RELATIONS AMONG PARENTS' ATTRIBUTIONS, AFFECT, AND BEHAVIORS IN THE CONTEXT OF EVOCATIVE PARENT-CHILD INTERACTIONS

By

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To my dad, who wanted so much to share in my delight on this day:

Thank you for teaching me to dream big

and to work hard. Your belief in me

helped me to believe in myself.

I know you would be proud!

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CHAPTER I

Introduction

Behavioral Parent Training

Behavioral Parent Training (BPT) arguably has the strongest empirical support for its efficacy of any intervention for children who are exhibiting externalizing behavior problems and are in the preschool through elementary school age range (e.g., Kazdin & Weisz, 1998). Traditionally, BPT programs have been based on a two-pronged theory of effective parenting that includes: (a) a positive parent-child relationship and (b) parents' use of appropriate and effective discipline (e.g., Forehand & McMahon, 2003; Hembree-Kigin & McNeil, 1995). BPT programs reflect this two-prong theory, by (a) enhancing a positive parent-child relationship through teaching parents to increase attention to, reflection about, and praise for appropriate child behaviors while teaching them to ignore mild disruptive behaviors, and (b) teaching parents behavioral management principles and parenting techniques that effectively manage negative child behaviors without negative effects (e.g., Forehand & McMahon, 2003; Hembree-Kigin & McNeil, 1995). Focus on this two-pronged approach implies that child behavior can be effectively managed if parents acquire and implement both of these skill sets effectively.

There is a large literature estimating the effects of BPT programs on child and parent outcome variables, with several meta-analyses summarizing this literature. These meta-analyses (e.g., Lundahl, Risser, & Lovejoy, 2006; Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Serketich & Dumas, 1996) indicate that BPT interventions are effective at (a) reducing child behavior problems, (b) improving parenting behaviors, and

(c) reducing parents' subjective reports of stress. In their meta-analyses of BPT outcomes, Serketich and Dumas (1996) reported mean standardized effect size estimates of $d = 0.86$ ($SD = 0.36$) for the overall child behavioral domain and $d = 0.44$ ($SD = 0.30$) for the parent adjustment domain that included measures such as parents' marital satisfaction, depression, stress, irritability, and anxiety. Lundahl et al. (2006) reported smaller mean effect size estimates of $d = 0.42$ (95% CI: 0.35, 0.49) for the child behavior domain, $d = 0.45$ (95% CI: 0.38, 0.53) for the parent behavior domain, and $d = 0.53$ (95% CI: 0.44, 0.63) for the parent perceptions domain. Maughan et al. (2005) reported a mean composite effect size estimate for child externalizing behaviors across randomized studies of $d = 0.30$ (95% CI: 0.21, 0.39). They also reported average effect size estimates of $d = 0.68$ for parent reports of child externalizing problems and of $d = 0.36$ for observations of child externalizing behaviors (Maughan et al., 2005). Thus, overall the meta-analytic findings are positive regarding the efficacy of BPT interventions.

Limitations of Behavioral Parent Training

Despite this evidence regarding the efficacy of BPT programs for treating childhood externalizing behavior problems (e.g., Taylor & Biglan, 1998), a number of problems are well-documented for BPT programs, including mean effect size estimates that often are in the small-to-medium range and that often deteriorate post-treatment (e.g., Assemany & McIntosh, 2002; Lundahl et al., 2006; Maughan et al., 2005; Webster-Stratton, 1990). Evidence also suggests that BPT programs are less effective for certain families, such as those with socioeconomic disadvantages and psychopathology (e.g., Dumas & Wahler, 1983; Miller & Prinz, 1990; Lundahl et al., 2006; Webster-Stratton, 1990).

Although Serketich and Dumas's (1996) meta-analysis of the effects of BPT on child externalizing behavior found mean effect size estimates for BPT in the large range, later meta-analytic findings have reported mean effect size estimates across child and parent behavior domains in the small-to-medium range based on Cohen's (1988) classification criteria. Additionally, Lundahl et al.'s (2006) meta-analysis suggests that effect size estimates at follow-up assessments in the child and parent behavior domains are small (i.e., $d = 0.21$, 95% CI: 0.08, 0.33 and $d = 0.25$, 95% CI: 0.11, 0.40, respectively). In addition to these modest effect size estimates at post-treatment and follow-up intervals, family characteristics have been found to significantly moderate treatment outcomes (e.g., Dumas & Wahler, 1983; Lundahl et al., 2006; Reyno & McGrath, 2006). Lundahl et al. (2006) found that socioeconomically disadvantaged families received significantly less benefit from BPT than socioeconomically advantaged families. Reyno and McGrath (2006) found a constellation of family variables that significantly moderated treatment outcomes, including factors related to socioeconomic disadvantage and maternal psychopathology. These limitations suggest that BPT programs potentially could be improved to increase program effectiveness generally and to improve efficacy, specifically for sub-groups previously found to benefit relatively minimally from this type of treatment.

Barriers to Parent Implementation of Skills

One of the possible reasons for the limitations of BPT programs is that these programs have typically not addressed parental factors that may be related to parents' ability or motivation to implement the strategies taught during BPT. For example, during the course of a traditional BPT intervention, parents learn skills to implement during

interactions with their children that will increase attention and reinforcement for positive child behaviors, and decrease attention and reinforcement for negative child behaviors. However, as suggested above, certain populations of parents may have difficulty implementing these skills and most parents appear to have difficulty maintaining these skills over time, as effects of BPT dissipate across a one or two year time frame. This suggests that there may be factors that are serving as barriers to parents' use of these skills.

One potentially important set of such factors are parental affective / stress reactions to evocative child behavior. In general, it is long and well-established that high levels of stress / affective arousal can interfere with implementation of learned behaviors (e.g., Broadhurst, 1959; Yerkes & Dodson, 1908). When interactions between children and parents become conflictual, parents can have rapid and intense negative emotional reactions that may interfere not only with parents' motivation and ability to apply the positive behavioral skills they already have learned but in particular their ability to develop and extrapolate these behaviors to new circumstances (e.g., Patterson, Reid & Dishion, 1992). If this is the case, it suggests that parents need to master not only appropriate behavioral management strategies such as those taught during BPT but also to learn strategies that will help them manage their own emotions during affectively intense situations with their children so that the parents can access, reason about, and effectively apply the learned strategies.

Research on Effects of Parental Factors on Intervention Outcomes

Although BPT programs have not typically addressed parental factors that may affect parents' ability or motivation to implement the parenting strategies that they learn, some intervention studies have assessed the effects of attributional style, attributions about child behavior, and expressed emotion on BPT outcomes, presumably to identify factors that affect outcomes so that enhanced interventions can be developed (e.g., Hoza, Owens, Pelham, Swanson, Conners, Hinshaw, Arnold, & Kraemer, 2000; Peters, Calam, & Harrington, 2005). Hoza et al. (2000), for example, assessed the relation between parental cognitive and attribution styles, and treatment outcomes for 105 families participating in the MTA study (Multimodal Treatment Study of Children with Attention Deficit Hyperactivity Disorder). The measures Hoza et al. (2000) used to assess parents' cognitive/ attribution styles included the Internal-External Scale, a general locus of control measure (Rotter, 1966); the Expanded Attributional Style Questionnaire, a measure that assesses parents' attributions about negative events along the dimensions internal/ external, stable/ unstable, and global/ specific (Peterson & Villanova, 1988); and the Cognitive Error Questionnaire, a questionnaire that assesses the degree to which individuals catastrophize, overgeneralize, personalize, and selectively abstract information in response to negative scenarios (Lefebvre, 1981). Although the general parental cognitive and attribution styles assessed did not predict treatment outcomes, these null results may have been due to the fact that the cognitive / attribution styles measured by Hoza et al. (2000) were not focused on the parent-child relationship or their interactions, and thus may not have been directly relevant to the intervention and intervention outcomes.

Peters et al. (2005) hypothesized that mothers who made attributions that their children's behavioral problems were caused by factors that were internal to the child, stable, and controllable by the child would attend and complete BPT less often than mothers who made attributions that children's behavioral problems were due to factors internal to and controllable by the parent. They also hypothesized that mothers who expressed more criticism, hostility, and were emotionally over-involved with their children (i.e., mothers with high Expressed Emotion or EE) would be less likely to attend and complete therapy than those mothers low in EE. Parents' causal attributions about their children's behaviors and level of Expressed Emotion were coded using the Leeds Attribution Coding System (Stratton, Munton, Hanks, Heard, & Davidson, 1988) based on responses collected during a semi-structured interview that was designed to probe the parents for factual information about recent events related to their children's behavior disorder. The results indicated that parents' expressed emotion and attributions about their children were unrelated to attendance and completion of treatment but that mothers' attributions about their own level of responsibility for child behaviors were significantly and positively related to treatment attendance and completion. Unfortunately, however, the effects of attributions and level of Expressed Emotion on other parent and child outcomes were not reported. These results suggest that parental self-attributions about their effect on their children's behavior change may be more important in predicting who will attend and complete treatment than parents' attributions about their children's behavior. Although these findings are interesting and important, the study did not test whether attributions and Expressed Emotion were related to parents' implementation of the parenting skills learned during BPT or children's post-treatment outcomes.

Modifications to Behavioral Parent Training

Although only a small handful of BPT intervention studies have included parental affective and cognitive variables as predictors of parent treatment implementation, and parent and child treatment outcomes, some empirically supported BPT programs have been modified to include modules addressing parents' strategies for coping with their emotions, cognitions, and stress (e.g., Hemphill & Littlefield, 2001; Kazdin & Whitley, 2003; Sanders, Markie-Dadds, Tully, & Bor, 2000; Webster-Stratton, 1994). The inclusion of modules addressing these parental factors suggests that some researchers believe that BPT outcomes can be incremented, if treatment includes interventions that help parents regulate their own emotions, develop strategies for solving their own problems, and modify their own faulty cognitions. Unfortunately, however, the intervention studies designed to evaluate whether these modified interventions increment outcomes over and above traditional BPT programs rarely studied whether the parental factors that were the targets of the new intervention modules actually moderated or mediated treatment outcomes (Kazdin & Whitley, 2003; Sanders et al., 2000; Webster-Stratton, 1994). For instance, Webster-Stratton (1994) conducted an outcome study comparing two variants of the Incredible Years BPT program, the basic program and an advanced version of the program that included treatment modules designed to address parents' coping, problem-solving, social support networking, and communication skills. The results of this study suggested that the treatment effects were significantly larger in the group of parents who received the advanced program in the domains of parent and child problem-solving and parent satisfaction with the program; however, the mechanisms by which these changes occurred were not tested.

Kazdin and Whitley (2003) developed and tested the addition of cognitive-behavioral modules to their Parent Management Training. These modules, called Parent Problem Solving, sought to help parents identify stressors, generate strategies for coping with stressors, and implement their strategies. They did not, however, specifically focus on child behavior as a stressor. This enhanced intervention incremented outcomes in comparison to their Parent Management Training program in the domains of parenting stress, parents' depression and symptoms of psychopathology, and child behavior. Although these authors stated that their study was not designed to test mechanisms through which these incremental changes occurred because they did not assess changes in parents' stress levels throughout the course of treatment, they conducted post hoc analyses designed to study the relation between changes in parents' stress and outcomes variables and found that changes in parents' stress levels were not significantly related to outcomes variables. Thus, they concluded that it was unlikely that changes in stress mediated treatment outcomes. These results, however, are difficult to interpret because Kazdin and Whitley (2003) did not specifically delineate the post hoc procedures they used to test the hypothesis, did not specify which stress scales/ sub-scales they included in their analyses, and did not specify which outcomes variables were included in their analyses. If they used a general measure of parents' stress in their mediation analyses (e.g., the total parent stress scale from the PSI), it is possible that the measure(s) was not sensitive to the specific changes in parenting stress that were directly targeted during the therapy and related to the increment in parent and child outcomes.

Thus, there is a significant gap in the BPT intervention literature since the putative mechanisms through which these additional treatment components increment

outcomes have not been explicitly outlined and tested. The intervention research including parental cognitive and affective factors as both predictors of BPT outcomes and as targets for improved interventions suggests that these factors are seen as important in parent and child behavior change. However, there are at least two critical limitations with this literature, including: (a) the need to measure context-specific parental attributions and affective processes, as attributions and affective reactions specific to the evocative parent-child interactions are likely to be more directly linked to decrements in parental implementation of appropriate discipline strategies and appropriate use of positive reinforcement; and (b) the need to assess changes in parents' attributions and coping with negative affect in intervention studies, to determine whether change in these factors serve as mediators, or moderators, of treatment outcome.

One of the limitations of the BPT intervention studies investigating the relations between parental factors and treatment outcomes noted above has been that parental factors often have been assessed at too broad or general a level rather than at a narrower, more context-specific level. Researchers in social psychology have noted for decades that in order to identify relations between attitudes and behaviors, a high correspondence between the attitude and behavior of interest generally is required (Ajzen & Fishbein, 1977). Additionally, in personality research, a similar argument has been made regarding the prediction of behavior using broadband and narrowband personality constructs, which has been called the "bandwidth-fidelity debate" (Cronbach & Gleser, 1957). Research in these areas suggests that stronger relations often are found between predictors and outcomes that are highly specific or correspondent to one another. These lines of research provide support for the notion that, if parents' attributions or levels of stress are measured

at a more general or global level, they may be less strongly related to the treatment outcomes specific to the parent-child relational context. However, whether more specific measurement of parents' affect, attributions, and stress during BPT would be more strongly related to treatment outcomes than general or global affect, attributions, and stress has not yet been assessed in BPT intervention research.

Another limitation of the BPT intervention research, especially that studying the incremental value of BPT modules added to help parents cope with stressors, is that these studies typically have not included or evaluated parental factors (i.e., attributions, negative affect, and perceived stress) that may serve as mediators or moderators of treatment outcomes. However, research in the area of state dependent learning and state dependent memory suggests that such types of parental factors could function as moderators and / or mediators of BPT outcomes. For instance, it has been found that individuals who are emotionally aroused are more likely to recall and implement behavioral strategies learned if this learning occurred under similar conditions of emotional arousal (e.g., Lang, Craske, Brown, & Ghaneian, 2001). This model can be applied to parenting, and it suggests that parents who experience high levels of negative affect during evocative interactions with their children are likely to revert to using highly over-learned parenting strategies that they have used in the past under similarly-arousing circumstances, rather than using the parenting behaviors that they recently learned under conditions of affective non-arousal.

Negative parenting behaviors (e.g., reprimanding or losing one's temper with a child) also may be more likely to be implemented by parents than newly learned positive parenting behaviors (e.g., praising successive approximations of positive child behavior)

because such negative discipline strategies often are immediately reinforced when the child stops the behavior. The effects of positive discipline strategies may be more delayed, although the long-term effects of the positive discipline strategies may be more sustained (Alber & Heward, 2000). That is, yelling at a child for misbehaving will have an immediate but short-term effect on the child's behavior (i.e., the child usually will stop the negative behavior, but generally only temporarily), whereas praising the positive aspects of the child's behavior will have a delayed but longer-term effect (i.e., the child will be more likely to repeat that positive behavior in the future). Thus, in tense situations, parents may not only have quicker access to negative parenting strategies because of state dependent memory and learning, but the reinforcement and learning of the negative behaviors may also be stronger because of the short-term effectiveness of negative parenting behaviors

Thus, traditional BPT treatment effects may be moderated by parents' tendency to experience intense affective arousal during evocative parent-child interactions. That is, parents who tend to become intensely affectively aroused during evocative parent-child interactions may have relative difficulty accessing and applying the newly learned parenting behaviors, and they thus may benefit less from treatment. It also is possible that parents' affective arousal may serve as a mediator of treatment effects insofar as the treatment targets, or has an impact, on parents' ability to successfully cope with or modify their level of affective arousal during parent-child interactions. That is, BPT may enhance parents' ability to control their affective responses during evocative parent-child interactions, perhaps because it increases their confidence to manage difficult parent-child interactions or because they do not attribute willful intentionality to the child's

misbehavior, and this increased affective control may result in enhanced child outcomes because parents are more able to implement their adaptive parenting behaviors.

Basic Research on Parental Affect, Attributions, and Parenting Behaviors

Basic research has investigated relations between parental affect, attributions, and parenting behaviors. Much of the research in this area to date has relied on parents' self-reports of attributions, affect, and behavioral choices in response to hypothetical vignettes presenting a variety of different situations involving child behaviors (e.g., Dix & Lochman, 1990; Dix, Reinhold, & Zambarano, 1990; Mills & Rubin, 1990). The general findings from these studies suggest that parents' negative affect, attributions about their child's behavior, and preferred parental responses to child behavior are related. Specifically, parents who attribute more responsibility for negative child behaviors to the child or the child's characteristics tend to report higher levels of negative affect and endorse the belief that harsher techniques are required to deal with the negative child behaviors. Although these results are informative, they are limited in that they do not measure parents' responses in actual interactions with their children and they do not specify or test how the studied variables are linked.

An example of the basic research that has employed parent self-report as the primary methodology for studying the relations among parent affect and behavior, and child behavior are two sub-studies conducted by Dix, Ruble, and Zambarano (1989) to understand parents' affect, attributions, and responses to child misbehavior. In the first sub-study, mothers read scenarios regarding child misbehavior and then, from a set of parenting behavior options, chose how they would respond. The scenarios involved

children who were the same age and gender as the mothers' children, and varied with respect to whether or not the child understood that s/he had misbehaved. Mothers also responded to items assessing the intensity of their negative affect, the degree to which they felt that the mother would need to assert behavioral control / power in response to the misbehavior, and the type and sternness of the response they deemed appropriate for the situation. Mothers also were asked to rate the degree to which the scenario was realistic (i.e., something their child would do). As expected in the first study, mothers reported that they would be more upset with an older child who understood their misbehavior and deemed power-assertive discipline more appropriate in comparison to other discipline strategies.

In the second sub-study, mothers rated their attributions and hypothetical responses to 10 common child misbehaviors that could cause emotional or physical harm to another person or an animal. Mothers' attributions and hypothetical responses to the child misbehaviors varied as a function of child age and type of child misbehavior, with mothers of younger children tending to endorse less power-assertive discipline strategies than mothers of older children. Although these studies suggest that there are differences in parents' affect and preferred behavioral responses across different child age groups, categories of misbehavior, and children's understanding of their behavior, studies such as these are limited because it is difficult to determine if the results would generalize to parents' actual affect and behavior during real interactions with their children. This is particularly relevant because these situations potentially involve high levels of negative affect. Additionally, these studies were limited in that they did not assess the relation between parents' affect and behavior.

