms than males), the magnitude of gender differences in mean and covariance structures across measures was not sufficient to require separate analyses of male and female data. In sum, the majority of findings in the first stage of analysis were consistent both with our predictions and with previous research, lending support to the validity of our choice of measures and viability of subsequent planned analyses.

Despite promising findings at this stage of analysis, two results were not consistent with hypotheses. First, contrary to predictions, youth reports of maternal behavioral control and permissiveness did not significantly predict externalizing symptoms. Possible explanations for this unexpected finding may relate to characteristics of the sample under investigation. The youth participants were referred for psychological assessment and treatment of severe behavioral problems; therefore, the range and severity of their externalizing behaviors were probably not typical of the average participant across previous studies. Possible restriction in range of youth externalizing behaviors, for example, could account for lower than expected correlations. A second, related possibility is that parental behavioral control may be atypical in this sample. A high correlation was observed between dimensions of parental behavioral and psychological control, suggesting that behavioral and psychological control strategies among participant caregivers may co-occur or overlap. As previous authors have pointed out, when behavioral control becomes overly strict or punitive (to the point that it produces negative cognitive-emotional states in the child and inhibits the development of autonomy), it can

also be considered psychologically controlling (Barber, 2002; Steinberg, 1990). Such behavioral *over*-control may actually increase externalizing behavior (Mills & Rubin, 1998). Thus, overlap between parenting control strategies, and possible cancelling out of positive effects of other aspects of behavioral control, may partially explain unexpected null findings. Finally, variables not accounted for in the current study, such as the timing of discipline or the degree to which behavioral control was proactive rather than reactive to the child's problem behaviors, may have potentially moderating or suppressing effects. For example, Pettit and colleagues (1997; 2002), finding inconsistent evidence for a link between behavioral control and delinquency, concluded that control strategies are most effective when they occur *prior* to the development of delinquent behavior problems, and are not merely a response to delinquent behavior. More research is required to clarify such issues as effective versus ineffective aspects of behavioral control, appropriate timing of behavioral discipline, and potential moderating and mediating effects on behavioral control.

Although perplexing, the lack of a significant direct effect between behavioral control and externalizing behavior was not a threat to other hypotheses of the current study. On the contrary, this finding supported further investigation of moderation and mediation. More concerning was the limited evidence for a direct relationship between psychological control and attachment anxiety. This not only conflicted with our hypothesis of simple mediation of psychological control by attachment anxiety (which presumed a direct relationship between these two variables) but also contradicted previous research demonstrating a direct relationship between anxious attachment and parenting behaviors defined as psychologically controlling (e.g., Karavasilis et al., 2003;

Strayer & Preece, 1999). Interestingly, however, our result *was* consistent with recent findings of Doyle and Markiewicz (2005), who also failed to find an expected direct relationship between psychological control and attachment anxiety. The authors speculated that the finding could relate to their use of a three-item measure of psychological control. However, the current study, utilizing a multi-item, continuous measure of psychological control, in addition to an alternative attachment measure and a clinical rather than normative adolescent sample, produced similar results. Thus, our replication of Doyle and Markiewicz's findings suggests that the result is not spurious, and may instead reveal something important about the relationship between attachment anxiety and psychological control.

To further investigate this possibility, we returned to the results of our factor analyses. As detailed in the Appendix, although factor analyses of the CAPAI supported the use of predetermined scales, exploratory analyses also suggested that the anxiety scale may consist of two closely related but separable sub-dimensions. The first factor, which we labeled "Rejection Anxiety," consisted of items measuring anxiety about emotional distance or rejection by the parent. The second factor, "Separation Anxiety," centered on items expressing concerns about physical distance, separation, and feelings of dependency on the parent. These sub-dimensions are not yet validated, and must, therefore, be interpreted with caution. However, it is noteworthy that results of preliminary correlational analyses (also reported in the Appendix) showed psychological control to be associated with significantly greater Rejection Anxiety but not Separation Anxiety. Therefore, it appears that parental psychological control may predict *specific* aspects of attachment anxiety.

Moreover, it may be important to investigate possible sub-dimensions of the psychological control scale of the CRPBI. Schaefer's (1965a) original conceptual definition of psychological control included a variety of parenting behaviors, such as guilt induction, withdrawal of affection, instilling of anxiety, and inconsistency. This range of content may give rise to specific sub-dimensions on the CRPBI which may, in turn, predict different aspects of attachment insecurity. Such inquiry was not in the scope of the current study. However, investigation of possible sub-dimensions of attachment anxiety and psychological control, and potential relationships between such dimensions, appears an important avenue for future research. It is possible that coalescing conceptually related but separable sub-dimensions into single scales, although yielding some psychometric benefits (e.g., increasing scale reliability), could obscure important relationships between very specific aspects of psychological control and attachment anxiety.

Finally, unique characteristics of the current sample and possible suppression or moderation by intervening variables may explain the lack of a direct effect between psychological control and attachment anxiety. For example, the fact that psychological control predicts attachment *avoidance* in the current sample suggests that youth may be responding to parental psychological control in an unexpected manner. Alternatively, parents' use of psychological control strategies may correlate with other behaviors or parental characteristics (e.g., neglect, abuse) that are more likely to predict attachment avoidance. Also, parental psychological control may have emerged in *response* to youth problem behavior, and may therefore not reflect the parent's typical strategies earlier in the child's development. Future research, using a normative comparison sample and

longitudinal analysis of transactions between parent and child over time, might help to clarify the relationship between psychological control and adolescent attachment.

In terms of the current study, lack of a clear direct relationship between dimensions of psychological control and attachment anxiety made the detection of simple mediation between these variables unlikely. However, given the direct relationship observed between psychological control and attachment *avoidance*, we chose to explore an additional hypothesis of simple mediation of psychological control by avoidance. Moreover, our original hypothesis that a mediational relationship between psychological control and attachment anxiety would be moderated by attachment avoidance remained viable.

Moderation

Following analyses of direct relationships, we turned our attention to potential moderated effects. In line with the work of previous authors such as Fuhrman and Holmbeck (1995) and Lamborn and Steinberg (1993)—who suggest that adjustment in childhood reflects the degree of “fit” between characteristics of the child and the child’s developmental context—we investigated the degree to which adolescent adjustment depends on the interaction between attachment and concurrent parenting strategies of the caregiver.

Results did not support our hypotheses of simple moderation. Although parental behaviors (acceptance and psychological control) and qualities of the youth’s attachment to the parent (anxiety and avoidance) independently predicted psychopathology, we found no evidence that the effects of *either* avoidance *or* anxiety vary as a function of concurrent parenting strategies. In the next stage of analysis, however, we found evidence

of conditional moderation. Results suggest that when attachment anxiety and avoidance are considered *simultaneously*, the level of externalizing symptoms among adolescents *does* vary slightly as a function of parental acceptance. More specifically, when attachment anxiety and avoidance are both high, maternal acceptance is related to lower externalizing symptoms. Therefore, in models of moderation, it may be preferable to consider dimensions of anxiety and avoidance in interaction rather than separately.

This conclusion would be consistent with the work of Bartholomew and her colleagues (e.g., Bartholomew & Horowitz, 1991), who define attachment in terms of the *interaction* between dimensions of anxiety and avoidance. Bartholomew's approach (discussed in the Introduction section) is particularly innovative in that it differentiates between two kinds of attachment avoidance: that which occurs in the context of high attachment anxiety (*Fearful* attachment) and that which occurs with low anxiety (*Dismissing* attachment). Recent clinical research supports this distinction, linking Fearful and Dismissing attachment styles to different developmental histories and clinical outcomes (Lessard & Moretti, 1998; Lessard, Scarfe, & Holland, 1999; Simpson & Rholes, 2002).