Some studies in this area have included direct observation of parent and child interactions as well as parent self-report data (e.g., Denham, Workman, Cole, Weissbrod, Kendziora, & Zahn-Waxler, 2000; Dix, Gershoff, Meunier, & Miller, 2004; Potier & Day, 2007; Slep & O'Leary, 1998). The findings of the observational studies are consistent with the findings of the studies relying on self-report, with significant relations among parents' attributions, affect, and behaviors and child behaviors. For example, Denham et al. (2000) found that the amount of negative affect parents reported was significantly related to the level of child behavior problems. However, this and other studies have not investigated the mechanisms through which these variables are linked. It is possible for instance, that a correlation between parents' negative affect and child behavior problems is due to (a) parents' use of different discipline strategies when affectively aroused, (b) direct effects of parental expression of negative affect on the child's self-esteem, (c) children learning negative behaviors through parental modeling of affective and behavioral dysregulation during difficult situations, or (d) the parent-child relationship may become aversive to the child, damaging the attachment, resulting in the child being less trusting and more hostile toward the parent. Understanding the mechanisms underlying relations between parent affect, parent behavior, and child behavior problems thus is essential if we are to determine how BPT interventions may best be modified to include components that specifically target parents' ability to cope with negative affect, to increase their ability to apply positive parenting strategies during evocative parent-child interactions.

CHAPTER II

Current Study

Although there is strong evidence suggesting that BPT programs are efficacious and effective at improving parenting and child behaviors, there remain several areas where program effectiveness is less than optimal. Given the evidence that BPT strategies are highly efficacious when implemented correctly, this likely is due at least in part to parental factors (not directly targeted during BPT) that have an impact on parents' implementation of the skills learned during BPT. One set of such factors that potentially affects parents' ability to implement good child behavior management strategies during evocative parent-child interactions is parents' affective reactions. Research in the area of state dependent learning and memory suggests that individuals who are affectively aroused tend to remember and rely on behaviors learned during periods of similar affective arousal. Thus, although parents may have learned the new, more effective parenting skills taught during BPT, their ability to access and apply these strategies may be impaired when they are upset with their children or affectively aroused. Intervention and basic research studying relations between parents' affect and behavior have not directly addressed this question.

Existing basic and intervention research studying effects of parental factors (e.g., parental affect and attributions on parent and child behavior) falls into three broad domains: (a) studies including parental factors as predictors of response to traditional BPT programs, (b) studies testing the relative efficacy of enhanced BPT programs, and (c) basic research studying relations among parental affect, attributions, and behavior.

Although these studies have made significant contributions to our understanding of parenting and parent training, they are limited (vis-à-vis understanding how parent training programs may best be improved) in that they (a) measured important parental factors at a broad, general level instead of at a level specific to the parent-child relational context, and (b) have not included important parental factors as mediators or moderators of treatment response.

Hypotheses

The purpose of the proposed study is to address some of these limitations, by studying relations between parents' affect and behavior and child behavior during evocative and non-evocative parent-child interactions. There are four sets of research hypotheses that are addressed in the study.

Hypothesis 1. The first set of hypotheses focuses on the relations between parents' affect and behavior during evocative parent-child interactions, and trait-level child behavior problems. This set of hypotheses is of interest because, according to our model, parent affect and use of maladaptive parenting behaviors under evocative conditions are linked (and ultimately increase child problem behaviors, and decrease the efficacy of BPT).

1-1. The relations among parent affect and parent behavior observed during the evocative interaction task will be significant.

1-2. The relations among affect reported during the evocative interaction task and parent report of child externalizing behavior will be significant.

1-3. The relations among parenting behavior observed during the evocative interaction task and parent report of child externalizing behavior will be significant.

1-4. When parent affect and parent behavior during the evocative interaction task are both included as predictors of parent report of child externalizing behavior, parent affect will not predict significant variability in child behavior but parent behavior will.

Hypothesis 2. The second set of hypotheses focuses on whether parenting behavior and parent affect that occur during evocative parent-child interactions are more strongly related to trait-level child behavior problems than parenting behavior and parent affect that occur during non-evocative parent-child interactions. This set of questions is of particular interest because Behavioral Parent Training tends to focus on training under non-evocative conditions, thus the questions assess whether this is an optimal strategy.

2-1. Parent reports of child externalizing behavior will be more strongly related to parenting behaviors observed during evocative interactions than to parenting behaviors observed during non-evocative interactions.

2-2. Parent reports of child externalizing behavior will be more strongly related to parents' affect during the evocative than during the non-evocative interactions.

2-3. Parent reports of child externalizing behavior will be more strongly related to parenting behaviors observed during interactions than to parents' questionnaire reports of their behaviors.

Hypothesis 3. The third set of hypotheses focuses on whether relations among child and parent behavior and affect are hierarchical, in the sense that relations between affect and behavior are stronger within levels than between levels. According to our model, these relations are stronger and effects of interventions will be stronger the more closely they relate to the hierarchical nature of the relations (e.g., if relations are hierarchical, then increasing parents' coping abilities should focus specifically on the affective reactions most closely connected to their use of maladaptive parenting strategies). We focus on the evocative parent-child interactions here because fundamentally we are interested in the effects of parental affect under evocative conditions.

3-1. Parents' trait-level affect will be more strongly related to parents' state-level affect than it is to parents' situation-specific affect.

3-2. Parenting behaviors during the evocative interaction task will be more strongly related to parents' situation-specific affect than to parents' state-level affect at baseline.

3-3. Parenting behaviors during the evocative interaction task will be more strongly related to parents' state-level affect than to parents' trait-level affect.

Hypothesis 4. The fourth set of hypotheses focuses on differences in parental responses to evocative versus non-evocative parent-child interactions. According to our model, evocative parent-child interactions should generate more negative affect and more negative parenting behavior, and if so, it will be important to help parents develop

appropriate parenting skills during evocative interactions more than during non-evocative interactions in BPT.

4-1. Parents will report less positive and more negative affect during the evocative than during the non-evocative interaction task.

4-2. Parents will display less positive and more negative parenting behavior during the evocative than during the non-evocative interaction task.

CHAPTER III

Method

Participants

Participants were 65 parent-child dyads with a child enrolled in kindergarten or first grade during the recruitment period (mean age = 6.28). Families were recruited from two sources: (1) advertisement through the Vanderbilt University Kennedy Center for Human Development Study Finder web site and recruitment service and (2) recruitment packets sent home to parents of kindergarten and first grade regular education students enrolled in four Metro Nashville public elementary schools. Ninety-one percent of the caregivers sampled were female, and 46% of the children sampled were female. Eighty-six percent of the caregivers were the children's biological parents, 3.1% were grandparents, 1.5% were step-parents, 4.6% were adoptive parents, 3.1% were other biological relatives of the children, and 1.5% were other types of caregivers. Thirty-seven percent of the parents were ethnic minorities (30.8% African-American), and 46% of the children were ethnic minorities (30.8% African-American). Sixty-six percent of the caregivers were married. The median caregiver education level was "some college," and the median annual household income was between $21,000 and $40,000. Caregivers' ages ranged from 23- to 69-years-old (M = 36.12, SD = 8.46).

Procedure

The research protocol received approval from the Vanderbilt University Institutional Review Board. Families who responded to the advertisements through the

Study Finder or who returned consent-to-contact forms to their children's teachers were contacted by study personnel, given additional information about the study, and if interested, were scheduled to participate in the study if their children met the criteria to participate (i.e., were currently enrolled in or had just completed kindergarten or first grade in a regular education classroom). Participation in the study required families to come to the Department of Psychology and Human Development at Vanderbilt University for a 1.5- to 2-hour lab visit.

During their visit to the lab, the caregiver and the child participated in the informed consent/ assent process. Then, the child was encouraged to play with the toys in the room while the parent completed the baseline questionnaire packet. Next, the parent was instructed to have his/ her child complete a tangram puzzle(s) for five minutes, using any type of assistance the parent chose to provide (Non-evocative Interaction Task). If a child finished a puzzle before the five minutes elapsed, the timer was stopped, and the child was given another puzzle to work on for the remainder of the time. Each child was administered the puzzles in the same order, but not all children were administered multiple puzzles. At the end of the task, or when the child completed a puzzle before time elapsed, a photograph was taken of the child's puzzle(s). The parent was then administered an affect adjective checklist and was instructed to rate his/ her affective state while engaging in the puzzle task with his/ her child. Once the parent completed this set of tasks, the parent was told that both experimenters were going to leave the room to make copies of the consent/ assent forms while the parent engaged in a free-play activity with his/ her child. The experimenters used a timer and remained out of the room for 5 minutes. At the end of this interval, the experimenter administered another affect

checklist and instructed the parent to rate his/ her state affect while engaging in the free-play activity with his/ her child. Experimenter 2 then engaged in child-directed play with the child while the parent completed a child behavior measure. After the parent completed this measure, the child was informed that experimenter 1 and his/ her parent were going to go across the hall into another office for a short period of time to do some things together. The child was told that if he/ she needed his/ her parent for any reason then experimenter 2 would bring the child to the other room to find the parent.

During this segment of the study, experimenter 2 was instructed to (1) engage in child-directed play with the child for approximately 25 to 35 minutes and to dump out all the toys during the play, and, (2) to attempt to engage the child in watching a cartoon movie on a portable DVD player with headphones after approximately 25 to 35 minutes of play. If the child attempted to clean up the toys in the room, experimenter 2 was instructed to say that they (i.e., the child and experimenter 2) would clean the toys up later, and attempts were made to distract the child from cleaning up the toys. In the other room, experimenter 1 administered a second questionnaire packet to the parent and then completed a semi-structured interview with the parent about a recent difficult or challenging situation the parent had with his/ her child. After this interview, the parent was asked to recall and rate his/ her affect during the incident on the affect adjective checklist and to complete another questionnaire. At the end of these tasks, the parent was instructed to go back into the room with the child, to seat himself/ herself back at the table where he/ she was prior to coming into the other office with experimenter 1, and to have the child clean up all the toys by himself/ herself as quickly as possible while the experimenters stepped out of the room (Evocative Interaction Task). Experimenter 1 and

the parent then returned to the other room, and the experimenters left the parent in the room with the child to complete the clean-up task. This task lasted 5 minutes and was timed by the experimenters. At the end of the clean-up task, the child was told that the experimenters would clean up the rest of the toys and was given a small toy prize for participating in the study. The parent was asked to fill out a final affect adjective checklist to rate his/ her state affect during the clean-up task. The parent was then paid $40 for his/ her participation in the study.

Measures

Measures collected in this study are conceptualized as representing three levels of specificity (see Table 1 below). *Level 3* represents general, trait-like characteristics without any specific linkage to the child (for the parent), or to the parent (for the child). Examples of Level 3 measures include the Beck Depression Inventory-II filled out with standard instructions (i.e., parent rates depressive symptoms for the past two weeks), and the Child Behavior Checklist. *Level 2* represents trait-like or state-like characteristics of the parent related to the child, but general in the sense that they are not linked to a specific interaction. Examples of Level 2 measures include the Parenting Stress Index filled out with standard instructions to report the parent's overall levels of parenting stress, or the Child Report of Parenting Behavior Inventory parenting behavior questionnaire. *Level 1* represents characteristics linked to a specific parent-child interaction. Level 1 measures include the observed parenting and child behaviors and parent affect and attributions reported during the experimental interaction tasks in this study.

Table 1

Measures Categorized by Level

Level 1 Measures Situation-specific	Level 2 Measures Trait-like or state-like measures related to the child	Level 3 Measures Trait-level/ across time
MAACL administered after each interaction task (affect related to a specific situation)	MAACL administered at baseline (state-like affect at baseline)	BDI-II (trait-like affect over the past two weeks)
DPICS-III Parent Behavior	CRPBI (general measure of self-reported parent behavior)	CBCL (general measure of parent reported child problems)
PCS administered after the recall task (parent report of attributions about event-specific child behavior)	PCS administered at baseline (parent report of attributions about child behavior in general) PSI (parenting stress related to the parenting role) PRDPB (Parent-rated parenting behavior toward child)	ECBI (general measure of parent reported child problems)

Demographic questionnaire. A demographic questionnaire was administered to the parent/ caregiver and included the following items: caregiver and child age, caregiver and child gender, caregiver-child relationship (e.g., biological parent, grandparent, adoptive parent), caregiver and child ethnicity, caregiver marital status, number of adults in the caregiver's household, caregiver's highest level of education, annual household

income, chronic physical illnesses of caregiver and/ or child, and history of mental health services sought for caregiver and/ or child/ family.

Multiple Affect Adjective Check List. The MAACL-R is a widely-used, 70-item measure of positive and negative affectivity (Zuckerman & Lubin, 1985). For the purposes of the current study, 15 affect adjectives were selected from the Multiple Affect Adjective Check List - Revised (MAACL-R) and were used to assess positive and negative state-level affect experienced by caregivers immediately after each caregiver-child interaction task as well as parents' retrospective ratings of their affect during a challenging incident between themselves and their children that they were interviewed about during the study.

The 15 affect adjectives selected for the present study were those deemed by the current authors to represent parents' potential positive and negative emotions experienced during the interaction tasks. Ten of the adjectives were negative affect adjectives (e.g., annoyed, irritated, hopeless), and five of the adjectives were positive affect adjectives (e.g., happy, cooperative, energetic). The internal consistency reliability of the positive and negative affect adjectives were estimated in the current sample separately for the baseline rating and the ratings given after each of the four tasks. Coefficient alpha estimates of the 5-item, positive affect scale ranged from 0.66 to 0.87 across rating time points. Coefficient alpha estimates of the 10-item, negative affect scale ranged from 0.65 to 0.89 across rating time points.

Parenting Cognition Scale. The Parenting Cognition Scale (PCS) is a 30-item parent report measure of parent attributions about child misbehavior (Snarr, Slep, &

Grande, 2009). This measure is comprised of two scales: the Child Attribution Scale and the Parent Responsible Scale. These scales measure the degree to which parents blame their children and/ or themselves for child misbehavior occurring over the past two months. The PCS demonstrated good internal consistency (alpha estimates ranged from 0.81 to 0.90) and test-retest reliability (Pearson's correlations ranged from 0.45 to 0.83) in the initial validation and cross-validation samples.

In the present study, the PCS was administered twice, at baseline as a measure of parents' cognitions about their children's misbehavior in general and again after the interview as a measure of parents' cognitions about the specific instance of child misbehavior discussed during the interview. Internal consistency reliability estimates of the PCS scales in the present sample at the baseline measurement were $\alpha = 0.84$ for the Child Attribution Scale and $\alpha = 0.75$ for the Parent Responsible Scale, and, in relation to a specific incident of child misbehavior, were $\alpha = 0.90$ for the Child Attribution Scale and $\alpha = 0.80$ for the Parent Responsible Scale.

Beck Depression Inventory, Second Edition. The Beck Depression Inventory, Second Edition (BDI-II) is a 21-item measure of depression symptoms that correspond with DSM-IV criteria for Major Depressive Disorder (Beck, Steer, & Brown, 1996). Respondents are asked to choose among multiple statements regarding their experience of each symptom within the last two weeks (e.g., I do not feel sad, I feel sad, I am sad all the time and I can't snap out of it, I am so sad or unhappy that I can't stand it). The internal consistency reliability estimate of the BDI-II total score in the standardization sample was reported to be $\alpha = 0.92$ for outpatients. One-week test-retest reliability was estimated as $r = 0.93$.

The total depression score was used in the present study as a measure of parents' trait level of depressive symptoms because of its inclusion in prior studies examining parent factors and their relations with child behavior problems. The internal consistency reliability estimate in the current sample for the BDI-II was $\alpha = 0.89$.

Child Behavior Checklist. The Child Behavior Checklist (CBCL) is a 118-item measure of parents' perceptions of their children's emotional and behavioral problems across two broad symptom domains: internalizing and externalizing symptoms (Achenbach & Rescorla, 2001). In the present study, because of the children's age range, we used the Externalizing Problems scale. The CBCL has shown good internal consistency (α's ranging from 0.78 to 0.97 in the standardization sample) and test-retest reliability (r's ranging from 0.95 to 1.00 in the standardization sample). Its construct validity is well-documented.

The internal consistency reliability estimate of the Externalizing Problems scale in the present sample was $\alpha = 0.88$.

Eyberg Child Behavior Inventory. The Eyberg Child Behavior Inventory (ECBI) is a 36-item, parent-rated measure of common child non-compliant and disruptive behaviors (Eyberg & Pincus, 1999). It consists of scales measuring the frequency a child exhibits common disruptive and non-compliant behaviors (Intensity Scale) and a scale measuring whether a parent deems the child behavior problematic (Problem Scale). The reliability and validity of the ECBI are well-documented. Internal consistency estimates of the Intensity Scale were $\alpha = 0.98$ and 0.95 and the Problem Scale were *KR20* = 0.98 and 0.93 in the standardization and restandardization samples, respectively. Three-week

test-retest reliabilities were 0.86 and 0.88 for the Intensity and Problem scales, respectively.

The internal reliability estimates of the Intensity and Problem scales in the present sample, respectively, were $\alpha = 0.89$ and $\alpha = 0.93$.

Child Report of Parenting Behavior Inventory – 30 - Adult. The Child Report of Parenting Behavior Inventory-30-Adult (CRPBI) is a 30-item measure of parents' self-report of their own parenting behaviors across three general dimensions: acceptance/ rejection (e.g., *I often praise my child.*), psychological control/ autonomy (e.g., *I insist that my child must do exactly as told.*), and firm/ lax control (e.g., *I let my child off when he/ she does something wrong.*) (CRPBI-30-Adult; Schludermann & Schludermann, 1970). The original CRPBI-30 was developed as a child report of parenting behaviors; however, the factors have been found to be invariant across child-rated and parent-rated versions of this measure (e.g., Fauber, Forehand, Thomas, & Wierson, 1990). The three scales have shown adequate internal consistency across studies and have demonstrated construct validity (e.g., α's ranged from 0.74 to 0.87; Schwartz, Barton-Henry, & Pruzinsky, 1985).

In the present study, the parent-rated version of the measure was used to assess parents' perceptions of their own parenting styles. Parents rated each of the 30 parenting behaviors on a scale from 1 to 3, where 1 = not like me, 2 = somewhat like me, and 3 = a lot like me. Internal consistency estimates in this sample were $\alpha = 0.59$, 0.69, and 0.67 for the acceptance/ rejection, psychological control/ autonomy, and firm/ lax control scales, respectively.

Parenting Stress Index – Third Edition. The Parenting Stress Index (PSI) is a 120-item measure of parenting stress that measures stress across domains related to the parent, the child, and parent-child interactions (Abidin, 1995). The PSI scales include a total stress scale, a child domain scale, and a parent domain scale. This measure has demonstrated good psychometric properties, including high internal consistency and test-retest reliability estimates and good construct validity. Internal consistency estimates ranged from $\alpha = 0.90$ to 0.95 across the three major scales, test-retest reliability estimates ranged from $r = 0.63$ to 0.96 at one to three month follow-up intervals across the three major scales.

In the present sample, the internal consistency reliability estimates were $\alpha = 0.82$, 0.91, and 0.92, respectively, for the Child Domain, Parent Domain, and Total Stress scores.

Social Competence Interview – adapted for difficult parenting situation. The original Social Competence Interview (SCI) is a semi-structured interview and coding system designed to measure interpersonal capabilities that have an impact on an individual's vulnerability to stress-related illnesses (Ewart, Suchday, & Sonnega, 1997). The interview has been found to elicit equal to greater physiological stress responses in comparison to other, commonly used laboratory stressors (Ewart, Jorgensen, Suchday, Chen, & Matthews, 2002).

The original SCI was adapted in the present study to focus on a recent, difficult episode between the parent and child. Each parent in the study was instructed to think about and recall a recent, difficult or challenging situation between himself/ herself and

the child that s/he was willing to discuss. Parents were given examples of stressful situations discussed by other parents (e.g., a time when a child threw a tantrum, a time when a child lied about something important, or a time when a child did something against the rules) and were asked to recall the situation out loud so that the interviewer could picture the situation.

The adapted version of the SCI was used in the present study as a recall task to elicit parents' vivid recall of a stressful parent-child interaction in order to study parents' affective and cognitive responses to a specific parenting stressor. Parents' affect and cognitions during the recalled situation were measured with the MAACL and PCS described above, rather than the SCI coding system.

Dyadic Parent Child Interaction Coding System, Third Edition. The Dyadic Parent Child Interaction Coding System (DPICS) is a system used to code parent and child behaviors occurring during parent-child interaction tasks designed to be conducted in the pre-treatment, mid-treatment, and post-treatment phases of Parent Child Interaction Therapy to assess parents' needs and progress (Eyberg, Nelson, Duke, & Boggs, 2005). The parent behaviors coded correspond directly to the positive parenting skills parents are taught to use with their children and the negative parenting behaviors parents are taught to avoid during PCIT. The positive parent behaviors coded include positive attention variables, praise (e.g., Great job!, I like how you put the toys away so neatly!), parent reflection of child utterances (e.g., You *are* drawing a snowman.), and parent description of appropriate child behaviors (e.g., Now, you are stacking the purple block on top of the green block.). Two types of parent commands also are coded, direct commands and indirect commands. Parent direct commands (commands that are positively stated, given

one at a time, are specific, and are developmentally appropriate; e.g., Please put these lips on Mr. Potato Head) are considered a positive parent behavior. A neutral parent behavior that is coded is parent talk (e.g., That cookie reminds me of the time we baked cookies at grandma's house.). The negative parenting behaviors that are coded include: (a) questions, (b) indirect commands (e.g., Let's clean this up., Will you bring me the doll?), and (c) negative talk (e.g., anything including the words no, don't, stop, quit, or not; anything said with sarcasm; criticisms about the child/ child's behavior).

The reliability and validity of the DPICS have been widely studied and are well-established (e.g., see Eyberg et al., 2005, for a summary of reliability and validity findings across studies). For example, inter-rater reliability estimates for videotaped coding of the parent categories used in DPICS-III reportedly ranged from Kappa of 0.46 to 0.86. The DPICS-III was developed to attempt to improve upon psychometric properties found across coded parent and child behaviors formerly used in prior versions of the DPICS.

For the present study, the author (S.B.) coded 100% of the videotaped puzzle task and clean-up task interactions using the DPICS-III. A second coder (S.C.), a Master's-level research assistant, was trained to code using the DPICS-III by the author, using randomly selected videotaped interactions of participants to establish agreement. Once trained to use the coding system, the second coder coded 20% of the videotaped interactions that were randomly selected and presented to her in random order. The interactions rated by both coders were used for inter-rater reliability analyses.

Inter-rater reliabilities were estimated using the random sample of 20% of the videotaped parent-child interactions coded by both raters. Inter-rater reliability of each category of parent behaviors used in the current study was estimated using the intraclass correlation coefficient. For the clean-up task, the reliability estimates were .94 for commands, .87 for questions, .72 for positive attention, .67 for neutral talk, and .60 for negative talk. For the puzzle task, the reliability estimates were .90 for commands, .91 for questions, .88 for positive attention, .82 for neutral talk, and .91 for negative talk.

Parent Report of Dyadic Parent Behavior. The Parent Report of Dyadic Parent Behavior (PRDPB) is a 17-item parent report measure of parents' perceptions of their dyadic interaction behavior developed for the present study (Ball & Weiss, 2009). This measure was developed to reflect similar behaviors as those measured by the DPICS-III based on parents' self-report of their own behavior rather than observed behavior during parent-child interactions.

An exploratory principal components analysis was conducted on the items of the PRDPB, and two scales were formed based on conceptual sorting of the items and the results of the principal components analysis. The two scales conceptually reflect child-directed parent behaviors and punitive parent behaviors. Internal consistency reliability estimates of the two scales constructed based on these preliminary findings were $\alpha = 0.73$ for the 8-item child-directed parent behavior scale and $\alpha = 0.71$ for the 6-item punitive parent behavior scale.

CHAPTER IV

Results

Missing Data

Data analyses for the present study were conducted in multiple steps. The first step examined missing data to determine the extent and patterns of missingness in order to select an appropriate procedure(s) for handling missing data. Missing values analysis was conducted using SPSS. Expectation Maximization (EM) methods were used to test the assumption that data were missing completely at random (MCAR). The hypothesis that data were MCAR was tested using Little's (1988) test developed for this purpose. The null hypothesis that data were MCAR was not rejected ($\chi^2 = .00$, $df = 15972$, $p = 1.00$). This suggests that a systematic pattern of missingness was not detected in relation to the variables of primary interest in this study.

In addition to testing for MCAR, patterns of missingness were examined across all items for all measures. The majority of variables had fewer than 5% missing values. Four items on the PSI had 6.2% to 7.7% missing values. On examination, these four PSI items pertained to parents' perceptions of support from their spouses/ partners since having children. Two of the participants with missing data on these four items did not complete the entire PSI due to administrative errors. The other three participants with missing data on these items reported their marital status on the demographic questionnaire as either single or widowed. These parents likely had missing values on these PSI items because they did not feel these items were relevant to them due to their current marital status. The PSI manual (Abidin, 1995) recommends that missing scale

items on the PSI be replaced with the mean of the other items on the scale. Thus, the missing values of the three participants missing only the spousal items were replaced with the mean of the other scale items.

Multiple imputation (MI) was used to replace missing values for the remainder of the observations and variables. This method for replacing missing values is a statistically-sound, two-step, Monte Carlo procedure that yields a series of completed datasets (Rubin, 1987). The first step of the MI procedure estimates the missing data based on a conditional distribution of the missing values given the observed values. The second step of the procedure uses the imputed dataset to estimate the population parameters (i.e., the population means and variances/ covariances). Rubin (1996) demonstrated that a small number of imputed datasets ($3 \leq n \leq 5$) is adequate for the majority of practical applications of MI. In the current study, five imputed datasets were created and used in all statistical analyses. For the current study, each statistical test was performed independently on each imputed dataset, and the pooled parameter estimates are reported.

Preliminary Analyses

The second step of data analyses was conducted to identify univariate outliers and to examine the distributional properties of all study variables (i.e., central tendency, variability, skewness and kurtosis). This step of analyses revealed that multiple study variables had distributional properties that violated assumptions of planned statistical tests. Per the recommendations of Tabachnick and Fidell (2007), variables with skewness coefficients above 1.0 were transformed using a square root transformation. Then,

distributional properties were re-examined and one variable that continued to have a skewness coefficient above 1.0 was transformed using a logarithmic transformation.

Descriptive statistics summarizing central tendency and variability of Level 1, 2, and 3 measures prior to transformation are presented in Tables 2 through 4. Pearson correlations among affective measures are presented in Table 5. As expected, correlations among nearly all negative affect measures were significantly, moderately, and positively correlated with one another. The majority of positive affect measures were significantly, moderately, and positively correlated with one another as well. Three exceptions were noted: The correlation between negative affect after the puzzle and recall task was not significant, the correlation between negative affect after the recall and clean-up task was not significant, and the correlation between baseline positive affect and positive affect measured after the clean-up task was not significant. There tended to be significant, moderate-to-strong, negative correlations between positive and negative affect measures administered at the same time point in the study (e.g., positive and negative affect at baseline significantly correlated with one another). The one exception to this pattern of findings was that the correlation between positive and negative affect measured after the puzzle task was not significant.

Pearson correlations among measures of observed parent behaviors are presented in Table 6. These correlations are of interest because some parenting behaviors considered negative parenting behaviors by the DPICS-III authors (Eyberg et al., 2005) were found to significantly correlate with positive parenting behaviors in the current study. For example, Parent Questions is a category of parent behaviors that are considered negative from the DPICS-III perspective; however, questions asked during the

clean-up task were significantly and positively correlated with Neutral Talk and Positive Attention, two types of behaviors that would generally be considered neutral or positive. Parent Questions during the puzzle task was correlated significantly and positively with positive parenting behaviors during the puzzle and clean-up tasks including significant positive associations with positive attention and neutral talk during the puzzle task; also, Parent Questions during the puzzle task was significantly negatively correlated with parent Negative Talk during the clean-up task.

Additionally, Commands is a common DPICS-III coding category for parent behaviors, and is the sum of parents' Direct Commands and Indirect Commands during a given episode (e.g., clean-up task). Parent Indirect Commands from the DPICS-III perspective can be either an ineffective or neutral parenting behavior, depending on whether the parents expect their children to obey commands or whether the parents intend to give their children an option to obey, respectively. Commands issued during the clean-up task were correlated significantly and positively with parent Negative Talk, perhaps reflecting the negative context of the clean-up task. However, Commands issued during the puzzle task were significantly and positively correlated with both positive and negative parenting behaviors, making it difficult to interpret commands as a measure of positive or negative parenting behavior in this study.

These various correlations could suggest that the DPICS-III system may not have been the most suitable coding system for the present study, at least as an index of positive and negative parenting as conceptualized by the DPICS-III authors. Based on these various correlations, it appears that some of the parenting behaviors measured by the DPICS-III are not inherently positive or negative but depend on the context in which they

occur. For example, the current pattern of correlations suggests that Parent Questions was a positive, rather than negative, parenting behavior in the current study and seemed to be a form of parents' positive engagement with their children during tasks rather than a factor linked to more negative parent-child relations, as suggested by the DPICS-III system. These issues should be considered when interpreting the remainder of the results examining the DPICS-III parent behaviors as variables of interest.

Table 2

Descriptive Statistics for Level 1 Measures

Measure	N	*M*	*SD*
Negative Affect, Puzzle Task	65	1.71	2.59
Negative Affect, Play Task	65	0.43	1.30
Negative Affect, Recall Task	65	15.93	8.94
Negative Affect, Clean-Up Task	65	3.58	4.68
Positive Affect, Puzzle Task	65	13.02	2.20
Positive Affect, Play Task	65	13.71	1.85
Positive Affect, Recall Task	65	3.53	3.37
Positive Affect, Clean-Up Task	65	9.40	4.60
PCS, Post-Recall, Child Attributions	65	24.35	11.15
PCS, Post-Recall, Parent Attributions	65	11.42	4.71
Parent Talk, Clean-Up Task	65	17.60	8.61
Parent Talk, Puzzle Task	65	14.89	10.23
Parent Negative Talk, Clean-Up Task	65	3.34	3.53
Parent Negative Talk, Puzzle Task	65	1.54	2.19
Parent Questions, Clean-Up Task	65	9.39	5.94
Parent Questions, Puzzle Task	65	7.94	6.28
Parent Positive Attention, Clean-Up Task	65	2.34	2.47
Parent Positive Attention, Puzzle Task	65	4.19	3.76
Parent Commands, Clean-Up Task	65	16.20	8.89
Parent Commands, Puzzle Task	65	9.88	7.07

Table 3

Descriptive Statistics for Level 2 Measures

Measure	N	*M*	*SD*
Parent Positive Affect, Baseline	65	12.09	2.47
Parent Negative Affect, Baseline	65	2.18	2.73
PCS, Child Attributions	65	22.13	8.40
PCS, Parent Attributions	65	11.43	3.50
CRPBI, Lax	65	18.00	2.96
CRPBI, Psychological Control	65	14.40	3.01
CRPBI, Warmth	65	28.40	1.66
PRDPB, Child Directed	65	40.19	3.81
PRDPB, Punitive	65	19.41	4.78
PSI, Child Domain	65	94.20	19.23
PSI, Parent Domain	65	110.89	26.22
PSI, Total Stress	65	205.09	41.24

Table 4

Descriptive Statistics for Level 3 Measures

Measure	N	*M*	*SD*
BDI-II	65	7.13	6.85
CBCL, Child Externalizing Behaviors	65	7.66	6.59
ECBI, Intensity	65	91.20	25.02
ECBI, Problem	65	8.19	7.51

Table 5

Pearson Correlations among Affect Variables

	NA1	NA2	NA4	NA5	PA1	PA2	PA4	PA5	BDI-II
NA1	1.00								
NA2	.43**	1.00							
NA4	.29*	.22	1.00						
NA5	.32**	.29*	.15	1.00					
PA1	-.33**	.01	-.34**	.07	1.00				
PA2	-.21	-.20	-.14	-.15	.29*	1.00			
PA4	-.04	-.07	-.46**	-.01	.30*	.35**	1.00		
PA5	-.07	-.07	-.15	-.66**	.19	.47**	.25*	1.00	
BDI-II	.40**	.37**	.54**	.15	-.32**	-.32*	-.37**	-.16	1.00

Note. NA1 = Negative Affect at Baseline, NA2 = Negative Affect after Puzzle Task, NA4 = Negative Affect recalled during Recall Task, NA5 = Negative Affect after Clean-Up Task, PA1 = Positive Affect at Baseline, PA2 = Positive Affect after Puzzle Task, PA4 = Positive Affect recalled during Recall Task, PA5 = Positive Affect after Clean-Up Task, BDI-II = BDI-II Total Score.

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

Table 6

Pearson Correlations among Observed Parent Behaviors

	CU-Nta	CU-Ques	CU-Comm	CU-Ta	CU-Posatt	PZ-Nta	PZ-Ques	PZ-Comm	PZ-Ta	PZ-Posatt
CU-Nta	1.00									
CU-Ques	-.04	1.00								
CU-Comm	.46**	.12	1.00							
CU-Ta	-.21	.25*	-.11	1.00						
CU-Posatt	-.14	.29*	.01	.34**	1.00					
PZ-Nta	.26*	-.05	.12	-.30*	-.23	1.00				
PZ-Ques	-.31*	.22	.08	.20	.08	-.04	1.00			
PZ-Comm	-.14	.01	.17	-.02	-.08	.35**	.44**	1.00		
PZ-Ta	-.04	-.09	-.02	.22	.02	-.11	.44**	.35**	1.00	
PZ-Posatt	-.24	.10	-.09	.26*	.33**	-.03	.43**	.36**	.21	1.00

Note. CU-Nta = Clean-Up Task – Negative Talk. CU-Ques = Clean-Up Task – Questions. CU-Comm = Clean-Up Task Commands. CU-Ta = Clean-Up Task – Neutral Talk. CU-Posatt = Clean-Up Task Positive Attention. PZ-Nta = Puzzle Task Negative Talk. PZ-Ques = Puzzle Task Questions. PZ-Comm = Puzzle Task Commands. PZ-Ta = Puzzle Task Neutral Talk. PZ-Posatt = Puzzle Task Positive Attention.

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

Pearson correlations among Level 1 measures are presented in Table 7 below. Among Level 1 measures, parent affect measures administered after the evocative interaction task (i.e., clean-up) and after the interview about the recalled evocative situation (i.e., recall task) did not correlate significantly with parent behaviors observed during the evocative interaction task, with the exception of the significant negative correlation between recalled negative affect and talk during the clean-up task. Negative affect recalled during the parent interview also was significantly, positively correlated with parent-responsible and child-responsible attributions for recalled negative child behavior.

Correlations among Level 2 measures are presented in Table 8 below. These correlations indicated that parenting stress measured by the PSI was significantly correlated with the majority of other Level 2 measures. Baseline affect correlated with the majority of other Level 2 measures as well. For example, parent levels of positive baseline affect correlated negatively with their levels of negative affect, levels of parent and total stress, and child attributions for child misbehavior. Parents' baseline positive affect also correlated positively with their self-reported levels of child-directed behavior and warmth/ acceptance. Parents' baseline negative affect correlated negatively with their self-reported levels of child-directed behaviors and warmth/ acceptance and positively with parent-responsible attributions for child misbehavior and parent and total stress.

Correlations among Level 3 measures are presented in Table 9 below. These correlations among parents' trait-level negative affect and externalizing child behaviors were all significantly, positively correlated, suggesting that parents' trait-level negative affect is strongly related to trait-level externalizing child behaviors.

Pearson correlations among all levels of parent affect variables and parent behavior during the evocative interaction task (i.e., Clean-Up Task) are presented in Table 10. The majority of parent affect variables did not correlate significantly with parent behaviors during the Clean-up Task. As mentioned above, only recalled negative affect significantly, negatively correlated with the Clean-up Task parent behavior, Neutral Talk.

Table 7

Pearson Correlations among Level 1 Measures

	MP1	MN1	MP2	MN2	Comm	Qu	PAtt	TA	NTa	Par	Child
MAACL CU											
Pos	1.00										
Neg	-.66**	1.00									
MAACL RT											
Pos	.25*	-.01	1.00								
Neg	-.15	.15	-.46**	1.00							
DPICS											
Comm	-.10	.07	-.16	.18	1.00						
Ques	.22	-.15	.01	-.11	.12	1.00					
PosAtt	-.08	.05	-.06	-.22	.01	.29*	1.00				
TA	-.15	.11	-.12	-.27*	-.11	.25*	.34**	1.00			
NTa	-.06	-.03	.14	.00	.46**	-.04	-.14	-.21	1.00		
PCS-PR											
Parent	-.03	.07	-.12	.38**	.02	-.13	-.13	-.16	-.02	1.00	
Child	-.01	.11	-.08	.37**	.03	-.07	-.31*	-.06	.13	.30*	1.00

Note. MAACL CU = MAACL collected following clean-up task. MAACL RT = MAACL collected regarding parents' recalled affect during recall task. MP1 = MAACL Positive Affect after clean-up task. MN1 = MAACL Negative Affect after clean-up task. MP2 = MAACL Positive Affect from recall task. MN2 = MAACL Negative Affect from recall task. DPICS = DPICS coded parent behaviors observed during the clean-up task. Comm = Parent Commands, Qu = Parent Questions, PAtt = Parent Positive Attention, TA = Parent Neutral Talk, and NTa = Parent Negative Talk during the evocative interaction task. PCS-PR = PCS answered post-recall task about the situation recalled. Par = PCS Parent Attributions Subscale and Child = PCS Child Attributions Subscale.
*p < .05. **p < .01.