Thus, extending Bartholomew's model to the current study, it may be that attachment *style* interacts with parental acceptance. More specifically, Fearful attachment may be associated with lower risk for externalizing symptoms when parental acceptance is high. In contrast, low parental acceptance (and, presumably, high parental rejection) may be associated with greater externalizing symptoms *regardless* of attachment style. A possible interpretation is that parental acceptance acts as a protective factor among youth with Fearful attachment, reducing their likelihood of engaging in aggressive or delinquent

behavior. In contrast, youth with both Dismissing and Preoccupied (low avoidance, high anxiety) attachment styles may not benefit from parental acceptance in the way that youth with Fearful or Secure attachment styles do.

These results encourage further research of complex interactions between parenting and *both* dimensions of anxiety and avoidance. However, it is also important to note that the three-way interaction described above, although statistically significant, accounted for only a small proportion of variance in youth externalizing symptoms. Therefore, alternative models of the relationship between parenting and attachment may be of more practical utility in predicting clinical outcome.

Mediation

We turned next to hypotheses of mediation. In contrast to models of moderation, mediational hypotheses delineate a specific causal sequence (Holmbeck, 1997). Thus, while a moderator variable is hypothesized to *change* the relationship between the predictor and the outcome variables, a mediator is presumed to *explain* it. The mediation models of the current study are based on both theory and recent research demonstrating (1) that general parenting behaviors, such as acceptance and psychological control, influence the child's development of specific attachment strategies, (2) that the child's attachment strategies influence later development of both internalizing and externalizing symptoms, and (3) that the relationship between parenting and child psychopathology is explained, at least partially, by the preceding two processes. In the current study, we examined both simple and complex mediation of parental acceptance and psychological control.

Mediation of Parental Acceptance

Our first hypothesis of simple mediation—that the relationship between parental acceptance and internalizing symptoms is mediated by attachment avoidance—was supported. Results suggest that parental acceptance leads to the development of *less* avoidant attachment, which in turn leads to better adjustment. In terms of specific parent-child dynamics, youth who experience their parent as warm and accepting appear more likely to approach and communicate with their attachment figure and seek support in times of distress. As a consequence of their lower attachment avoidance, the youth appear at decreased risk of developing internalizing symptoms. Conversely, youth who experience greater rejection and lack of warmth in parent-child interactions appear *less* likely to approach and communicate with their parent, which then increases their risk for internalizing symptoms such as anxiety and depressive symptoms. In short, the relationship between parental acceptance and internalizing symptoms appears to be explained by the attachment processes that develop in response to parental warmth versus rejection.

There is still much to be understood about the precise mechanisms underlying the mediational process. One possible explanation is that youth who experience their caregiver as warm and accepting are more likely to develop positive *internal working models* of their caregiver's availability and responsiveness (Bowlby, 1973) and will be more likely to express their concerns and seek comfort and guidance within attachment relationships. This type of attachment security may reduce risk for internalizing symptoms by providing the child with greater opportunities to develop self-regulation skills, interpersonal competence, and strategies for managing difficult life events and

associated distressing affect. In contrast, youth who expect interactions with their caregiver to be rejecting and unrewarding, and thus tend *not* to seek out attachment figures for help or advice, may receive fewer opportunities to express and process emotions and to develop effective coping mechanisms. Clearly, more research is required to examine the specific mediation process. However, preliminary support provided by the current study, in combination with other recent research establishing similar links between parental acceptance, attachment avoidance, and internalizing symptoms (e.g., Doyle & Markiewicz, 2005; Karavasilis et al., 2003), suggest that such work may be worthwhile.

Following analyses of simple mediation, we turned to more complex models of *moderated* mediation of parental acceptance. We hypothesized that the degree to which the effect of parental acceptance is mediated by attachment anxiety might vary as a function of attachment avoidance. Results suggested that, in the prediction of internalizing symptoms, attachment anxiety does *not* change the simple mediation relationship between acceptance and avoidance. Therefore, the mediation relationship described above does not depend on the child's level of attachment anxiety. However, in the prediction of *externalizing* symptoms, attachment anxiety does matter. More specifically, it appears that attachment avoidance that occurs in response to parental rejection is less likely to predict externalizing symptoms when attachment anxiety is high. In contrast, when attachment anxiety is low, avoidance is *more* likely to predict externalizing symptoms. Extending these results to specific attachment prototypes, it appears that youth with a Dismissing attachment style (characterized by high avoidance and low anxiety) may be more likely to engage in externalizing behaviors such as

delinquency and aggression in response to low parental acceptance. In contrast, youth with a more Fearful attachment style (high avoidance, high anxiety) appear relatively less likely to engage in externalizing behaviors in response to low parental acceptance. It is important to note, however, the magnitude of the moderating effect appears very small. Therefore, we are cautious not to over-interpret these results. Simple mediation of acceptance by avoidance appears to be the more significant finding.

Mediation of Psychological Control

We next examined mediation of psychological control by attachment anxiety. Given only marginal support for a direct relationship between psychological control and attachment anxiety in the first stage of analysis, it was unlikely that we would observe a significant simple mediation relationship. Indeed, multiple regression analysis did not support the mediation model. Possible explanations for the lack of a direct relationship between psychological control and attachment anxiety are summarized in our discussion of basic predictive relationships. However, we reiterate, here, that although the result contradicted our hypotheses, an analogous finding in a recent comparable study (Doyle & Markiewicz, 2005), and our own preliminary analyses linking psychological control to *specific* aspects of attachment anxiety, suggest areas for further study. Of particular interest would be potential relationships between sub-dimensions of both psychological control (e.g., “withdrawal of affection”) and attachment anxiety (e.g., “rejection anxiety”).

Furthermore, in the current study, support for a model of *moderated* mediation suggests that the relationship between attachment anxiety, psychological control and psychopathology may depend on concurrent attachment *avoidance*. Results suggest that

psychological control is more likely to predict attachment anxiety and, indirectly, psychopathology in the context of *low* avoidance. Interestingly, the moderating effect also appears different for internalizing versus externalizing symptoms. In the prediction of internalizing symptoms, low attachment avoidance appears to strengthen the relationship between psychological control and attachment anxiety (first stage moderation); whereas, in the prediction of externalizing symptoms, low avoidance appears to increase the relationship between attachment anxiety and externalizing symptoms (second stage moderation). One possible conclusion is that, in the context of attachment anxiety, avoidance serves as a protective factor against the negative effects of psychological control, allowing the youth greater physical and emotional distance in the attachment relationship, and reducing his or her exposure to negative parenting behaviors. This would be consistent with recent research suggesting that greater separation or emotional autonomy from the parent, in the context of specific negative family dynamics, predicts better outcome for the child (Lamborn & Steinberg, 1993; Toth & Cicchetti, 1996). However, despite intriguing possibilities raised by this result, it is important to note that the interaction effect was small, predicting only a small proportion of variance in symptom severity.

More predictive was the simple mediation of psychological control by attachment avoidance. Although not one of our original hypotheses, this third model of simple mediation was explored due to the significant association observed between psychological control and attachment avoidance in our first stage of analysis, and because previous research has linked parental psychological control to the development of avoidant attachment (Barber & Harmon, 2002; Doyle & Markiewicz, 2005). Results of

the current study supported a *partial* mediation relationship in the prediction of internalizing symptoms. Thus, psychological control appears to have both a direct effect on internalizing symptoms and an *indirect* effect, passing through attachment avoidance.

This finding is particularly interesting in light of the moderated mediation relationship described previously, which suggests that attachment avoidance has a small moderating effect, *decreasing* risk of internalizing problems. In contrast, the current finding suggests that, when considered independent of anxiety, avoidance acts as a mediator of psychological control, *increasing* risk of internalizing problems. These findings, although seemingly paradoxical, are not necessarily contradictory. In complex interpersonal dynamics, specific variables may act as both moderator *and* mediator. For example, attachment strategies may develop in response to certain parenting behaviors *and* have reciprocal effects on the relationship. Thus, attachment avoidance may have the general effect of increasing risk for internalizing symptoms, while at the same time exerting a subtle moderating effect on other risk factors for internalizing symptoms. Further research of the relative risks and benefits of attachment avoidance, particularly in the context of unhealthy parent-child dynamics, may help to clarify the seemingly complex relationship between psychological control, attachment avoidance, and psychopathology. However, the results of the current study suggest that attachment avoidance has both mediating and moderating effects on psychological control, predicting both positive and negative outcomes depending on the particular circumstances in which it occurs.

Limitations and Suggestions for Future Research

The results of the current study offer complex and important insights about the relationship between parenting and attachment in the development of psychopathology. However, there are also specific aspects of our study's design and sample that could potentially limit the generalizability and validity of our conclusions. In the following discussion, we carefully consider these limitations and offer suggestions for future research.

The first and most serious limitation of our study is that we rely on cross-sectional data. Our hypotheses of mediation rest on assumptions of directionality, which can only be tested explicitly with a longitudinal design. Therefore, although, in practice, research on mediation tends to rely on concurrent data, it would be preferable to replicate the results of this study using longitudinal analyses. It is important to note, however, that Doyle and Markiewicz (2005), in a recent longitudinal study of parenting and attachment, found evidence not only that attachment anxiety mediates parental acceptance, but also that the mediated effects appear to be largely unidirectional, leading from parenting and attachment to psychopathology. This convergent evidence compensates somewhat for our own use of cross-sectional data, and supports more definitive conclusions of simple mediation. Nonetheless, we urge further longitudinal research—in part because our clinical population may differ in important ways from the normative sample used by Doyle and Markiewicz, and in part because the more detailed measures used in the current study offer a unique opportunity to explore possible mediation relationships between very *specific* aspects of attachment and parenting.

Our study is further limited by our reliance on youth self-report data. Although clinical research frequently uses self-report measures, inaccurate reporting and response biases may produce misleading results or obscure important relationships between variables. Nevertheless, there is considerable research suggesting that adolescents are not only capable of reflecting on and reporting their psychological experiences, but also as accurate as adults in their responses (Achenbach, McConaughy, & Howell, 1987; Moskowitz & Schwarz, 1982). In fact, in many situations (e.g., reporting negative parenting behaviors) youth may provide *more* objective information than their caregivers (Schwarz et al., 1985; Sourander, Helstelae, & Helenius, 1999). Moreover, when the subjective experience of the research participant is of primary interest, self-reports can be the most meaningful and predictive of outcome (Boyce et al., 1998; Morris et al., 2002).

Therefore, we are concerned less with the use of adolescent self-reports, per se, and more with the potential risk associated with using the same informant *across* measures. This increases the chance that respondent characteristics, such as general mood or defensive response bias, may lead to spurious correlations in the data. The problems of potentially biased responding are a constant challenge to clinical researchers, and are not easily solved. One possible corrective measure is to include validity checks and measures of response tendencies (e.g., scales to assess socially desirable responding or general dysphoria). Assuming such scales produce valid and reliable estimates of these variables, their effects could be factored out in subsequent analyses. A second possibility is to compare self-report data to the reports of other informants, such as the parent, teacher or treatment provider. Unfortunately, this type of comparison would not necessarily lead to greater clarity or confidence in our conclusions. Discrepancies

between the reports of youth and secondary informants are not only typical but also difficult to interpret (Achenbach, McConaughy, & Howell, 1987; Ferdinand, van der Ende, & Verhulst, 2004). For example, discrepancies in parent and child reports of the child's attachment security, rather than indicating simple measurement error or inaccurate responding, may be an important predictor of outcome, possibly reflecting aspects of the attachment relationship such as poor parental attunement. Thus, although gathering data from multiple informants may help to compensate for possible response biases, simply averaging together the responses, or picking one response over the other, may obscure valuable clinical information (Ferdinand et al, 2004). A final corrective measure would be to use alternative methods of measurement, such as direct observation. We strongly support such follow-up research, including observation of parent-child interactions and comparisons between child and observer ratings of attachment and parenting behaviors. Of interest would be how closely related these sources of information are, and whether or not "objective ratings," or the youth's subjective experiences in the attachment relationship, are more predictive of psychopathology. Until such research is carried out, it must be restated that the results of the current study, although likely reflecting objective and observable aspects of parenting-attachment dynamics, address only what is experienced and reported by the youth themselves.

A third limitation of our study is that the proportion of youth reporting on their male caregivers was insufficient to allow comparison of mothers' and fathers' parenting. For this reason, our results and conclusions speak only to the respondents' perspectives of their *female* caregivers. Research of parent-child dynamics, especially in the field of attachment, has typically focused on the child's relationship to the mother. However,

recent studies show that fathers continue to be important attachment figures in adolescence (Stone, Buehler, & Barber, 2002). Moreover, although attachment relationships to mothers and fathers have many similarities, there may also be important differences too (Grossman, Grossman, & Zimmerman, 1999; Lieberman, Doyle, & Markiewicz, 1999). These potential differences may provide a fruitful avenue for future research.

A final limitation relates to specific population under study. As discussed previously, the participants of the current study were drawn from a clinical sample of adolescents referred for assessment and treatment of behavioral problems. Aside from obvious limits to generalizability, this may also have produced restriction of range problems, narrowing the variance of specific variables (e.g., externalizing symptoms) and potentially limiting our ability to detect statistical relationships that might be more apparent in a more diverse sample. Although the current study is primarily concerned with parenting-attachment interactions in relation psychopathology, additional research including both clinical and normative samples would be an important follow-up to the current study. Extended research might also allow a larger sample size, increasing power to detect more subtle moderated and mediated effects, and allowing investigation of a greater range of hypotheses.

CONCLUSION

Previous research has examined extensively simple direct relationships between attachment, parenting and psychopathology. Yet, surprisingly few studies have investigated more complex interactions between dimensions of attachment and parenting

style in relation to adolescent adjustment. In part, research has been limited by practical considerations. Analyses of indirect effects, such as moderation and mediation, rely on large sample sizes and measures that are empirically sound and consistent with current theory. These resources have not been readily available to researchers in the field. Moreover, foundational work to identify key conceptual dimensions of parenting and attachment has taken considerable time and effort. Only recently have researchers shifted focus from general categories or prototypes, such as “authoritarian” parenting or “ambivalent” attachment, to the specific dimensions presumed to underlie these categories (e.g., psychological control; attachment anxiety and avoidance). Therefore, theoretical questions about how these dimensions might interact are also relatively recent. Finally, in studies of attachment-parenting dynamics, greater attention has historically been given to early development. However, recent research suggests that parenting behaviors and the security of the attachment relationship remain important predictors of adjustment throughout adolescence.

The objectives of the current study reflect these recent conceptual and methodological shifts in the study of parenting and attachment. Moving beyond simple direct pathways, our hypotheses integrate contemporary theory in the fields of development and psychopathology. We investigate a range of moderation and mediation models, emphasizing the potential importance of complex relationships between etiological and contextual factors in determining specific developmental trajectories. Moreover, our use of innovative measures, such as the CAPAI—allowing for continuous, multi-item assessment of central constructs such as anxiety and avoidance—provides new power and precision to investigate complex attachment-parenting dynamics.

Despite limitations to our study, our findings are both complex and diverse. Our results support a range of both direct and indirect relationships between dimensions of parenting, attachment, and psychopathology, including simple predictive relationships, models of simple mediation, and conditional moderation and mediation. Thus, the question arises how best to integrate these findings.

In one sense, the hypotheses in each stage of analysis represent competing models, each resting on varied research traditions and associated theoretical assumptions. For example, our moderation hypotheses are concerned primarily with the effect of context, exploring the ways in which dimensions of attachment and parenting *interact* to predict psychopathology. In contrast, our mediation models are longitudinal hypotheses, involving assumptions about directionality and causality leading from parenting to attachment. In another sense, however, these models are complimentary. Relational processes, such as attachment and parenting, are complex and multi-determined. Even seemingly disparate findings may provide useful, valid perspectives on the same psychological phenomena. Therefore, we seek to both contrast *and* coalesce the results of our three stages of analysis.