Table 8

Pearson Correlations among Level 2 Measures

	Pos	Neg	CD	Pun	PCS-P	PCS-C	Lax	Psy	Warm	PSI-C	PSI-P	PSI-T
MAACL												
Pos	1.00											
Neg	-.33**	1.00										
PRDPB												
CD	.24*	-.27*	1.00									
Pun	-.05	.12	-.13	1.00								
PCS												
Parent	-.20	.54**	-.21	.40**	1.00							
Child	-.28*	.10	-.01	.11	.11	1.00						
CRPBI												
Lax	-.07	.02	.13	.02	.03	.02	1.00					
PsyCtr	.02	.09	-.03	.38**	.26*	.16	.03	1.00				
Warm	.47**	-.35**	.42**	-.24	-.16	-.13	-.06	.01	1.00			
PSI												
Child	-.17	.12	-.13	.21	.15	.54**	.07	.39**	-.03	1.00		
Par	-.41**	.48**	-.35**	.28*	.43**	.33**	.08	.37**	-.34**	.64**	1.00	
Tot	-.34**	.36**	-.28*	.27*	.34**	.46**	.09	.42**	-.23	.87**	.93**	1.00

Note. Pos = MAACL Positive Affect at baseline. Neg = MAACL Negative Affect at baseline. CD = Child Directed Scale from the PRDPB. Pun = Punitive Parent Behavior from the PRDPB. PCS-P = Parenting Cognitions Scale Parent Subscale. PCS-C = Parenting Cognitions Scale Child Subscale. Lax = CRPBI Lax/ Firm Control Subscale. Psy = CRPBI Psychological Control Subscale. Warm = CRPBI Warmth/ Acceptance Subscale. PSI-C = Parenting Stress Index Child Stress Subscale. PSI-P = Parenting Stress Index Parent Stress Subscale. PSI-T = Parenting Stress Index Total Stress.
*$p < .05$. **$p <$. .01.

Table 9

Pearson Correlations among Level 3 Measures

	BDI-II	CBCL-Ext	Int	Prob
BDI-II	1.00			
CBCL-Ext	0.42**	1.00		
ECBI				
Int	0.42**	0.66**	1.00	
Prob	0.34**	0.50**	0.69**	1.00

Note. CBCL-Ext = CBCL Externalizing Problems Scale. Int = ECBI Intensity Scale. Prob = ECBI Problem Scale.
*$p < .05$. **$p < .01$.

Table 10

Pearson Correlations among Parent Affect and Clean-Up Task Parent Behaviors

	Negative Talk	Positive Attention	Commands	Questions	Talk
Puzzle PA	-.03	-.10	.01	.06	-.05
Recall PA	.14	-.06	-.16	.01	-.12
Clean-Up PA	-.06	-.08	-.10	.22	-.15
Puzzle NA	.07	-.12	.21	.02	-.04
Recall NA	.00	-.22	.18	-.11	-.27*
Clean-Up NA	-.03	.05	.07	-.15	.11
Baseline PA	-.08	.14	-.01	.00	.10
Baseline NA	-.03	.03	.05	-.02	.11
BDI-II	-.02	-.24	.24	.11	-.18

Note. PA = Positive Affect. NA = Negative Affect.
*$p < .05$.

Pearson correlations among all levels of parent affect variables and parent behavior during the non-evocative interaction task (i.e., Puzzle Task) are presented in Table 11. The pattern of correlations seen in Table 11 suggests that the more positive behaviors parents demonstrated during the puzzle task (i.e., positive attention, neutral talk), the less positive affect and more negative affect they demonstrated during the evocative interaction task. For example, positive affect measured after the clean-up task was negatively correlated with the amount of positive attention parents paid to their children during the puzzle task. Negative affect during the puzzle task correlated significantly and positively with parent questions and neutral talk. Parent negative affect measured after the clean-up task correlated positively with positive attention, questions, and neutral talk during the puzzle task. State- and trait-level negative affect measures collected at baseline correlated positively with commands and questions during the puzzle task, and baseline negative affect correlated positively with neutral talk during the puzzle task.

Table 11

Pearson Correlations among Parent Affect and Puzzle Task Parent Behaviors

	Puzzle Task Parent Behaviors				
Parent Affect	Negative Talk	Positive Attention	Commands	Questions	Talk
BDI-II	.17	.10	.54**	.34**	.12
Baseline PA	.13	.10	.07	.05	-.05
Puzzle PA	-.10	-.20	-.13	-.05	.02
Recall PA	-.02	.00	-.15	-.02	-.08
Clean-Up PA	-.13	-.39**	-.12	-.15	-.18
Baseline NA	.00	-.01	.26*	.32*	.36**
Puzzle NA	.06	-.06	.14	.30*	.27*
Recall NA	.16	-.22	.15	.14	.12
Clean-Up NA	.08	.32*	.17	.33**	.31*

Note. PA = Positive Affect. NA = Negative Affect.
*$p < .05$. ** $p < .01$.

Pearson correlations among parent affect and child behavior measures are presented in Table 12 below. CBCL Externalizing scores correlated negatively with parents' positive affect during the puzzle task and positively with parents' recalled negative affect and trait-level negative affect. ECBI Intensity and Problem scores correlated positively with parents' recalled negative affect and trait-level negative affect.

Table 12

Pearson Correlations among Parent Affect and Child Behavior Measures

Parent Affect	CBCL Externalizing Problems	ECBI Intensity Scale	ECBI Problem Scale
Puzzle PA	-.26*	-.22	-.13
Recall PA	-.08	-.23	-.24
Clean-Up PA	-.12	-.08	-.13
Puzzle NA	.09	.16	.04
Recall NA	.36**	.34**	.38**
Clean-Up NA	-.01	.15	.14
Baseline PA	-.13	-.08	-.13
Baseline NA	.07	.21	.12
BDI-II	.42**	.42**	.34**

Note. PA = Positive Affect. NA = Negative Affect.

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

Table 13 below summarizes Pearson correlations among parents' positive and negative affect measures collected across the study and parents' attributions for child misbehavior in general or a specific incident of child behavior discussed during the recall task. These results indicate that parents made fewer child-responsible attributions about child misbehavior in general if they reported higher positive affect at baseline and made more child-responsible attributions about child misbehavior if they reported higher trait-level negative affect (BDI-II total score) at baseline. Parents with higher state- and trait-

level negative affect at baseline also made more parent-responsible attributions about child misbehavior in general. Parents who reported higher levels of negative affect during the recalled incident, after the puzzle task, and who reported higher levels of trait-level negative affect at baseline made more child-responsible attributions about a specific incident of child misbehavior. Parents who reported lower levels of positive affect after the puzzle task, higher levels of negative affect during the recalled incident, and who had higher levels of baseline state-level negative affect made more parent-responsible attributions about a specific incident of child misbehavior. These correlations suggest that parents who experience more negative affect, either at the state- or trait-level, are likely to place more blame on themselves and their children for child misbehavior in general and for specific examples of child misbehavior.

Table 13

Pearson Correlations among Parent Affect and Attributions about Child Behavior

Parent Affect	PCS Child	PCS Parent	PCS-PR Child	PCS-PR Parent
Clean-up PA	-.20	-.01	-.01	-.03
Recall PA	-.16	.05	-.09	-.12
Puzzle PA	-.23	-.09	-.14	-.25*
Baseline PA	-.28*	-.20	-.02	-.14
Clean-up NA	.12	.11	.11	.07
Recall NA	.16	.09	.37**	.38**
Puzzle NA	-.07	.22	.25*	.21
Baseline NA	.10	.54**	.06	.29**
BDI-II	.34**	.27*	.35**	.24

Note. PCS Child = Parenting Cognitions Scale – Child Attributions. PCS Parent = Parent Attributions. PR Child = Post-Recall Child Attributions. PR Parent = Post-Recall Parent Attributions. PA = Positive Affect. NA = Negative Affect.

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

Table 14 summarizes Pearson correlations among parent attributions about child misbehavior in general and a specific, recalled incident of child behavior discussed during the parent interview/ recall task and parent behaviors during the evocative interaction task. The only significant association among parent attributions and parent behaviors coded using the DPICS-III was the negative relation between parents' child-

responsible attributions about the specific incident discussed during the recall task and positive attention during the evocative interaction task.

Table 14

Pearson Correlations among Parents' Attributions and Parent Behavior during the Evocative Interaction Task

Parents' Attributions	Parent Behavior during the Evocative Interaction Task				
	Negative Talk	Questions	Positive Attention	Commands	Talk
PCS - Child Attributions	.01	-.18	-.24	-.09	-.03
PCS - Parent Attributions	-.19	-.21	-.02	.00	.04
PCS – Post Recall Child Attributions	.13	-.07	- .31*	.03	-.06
PCS – Post Recall Parent Attributions	-.02	-.13	-.13	.02	-.16

*$p < .05$.

Table 15 summarizes Pearson correlations among parent attributions about child misbehavior, in general and for a specific recalled incident discussed during the recall task, and parent behaviors during the non-evocative interaction task. These correlations suggest that parents who gave more commands during the puzzle task made more child-responsible attributions about child misbehavior in general. Parents who asked more questions and engaged in more neutral talk during the puzzle task made more parent-responsible attributions about child misbehavior in general.

Table 15

Pearson Correlations among Parent Attributions and Parent Behavior during the Non-Evocative Interaction Task

Parent Attributions	Parent Behavior during the Non-Evocative Interaction Task				
	Negative Talk	Questions	Positive Attention	Commands	Talk
PCS - Child Attributions	.11	.08	.09	.37**	.08
PCS - Parent Attributions	-.12	.39**	.08	.21	.28*
PCS – Post Recall Child Attributions	.24	.16	-.13	.19	-.08
PCS – Post Recall Parent Attributions	.08	.09	-.13	.04	.04

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

Table 16 summarizes Pearson correlations among parent behavior and parent-reported child problems. These results suggest that parents who asked fewer questions and paid less positive attention to their children during the clean-up task, and parents who gave more commands to their children during the puzzle task reported more child problems on the CBCL Total Problems scale. Also, parents who paid less positive attention to their children during the clean-up task reported higher levels of problems on the CBCL Externalizing Problems scale. Parents who paid less positive attention to their children during the clean-up task and issued more commands during the puzzle task reported higher levels of child behavior problems on the ECBI Intensity scale. Parents who paid less positive attention to their children during the clean-up task also reported more problematic child behavior on the ECBI Problem scale. These correlations suggest that both parents' positive attending to children during difficult situations and parents' issuance of fewer commands during neutral parent-child interactions are related to better child outcomes.

Table 17 summarizes Pearson correlations among parent-reported parent behavior and parent-reported child problems. These correlations suggest that parents who reported using more punitive parenting strategies to regulate child behavior tended to also report that their children exhibited more severe externalizing behavior problems, as indexed by the ECBI Intensity scale score.

Table 18 summarizes Pearson correlations among parent-reported attributions and parent-reported child problems. These results suggest that parents who made more child-responsible attributions about child misbehavior in general and about a specific instance of misbehavior reported more child problems on the CBCL Total Problems and

Externalizing Problems scales and across the ECBI Intensity and Problems scales. Additionally, parents who made more parent-responsible attributions about child misbehavior in general reported higher levels of child problems on the ECBI Intensity scale.

Table 16

Pearson Correlations among Parent Behavior and Child Problems

Parent Behavior	CBCL Total	CBCL Externalizing	ECBI Intensity	ECBI Problem
CU – Negative Talk	.02	.10	-.04	-.01
CU – Questions	-.31*	-.23	-.24	-.16
CU – Commands	-.04	-.02	.04	.01
CU – Talk	-.07	-.14	.03	.00
CU – Positive Attention	-.41**	-.28*	-.34**	-.31*
PZ – Negative Talk	.24	.23	.07	.02
PZ – Questions	.08	-.02	.17	.17
PZ – Commands	.32**	.24	.30*	.19
PZ – Talk	.03	-.11	.06	.07
PZ – Positive Attention	.01	-.01	.08	.08

Note. CU = Clean-up Task. PZ = Puzzle Task.

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

Table 17

Pearson Correlations among Parent-Reported Parent Behavior and Child Problems

Parent-Reported Parent Behavior	CBCL Externalizing	ECBI Intensity	ECBI Problem
PRDPB			
CD	-.09	-.22	-.04
Pun	.09	.30*	.03
CRPBI			
Lax	-.04	-.11	-.20
PsyCtr	.18	.24	.09
Warm	-.10	-.16	.01

Note: CD = Child Directed Parent Behavior from the PRDPB Pun = Punitive parent behavior from the PRDPB. Lax = CRPBI Lax/ Firm Control Subscale. Psy = CRPBI Psychological Control Subscale. Warm = CRPBI Warmth/ Acceptance Subscale.

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

Table 18

Pearson Correlations among Parent Attributions and Child Behavior Measures

Parent Attributions about Child Misbehavior	CBCL Tot	CBCL Ext	ECBI Int	ECBI Prob
PCS – Child Attributions	.59**	.61**	.50**	.42**
PCS – Parent Attributions	.07	-.05	.31*	.18
PCS – Post Recall Child Attributions	.44**	.45**	.45**	.39**
PCS – Post Recall Parent Attributions	.12	.15	.24	.20

Note. CBCL Tot = CBCL Total Problems. CBCL Ext = CBCL Externalizing Problems. ECBI Int = ECBI Intensity. ECBI Prob = ECBI Problem.

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

Correlations among demographic variables and dependent variables were examined prior to testing study hypotheses. Significant correlations among demographic variables and dependent variables are summarized in Table 19 below. Demographic variables found to have significant relations with study dependent variables were used as covariates in subsequent analyses involving the relevant dependent variables.

Table 19

Summary of Significant Correlations among Demographic and Dependent Variables

DPICS-III Parent Behavior	Parent Sex	Child Age	Parent Marital	Minority	Education	Income	Adults in Household
Commands	-	-.35**	-	-	-	-	-
Positive Attention	-	-	-	-.31*	-	.34**	-
Neutral Talk	-	-	-	-.27*	.26*	.32**	-

Note. Parent Marital = Parent Marital Status

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

Models

Two general forms of analyses were used to test study hypotheses. The first involved general linear models analyses (Timm & Mieczkowski, 1997) to test hypothesized univariate relations (see Table 20 below). The second involved path analyses (Kline, 2005) to test hypotheses that involved comparisons of the magnitude of relations between different sets of variables (see Table 21 below).

Path analysis can be viewed as a special case of structural equation modeling in which individual observed variables are used instead of latent constructs. That is, path analysis represents a structural equation model with the structural component but not the measurement model. Although it would have been ideal to use SEM with latent variables, the relatively small sample size prohibited the use of SEM with latent variables. In these models, variables were standardized, with paths from the two independent variables to the dependent variable. Models were estimated twice, once with the parameters from the two independent variables to the dependent variable restricted to be equal (restricted model), and once with the paths unrestricted (unrestricted model). A fit index that compares these two models is the model chi-square index. This index is a measure of "badness of fit" such that if the restricted model fits the data more poorly than the unrestricted model, then the null hypothesis that the models fit equally in the population is rejected (Kline, 2005, p. 135). Unrestricted models always fit the data perfectly because all model parameters are free to vary, whereas restricted models do not fit the data perfectly but make the model more parsimonious by placing constraints on model parameters, which results in increased degrees of freedom (Kline, 2005). Thus, the

restricted model may be preferable to the unrestricted model if there is no evidence that it fits the data more poorly than the unrestricted model.

Table 20

Analyses of Univariate Relations

Hypothesis	Dependent variable	Independent variable(s)
1.1	Parent Behavior (EIT)	Parent Affect (EIT)
1.2	Externalizing Child Behavior	Parent Affect (EIT)
1.3	Externalizing Child Behavior	Parent Behavior (EIT)
1.4	Externalizing Child Behavior	Parent Behavior (EIT), Parent Affect (EIT)
4.1	Parent Affect	Task (EIT vs. NIT)
4.2	Parent Behavior	Task (EIT vs. NIT)

Note. EIT = Evocative Interaction Task. NIT = Non-evocative Interaction Task.

Table 21

Analyses focused on comparison of relations

	Endogenous variable(s)	Exogenous variable(s)
2.1	CBCL-Ext	Parent Behavior (EIT), Parent Behavior (NIT)
2.2	CBCL-Ext	Parent Affect (EIT), Parent Affect (NIT)
2.3	CBCL-Ext	Parent Behavior, Parent Report of Parent Behavior
3.1	None	Parent Affect (Level 3), Parent Affect (Level 2), Parent Affect (Level 1)
3.2	Parent Behavior (EIT)	Parent Affect (Level 2), Parent Affect (Level 1)
3.3	Parent Behavior (EIT)	Parent Affect (Level 3), Parent Affect (Level 2)

Note. CBCL-Ext = CBCL Externalizing Problems Scale. EIT = Evocative Interaction Task. NIT= Non-evocative Interaction Task.

Univariate GLM Analyses

Hypothesis 1.1. *The relations among parent affect and parent behavior observed during the evocative interaction task will be significant*.

A series of linear regression analyses were conducted to examine the relations among parent affect and behavior during the evocative interaction task. Each parenting behavior included in the study (i.e., negative talk, talk, total commands, questions, and positive attention) was included as a dependent variable in a separate regression analysis, and parent affect variables measured during the evocative interaction task (i.e., MAACL Positive and Negative Affect scale scores during the Clean-Up Task) were included as the independent variables.

The first linear regression analysis regressed parent negative talk onto parent positive and negative affect variables measured during the evocative interaction task. Results of this analysis are presented in Table 22. The regression model [$F_{(2, 62)}$ ranged from 0.29 to 0.44 and model p ranged from 0.64 to 0.75 across imputed datasets] did not account for significant variability in the dependent variable, parent negative talk during the evocative interaction task.

Table 22

Linear Regression of Parent Negative Talk on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	1.93**	[0.93, 2.94]	0.00
Negative Affect	-0.10	[-0.36, 0.16]	0.45
Positive Affect	-0.03	[-0.11, 0.05]	0.43
R^2	.01		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

The second linear regression analysis regressed parent neutral talk onto parent positive and negative affect variables measured during the evocative interaction task and included the Household Income variable as a covariate. Results of this analysis are presented in Table 23. The full regression model was significant [$F_{(3, 61)}$ ranged from 2.89 to 3.28 and model p ranged from 0.03 to 0.04 across imputed datasets]. However, parents' affect variables measured during the evocative interaction task did not account for significant variability in parent neutral talk during the evocative interaction task after controlling for household income levels. These analyses were also conducted without

controlling for household income, but the parent affect variables still did not account for significant variability in parent neutral talk.

Table 23

Linear Regression of Parent Neutral Talk on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	16.26**	[8.22, 24.29]	0.00
Household Income	1.62**	[0.46, 2.78]	0.01
Negative Affect	-0.36	[-2.37, 1.66]	0.73
Positive Affect	-0.38	[-0.96, 0.21]	0.21
R^2	.13		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

The third linear regression analysis regressed parent commands issued during the evocative interaction task onto parent positive and negative affect variables and included child age as a covariate. Results are presented in Table 24. The full regression model was significant [$F_{(3, 61)}$ ranged from 3.27 to 4.08 and model p ranged from 0.01 to 0.03 across imputed datasets]. However, parent affect variables measured during the evocative interaction task did not account for significant variability in parent commands during the evocative interaction task after controlling for child age. These analyses also were conducted without controlling for child age, but the parent affect variables still did not account for significant variability in parent commands.