First, we conclude that dimensions of parenting and attachment are each important predictors of adolescent psychopathology. Basic predictive relationships between these variables and general internalizing and externalizing symptoms appear significant and reliable, influenced by, but not dependent on, age, gender, and interactions between the variables themselves. However, the results of our more complex analyses *also* suggest that these predictive relationships reflect more than simple direct

effects of these variables. Indirect effects, including simple mediation relationships between these variables, are important predictors of symptom expression.

Second, we believe the current study supports hypotheses of simple mediation over simple moderation. While results are consistent with predictions that attachment avoidance mediates both parental acceptance and psychological control, *none* of our hypotheses of simple moderation were supported. Thus, rather than viewing dimensions of parenting and attachment as independent variables in interaction, it appears more accurate to regard attachment strategies as arising *from* general parenting practices and influencing subsequent risk for internalizing and externalizing symptoms. There are, of course, caveats to this conclusion. Until the results of simple mediational analyses are confirmed by longitudinal research, we cannot claim full support for our mediated models. Moreover, as discussed in the Results section, characteristics of field research make interaction effects difficult to detect. Consequently, the absence of statistically significant simple moderation effects may be attributable to our research design, choice of quantitative methods, or limitations of sample size. In addition, results of the current study marginally supported a more complex model of conditional moderation. Nonetheless, if simple moderated effects are present, they appear secondary and subtle in comparison to mediated effects.

Third, significant (though slight) conditional moderating and mediating effects suggest that, while simpler models may be most useful in predicting symptom severity, complex interactions between parenting and attachment variables may provide additional predictive power. In particular, results suggest that it may be informative to consider *both* attachment anxiety and avoidance in relationship to parenting. In addition, preliminary

evidence points to potentially interesting and informative interactions between specific sub-dimensions of attachment and parenting style.

In conclusion, the results of the current study, in combination with the pioneering work of authors such as Doyle and Markiewicz (2005), can be viewed as an important next step in the emerging study of parenting-attachment dynamics. Much work remains to clarify the precise relationships between dimensions of parenting and attachment in the prediction of psychopathology. However, our hope is that continuing research in this field will lead to new clinical insights, improved treatment effectiveness, and healthier outcomes for clinic referred youth and their families.

REFERENCES

- Achenbach, T. M. (1991). *Manual for the Youth Self-Report and 1991 Profiles*. Burlington: University of Vermont, Department of Psychiatry.
- Achenbach, T. M., & Edelbrock, C. S., (1981). Behavioral problems and competencies reported by parents of normal and disturbed children aged four through sixteen. *Monographs of the Society for Research in Child Development, 46(1)*, 1–82.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213–232.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Erlbaum.
- Allen, J. P., Marsh, P., McFarland, C., McElhaney, K. B., Land, D. J., Jodl, K. M., & Peck, S. (2002). Attachment and autonomy as predictors of the development of social skills and delinquency during midadolescence. *Journal of Consulting and Clinical Psychology, 70(1)*, 56–66.
- Allen, J. P., McElhaney, K. B., Land, D. J., Kuperminc, G. P., Moore, C. W., O'Beirne-Kelly, H., & Kilmer, S. L. (2003). A secure base in adolescence: Markers of attachment security in the mother-adolescent relationship. *Child Development, 74(1)*, 292–307.
- Allen, J. P., Moore, C., Kuperminc, G., & Bell, K. (1998). Attachment and adolescent psychosocial functioning. *Child Development, 69*, 1406–1419.

- Andrews, J. A., Hops, H., & Duncan, S. C. (1997). Adolescent modeling of parent substance abuse: The moderating effect of the relationship with the parent. *Journal of Family Psychology, 11*(3), 259–270.
- Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development, 67*, 3296–3319.
- Barber, B. K. (2002). Reintroducing parental psychological control. In Barber, B. K. (Ed.), *Intrusive parenting: How psychological control affects children and adolescents* (pp. 3–14). Washington DC: American Psychological Association.
- Barber, B. K., & Harmon, E. L. (2002). Violating the self: Parental psychological control of children and adolescents. In Barber, B. K. (Ed.), *Intrusive parenting: How psychological control affects children and adolescents* (pp. 15–52). Washington DC: American Psychological Association.
- Barber, B. K., Olsen, J. E., & Shale, S. C. (1994). Associations between parental psychological and behavioral control and youth internalized and externalized behaviors. *Child Development, 65*, 1120–1136.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226–244.
- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology, 4*, 1–103.

- Baumrind, D. (1972). An exploratory study of socialization effects on Black children: Some Black-White comparisons. *Child Development, 43*, 261–267.
- Baumrind, D. (1991). Effective parenting during the early adolescent transition. In P. Cowan & E. M. Hetherington (Eds.), *Family transitions* (pp. 111–163). Hillsdale, NJ: Erlbaum.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1, Attachment*. New York: Basic Books.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2, Separation*. New York: Basic Books.
- Bowlby, J. (1980). *Attachment and loss: Vol. 3, Loss*. New York: Basic Books.
- Boyce, W. T., Frank, E., Jensen, P. S., Kessler, R. C., Nelson, C. A., & Steinberg, L. (1998). Social context in developmental psychopathology: Recommendations for future research from the MacArthur Network on Psychopathology and Development. *Development and Psychopathology, 10*, 143–164.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1996). A comprehensive approach to the self-report measurement of adult attachment. Unpublished manuscript, Department of Psychology, State University of New York, Stony Brook.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). New York: Guilford Press.
- Brown, A. M., & Whiteside, S. P. (2008). Relations among perceived parental rearing behaviors, attachment, and worry in anxious children. *Anxiety Disorders, 22*, 263–272.

- Carlson, E. A., & Sroufe, L. A. (1995). Contribution of attachment theory to developmental psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology (Vol. 1): Theory and methods* (pp. 581–617). New York: Wiley.
- Chao, R. K. (1994). Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development, 65*, 1111–1119.
- Cicchetti, D., & Rogosch, F. A. (1996). Equifinality and multifinality in developmental psychopathology. *Development and Psychopathology, 8*, 597–600.
- Claes, M., Lacourse, E., Ercolani, A., Pierro, A., Leone, L., & Presaghi, F. (2005). Parenting, peer orientation, drug use, and antisocial behavior in late adolescence: A cross-national study. *Journal of Youth and Adolescence, 34*(5), 401–411.
- Cohen, J., Cohen, P. West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation for the behavioral sciences. (3rd Ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Cross, H. J. (1969). College students' memories of their parents: A factor analysis of the CRPBI. *Journal of Consulting and Clinical Psychology, 33*(3), 275–278.
- Cummings, E. M., Davies, P. T., & Campbell, S. B. (2000). New directions in the study of parenting. *Developmental psychopathology and family process: Theory, research, and clinical implications* (pp. 200–250). New York: Guilford Press.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113*, 487–496.

- Doyle, A. B., & Markiewicz, D. (2005). Parenting, marital conflict and adjustment from early- to mid-adolescence: Mediated by adolescent attachment style? *Journal of Youth and Adolescence*, *34*(2), 97–110.
- Doyle, A. B. & Moretti, M. M. (2000). Attachment to parents and adjustment in adolescence: Literature review and policy implications. Health Canada Report, File number 032ss.H5219-9-CYH7/001/SS.
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, *12*(1), 1–22.
- Ferdinand, R. F., van der Ende, J., & Verhulst, F. C. (2004). Parent-adolescent disagreement regarding psychopathology in adolescents from the general population as a risk factor for adverse outcome. *Journal of Abnormal Psychology*, *113*(2), 198–206.
- Fraley, R. C. & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 77–114). New York: Guilford Press.
- Fuhrman, T., & Holmbeck, G. N. (1995). A contextual-moderator analysis of emotional autonomy and adjustment in adolescence. *Child Development*, *66*, 793–811.
- Gray, M. R., & Steinberg, L. (1999). Unpacking authoritative parenting: Reassessing a multidimensional construct. *Journal of Marriage and the Family*, *61*(3), 574–587.
- Greenberg, M. T. (1999). Attachment and psychopathology in childhood. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 469–496). New York: Guilford Press.

- Grossman, K. E., Grossman, K., & Zimmerman, P. (1999). A wider view of attachment and exploration: Stability and change during the years of immaturity. In Cassidy, J., and Shaver, P. R. (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 760–786). New York: The Guilford Press.
- Harrell, F. E. (2001). *Regression modeling strategies: With applications to linear models, logistic regression, and survival analysis. Springer Series in Statistics*. New York: Springer.
- Hetherington, E. M., Clingempeel, W., Anderson, E., Deal, J., Hagan, M., Hollier, E., & Lindner, M. (1992). Coping with marital transitions: A family systems perspective. *Monographs of the Society for Research in Child Development*, 57(2–3, Serial No. 227).
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, 65(4), 599–610.
- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology*, 27(1), 87–96.
- Karavasilis, L., Doyle, A. B., & Markiewicz, D. (2003). Associations between parenting style and attachment to mother in middle childhood and adolescence. *International Journal of Behavioral Development*, 27(2), 153–164.

- Kawash, G. F., & Clewes, J. L. (1988). A factor analysis of a short form of the CRPBI: Are children's perceptions of control and discipline multidimensional? *Journal of Psychology, 122*(1), 57–67.
- Kenny, M. E. (1987). The extent and function of parental attachment among first-year college students. *Journal of Youth and Adolescence, 16*, 17–27.
- Kerns, K. A., & Stevens, A. C. (1996). Parent-child attachment in late adolescence: Links to social relations and personality. *Journal of Youth and Adolescence, 25*, 323–342.
- Khaleque, A., & Rohner, R. P. (2002). Perceived parental acceptance-rejection and psychological adjustment: A meta-analysis of cross-cultural and intracultural studies. *Journal of Marriage and the Family, 64*(1), 54–64.
- Kobak, R. R., Cole, H. E., Ferenz-Gillies, R., Fleming, W. S., & Gamble, W. (1993). Attachment and emotion regulation during mother-teen problem solving: A control theory analysis. *Child Development, 64*, 231–245.
- Kobak, R. R., & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and other. *Child Development, 59*, 135–146.
- Lamborn, S. D., & Steinberg, L. Emotional autonomy redux: Revisiting Ryan and Lynch. *Child Development, 64*, 483–499.
- Lessard, J. C. & Moretti, M. M. (1998). Suicidal ideation in an adolescent sample: Attachment patterns and clinical implications. *Journal of Adolescence, 21*, 383–395.

- Lieberman, M., Doyle, A. B., and Markiewicz, D. (1999). Developmental patterns in security of attachment to mother and father in late childhood and early adolescence: Associations with peer relations. *Child Development, 70*, 202–213.
- Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. *Developmental Psychology, 28*, 1006–1017.
- Maccoby, E. E., & Martin, J. (1983). Socialization in the context of the family: Parent-child interactions. In E. M. Hetherington (Ed.) & P. H. Mussen (Series Ed.), *Handbook of child psychology: Vol. 4. Socialization, personality, and social development* (pp. 1–101). New York: Wiley.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G. and Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*(1), 83–104.
- Marsh, P., McFarland, F. C., Allen, J. P., McElhaney, K. B., & Land, D. (2003). Attachment, autonomy, and multifinality in adolescent internalizing and risky behavioral symptoms. *Development and Psychopathology, 15*, 451–467.
- McClelland, G. H, & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114*(2), 376–390.
- McKay, S. & Steiger, A. R. (2003). Perceptions of parenting and attachment avoidance and anxiety: Further validation of the Comprehensive Adolescent-Parent Attachment Inventory. Poster presented at the biennial meeting of the *Society for Research in Child Development (SRCD)*. Tampa, Florida.

- Mills, R. L., & Rubin, K. H. (1998). Are behavioural and psychological control both differentially associated with childhood aggression and social withdrawal? *Canadian Journal of Behavioural Science, 30*(2), 132–136.
- Moretti, M. M., Lessard, J. C., Scarfe, E., & Holland, R. (1999). *Attachment and conduct disorder in adolescence: The importance of differentiating fearful from dismissing patterns*. Unpublished manuscript, Simon Fraser University, Burnaby, British Columbia, Canada.
- Moretti, M. M., McKay, S., & Holland, R. (2000). The Comprehensive Adolescent-Parent Attachment Inventory (CAPAI). Unpublished measure and data. Simon Fraser University, Burnaby, British Columbia, Canada.
- Moretti, M. M., Obsuth, I., Odgers, C. L., & Reebye, P. (2006). Exposure to maternal vs. paternal partner violence, PTSD, and aggression in adolescent girls and boys. *Aggressive Behavior, 32*(4), 385–395.
- Morris, A. S., Steinberg, L., Sessa, F. M., Avenevoli, S., Silk, J. S., & Essex, M. J. (2002). Measuring children's perceptions of psychological control: Developmental and conceptual considerations. In B. K. Barber (Ed.), *Intrusive parenting: How psychological control affects children and adolescents* (pp. 125–160). Washington, DC: American Psychological Association.
- Moskowitz, D. S., & Schwarz, J. C. (1982). Validity comparison of behavior counts and ratings by knowledgeable informants. *Journal of Personality and Social Psychology, 42*, 518–528.

- Muris, P., Meesters, C., Morren, M., & Moorman, L. (2004). Anger and hostility in adolescents: Relationships with self-reported attachment styles and perceived parenting rearing styles. *Journal of Psychosomatic Research, 57*, 257–264.
- Muris, P., Meesters, C., & van den Berg, S. (2003). Internalizing and externalizing problems as correlates of self-reported attachment style and perceived parental rearing in normal adolescents. *Journal of Child and Family Studies, 12*(2), 171–183.
- O'Connor, T. G. (2002). Annotation: The “effects” of parenting reconsidered: Findings, challenges, and applications. *Journal of Child Psychology and Psychiatry, 43*(5), 555–572.
- Peled, M. R., & Moretti, M. M. (2007). Rumination on anger and sadness in adolescence: Fueling of fury and deepening of despair. *Journal of Clinical Child and Adolescent Psychology, 36*(1), 66–75.
- Peled, M. R. (2005). Ruminations on rumination: Anger and sadness rumination in a normative and clinical sample. Unpublished doctoral dissertation, Department of Psychology, Simon Fraser University, Burnaby, British Columbia.
- Penney, S. R., & Moretti, M. M. (2007). The relation of psychopathy to concurrent aggression and antisocial behavior in high-risk adolescent girls and boys. *Behavioral Sciences & the Law, 25*(1), 21–41.
- Pettit, G. S., Bates, J. E., & Dodge, K. A. (1997). Supportive parenting, ecological context, and children's adjustment: A seven-year longitudinal study. *Child Development, 68*, 908–923.

- Pettit, G. S., & Laird, R. D. (2002). Psychological control and monitoring in early adolescence: The role of parental involvement and earlier child adjustment. In Barber, B. K. (Ed.), *Intrusive parenting: How psychological control affects children and adolescents* (pp. 97–124). Washington DC: American Psychological Association.
- Pettit, G. S., Laird, R. D., Dodge, K. A., Bates, J. E., & Criss, M. M. (2001). Antecedents and behavior-problem outcomes of parental monitoring and psychological control in early adolescence. *Child Development, 72*(2), 583–598.
- Pettit, G. S., & Lollis, S. P. (1997). Reciprocity and bidirectionality in parent-child relationships: New approaches to the study of enduring issues. *Journal of Social and Personal Relationships, 14*, 435–440.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717–731.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*(1), 185–227.
- Rice, K. G. (1990). Attachment in adolescence: A narrative and meta-analytic review. *Journal of Youth and Adolescence, 19*, 511–538.
- Roelofs, J., Meesters, C., ter Huurne, M., Bamelis, L., Muris, P. (2006). On the links between attachment style, parental rearing behaviors, and internalizing and externalizing problems in non-clinical children. *Journal of Child and Family Studies, 15*(3), 331–344.