Table 24

Linear Regression of Parent Commands on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	53.72**	[29.77, 77.67]	0.00
Child Age	-5.33**	[-8.68, -1.98]	0.00
Negative Affect	-0.35	[-2.41, 1.70]	0.74
Positive Affect	-0.38	[-0.99, 0.23]	0.22
R^2	.15		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

The fourth linear regression analysis regressed parent questions during the evocative interaction task onto parent positive and negative affect variables. Results are summarized in Table 25. Variability in parent affect variables did not account for significant variability in the dependent variable, parent questions [$F_{(2, 62)}$ ranged from 1.54 to 1.83 and model p ranged from 0.17 to 0.22 across imputed datasets].

Table 25

Linear Regression of Parent Questions on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	2.44**	[1.46, 3.42]	0.00
Negative Affect	-0.01	[-0.27, 0.24]	0.92
Positive Affect	0.05	[-0.03, 0.12]	0.19
R^2	.05		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

The fifth linear regression analysis regressed parent positive attention during the evocative interaction task onto parent positive and negative affect variables and included household income and parent minority status as covariates in the analysis. The full regression model was significant [$F_{(4, 58)}$ ranged from 3.07 to 3.52 and model p ranged from 0.01 to 0.02 across imputed datasets]. However, parent affect variables did not account for significant variability in parent positive attention during the evocative interaction task after controlling for household income and parent minority status. These analyses also were conducted without controlling for the covariates, household income and parent minority status, but the parent affect variables still did not account for significant variability in parent positive attention.

Table 26

Linear Regression of Parent Positive Attention on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	1.38**	[0.47, 2.29]	0.00
Household Income	0.15*	[0.02, 0.27]	0.03
Minority Status	-0.43	[-0.90, 0.03]	0.07
Negative Affect	-0.09	[-0.31, 0.12]	0.39
Positive Affect	-0.03	[-0.09, 0.03]	0.33
R^2	.18		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

The hypothesis that parent positive and negative affect during the evocative interaction would account for significant variability in parent behavior during the evocative interaction was not supported by these findings. None of the parent affective

variables accounted for significant variability in the parent behavior variables during the evocative interaction task, with or without controlling for demographic factors related to the dependent variables.

Hypothesis 1.2. *The relations among affect reported during the evocative interaction task and parent report of child externalizing behavior will be significant.*

A series of linear regression analyses were conducted to test the hypothesis that parent affect during the evocative interaction tasks would account for significant variability in child externalizing behaviors. Measures of externalizing child behaviors used as dependent variables in these analyses included the CBCL Externalizing Problems scale scores, the ECBI Intensity scale scores, and the ECBI Problem scale scores. The parent affect variables used as the independent variables in these analyses included MAACL positive and negative affect scale scores measured after the recall task and after the clean-up task.

The first linear regression analysis regressed child externalizing behavior, as indexed by the CBCL Externalizing Problems scale, onto parent positive and negative affect variables measured during the clean-up and recall tasks. Results are summarized in Table 27. The full regression model was significant [$F_{(4, 60)}$ ranged from 3.23 to 3.36 and model p was 0.02 across imputed datasets]. Variability in parents' negative affect reported during the recall task accounted for significant variability in child externalizing problems, as indexed by the CBCL Externalizing Problems scale.

Table 27

Linear Regression of CBCL Externalizing Scores on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	2.11**	[0.86, 3.37]	0.00
Clean-Up NA	-0.22	[-0.51, 0.06]	0.13
Recall NA	0.06**	[0.03, 0.09]	0.00
Clean-Up PA	-0.07	[-0.15, 0.02]	0.12
Recall PA	0.23	[-0.10, 0.57]	0.17
R^2	.18		

Note. $N = 65$. NA = Negative Affect. PA = Positive Affect. CI = Confidence Interval. *$p < .05$. **$p < .01$.

The second linear regression analysis included the intensity of child non-compliant and disruptive behaviors, as indexed by the ECBI Intensity scale, as the dependent variable and parent positive and negative affect variables during the clean-up and recall tasks as the independent variables. Results are summarized in Table 28. The full regression model was not significant across all imputed datasets [$F_{(4, 60)}$ ranged from 2.25 to 2.55 and model *p* ranged from 0.05 to 0.07 across imputed datasets]. When pooled across imputed datasets, variability in the parent affect variable, Recall Negative Affect, accounted for significant variability in the intensity of child non-compliant and disruptive behaviors as indexed by the ECBI Intensity scores.

Table 28

Linear Regression of ECBI Intensity Scores on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	74.30**	[47.39, 101.20]	0.00
Clean-Up NA	3.40	[-2.75, 9.56]	0.28
Recall NA	0.75*	[0.01, 1.49]	0.05
Clean-Up PA	0.59	[-1.24, 2.41]	0.53
Recall PA	-3.20	[-10.46, 4.06]	0.39
R^2	.14		

Note. $N = 65$. NA = Negative Affect. PA = Positive Affect. CI = Confidence Interval. *$p < .05$. **$p < .01$.

The third and final regression analysis in this series included parents' perceptions of whether or not their children's non-compliant and disruptive behaviors were problematic, as indexed by the ECBI Problem scale, as the dependent variable and parent positive and negative affect variables during the evocative interaction and recall tasks as the independent variables. Results are summarized in Table 29. The full regression model was significant [$F_{(4, 60)}$ ranged from 2.75 to 3.08 and model p ranged from 0.02 to 0.04 across imputed datasets]. The parent affect variable, Recalled Negative Affect, accounted for significant variability in ECBI problem scores.

Table 29

Linear Regression of ECBI Problem Scores on Parent Affect Variables

Variable	*B*	95% CI	*p*
Constant	1.68*	[0.11, 3.25]	0.04
Clean-Up NA	0.10	[-0.26, 0.46]	0.58
Recall NA	0.05*	[0.01, 0.10]	0.02
Clean-Up PA	0.00	[-0.11, 0.11]	0.99
Recall PA	-0.13	[-0.56, 0.29]	0.54
R^2	.16		

Note. $N = 65$. NA = Negative Affect. PA = Positive Affect. CI = Confidence Interval. *$p < .05$. **$p < .01$.

The hypothesis that parent affect during the evocative interaction and recall tasks accounted for significant variability in child externalizing behavior problems was supported by the current findings. Parent-reported negative affect during the recall task accounted for significant variability in child externalizing behavior problems as indexed by the CBCL Externalizing Problems, ECBI Intensity, and ECBI Problem scale scores.

Hypothesis 1.3. *The relations among parenting behavior observed during the evocative interaction task and parent report of child externalizing behavior will be significant.*

A series of linear regression analyses were conducted to examine the relations among parents' behaviors during the evocative interaction task and child externalizing behavior problems. Parenting behaviors included as the independent variables in these analyses included negative talk, talk, total commands, questions, and positive attention. Measures of child externalizing behaviors included as the dependent variables in these analyses included the CBCL Externalizing scale scores, the ECBI Intensity scale scores,

and the ECBI Problem scale scores. The first linear regression analysis included CBCL Externalizing scale scores as the dependent variable and the parent behavior variables observed during the evocative interaction task as the independent variables. Results are presented in Table 30. The full regression model was not significant [$F_{(5, 59)}$ ranged from 1.25 to 1.48 and model p ranged from 0.21 to 0.30 across imputed datasets]. Parent behavior variables during the evocative interaction task did not account for significant variability in CBCL Externalizing scores.

Table 30

Linear Regression of CBCL Externalizing Scores on Parent Behavior Variables during the Evocative Interaction Task

Variable	*B*	95% CI	*p*
Constant	3.33**	[2.21, 4.45]	0.00
Negative Talk	0.10	[-0.22, 0.42]	0.55
Commands	-0.01	[-0.04, 0.03]	0.80
Questions	-0.17	[-0.47, 0.13]	0.26
Neutral Talk	-0.00	[-0.04, 0.04]	0.88
Positive Attention	-0.28	[-0.63, 0.07]	0.12
R^2	.10		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

In the second analysis, the ECBI Intensity scores were included as the dependent variable, and the parent behaviors observed during the evocative interaction task were included as the independent variables in the regression. Results are summarized in Table 31. The full regression model was significant [$F_{(5, 59)}$ ranged from 2.56 to 2.83 and model p ranged from 0.02 to 0.04 across imputed datasets]. Variability in parent positive

attention during the evocative interaction task accounted for significant variability in ECBI Intensity scores.

In the third linear regression analysis, the ECBI Problem scale scores were included as the dependent variable, and the parent behaviors observed during the evocative interaction task were included as the independent variables in the regression. Results are presented in Table 32. The full regression model was not significant [$F_{(5, 59)}$ ranged from 1.51 to 1.74 and model p ranged from 0.14 to 0.20 across imputed datasets]. However, variability in parent positive attention during the evocative interaction task accounted for significant variability in ECBI Problem scores.

Table 31

Linear Regression of ECBI Intensity Scores on Parent Behavior Variables during the Evocative Interaction Task

Variable	*B*	95% CI	*p*
Constant	105.89**	[83.46, 128.33]	0.00
Negative Talk	-2.92	[-9.41, 3.56]	0.38
Commands	0.41	[-0.35, 1.16]	0.29
Questions	-4.96	[-10.91, 0.98]	0.10
Neutral Talk	0.57	[-0.18, 1.32]	0.14
Positive Attention	-9.94*	[-16.94, -2.94]	0.01
R^2	.19		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

Table 32

Linear Regression of ECBI Problem Scores on Parent Behavior Variables during the Evocative Interaction Task

Variable	*B*	95% CI	*p*
Constant	3.14**	[1.76, 4.51]	0.00
Negative Talk	-0.10	[-0.50, 0.29]	0.62
Commands	0.01	[-0.03, 0.06]	0.60
Questions	-0.17	[-0.53, 0.20]	0.37
Neutral Talk	0.02	[-0.02, 0.07]	0.30
Positive Attention	-0.54*	[-0.96, -0.11]	0.01
R^2	.12		

Note. $N = 65$. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

Combined, the results of this set of analyses, testing the hypothesis that parents' behaviors during evocative interactions would account for significant variability in trait levels of child externalizing behaviors, provided partial support for this hypothesis. In two of the three sets of analyses, observed parent positive attention during the evocative interaction task (i.e., the Clean-Up Task) was significantly, negatively related to child externalizing behaviors.

Hypothesis 1.4. *When parent affect and parent behavior during the evocative interaction task are both included as predictors of parent report of child externalizing behavior, parent affect will not predict significant variability in child behavior but parent behavior will.*

A series of linear regression analyses were planned to test the hypothesis that the relations among parent affect during evocative interactions and child externalizing behavior would not reach statistical significance once parent behavior was entered into

the regression. The only parent affect variable used in this set of analyses was parents' negative affect during the recall task, as it was the only affect variable to emerge as a significant predictor of child behavior problems in earlier analyses. The only parent behavior variable used in this set of analyses was parent positive attention during the clean-up task, as it was the only parent behavior variable that predicted significant variability in externalizing child behavior scores in earlier analyses.

The first linear regression included CBCL Externalizing Problems as the dependent variable and parent negative affect during the recall task and parent positive attention during the clean-up task as the independent variables. Results are summarized in Table 33. The full regression model was significant [$F_{(2, 62)}$ ranged from 6.23 to 6.60 and model p was 0.00 across imputed datasets]. Parent negative affect recalled during the interview task accounted for significant variability in the CBCL Externalizing scores; however, parent positive attention did not account for significant variability in CBCL Externalizing scores when entered simultaneously with parent recalled negative affect as independent variables.

Table 33

Linear Regression of CBCL Externalizing Scores on Parent Positive Attention during an Evocative Interaction and Parents' Recalled Negative Affect

Variable	*B*	95% CI	*p*
Constant	2.17**	[1.44, 2.90]	0.00
Positive Attention	-0.27	[-0.57, 0.04]	0.09
Recall NA	0.04*	[0.01, 0.07]	0.01
R^2	.17		

Note. $N = 65$. NA = Negative Affect. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

A second linear regression analysis was conducted to test the hypothesis that parent behavior accounts for the variability between child externalizing behavior and parents' negative affect during evocative interactions. ECBI Intensity scores were used as the dependent variable in this analysis and parent positive attention during the Clean-Up task and parent negative affect during the Recall Task were included as the independent variables. Results are summarized in Table 34. The full regression model was significant [$F_{(2, 62)}$ ranged from 6.83 to 7.44 and model p was .00 across imputed datasets]. Parent positive attention during the evocative interaction task was significantly, negatively related to ECBI Intensity scores, and parent negative affect reported during the recall task was significantly, positively related to ECBI Intensity scores.

Table 34

Linear Regression of ECBI Intensity Scores on Parent Positive Attention during an Evocative Interaction Task and Parents' Recalled Negative Affect

Variable	*B*	95% CI	*p*
Constant	88.20**	[73.00, 103.40]	0.00
Positive Attention	-7.53*	[-13.94, -1.13]	0.02
Recall NA	0.77*	[0.14, 1.41]	0.02
R^2	.19		

Note. $N = 65$. NA = Negative Affect. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

A third linear regression analysis was conducted to test the hypothesis that parent behavior accounted for the relation between parent negative affect during evocative parent-child interactions and child externalizing behaviors. This analysis included ECBI Problem scores as the independent variable and parent positive attention during the

Clean-Up Task and parents' negative affect during the Recall Task as the dependent variables. Results are presented in Table 35 below. The full regression model was significant [$F_{(2,62)}$ ranged from 7.42 to 8.03 and the model p was 0.00 across imputed datasets]. Parent negative affect was significantly, positively related to ECBI Intensity scores, and parent positive attention was marginally, negatively related to ECBI Intensity scores.

Table 35

Linear Regression of ECBI Problem Scores on Parent Positive Attention during an Evocative Interaction and Parents' Recalled Negative Affect

Variable	*B*	95% CI	*p*
Constant	2.06**	[1.17, 2.95]	0.00
Positive Attention	-0.38	[-0.75, -0.00]	0.05
Recall NA	0.05**	[0.02, 0.09]	0.00
R^2	.20		

Note. $N = 65$. NA = Negative Affect. CI = Confidence Interval.
*$p < .05$. **$p < .01$.

Together, the results of these analyses do not support the hypothesis that parent behavior during evocative parent-child interactions accounts for the relation between parents' negative affect during evocative interactions and externalizing child behaviors. The relations between parent negative affect during an evocative interaction and child externalizing behavior, as indexed by the CBCL and ECBI, continued to be significantly related to one another after including the parent behavior variable, positive attention during the evocative interaction task into the model. Thus, both parent negative affect and

parent behavior during difficult parent-child interactions predict significant, unique variability in trait-level externalizing child behaviors.

Hypothesis 4.1. *Parents will report less positive and more negative affect during the evocative than during the non-evocative interaction task.*

A series of dependent t-tests were conducted to test the hypotheses that mean levels of parent affect did not differ by task type. The first directional, dependent t-test tested the null hypothesis that mean levels of parent negative affect during the clean-up and puzzle tasks did not differ. It was hypothesized that the mean level of parent-reported negative affect during the clean-up task/ evocative interaction would be higher than the mean level of parent-reported negative affect during the puzzle task. The results indicated that the mean level of parents' negative affect was significantly greater during the clean-up task than during the puzzle task ($t_{64} = 2.84$, $p = .005$), and the null hypothesis that mean levels of negative affect did not differ across tasks was rejected.

The second directional, dependent t-test tested the null hypothesis that mean levels of parent positive affect during the clean-up and puzzle tasks did not differ. It was hypothesized that the mean level of parent-reported positive affect during the clean-up task would be lower than the mean level of parent-reported positive affect during the puzzle task. The results indicated that the mean level of parents' positive affect was significantly lower during the clean-up task than during the puzzle task ($t_{64} = -7.13$, $p = .00$), and the null hypothesis that mean levels of positive affect did not differ across task was rejected.

The third directional, dependent t-test tested the null hypothesis that mean levels of parent negative affect reported for the recall task and that reported during the puzzle task did not differ. It was hypothesized that the mean level of parent-reported negative affect reported for the recall task would be higher than the mean level of parent-reported negative affect during the puzzle task. The results indicated that the mean level of parents' negative affect was significantly greater during the recall task than during the puzzle task ($t_{64} = 13.29$, $p = .00$), and the null hypothesis that mean levels of negative affect did not differ by task was rejected.

The fourth and final directional, dependent t-test tested the null hypothesis that mean levels of parent positive affect recalled during the recall task and that reported during the puzzle task did not differ. It was hypothesized that the mean level of parent-reported positive affect reported for the recall task would be lower than parent-reported positive affect during the puzzle task. The results indicated that the mean level of parent positive affect was significantly lower during the recall task than during the puzzle task ($t_{64} = -17.37$, $p = .00$), and the null hypothesis that mean levels of positive affect did not differ by task was rejected.

Together, these results suggest that the manipulation of parent affect desired during the study was achieved in that parents experienced significantly higher levels of negative affect and significantly lower levels of positive affect during the evocative interaction tasks (i.e., the Clean-Up and Recall Tasks) than during the non-evocative interaction task (i.e., the Puzzle Task).

Hypothesis 4.2. *Parents will display less positive and more negative parenting behavior during the evocative than during the non-evocative interaction task.*

A series of dependent t-tests were conducted to test the hypothesis that parent behaviors did not differ by evocative versus non-evocative interaction task type. The two classes of parenting behaviors thought to be most relevant to this set of analyses were parents' negative talk and positive attention, given that prior descriptive analyses suggested that these behaviors had the most positive or negative connotations in this study. The first directional, dependent t-test tested the null hypothesis that parents engaged in equivalent mean levels of negative talk during the clean-up and puzzle tasks. It was hypothesized that parents would engage in greater mean levels of negative talk during the clean-up task than the puzzle task. The results indicated that the mean level of parent negative talk was significantly greater during the clean-up task than the puzzle task ($t_{64} = 4.40$, $p = .00$), and the null hypothesis was rejected.

The second directional, dependent t-test tested the null hypothesis that parents engaged in equivalent mean levels of positive attention during the clean-up and puzzle tasks. It was hypothesized that parents would engage in lower mean levels of positive attention during the clean-up task than the puzzle task. The results indicated that the mean level of parent positive attention was significantly lower during the clean-up task than during the puzzle task ($t_{64} = -4.05$, $p = .00$), and the null hypothesis was rejected.

Combined, these results suggest that parents did, as hypothesized, engage in more negative and less positive behaviors during evocative versus non-evocative interaction tasks. Parents engaged in higher mean levels of negative talk and lower mean levels of

positive attention during the evocative versus the non-evocative parent-child interaction tasks.

Path Analyses

Hypothesis 2.1. *Parent reports of child externalizing behavior will be more strongly related to parenting behaviors observed during evocative interactions than to parenting behaviors observed during non-evocative interactions*.

As discussed above, the path analyses testing this hypothesis involve determining if a restricted model, with the relations (a) between child externalizing behaviors and parent behavior during the evocative interaction task and (b) between child externalizing behaviors and parent behavior during the non-evocative interaction task restricted to be equal, fits the data better than an unrestricted model allowing the relations to differ. If the restricted model fits the data significantly more poorly than the unrestricted model, the null hypothesis of equal fit is rejected, and the unrestricted model is presumed to fit the data better. For these analyses, evidence for hypothesis 2.1 above would involve rejecting the hypothesis that the unrestricted versus restricted models fit the data equally well.

Five sets of path analyses were conducted to test hypothesis 2.1. In each path analysis testing this hypothesis, the dependent variables were the CBCL Externalizing Problem scores, and the independent variables were the DPICS-III parenting behaviors observed during the evocative versus non-evocative interaction tasks. Each type of parenting behavior was included in a separate path analysis. Path diagrams illustrating each of these analyses are presented below in Figure 1.

Figure 1. Path Diagrams of Relations among Parent Behaviors and Child Externalizing Behaviors

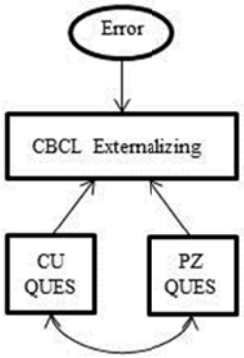


Figure 1a. CU = Clean-Up Task. PZ = Puzzle Task. QUES = Questions.

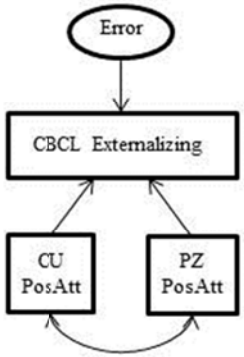


Figure 1b. CU = Clean-Up Task. PZ = Puzzle Task. PosAtt = Positive Attention.

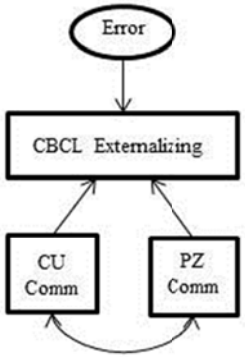


Figure 1c. CU = Clean-Up Task. PZ = Puzzle Task. Comm = Commands.

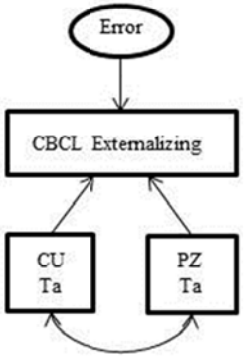


Figure 1d. CU = Clean-Up Task. PZ = Puzzle Task. Ta = Neutral Talk.

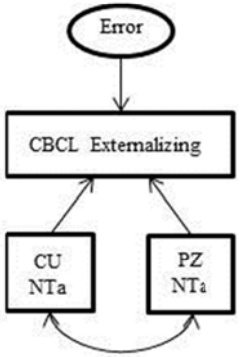


Figure 1e. CU = Clean-Up Task. PZ = Puzzle Task. NTa = Negative Talk.

Fit did not differ significantly for the restricted model (constraining the paths to be equal between Parent Questions by task and child externalizing behaviors) versus in the unrestricted model ($\chi^2(1) = 2.19$, $p = .14$). Thus, Parent Questions was not differentially predictive of child externalizing behaviors by evocative versus non-evocative interaction tasks. The restricted model constraining the paths between Parent Positive Attention by task and child externalizing behavior problems was found to fit significantly more poorly than the unrestricted model that allowed the parameters to vary ($\chi^2(1) = 3.82$, $p = .05$). Thus, Parent Positive Attention during the evocative interaction task was significantly more predictive of child externalizing behaviors than Parent Positive Attention during the non-evocative interaction task.

The restricted model constraining the paths between Parent Commands across tasks and child externalizing behavior problems was not found to fit significantly differently than the unrestricted model ($\chi^2(1) = 2.51$, $p = .11$). Thus, Parent Commands was not differentially predictive of child externalizing behaviors by task type. The restricted model constraining the paths between Parent Negative Talk by task and child externalizing behavior problems was not found to fit significantly differently than the unrestricted model ($\chi^2(1) = .71$, $p = .40$). Thus, Parent Negative Talk was not differentially predictive of child externalizing behaviors by task type. The restricted model constraining the paths between Parent Neutral Talk by task and child externalizing behavior problems was not found to fit significantly differently than the unrestricted model ($\chi^2(1) = .04$, $p = .85$). Thus, Parent Neutral Talk was not found to differentially predict child externalizing behaviors.

Thus, partial support was found for the hypothesis that parent behaviors during evocative parent-child interactions predict more variability in child externalizing behaviors than do parent behaviors during non-evocative parent-child interactions. Specifically, the relation between parents' positive attention and externalizing child behaviors during the clean-up task was significantly stronger (in a negative direction) than the relation between these two variables during the puzzle task.

Hypothesis 2.2. *Parent reports of child externalizing behavior will be more strongly related to parents' affect during the evocative than during the non-evocative interactions*.

Four sets of path analyses testing the difference in fit between two models (restricted versus unrestricted) of the relations among parent affect and child externalizing behaviors were conducted. In each set of analyses, the dependent variables were CBCL Externalizing Problems scores, and the independent variables were parents' MAACL ratings of their positive and negative affect during evocative and non-evocative interaction tasks.

The first set of analyses tested the relative fit of the restricted model, in comparison to the unrestricted model, of the direct effects of parent positive affect during the clean-up and the puzzle tasks on child externalizing problems. A path diagram illustrating these relations is presented in Figure 2a below. The model chi-square was $\chi^2(1) = 1.26$, $p = .26$, and the null hypothesis that the restricted model fit significantly differed from the unrestricted model fit was not rejected. Thus, the relations between

parents' state-level positive affect and child externalizing behavior did not differ significantly during the puzzle versus clean-up tasks.

The second set of analyses tested the relative fit of the restricted model to the unrestricted model of the direct effects of parent negative affect during the clean-up and puzzle tasks on child externalizing problems. A path diagram illustrating these relations is presented in Figure 2b below. The model chi-square was $\chi^2(1) = .42$, $p = .52$, and the null hypothesis that the model fit was equal for restricted and unrestricted models was not rejected. Thus, parents' state-level negative affect was not differentially predictive of child externalizing behaviors across puzzle versus clean-up tasks.

The third set of analyses tested the relative fit of the restricted model versus the unrestricted model of the direct effects of parent positive affect during the recalled interaction and puzzle tasks on child externalizing problems. A path diagram illustrating these relations is presented in Figure 3a below. The model chi-square was $\chi^2(1) = 1.57$, $p = .21$, and the null hypothesis that the model fit was equal for restricted and unrestricted models was not rejected. Thus, parent's state-level positive affect was not differentially predictive of child externalizing behaviors in the puzzle versus the recall tasks.

The fourth set of analyses tested the relative fit of the restricted model versus the unrestricted model of the direct effects of parent negative affect during the recalled interaction and puzzle tasks on child externalizing problems. A path diagram illustrating these relations is presented in Figure 3b below. The model chi-square was $\chi^2(1) = 2.34$, $p = .13$, and the null hypothesis that the model fit was equal for restricted and unrestricted

models was not rejected. Thus, parents' state-level negative affect was no differentially predictive of child externalizing behaviors in the puzzle versus the recall tasks.

Together, the results of these four sets of analyses do not support the hypothesis that parents' positive or negative affect during evocative parent-child interactions are better predictors of child externalizing problems than parents' positive or negative affect during non-evocative parent-child interactions.

Figure 2. Path Analysis Models of Relations Among Parent Affect and Child Behavior

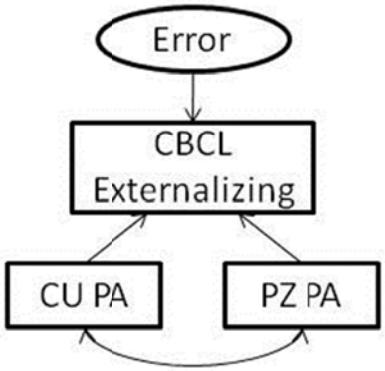


Figure 2a. CU = Clean-Up Task. PZ = Puzzle Task. PA = Positive Affect.

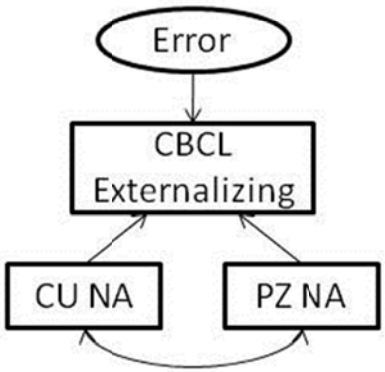


Figure 2b. CU = Clean-Up Task. PZ = Puzzle Task. NA = Negative Affect.

Figure 3. Path Analysis Models of Relations Among Parent Affect and Child Behavior

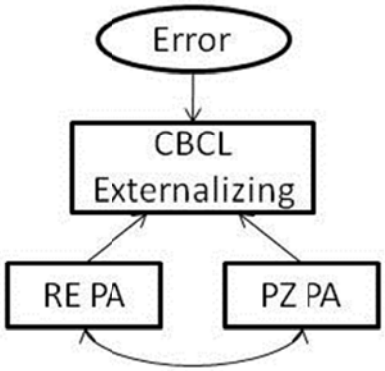


Figure 3a. RE = Recalled Interaction Task. PZ = Puzzle Task. PA = Positive Affect.

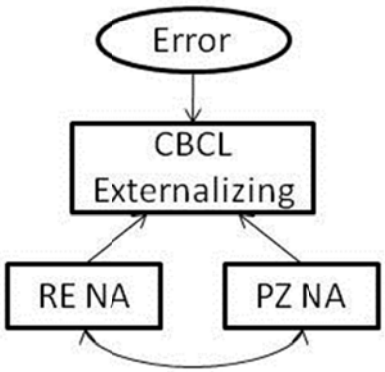


Figure 3b. RE = Recalled Interaction Task. PZ = Puzzle Task. NA = Negative Affect.

Hypothesis 2.3. *Parent reports of child externalizing behavior will be more strongly related to parenting behaviors observed during interactions than to parents' questionnaire reports of their behaviors.*

Two sets of path analyses testing the difference in fit of restricted versus unrestricted models of relations among (a) parents' observed behaviors (DPICS-III Parent Positive Attention and Parent Negative Talk observed during the Clean-Up Task) and trait levels of child externalizing behaviors (CBCL Externalizing Problems scores), and (b) parents' self-reported behaviors (PRPDB Child-Directed and Punitive parenting; CRPBI Warmth/ Acceptance and Psychological Control) and child externalizing behaviors (CBCL Externalizing Problems scores). A path diagram illustrating these relations is presented in Figure 4 below. Positive and negative parenting behaviors were used in these analyses. Parent Positive Attention was used in these analyses because it conceptually corresponds with parent-reported warmth/ acceptance reported on the CRPBI and Child-Directed parenting behavior on the PRDPB. Parent Negative Talk was used in this analysis because it conceptually corresponds with parent-reported punitive behavior reported on the PRDPB and psychological control on the CRPBI.

Pearson correlations between parent-reported parenting behaviors and CBCL Externalizing Problems scores (see Table 17 above) suggest that parent-reported parent behaviors are not significantly related to child externalizing behaviors as measured by the CBCL Externalizing Problems scores. Pearson correlations among parent behaviors observed during the evocative interaction task and parent reports of externalizing child behaviors (i.e., CBCL Externalizing scores) suggest that there are significant relations between parents' positive attention during evocative parent-child interactions and child

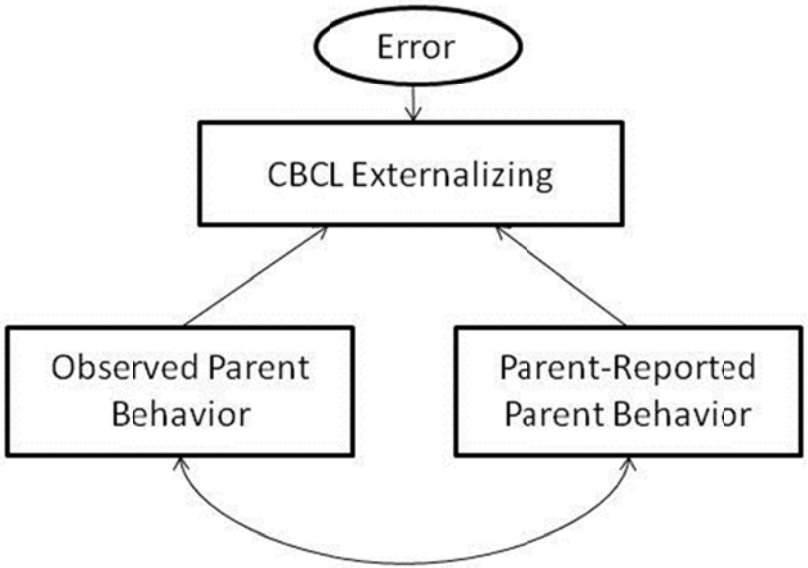
externalizing problems but not between parents' negative talk during evocative parent-child interactions and child externalizing problems (see Table 16 above). Given these preliminary findings, we expected to find differential relations between parent-reported behavior and child problems versus observed parent behavior and child problems.

In the first set of analyses, a path analysis was conducted to test a restricted versus unrestricted model of the effects of Parent Positive Attention observed during the evocative interaction task and PRDPB Child-Directed reported behavior on parent ratings of child externalizing problems (i.e., CBCL Externalizing Problems scores). The model chi-square was $\chi^2(1) = 1.07$, $p = .30$, and the null hypothesis of equal fit across restricted and unrestricted models was not rejected. The second path analysis tested a restricted versus unrestricted model of the effects of Parent Positive Attention and CRPBI Warmth/ Acceptance on parent ratings of child externalizing problems. The model chi-square was $\chi^2(1) = .99$, $p = .32$, and the null hypothesis of equal fit across restricted and unrestricted models was not rejected. Thus, no evidence was found for differential prediction of child externalizing behaviors by parent-reported versus observed positive parenting behaviors.

In the second set of analyses, the first path analysis tested a restricted versus unrestricted model of the effects of Parent Negative Talk and PRDPB Punitive Behavior on child externalizing behavior problems. The model chi-square was $\chi^2(1) = .00$, $p = .96$, and the null hypothesis of equal fit across restricted and unrestricted models was not rejected. The second path analysis tested a restricted versus unrestricted model of the effects of Parent Negative Talk and CRPBI Psychological Control on child externalizing behavior. The model chi-square was $\chi^2(1) = .20$, $p = .66$, and the null hypothesis of equal fit across restricted and unrestricted models was not rejected. Again, no evidence was

found for differential prediction of child externalizing behaviors by parent-reported versus observed negative parenting behaviors. Overall, then, the results of the two sets of analyses testing hypothesis 2.3 do not support the hypothesis that observed versus parent-reported parent behavior predict child externalizing behavior problems differentially.

Figure 4. Path Diagram of the Relations Among Parent Behavior and Child Behavior



Hypothesis 3.1. *Parents' trait-level affect will be more strongly related to parents' state-level affect than it is to parents' situation-specific affect.*

Two sets of path analyses testing the difference between a restricted and an unrestricted model of relations among the three levels of parent negative affect variables measured in this study were conducted. Path diagrams illustrating these relations are presented in Figure 5 below. In the restricted models, covariances between the Level 1 affect measures (i.e., parents' situation-specific MAACL ratings of positive and negative affect) and Level 3 affect measures (i.e., parents' BDI scores) were constrained to be equal to the covariances between the Level 2 affect measures (i.e., parents' baseline MAACL ratings of positive and negative affect) and the Level 3 affect measures. It was hypothesized that the Level 2 measures would correlate more highly with Level 3 measures than Level 1 measures would correlate with the Level 3 measures.

The fit of the restricted versus the unrestricted models illustrated in Figure 5a was $\chi^2(1) = 3.26$, $p = .07$, and the null hypothesis that both models fit the data equally well was not rejected. The fit of the restricted versus the unrestricted models illustrated in Figure 5b was $\chi^2(1) = 2.86$, $p = .09$, and the null hypothesis that both models fit the data equally well was not rejected. These results do not support the hypothesis that the covariances between Level 2 and Level 3 differed significantly from those between Level 1 and Level 3 affect measures.

Hypothesis 3.2. *Parenting behaviors during the evocative interaction task will be more strongly related to parents' situation-specific affect than to parents' state-level affect at baseline.*

Ten sets of path analyses were conducted to test the hypotheses that Level 1 (i.e., situation-specific MAACL ratings) and Level 2 (i.e., baseline MAACL ratings) negative affect measures have differential relations with parent behaviors during the Clean-Up Task/ evocative interaction. Five sets of analyses used the negative affect score from the MAACL administered after the Recalled Interaction Task as the Level 1 measure of negative affect, and five sets of analyses used the negative affect score from the MAACL administered after the Clean-Up Task as the Level 1 measure of negative affect. A path diagram illustrating the relations among the Level 1 and 2 negative affect measures and parent behaviors during the evocative interaction task is presented below in Figure 6.

First, five sets of path analyses were conducted to test the fit of restricted versus unrestricted models of the relations between Level 1 and Level 2 negative affect and parent behaviors during the evocative interaction task. These five sets of analyses were conducted using the negative affect score from the MAACL administered following the Clean-Up Task as the Level 1 negative affect measure. The first set of analyses included Parent Questions as the endogenous variable in the model. The model chi-square was $\chi^2(1) = 1.03$, $p = .31$, and the null hypothesis that there was no difference in fit was not rejected. The second set of analyses included Parent Positive Attention as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .00$, $p > .95$, and the null hypothesis that there was no difference in fit was not rejected. The third set of analyses included Parent Commands as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .02$, $p > .89$, and the null hypothesis that there was no difference in fit was not rejected. The fourth set of analyses included Parent Negative Talk as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .00$, $p > .96$, and the

null hypothesis that there was no difference in fit was not rejected. The fifth set of analyses included Parent Neutral Talk as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .00$, $p > .97$, and the null hypothesis that there was no difference in fit was not rejected. These results do not support the hypothesis that there would be significant differences in the relations among parents' state-level negative affect measured at baseline and situation-specific negative affect measured after the Clean-Up Task and parents' behaviors during the Clean-Up Task.

An additional five sets of path analyses were conducted to test the fit of restricted versus unrestricted models of the relations between parents' Level 1 and 2 negative affect and parent behaviors during the evocative interaction task, using parents' report of their negative affect during the Recall Task as the Level 1 measure of negative affect. The first set of analyses included Parent Questions as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .11$, $p > .74$, and the null hypothesis of no difference in fit was not rejected. The second set of analyses included Parent Positive Attention as the endogenous variable in the model. The model chi-square was $\chi^2(1) = 2.68$, $p > .10$, and the null hypothesis of no difference in fit was not rejected. The third set of analyses included Parent Commands as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .79$, $p > .37$, and the null hypothesis of no difference in fit was not rejected. The fourth set of analyses included Parent Negative Talk as the endogenous variable in the model. The model chi-square was $\chi^2(1) = .00$, $p > .96$, and the null hypothesis of no difference in fit was not rejected. The fifth set of analyses included Parent Neutral Talk as the endogenous variable in the model. The model chi-square was $\chi^2(1) = 6.44$, $p = .01$, and the null hypothesis of no difference in fit was rejected. These

results provided partial support for the hypothesis that there would be differential relations among parents' state level negative affect measured at baseline and parent behavior during evocative interactions and parents' state-level negative affect during an evocative parent-child interaction and parent behaviors during an evocative interaction.