- Rosenblatt, A., & Rosenblatt, J. A. (2002). Assessing the effectiveness of care for youth with severe emotional disturbances: Is there agreement between popular outcome measures? *The Journal of Behavioral Health Services & Research*, 29(3), 259–273.
- Rosenstein, D. S., & Horowitz, H. A. (1996). Adolescent attachment and psychopathology. *Journal of Consulting and Clinical Psychology*, 64(2), 244–253.
- Rubin, D. B. (1987). *Multiple imputation for nonresponse in surveys*. Hoboken, New Jersey: John Wiley & Sons.
- Rubin, K. H., Cheah, C. S. L., & Fox, N. (2001). Emotional regulation, parenting and display of social reticence in preschoolers. *Early Education and Development*, 12, 97–115.
- Safford, S. M., Alloy, L. B., Pieracci, A. (2007). A comparison of two measures of parental behavior. *Journal of Child and Family Studies*, 16(3), 375–384.
- Schaefer, E. S. (1965a). Children's reports of parental behavior: An inventory. *Child Development*, 36, 413–423.
- Schaefer, E. S. (1965b). A configurational analysis of children's reports of parent behavior. *Journal of Consulting Psychology*, 29, 552–557.
- Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. Vol. 72, *Monographs on Statistics and Applied Probability*. Boca Raton, Florida: Chapman & Hall.
- Scharf, M., Mayseless, O., & Kivenson-Baron, I. (2004). Adolescents' attachment representations and developmental tasks in emerging adulthood. *Developmental Psychology*, 40(3), 430–444.

- Scharfe, E. (1997). A test of Bartholomew's four-category model of attachment in a clinical sample of adolescents. Unpublished doctoral dissertation, Department of Psychology, Simon Fraser University, Burnaby, British Columbia.
- Schludermann, E., & Schludermann, S. (1970). Replicability of factors in children's report of parent behavior (CRPBI). *Journal of Psychology*, *76*, 239–249.
- Schwarz, J. C., Barthon-Henry, M., & Pruzinsky, T. (1985). Assessing child-rearing behaviors: A comparison of ratings made by mother, father, child, and sibling on the CRPBI. *Child Development*, *56*, 462–479.
- Simpson, J. A., & Rholes, W. S. (2002). Fearful-avoidance, disorganization, and multiple working models: Some directions for future theory and research. *Attachment and Human Development*, *4*(2), 223–229.
- Siqueland, L., Kendall, P. C., & Steinberg, L. (1996). Anxiety in children: Perceived family environments and observed family interactions. *Journal of Clinical Child Psychology*, *25*, 225–237.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290–312). San Francisco: Jossey-Bass.
- Sourander, A., Helstelae, L., & Helenius, H. (1999). Parent-adolescent agreement on emotional and behavioral problems. *Social Psychiatry and Psychiatric Epidemiology*, *34*, 657–663.
- Sroufe, L. A. (1997). Psychopathology as an outcome of development. *Development and Psychopathology*, *9*, 251–268.

- Steiger, A. R. (2003). Preliminary validation of the Comprehensive Adolescent-Parent Attachment Inventory. Unpublished master's thesis, Department of Psychology, Simon Fraser University, Burnaby, British Columbia.
- Steiger, A. R., & Moretti, M. M. (2003). Psychometric properties of a new measure of adolescent-parent attachment. Poster presented at the biennial meeting of the *Society for Research in Child Development (SRCD)*. Tampa, Florida.
- Steiger, A. R., & Moretti, M. M. (2005). Convergent and discriminant validity of the Comprehensive Adolescent-Parent Attachment Inventory. Poster presented at the annual meeting of the *Canadian Psychological Association*. Montreal, Canada.
- Steinberg, L. (1990). Autonomy, conflict, and harmony in family relationships. In S. S. Feldman & G. R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 255–276). Cambridge, MA: Harvard University Press.
- Steinberg, L., Lamborn, S. D., Darling, N., Mounts, N. S., & Dornbush, S. M. (1994). Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 65*, 754–770.
- Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development, 63*, 1266–1281.
- Steinberg, L., Mounts, N. S., Lamborn, S. D., & Dornbush, S. M. (1991). Authoritative parenting and adolescent adjustment across varied ecological niches. *Journal of Research on Adolescence, 1*(1), 19–36.

- Strayer, J., & Preece, C. (1999). Relations of self-evaluative emotional style to adult attachment and reported parenting. Paper presented at the annual meeting of the Canadian Psychological Association, Halifax, Nova Scotia, May.
- Stone, G., Buehler, C., and Barber, B. K. (2002). Interparental conflict, parental psychological control, and youth problem behaviors. In Barber, B. K. (Ed.), *Intrusive parenting: How psychological control affects children and adolescents* (pp. 53–96). Washington DC: American Psychological Association.
- Toth, S. L., & Cicchetti, D. (1996). The impact of relatedness with mother on school functioning in maltreated children. *Journal of School Psychology, 34*(3), 247–266.
- Wood, J. J., McLeod, B. D., Sigman, M., Hwang, W., & Chu, B. C. (2003). Parenting and childhood anxiety: Theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry, 44*(1), 134–151.

APPENDICES

APPENDIX A: Expanded Factor Analysis of the CAPAI

Given that the results of confirmatory factor analysis and analyses of scale unidimensionality suggested possible areas for scale improvement, we pursued further factor analyses of the CAPAI. First, we used maximum likelihood EFA to expand our factoring of the original Anxiety and Avoidance items, evaluating the statistical fit and conceptual content of 3, 4, 5, 6, and 7-factor solutions. Analyses of the range of solutions pointed to important sources of variance in the items *not* accounted for in the two factor model. Of primary interest was the 4-factor solution, which provided substantially improved fit ($\chi^2(492) = 747.59, p < .001$; RMSEA=.051, CI 90% = .045 to .060) while remaining consistent with the theoretical framework of the original measurement model. The factor pattern obtained by oblique rotation (promax, kappa=4) is presented in the table below:

Pattern Matrix^a

| | Factor | | | |
|---|--------|-------|-------|-------|
| | 1 | 2 | 3 | 4 |
| (10) I worry that my parent won't care about me as much as I care about my parent (x+) | .782 | | | |
| (53) I find that my parent doesn't want to get as close as I would like (x+) | .770 | | | |
| (22) I often wish that my parent's feelings for me were as strong as my feelings are for my parent (x+) | .709 | | | |
| (27) I worry a lot about my relationship with my parent (x+) | .701 | | | |
| (12) I worry about being abandoned by my parent (x+) | .684 | | | |
| (29) I often want to be really close to my parent and sometimes this makes my parent back away (x+) | .672 | | | |
| (09) I need a lot of reassurance that I am loved by my parent (x+) | .625 | | | |
| (37) Sometimes I feel that I have to force my parent to show that my parent cares about me (x+) | .592 | | | |
| (05) If I can't get my parent to show interest in me I get upset or angry (x+) | .488 | | | |
| (32) I want to get close to my parent but I keep pulling back (v+) | .472 | | | .275 |
| (25) When my parent disapproves of me if feel really bad about myself (x+) | .459 | | | .283 |
| (55) I don't often worry about being abandoned (x-) | -.430 | .279 | | |
| (41) My desire to be very close sometimes scares people away (x+) | .424 | | | |
| (33) I resent it when my parent spends time away from me (x+) | .422 | | | .326 |
| (26) I try to avoid getting too close to my parent (v+) | | .981 | | |
| (20) I get uncomfortable when my parent wants to be very close (v+) | | .845 | | |
| (56) I am nervous when my parent gets too close to me (v+) | | .657 | | |
| (47) I prefer not to be too close to my parent (v+) | | .587 | | |
| (13) I don't feel comfortable opening up to my parent (v+) | | .509 | | |
| (16) Just when my parent starts to get close to me I find myself pulling away (v+) | .282 | .462 | | |
| (01) I prefer not to show my parent how I feel deep down (v+) | | .420 | -.294 | .282 |
| (35) I usually discuss my problems and concerns with my parents (v-) | | | .892 | |
| (19) I feel comfortable sharing my private thoughts and feelings with my parent (v-) | | | .857 | |
| (28) I tell my parent just about everything (v-) | | | .768 | |
| (38) I don't mind asking my parent for comfort, advice, or help (v-) | | | .517 | |
| (36) I find it relatively easy to get close to my parent (v-) | | | .471 | |
| (44) I turn to my parent for many things, including comfort and reassurance (v-) | | | .440 | .272 |
| (50) It helps to turn to my parent in times of need (v-) | | -.303 | .306 | .297 |
| (02) When I'm away from my parent I feel anxious and afraid (x+) | | | | .816 |
| (08) I worry about being away from my parent (x+) | | | | .804 |
| (43) I worry a fair amount about losing my parent (x+) | .327 | | | .485 |
| (17) I get frustrated when my parent is not around as much as I would like (x+) | .264 | | | .470 |
| (23) I feel comfortable depending on my parent (v-) | | | | .466 |
| (07) I find it difficult to depend on my parent (v+) | .269 | .323 | | -.449 |
| (04) I am very comfortable being close to my parent (v-) | | | | .393 |
| (48) I get frustrated if my parent is not available when I need my parent (x+) | .268 | | | .301 |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