Hypothesis 3.3. *Parenting behaviors during the evocative interaction task will be more strongly related to parents' state-level affect than to parents' trait-level affect.*

Five sets of path analyses were conducted to test the hypotheses that Level 2 Negative Affect (i.e., Baseline MAACL ratings) and Level 3 Negative Affect (i.e., BDI-II ratings) had differential relations with parents' behaviors during the Clean-Up Task/ evocative interaction task. A path diagram illustrating these relations is presented below in Figure 7.

The first set of analyses tested the difference between the fit of the restricted versus unrestricted model of the relations among Level 2 and Level 3 negative affect and Parent Questions. The model chi-square was $\chi^2(1) = .80$, $p > .37$, and the null hypothesis that the restricted model fit equally well as the unrestricted model was not rejected. The second set of analyses tested the difference between the fit of a restricted versus unrestricted model of the relations among Level 2 and 3 negative affect and parent Positive Attention. The model chi-square was $\chi^2(1) = 4.32$, $p < .05$, and the null hypothesis that the restricted model fit as well as the unrestricted model was rejected. The third set of analyses tested the difference between the fit of a restricted versus unrestricted model of the relations among Level 2 and 3 negative affect and Parent Commands. The model chi-square was $\chi^2(1) = 1.89$, $p > .17$, and the null hypothesis that

the restricted model fit as well as the unrestricted model was not rejected. The fourth set of analyses tested the difference between the fit of a restricted versus unrestricted model of the relations among Level 2 and 3 negative affect and Parent Negative Talk. The model chi-square was $\chi^2(1) = .01$, $p > .94$, and the null hypothesis that the restricted model fit as well as the unrestricted model was not rejected. The fifth set of analyses tested the difference between the fit of a restricted versus unrestricted model of the relations among Level 2 and 3 negative affect and Parent Neutral Talk. The model chi-square was $\chi^2(1) = 4.61$, $p < .03$, and the null hypothesis that the restricted model fit as well as the unrestricted model was rejected. These results provided support for the hypothesis that there are differential relations among parents' state-level affect and their behavior during evocative parent-child interactions and parents' trait-level negative affect and their behavior during evocative parent-child interactions. However, examination of the path coefficients of the Level 2 and Level 3 measures of negative affect revealed that parents' trait-level negative affect, measured by the BDI-II, was more predictive of the parent behavior variables than was parents' state-level negative affect. These findings were the opposite of what we expected.

Figure 5. Path Diagram of Relations among Affect Variables Measured Across Levels

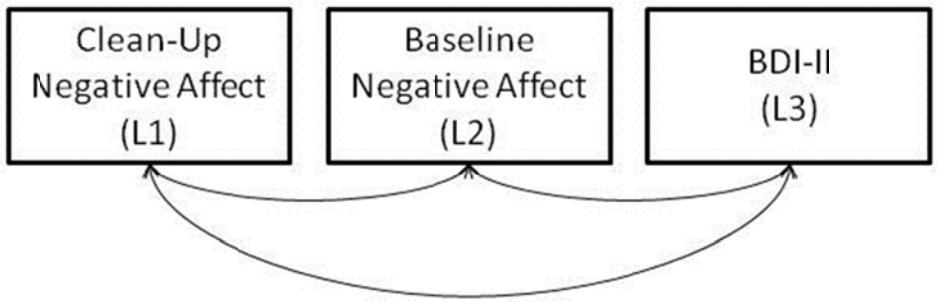


Figure 5a. L1 = Level 1. L2 = Level 2. L3 = Level 3.

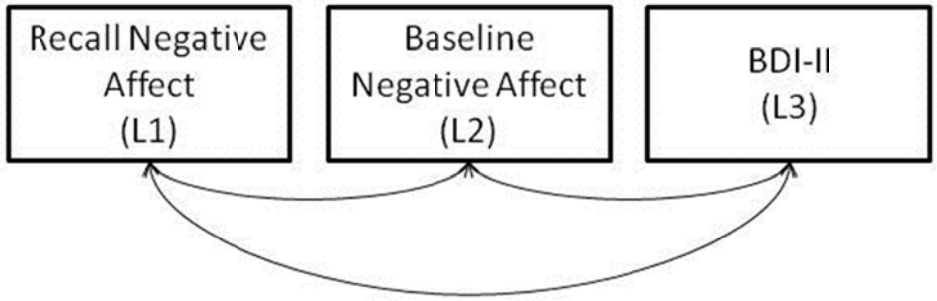


Figure 5b. L1 = Level 1. L2 = Level 2. L3 = Level 3.

Figure 6. Path Analysis Model of the Relations among Parent Behavior and Level 1 and Level 2 Negative Affect

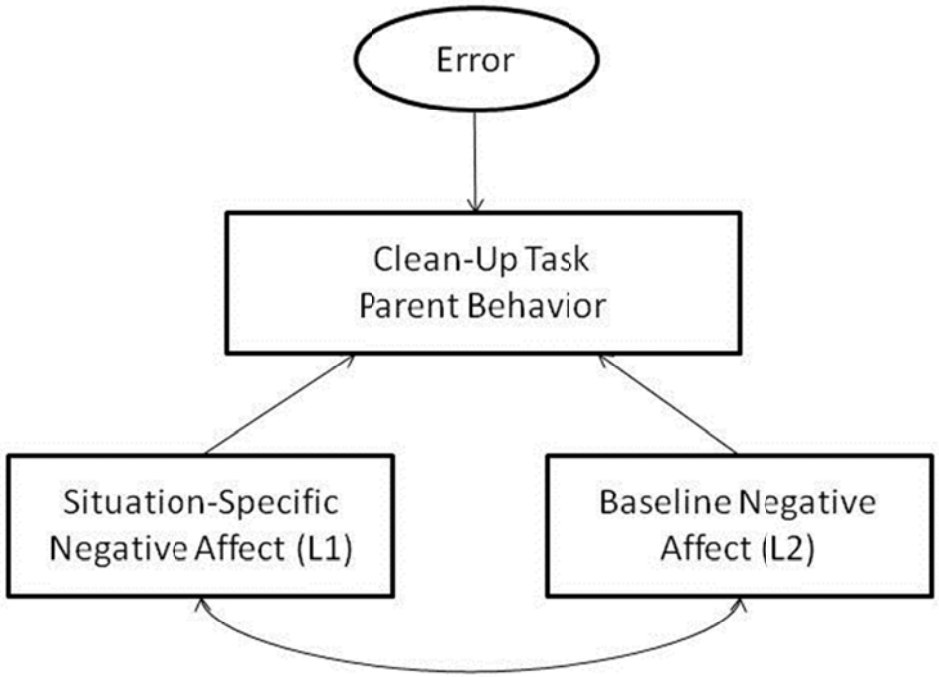
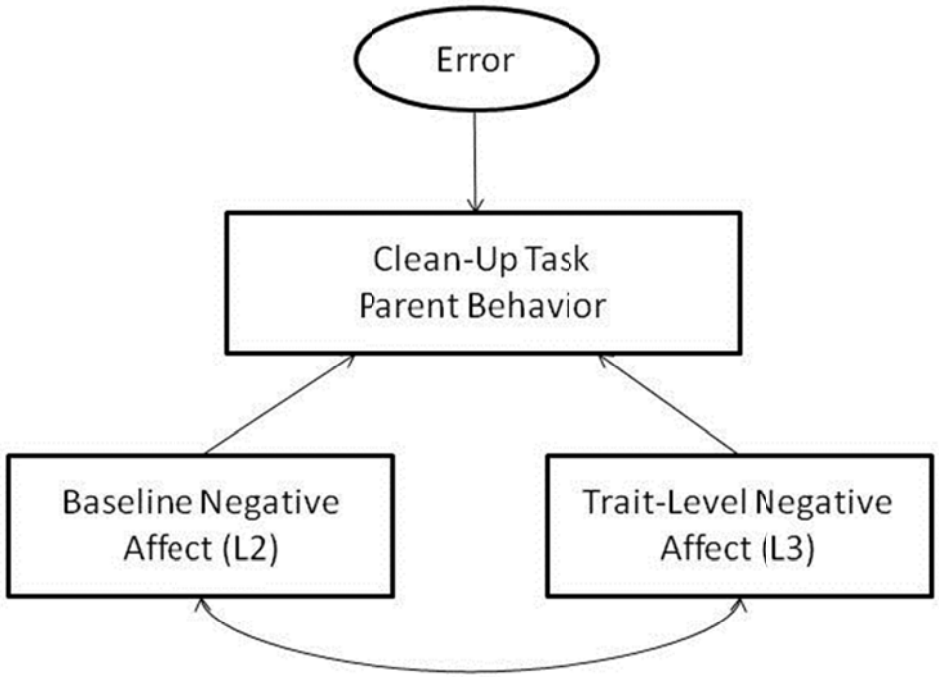


Figure 7. Path Analysis Model of the Relations among Parent Behavior and Level 2 and Level 3 Negative Affect



CHAPTER V

Discussion

The goal of this study was to better understand the relations among parent-child interaction contexts (i.e., Non-Evocative and Evocative), parents' affect and behavior during parent-child interactions, and trait-levels of child externalizing behaviors. This study built upon prior work across two domains of research studying parent-child interactions: (a) research studying the outcomes of Behavioral Parent Training interventions and (b) basic research studying the effects of parent factors on parent and child behavior. Prior studies conducted within these domains have found significant associations among parents' trait-level negative affect and parent-reported parenting behavior and child externalizing problems (e.g., Dix et al., 1989) but have not accounted for the parent-child interaction context, often have not included direct observations of parents interacting with their children, and generally have included measures of parent factors at broad, trait levels rather than at levels more directly linked to parent-child interactions. This study built upon previous work by (a) including parent factors and contextual factors not considered in BPT intervention research studies, (b) studying parents and children during actual parent-child interactions, and (c) including measures of parent factors more proximally linked to the parent-child interaction context (e.g., parents' affect during actual situations with their children) than those used in previous work to determine if these factors systematically influenced parent-child interactions and trait-level child behavior problems.

Univariate Relations among Parent Affect and Behavior and Child Behavior

We first examined the hypothesis that parents' affect during evocative parent-child interactions would predict significant variability in parents' behaviors toward their children. This question is important for researchers studying Behavioral Parent Training programs because research in the area of memory and learning suggests that individuals are likely to revert back to previously-learned behaviors under conditions of affective arousal (Bower, 1992), and parenting interventions often occur in interaction contexts that are less affectively arousing than naturalistic environments in a number of ways (e.g., fewer competing demands on parents' attention; more direct support for parents from a therapist during interactions; minimal aversive child behavior). Thus, if parents' behaviors during evocative interactions are dependent on their affective arousal, it suggests that it may be optimal to train parents in contexts that more closely approximate the evocative contexts they are likely to experience in naturalistic environments to achieve better generalization of newly learned parenting skills.

Contrary to our expectations, variability in parents' self-reported positive and negative affect during the evocative interaction task did not predict significant variability in parents' observed behaviors during this task. Although the lack of significant findings could indicate that the majority of parents are able to modulate their affect during evocative situations with their children by inhibiting impulses to engage in negative parenting behaviors, a number of other interpretations of these findings are plausible as well. For example, it is possible that the interaction context that was designed to be challenging or evocative in this study was not sufficiently stressful to alter parents' behavior in a way that was consistent with their affect, or that parents did not experience

extreme enough changes in their affect to influence their behavior toward their children during the task. It is also possible that parents were more careful to control their behavior when they were being observed as part of a research study, for social desirability reasons. There is evidence that the evocative interaction simulated in the lab was not as challenging for parents as evocative situations that occur in their naturalistic contexts. For example, when parents were interviewed about a recent, difficult situation with their children and were asked to report the affect they experienced during those situations, they reported a significantly higher mean level of negative affect and lower mean level of positive affect (t_{64} = -9.80, $p < .001$ for negative affect and t_{64} = 8.27, $p < .001$ for positive affect) than they reported during the evocative interaction lab task. Thus, it is unclear from the current findings whether parents tend to engage in more negative and less positive parenting behavior under conditions of higher levels of affective arousal. Additionally, it also is possible that the measurement of parent behaviors in this study was not sensitive enough to detect subtle changes in parent behavior that likely resulted from the mildly stressful lab task within this non-referred sample, as the DPICS-III was designed to detect meaningful changes in parent behaviors in clinical samples participating in a specific variant of Behavioral Parent Training.

Next, we investigated relations among child externalizing behaviors and parents' state-level, situation-specific positive and negative affect during evocative interactions with their children. These potential relations are important because, even though previous research has demonstrated significant associations between parents' trait-level negative affect and child externalizing behaviors, some parents with low trait-level negative affect also may tend to have difficulty regulating their emotions during difficult situations with

their children, in addition to parents who experience higher trait-level negative affect. Additionally, prior studies have not included measures of parents' positive affect and its effects on child externalizing behaviors. Thus, we included state-level positive and negative affect measures in addition to trait-level negative affect measures in the current study. Partial support was found for the hypothesis that parents' state-level negative affect during difficult parent-child interactions would predict significant variability in trait-level child problems, as parent-reported, situational negative affect recalled from previous difficult interactions with their children accounted for significant variability in child externalizing behaviors, as indexed by the CBCL Externalizing Problems scores and ECBI Intensity and Problem scale scores. These findings are interesting because they suggest that parents' state-level positive affect during difficult situations is not an important determinant of parent reports of externalizing child behavior but state-level negative affect during interactions deemed difficult or challenging by the parent is potentially important.

Similar to the first set of tests conducted to study the associations among parents' state-level affect and their behavior in a challenging situation in the lab, parents' state-level negative affect during the mildly stressful lab task also did not predict significant variability in child externalizing behavior problems, whereas their state-level negative affect reported during their recall of a challenging parent-child interaction did predict significant variability in child externalizing behaviors . Lack of significant findings with respect to the set of affect variables measured after the evocative lab task may be because the lab task was a mild and time-limited stressor where parents may have felt compelled

to behave in a socially desirable manner, whereas the recalled stressful situations were experienced as more evocative of parents' negative affect on average.

The next hypothesis that was investigated was that parents' behavior during the evocative interaction lab task would predict significant variability in externalizing child behaviors. This association is important to investigate because the relation between parents' affect during evocative interactions and child behavior may be mediated by parent behavior. The results from this study provided some support for this hypothesis, as parent positive attention during evocative parent-child interactions predicted significant variability in child externalizing behaviors as measured by the ECBI Problem and Intensity scales. Interestingly, the negative parenting behaviors measured in this study were not related to externalizing child problems as expected. These results were surprising because parents' negative behaviors toward their children and child externalizing behaviors have been linked in other studies (e.g., Denham et al., 2000).

The current results may suggest that the important parenting behaviors during evocative parent-child interactions, in terms of determining levels of child externalizing behaviors, are those that demonstrate that parents are positively attending to their children during difficult/ challenging times. These findings fit with behavioral theory that it is important for parents to attend to positive child behaviors in order to positively influence externalizing child behavior. Although significant relations among negative parenting behaviors and child externalizing behaviors were not found, it is possible that the evocative interaction task in the current study was too short in duration or too mild a stressor to produce ample variability in negative parenting behaviors that would be required to detect relations among these parent behaviors and child externalizing

problems. Additionally, as stated before, it also may be the case that the DPICS-III coding system may not have been sensitive enough a measure of parent behavior to pick up on subtle differences in negative parent behavior that may be more highly related to variation in child externalizing behaviors during an evocative task such as used here.

The final hypothesis in this set was that the relation between parents' state-level negative affect during evocative parent-child interactions and child externalizing behavior would not be significant once parents' behavior during the evocative interaction was included in the regression model. Conceptually, we assumed that parents' negative affect during evocative parent-child interactions would lead to higher levels of child externalizing behaviors for those parents who engaged in more negative or less positive parenting behaviors during those interactions. However, contrary to our expectations, parents' recalled negative affect predicted significant variability in child externalizing behavior scores even when the parenting behavior, Parent Positive Attention, was included in the prediction models. In one instance, parents' recalled negative affect predicted variability in child externalizing behavior, and the parenting behavior (Parent Positive Attention) did not (see Table 33 above). Although these results do not support our hypothesis that parent behavior explains covariation between parent affect and child externalizing problems, the potential limitations of the measure of parent behavior used in the present study, as discussed above, may underlie the findings in this analysis as well. It is possible that if a more sensitive measure of parent behavioral variations during a mild stressor, or if the DPICS-III had been used during a more evocative parent-child interaction, that parent behavior might have explained significant covariation between parent affect and externalizing child behavior.

Together, the results of this study provide evidence that parents' situational, state-level negative affect is (a) related to trait-level child externalizing behavior, and, (b) that parents' positive parenting behaviors during evocative interactions are related to trait-level child externalizing behaviors. Our results failed to provide evidence that parents' negative parenting behaviors during evocative parent-child interactions (a) predict child externalizing behavior problems, or, (b) account for the relation between parents' negative affect and child externalizing behavior problems. Future work could improve upon the current study by using different measures of parent behavior that are more sensitive to normative parent behaviors linked to parents' negative affect and / or by studying parent-child interactions in more naturalistic, evocative interaction contexts (e.g., interactions that occur in the home versus those set up in the lab) where parents may be more likely to show variability in the frequency or intensity of negative parenting behaviors toward their children. Relations among parent affective and behavioral variables and child behavioral variables also might have been larger in magnitude if the evocative lab task had been lengthened or made more challenging for parents and children.

Variation in Parent Affect and Behavior across Evocative and Non-Evocative Interaction Tasks

We hypothesized that there would be significant differences in mean levels of parents' positive and negative affect and behavior across the lab tasks designed to be evocative and non-evocative in this study. These differences were important because they were necessary to allow us to test our hypotheses regarding the effects of parental negative affect on parental behavior and child behavior. In addition, if parents' affect and

behavior can be reliably altered during such lab tasks, then they likely also could be altered reliably during Behavioral Parent Training intervention visits in order for parents to be able to practice generalizing their acquired parenting skills under more stressful, realistic conditions. Results indicated that there were reliable mean differences in parent positive and negative affect and parents' positive and negative parenting behaviors in the Clean-Up versus Puzzle tasks in this study. There also were reliable mean differences in parent positive and negative affect across the Recall and Puzzle Tasks in this study.

Comparison of Effects of Parent Variables by Task Type

The next set of hypotheses tested in this study used path analyses to determine if relations between parents' behavior and child externalizing behaviors differed when parents' behaviors were measured during evocative versus non-evocative parent-child interactions. Child management theory suggests that child externalizing behavior often becomes worse as a result of a coercive process between parents and children, such that children misbehave, parents respond harshly and punitively to stop child misbehavior, which further impels children to respond negatively and thus perpetuates the negative cycle of parent-child interaction (Patterson, 1982). This theory does not explicitly address the effect on child behavior of the context of parent-child interaction (i.e., whether the magnitude of relations between positive/ negative parenting behavior and child behavior differ by type of parent-child interaction). We hypothesized that parenting behaviors occurring during evocative parent-child interactions would be more predictive of trait-levels of child externalizing behaviors because this type of interaction context is generally where child externalizing behaviors are seen and dealt with, either positively or negatively, by parents. This set of hypotheses is conceptually important because, if there

were stronger relations between parent behavior and child externalizing behavior during evocative interactions than between parent behavior and child externalizing behavior during non-evocative interactions, then Behavioral Parent Training programs potentially could be enhanced by training parents under more evocative conditions, versus the neutral contexts wherein parent training typically occurs.

Results evaluating the differential effects of parent-child interaction context on the relations among parent affect and behavior and child externalizing behavior were mixed. For example, differential effects were found on child externalizing behavior, as measured by the CBCL, for Parent Positive Attention by interaction task type ($\beta_{\text{non-evocative}}$ = -0.31, SE = 0.13, p = .02; $\beta_{\text{evocative}}$ = 0.10, SE = .13, p = .44); however, no differential effects were found on child externalizing behaviors for other parent behaviors by interaction task type. Thus, more research is needed to determine if parent behaviors across different types of interactions affect child externalizing behaviors differentially, and if so, how parenting interventions may be modified to help parents apply parenting skills across different types of interactions.

We also hypothesized that the effects of parents' affective state on externalizing child behaviors would differ by interaction task type. If the hypothesized effects were found for parent affect by task type, it could suggest that parents with children with disruptive behavior problems may need extra support modulating their own affect during difficult interactions when participating in parenting interventions, and it also could suggest that parents' affect during evocative interactions is an important factor in determining children's levels of externalizing behaviors. Path analyses were conducted to test this set of hypotheses, and no evidence was found to support these hypotheses. It is

possible that the effects of parent positive and negative affect on child externalizing problems do not depend on interaction type – that the effects of parent negative affect are equally influential / non-influential during non-evocative and evocative parent-child interactions. However, these findings also could be the result of our evocative interactions not being sufficiently powerful to produce the type of effects on parent affect and/ or child behavior seen in naturalistic parent-child interactions. Additionally, our manipulation of evocative parent-child interactions in this laboratory study does not account for the frequency of evocative parent-child interactions that occur naturalistically between our parent-child dyads. That is, it is likely that not only are the behaviors and affect occurring during an evocative interaction important but that the frequency of evocative interactions, and hence these behaviors and affect, is likely also important. Future work should further investigate these hypotheses by attempting to induce more realistic manipulations of evocative parent-child interactions, by studying parent-child interactions in more naturalistic contexts in order to capture more variability in parent and child behavior, and/ or assessing the frequency of evocative interactions that occur between each parent-child dyad as additional variables.

Measurement Questions

The remainder of questions that were examined in the current study related to measurement issues we encountered in reviewing prior work. The first measurement question examined in this study was whether parent behavior observed during the evocative interaction task would predict more variability in externalizing child problems than parent-reported parent behaviors. Results of our tests failed to support the hypothesis that observed parent behaviors would be stronger predictors of child externalizing

behavior problems than parent-reported parent behaviors. It is difficult to determine the significance of these findings, however, because we did not find strong relations among externalizing child behaviors and parent behaviors as measured in this study. Future work should include different measures of observed parent behaviors and should observe parent-child interactions in challenging contexts that more closely match those that parents and children regularly encounter.

The next set of measurement hypotheses tested in the current study stated that there would be hierarchical relations among parent affect measures such that parents' situational negative affect would be more highly related to parents' baseline state-level negative affect than it would be to parents' trait-level negative affect. These questions are important because parents' trait-level negative affect has been measured in prior studies and has been found to be an important predictor of child externalizing problems; however, parents' state-level negative affect and its effects on child behavior has not been studied. To determine if we were capturing a different construct than trait-level negative affect with our measure of state-level negative affect, we evaluated relations relative to a hierarchy of relations among these negative affect measures. However, we failed to find evidence that these measures were hierarchically linked. One possible explanation is that although it is the state-level affect that influences specific behaviors, our study assessed state-level affect in a single instance, which may or may not be representative of the multiple affect states that a particular parent experiences, whereas the trait-level measures assess affect across a broader timeframe, and thus reflect a wider assessment of affect.

It thus is unclear if adding measures of parents' state-level negative affect to studies would add value over and above negative affect captured by trait-level measures

such as the BDI-II, as these measures may not be capturing anything unique over and above the trait-level measures of negative affect. Future work could improve upon the methods used in the current study of parent affect by including physiological measures in addition to self-report affect measures, as physiological indicators of affect would share less method variance with parent-report measures of trait-level negative affect and would not be influenced by social desirability.

The last set of measurement hypotheses tested by the current study were that parent negative affect measures that were more closely linked to evocative parent-child interactions would predict more variability in parent behavior during evocative parent-child interactions than would either state-level measures of parent negative affect administered at baseline or trait-level measures of parent negative affect administered at baseline. If the hypothesized differences had been found, then it would potentially suggest that there was a stronger causal link between parents' situation-specific, state-level negative affect and parenting behavior than parents' trait-level negative affect and parenting behaviors. This question is of practical importance in determining which parent affective variables, state-level or trait-level, deserve more attention during parenting interventions.

Our findings were mixed when we tested these hypotheses. For example, parents' negative affect recalled during the interview about an evocative parent-child interaction that occurred recently was more strongly related to Parent Neutral Talk observed during the clean-up task than was parents' state-level negative affect reported at baseline ($\beta_{\text{recalled negative affect}} = -0.33$, $SE = 0.13$, $p = 0.01$; $\beta_{\text{baseline negative affect}} = 0.22$, $SE = 0.13$, $p = 0.08$). However, significant differences were not found in the relations of parent situation-

specific negative affect and baseline state-level negative affect and other parent behavior variables observed during the clean-up task. Additionally, differences in relations between state-level negative affect measured at baseline and parent behavior versus between trait-level negative affect measured at baseline and parent behavior were either not found or were in the wrong direction (i.e., parents' trait-level negative affect measured at baseline by the BDI-II was more highly related to parents' Neutral Talk and Positive Attention during the clean-up task than parents' state-level negative affect measured at baseline). As noted earlier in the discussion of study results, however, these findings also could indicate that the measure of parenting behavior was not sensitive enough to parent affective changes that occurred during the tasks in the study or that the study manipulations did not evoke enough negative affect to impel some parents to behave differently toward their children as a result of changes in their situation-specific negative affect or state-level negative affect measured at baseline. Future work could improve upon the current study by attempting to induce higher levels of state-level negative affect in parents by either strengthening the experimental manipulation or studying parents and children in more naturalistic contexts.

Limitations of the Current Study

This study improved upon previous research in a variety of ways; however, there also were significant limitations that should be considered when interpreting the findings. One of the biggest problems that potentially affected conclusions drawn from this study was the lack of statistical power that was due, at least in part, to the small sample of parents and children included in this study. The lack of power to detect small relations among study variables likely means that some effects/ trends that are conceptually

meaningful were not statistically significant. Future work could enhance the understanding of relations among the variables of interest by investigating similar questions using larger samples of participants.

Another set of limitations of the current work is that the measurement of parent behaviors during parent-child interactions was limited to the DPICS-III system, which is designed to detect clinically meaningful differences in parenting behaviors in referred families. The DPICS-III is a useful measure of variability in parenting behaviors in clinic-referred families in regards to PCIT treatment, but it may not capture important variability in parenting behaviors in non-referred families that influence child behavior but are not related to PCIT treatment. Future work should consider including a variety of other parent behavior measures.

A third set of potential limitations of the current work is that the manipulation of the evocative interaction context in the current study may not have been strong enough to produce negative parenting behavior during this task. Although parents' affect and behavior were found to differ reliably across interaction contexts (i.e., evocative versus non-evocative interaction contexts) in this study, the manipulation of the evocative interaction may not have been strong enough or long enough in duration for some parents to experience high enough levels of negative affect sufficient to influence their behavior.

Additionally, it is possible that the strength of the evocative interaction manipulation was attenuated because the interaction occurred after an interview that required parents to engage in thinking about previous difficult interactions with their children, including questions asking parents about things they might do differently during

future interactions in order to improve outcomes. This sequencing of study activities may have affected parents' behavior during the evocative interaction task because this question may have induced some parents to behave differently after thinking through what they could have done differently during prior difficult interactions with their children.

Conclusion

This study built upon prior work by studying a broader array of parent affective factors and contextual factors and their relations to externalizing child behaviors than those included in previous studies investigating relations among parent factors and child behavioral variables. It also examined potential measurement issues that may have led to null findings with respect to hypothesized relations among parent factors and child outcomes investigated in prior studies. Our findings suggest that the relations among parent factors and child outcomes are influenced by parent-child interaction context. Thus, it is important to consider the effects that varying context during parenting interventions may have on the outcomes of parenting interventions. Parents who can learn to generalize newly learned skills across more challenging/ evocative contexts may improve their children's behavioral outcomes.

Our findings also suggest that it is important to consider a broader array of parent factors than those typically measured during parenting intervention outcomes studies in order to better understand the differential effectiveness of interventions noted in prior work. Parents' state-level negative affect is one example of a parent variable not included in prior parenting intervention outcomes studies that our findings suggest potentially

accounts for significant variability in child externalizing behaviors. Intervention studies focused on demonstrating the efficacy of interventions typically do not attempt to understand process variables that may moderate or mediate outcomes. Because Behavioral Parent Training interventions have demonstrated efficacy across a number of populations and outcomes domains, future parenting intervention research should attempt to further elucidate the processes through which intervention effects are mediated and/ or moderated by studying parent factors, such as parents' state-level negative affect that may be linked to parent and child outcomes.

References

Abidin, R.R. (1995). *Parenting Stress Index, 3rd Edition: Professional Manual.* Odessa, FL: Psychological Assessment Resources, Inc.

Achenbach, T.M. & Rescorla, L.A. (2001). *Manual for ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, and families.

Ajzen, I., & Fishbein, M. (1977). Attitude and behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin, 84,* 888-918.

Alber, S.R., & Heward, W.L. (2000). Teaching students to recruit positive attention: A review and recommendations. *Journal of Behavioral Education, 10,* 177-204.

Allison, P.D. (2001). *Missing Data.* Thousand Oaks, CA: Sage Publications.

Assemany, A.E. & McIntosh, D.E. (2002). Negative treatment outcomes of behavioral parent training programs. *Psychology in the Schools, 39,* 209-219.

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). *Manual for the Beck Depression Inventory – II*. San Antonio, TX: Psychological Corporation.

Bower, G.H. (1992). How emotions affect learning. In Christianson, S-A. (Eds.), *The handbook of emotion and memory: Research and theory* (pp. 3-31). Hillsdale, NJ: Lawrence Erlbaum Associates.

Broadhurst, P.L. (1959). The interaction of task difficulty and motivation: The Yerkes Dodson law revived. *Acta Psychologica, 16*, 321-338.

Bugental, D. (2004). *Parent Attribution Test*. Unpublished manual. Santa Barbara, CA: University of California, Santa Barbara.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd Ed.). Hillsdale, NJ: Lawrence Erlbaum.

Cronbach, L.J., & Gleser, G.C. (1957). *Psychological tests and personnel decisions*. Champaign, IL: University of Illinois Press.

Denham, S.A., Workman, E., Cole, P.M., Weissbrod, C., Kendziora, K.T., & Zahn-Waxler, C. (2000). Prediction of externalizing behavior problems from early to middle childhood: The role of parental socialization and emotion expression. *Development and Psychopathology, 12,* 23-45.

Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptive processes. *Psychological Bulletin, 110,* 3-25.

Dix, T., Gershoff, E.T., Meunier, L.N., & Miller, P.C. (2004). The affective structure of supportive parenting: Depressive symptoms, immediate emotions, and child-oriented motivation. *Developmental Psychology, 40,* 1212-1227.

Dix, T., & Lochman, J.E. (1990). Social cognition and negative reactions to children: A comparison of mothers of aggressive and nonaggressive boys. *Journal of Social and Clinical Psychology, 9,* 418-438.

Dix, T., Reinhold, D.P., & Zambarano, R.J. (1990). Mothers' judgment in moments of anger. *Merill-Palmer Quarterly, 36,* 465-486.

Dix, T., Ruble, D.N., & Zambarano, R.J. (1989). Mothers' implicit theories of discipline: Child effects, parent effects, and the attribution process. *Child Development, 60,* 1373-1391.

Dumas, J.E., & Wahler, R.G. (1983). Predictors of treatment outcome in parent training: Mother insularity and socioeconomic disadvantage. *Behavioral Assessment, 5,* 301-313.

Eyberg, S.M., Nelson, M.M., Duke, M., & Boggs, S.R. (2005). *Manual for the Dyadic Parent-Child Interaction Coding System* (3rd Edition). Unpublished manual.

Forehand, R.J., & McMahon, R.L. (2003). *Helping the noncompliant child: Family based treatment for oppositional behavior*. New York: Guilford Press.

Hembree-Kigin, T.L., & McNeil, C.B. (1995). *Parent-child interaction therapy*. New York: Plenum Press.

Hemphill, S.A. & Littlefield, L. (2001). Evaluation of a short-term group therapy program for children with behavior problems and their parents. *Behaviour Research and Therapy, 39,* 823-841.

Hoza, B., Owens, J.S., Pelham, W.E., Jr., Swanson, J.M., Conners, C.K., Hinshaw, S.P., Arnold, L.E., & Kraemer, H.C. (2000). Parent cognitions as predictors of child treatment response in attention-deficit/ hyperactivity disorder. *Journal of Abnormal Child Psychology, 28,* 569-583.

Kazdin, A.E. & Weisz, J.R. (1998). Identifying and developing empirically supported child and adolescent treatments. *Journal of Consulting and Clinical Psychology, 66,* 19-36.

Kazdin, A.E. & Whitley, M.K. (2003). Treatment of parental stress to enhance therapeutic change among children referred for aggressive and antisocial behavior. *Journal of Consulting and Clinical Psychology, 71,* 504-515.

Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling* (2nd Edition). New York: Guilford Press.

Lang, A.J., Craske, M.G., Brown, M., & Ghaneian, A. (2001). Fear-related state dependent memory. *Cognition and Emotion, 15,* 695-703.

Lefebvre, M.F. (1981). Cognitive distortion and cognitive errors in depressed psychiatric and low back pain patients. *Journal of Consulting and Clinical Psychology, 49,* 517-525.

Leung, D.W., & Slep, A.M.S. (2006). Predicting inept discipline: The role of parental depressive symptoms, anger, and attributions. *Journal of Consulting and Clinical Psychology, 74,* 524-534.

Little, R.J.A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83,* 1198-1202.

Lundahl, B., Risser, H.J., & Lovejoy, M.C. (2006). A meta-analysis of parent training: moderators and follow-up effects. *Clinical Psychology Review, 26,* 86-104.

Maughan, D.R., Christiansen, E., Jenson, W.R., Olympia, D., & Clark, E. (2005). Behavioral parent training as a treatment for externalizing behaviors and disruptive behavior disorders: a meta-analysis. *School Psychology Review, 34,* 267-286.

Miller, G.E., & Prinz, R.J. (1990). Enhancements of social learning family interventions for childhood conduct disorder. *Psychological Bulletin, 108,* 291-307.

Miller, S.A. (1995). Parents' attributions for their children's behavior. *Child Development, 66,* 1557-1584.

Mills, R.S.L., & Rubin, K.H. (1990). Parental beliefs about problematic social behaviors in early childhood. *Child Development, 61,* 138-151.

Patterson, G.R. (1982). *Coercive family process*. Eugene, OR: Castalia.

Patterson, G. R., Reid, J. B. & Dishion, T. J. (1992). *Antisocial boys: A social interactional approach*. Eugene, OR: Castalia.

Peterson, C., & Villanova, P. (1988). An expanded Attributional Style Questionnaire. *Journal of Abnormal Psychology, 97,* 87-89.

Peters, S., Calam, R., & Harrington, R. (2005). Maternal attributions and expressed emotion as predictors of attendance at parent management training. *Journal of Child Psychology and Psychiatry, 46,* 436-448.

Potier, J., & Day, C. (2007). Childhood conduct problems: A preliminary investigation into the role of mothers' interpersonal schemas and their relationship to parenting behaviour. *Behavioural and Cognitive Psychotherapy, 35,* 457-472.

Reyno, S.M. & McGrath, P.J. (2006). Predictors of parent training efficacy for child externalizing behavior problems – a meta-analytic review. *Journal of Child Psychology and Psychiatry, 47,* 99-111.

Robinson, E.A., & Eyberg, S.M. (1981). The Dyadic Parent-Child Interaction Coding System: Standardization and validation. *Journal of Consulting and Clinical Psychology, 49,* 245-250.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80,* (Whole No. 609).

Rubin, D.B. (1987). *Multiple Imputation for Nonresponse in Surveys.* New York: J. Wiley and Sons.

Rubin, D.B. (1996). Multiple imputation after 18+ years. *Journal of the American Statistical Association, 91,* 473-489.

Sanders, M.R., Markie-Dadds, C., Tully, L.A., & Bor, W. (2000). The Triple P-Positive Parenting Program: A comparison of enhanced, standard, and self-directed behavioral family intervention for parents of children with early onset conduct problems. *Journal of Consulting and Clinical Psychology, 68,* 624-640.

Schludermann, E.H., & Schludermann, S.M. (1988). *Parent Behavior Report (PBR) for younger children.* Technical report. Winnipeg, Canada: University of Manitoba, Department of Psychology.

Serketich, W.J. & Dumas, J.E. (1996). The effectiveness of behavioral parent training to modify antisocial behavior in children: a meta-analysis. *Behavior Therapy, 27,* 171-186.

Slep, A.M.S. (1997). *Parenting Cognition Scale.* Unpublished measure.

Slep, A.M.S., & O'Leary, S.G. (1998). The effects of maternal attributions on parenting: An experimental analysis. *Journal of Family Psychology, 12,* 234-243.

Stratton, P., Munton, A.G., Hanks, H.J.L., Heard, D., & Davidson, C. (1988). *Leeds Attributional Coding System manual.* Unpublished manuscript, University of Leeds.

Tabachnick, B.G., & Fidell, L.S. (2007). *Using Multivariate Statistics* (Fifth Edition). Boston: Allyn & Bacon.

Taylor, T.K., & Biglan, A. (1998). Behavioral family interventions for improving child-rearing: A review of the literature for clinicians and policy makers. *Clinical Child and Family Psychology Review, 1,* 41-60.

Timm, N.H. & Mieczkowski, T.A. (1997). *Univariate and Multivariate General Linear Models: Theory and applications using SAS software..* Cary, NC: SAS Publishing.

Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063-1070.

Webster-Stratton, C. (1990). Long-term follow-up of families with young conduct problem children: From preschool to grade school. *Journal of Clinical Child Psychology, 19,* 144-149.

Webster-Stratton, C. (1994). Advancing videotape parent training: A comparison study. *Journal of Consulting and Clinical Psychology, 62,* 583-593.

Yerkes, R. M. & Dodson, J. D. (1908). The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology and Psychology, 18*, 459-482.