An examination of the factor pattern reveals that the two major dimensions of Anxiety and Avoidance remained separable: Anxiety items loaded primarily on Factors 1 and 4 and Avoidance items on Factors 2 and 3. However, *within* the major dimensions, possible sub-factors were revealed, with items on each of the scales dividing into separate factors. The patterning of items in the 4-factor model (shown above) appeared robust over increased factoring, with the first four factors remaining largely consistent across solutions and subsequent factors consisting of only a few items.

An evaluation of conceptual content of the four scales suggested that these results were not only of statistical interest, but also of potential clinical importance. Consider,

first, the Avoidance dimensions: Factor 2, consisting of items such as “I try to avoid getting too close to my parent” and “I get uncomfortable when my parent wants to be very close,” appeared to capture the youth’s discomfort with closeness and a wish for greater distance in the attachment relationship. In contrast, Factor 3 (composed primarily of negatively keyed Avoidance items), appeared to reflect the youth’s tendency to approach and confide in the parent (e.g., “I usually discuss my problems and concerns with my parent”; “I feel comfortable sharing my private thoughts and feelings with my parent”). In effect, the Avoidance scale was divided into two sub-dimensions of “approach” and “avoidance” behaviors.

Next, turning to the Anxiety scale, Items loading on Factor 1 referred primarily to emotional aspects of the attachment relationship—in particular to anxiety about the experience of rejection or emotional distance in the attachment relationship (e.g., “I find that my parent doesn’t want to get as close as I would like” and “I worry that my parent won’t care as much about me as I care about my parent”). In contrast, Factor 4 appeared more specific to anxiety about physical distance/separation from the parent (e.g., “When I’m away from my parent, I feel anxious and afraid” and “I worry a fair amount about losing my parent”). For ease of interpretation, we label these dimensions as follows:

| Avoidance | Anxiety |
|---|---|
| <ul style="list-style-type: none"> • Factor 2: “discomfort with closeness” • Factor 3: “approach/communication” | <ul style="list-style-type: none"> • Factor 1: “rejection anxiety” • Factor 4: “separation anxiety” |

Interestingly, three additional items, which reflect dependency in the attachment relationship (e.g., “I feel comfortable depending on my parent”), also loaded on Factor 4. Although originally pre-specified to measure Avoidance, the items’ appearance on this

factor—which centered on concerns about separation from the parent—makes conceptual sense. Issues of dependency in the attachment relationship likely relate *both* to anxiety about physical separation *and* to strategies for maintaining proximity to the attachment figure. More generally, this statistical overlap pointed to potential sources of intersection between dimensions of Anxiety and Avoidance. This was also seen in the factor correlation matrix for the 4-factor model:

Factor Correlation Matrix

| Factor | 1 | 2 | 3 | 4 |
|-------------------------------|-------|-------|-------|-------|
| 1 “rejection anxiety” | 1.000 | | | |
| 2 “discomfort with closeness” | .304 | 1.000 | | |
| 3 “approach/communication” | -.072 | -.644 | 1.000 | |
| 4 “separation anxiety” | .321 | -.369 | .536 | 1.000 |

The results of these analyses suggest that, although *general* scales of Anxiety and Avoidance may be independent, specific sub-dimensions of the constructs may not. Understanding possible relationships between specific aspects of Anxiety and Avoidance would not only help to clarify lack of unidimensionality observed in the 2-factor model, but also would be of potentially broader significance to our theoretical understanding of adolescent-parent attachment dynamics. For example, due to the absence of an expected direct relationship between psychological control and Anxiety, we performed an exploratory analysis of correlations between Psychological Control and hypothetical sub-dimensions of the Anxiety scale. Psychological Control was significantly associated with the “rejection anxiety” sub-dimension ($r = .18$, $p < .05$), but not with “separation

anxiety" ($r = -.13$, $p = .078$). Moreover, the *directions* of the relationships were opposite. These findings are only preliminary and exploratory; however, the results are thought provoking, suggesting that possible sub-dimensions of the CAPAI might relate in unexpected ways, not only to each other but also to dimensions of parenting and clinical outcome.

APPENDIX B: Measures

As detailed in the Methods section, measures were administered as part of ongoing program evaluation research at a treatment center for youth with behavioral difficulties. Administration of measures was overseen by research assistants following standardized administration procedures, with center psychology assistants and child care workers facilitating the distribution of questionnaires. On the Children's Report of Parenting Behaviors Inventory (CRPBI), youth were requested to provide information on both their primary female caregiver ("mother") and male caregiver ("father"). In all cases, youth were verbally instructed that the primary attachment figure referred to on the Comprehensive Adolescent-Parent Attachment Inventory (CAPAI) should also be one of the caregivers referred to on the CRPBI.

Presented below are the original CAPAI ("CAPAI-Y," 4 pages) and the CRPBI ("Questionnaire for Children and Youth," 3 pages), administered to the youth participants of this study. Licensing agreements and copyright protection do not allow duplication of the Youth Self Report (YSR).

CAPAI-Y

DATE: _____ NAME: _____

ID#(office only) _____

Please think about one parent or caregiver that has played the **most important part in raising you**. You most likely live with this parent now, but you may be living somewhere else and still have contact with this parent. Answer all the questions based on how you feel about this parent. **Before you start, who is this parent?** Circle ONE:

MOM DAD STEPMOM STEPDAD
 FOSTER MOM FOSTER DAD AUNT UNCLE

OTHER PERSON (who is this person?): _____

Read each sentence and circle each number to show how much you agree or disagree.

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|----------------------|---|---|-------------------|---|---|-------------------|
| | Disagree Strongly | | | Neutral/ Mixed | | | Agree Strongly |
| 1. I prefer not to show my parent how I feel deep down. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. When I'm away from my parent I feel anxious and afraid. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I would rather take care of myself than depend on my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I am very comfortable being close to my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. If I can't get my parent to show interest in me, I get upset or angry. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I have very mixed feelings about my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. I find it difficult to depend on my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. I worry about being away from my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

CAPAI-Y

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|------------------------------|----------|----------|---------------------------|----------|----------|---------------------------|
| | Disagree Strongly | | | Neutral/ Mixed | | | Agree Strongly |
| 9. I need a lot of reassurance that I am loved by my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I worry that my parent won't care about me as much as I care about my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Often, just when you think you can depend on my parent, my parent doesn't come through for me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. I worry about being abandoned by my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. I don't feel comfortable opening up to my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. I don't like it when my parent and I have to be separated. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. It is very important to me to feel independent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Just when my parent starts to get close to me I find myself pulling away. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. I get frustrated when my parent is not around as much as I would like. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. My feelings about my parent seem to change often. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. I feel comfortable sharing my private thoughts and feelings with my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. I get uncomfortable when my parent wants to be very close. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. I have often had to get angry to get my parent's attention. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. I often wish that my parent's feelings for me were as strong as my feelings are for my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. I feel comfortable depending on my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. I have learned from bitter experience that my parent is not to be trusted. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

CAPAI-Y

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|------------------------------|----------|----------|---------------------------|----------|----------|---------------------------|
| | Disagree Strongly | | | Neutral/ Mixed | | | Agree Strongly |
| 25. When my parent disapproves of me, I feel really bad about myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I try to avoid getting too close to my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. I worry a lot about my relationship with my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. I tell my parent just about everything. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. I often want to be really close to my parent and sometimes this makes my parent back away. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. When I'm away from my parent, I miss my parent a great deal. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31. I rely on myself, not my parent, to solve my problems. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32. I want to get close to my parent, but I keep pulling back. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. I resent it when my parent spends time away from me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. I'm often not sure how I feel about my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. I usually discuss my problems and concerns with my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36. I find it relatively easy to get close to my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37. Sometimes I feel that I have to force my parent to show that my parent cares about me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 38. I don't mind asking my parent for comfort, advice, or help. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39. I find it difficult to trust my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 40. I'm confident that my parent likes and respects me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

CAPAI-Y

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|------------------------------|----------|----------|---------------------------|----------|----------|---------------------------|
| | Disagree Strongly | | | Neutral/ Mixed | | | Agree Strongly |
| 41. My desire to be very close sometimes scares people away. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 42. I'm in no hurry to make my relationship with my parent better. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 43. I worry a fair amount about losing my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 44. I turn to my parent for many things, including comfort and reassurance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 45. I would like to spend much more time with my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 46. I do not need my parent to take care of me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 47. I prefer not to be too close to my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 48. I get frustrated if my parent is not available when I need my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 49. I often have trouble figuring out whether I really love my parent or not. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 50. It helps to turn to my parent in times of need. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 51. It's best to be on your guard when you're dealing with my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 52. I often feel that I am not good enough for my parent. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 53. I find that my parent doesn't want to get as close as I would like. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 54. If you've got a job to do, you should do it no matter who gets hurt. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 55. I don't often worry about being abandoned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 56. I am nervous when my parent gets too close to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

QUESTIONNAIRE FOR CHILDREN AND YOUTH

Please read each statement below and circle the answer that most closely describes the way each of your parents acts towards you. BE SURE TO MARK EACH ANSWER FOR EACH PARENT.

If the statement is **NOT LIKE** your parent, circle **NL**.

If the statement is **SOMEWHAT LIKE** your parent, circle **SL**.

If the statement is **A LOT LIKE** your parent, circle **LL**.

| My parent is a person who... | | NOT LIKE | SOMEWHAT LIKE | A LOT LIKE |
|--|------------------|---------------------|--------------------------|-----------------------|
| 1)...makes me feel better after talking over my worries with her/him. | Mother Father | NL NL | SL SL | LL LL |
| 2)...sees to it that I know exactly what I may or may not do. | Mother Father | NL NL | SL SL | LL LL |
| 3)...soon forgets a rule she/he has made. | Mother Father | NL NL | SL SL | LL LL |
| 4)...is easy with me. | Mother Father | NL NL | SL SL | LL LL |
| 5)...will not talk with me when I displease him/her. | Mother Father | NL NL | SL SL | LL LL |
| 6)...is very strict with me. | Mother Father | NL NL | SL SL | LL LL |
| 7)...feels hurt when I do not follow advice. | Mother Father | NL NL | SL SL | LL LL |
| 8)...is always telling me how I should behave. | Mother Father | NL NL | SL SL | LL LL |
| 9)...spends very little time with me. | Mother Father | NL NL | SL SL | LL LL |
| 10)...believes in having a lot of rules and sticking with them. | Mother Father | NL NL | SL SL | LL LL |
| 11)...punishes me for doing something one day, but ignores it the next. | Mother Father | NL NL | SL SL | LL LL |
| 12)...lets me off easy when I do something wrong. | Mother Father | NL NL | SL SL | LL LL |
| 13)...sometimes when she/he disapproves, does not say anything, but is cold and distant for a while. | Mother Father | NL NL | SL SL | LL LL |
| 14)...sticks to a rule instead of allowing a lot of exceptions. | Mother Father | NL NL | SL SL | LL LL |
| 15)...if I break a promise, does not trust me again for a long time. | Mother Father | NL NL | SL SL | LL LL |
| 16)...does not seem to think of me very often. | Mother Father | NL NL | SL SL | LL LL |

| | | | | |
|--|--------|----|----|----|
| 17)...does not tell me what time to be at home when I go out. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 18)...gives me a lot of care and attention. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 19)...believes that all my bad behaviour should be punished in some way. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 20)...gives hard punishment. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 21)...believes in showing her/his love for me. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 22)...feels hurt by the things I do. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 23)...says some day I will be punished for my bad behaviour. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 24)...gives me as much freedom as I want. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 25)...smiles at me very often. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 26)...depends on her/his mood whether a rule is enforced or not. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 27)...excuses my bad conduct. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 28)...does not show that she/he loves me. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 29)...is less friendly with me, if I don't see things her/his way. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 30)...is able to make me feel better when I am upset. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 31)...would like to be able to tell me what to do all the time. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 32)...thinks and talks about my misbehaviour long after it is over. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 33)...lets me go any place I please without asking. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 34)...enjoys doing things with me. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 35)...makes me feel like the most important person in her/his life. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 36)...only keeps rules when I suits her/him. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 37)...will avoid looking at me when I have disappointed her/him. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |
| 38)...often praises me. | Mother | NL | SL | LL |
| | Father | NL | SL | LL |

| | | | | |
|--|------------------|----------|----------|----------|
| 39)...says, if I love her/him, I would do what she/he wants me to do. | Mother Father | NL NL | SL SL | LL LL |
| 40)...complains that I get on her/his nerves. | Mother Father | NL NL | SL SL | LL LL |
| 41)...insists that I must do exactly as I am told. | Mother Father | NL NL | SL SL | LL LL |
| 42)...loses her/his temper with me when I do not help around the house. | Mother Father | NL NL | SL SL | LL LL |
| 43)...does not insist I obey, if I complain and protest. | Mother Father | NL NL | SL SL | LL LL |
| 44)...cheers me up when I am sad. | Mother Father | NL NL | SL SL | LL LL |
| 45)...sees to it that I obey when she/he tells me something. | Mother Father | NL NL | SL SL | LL LL |
| 46)...tells me of all the things she/he has done for me. | Mother Father | NL NL | SL SL | LL LL |
| 47)...wants to control whatever I do. | Mother Father | NL NL | SL SL | LL LL |
| 48)...thinks that any misbehaviour is very serious and will have future consequences. | Mother Father | NL NL | SL SL | LL LL |
| 49)...is always finding fault with me. | Mother Father | NL NL | SL SL | LL LL |
| 50)...if I have hurt her/his feelings, stops talking to me until I please her/him again. | Mother Father | NL NL | SL SL | LL LL |
| 51)...says, if I really cared for her/him, I would not do things that cause her/him to worry. | Mother Father | NL NL | SL SL | LL LL |
| 52)...is always trying to change me. | Mother Father | NL NL | SL SL | LL LL |
| 53)...is easy to talk to. | Mother Father | NL NL | SL SL | LL LL |
| 54)...lets me go out any evening I want. | Mother Father | NL NL | SL SL | LL LL |
| 55)...when I have certain jobs to do, does not allow me to do anything else until the jobs are done. | Mother Father | NL NL | SL SL | LL LL |
| 56)...changes her/his mind to make things easier for herself/himself. | Mother Father | NL NL | SL SL | LL LL |
| 57)...can be talked into things easily. | Mother Father | NL NL | SL SL | LL LL |
| 58)...has more rules than I can remember. | Mother Father | NL NL | SL SL | LL LL |
| 59)...will talk to me again and again about anything bad I do. | Mother Father | NL NL | SL SL | LL LL |
| 60)...lets me do anything I like to do. | Mother Father | NL NL | SL SL | LL LL |