

The relationships among aggressive functions, family factors, and internalizing and externalizing
symptoms in youth

Natoshia Raishevich, B.A.

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial
fulfillment of the requirements for the degree of

Master of Science

In

Psychology

Angela Scarpa, Ph.D., Chair

Julie Dunsmore, Ph.D.

Thomas Ollendick, Ph.D.

May 10, 2007

Blacksburg, VA

Keywords: Aggression, Proactive, Reactive, Family, Internalizing, Externalizing

The relationships among aggressive functions, family factors, and internalizing and externalizing symptoms in youth

Natoshia Raishevich

(ABSTRACT)

Aggression is a heterogeneous behavior that has been conceptualized by two distinct but inter-related functions: proactive and reactive aggression (Dodge, 1991). Proactive aggression has been linked to externalizing behaviors and reactive aggression to internalizing behaviors (Vitaro, Gendreau, Tremblay, & Oligny, 1998). There has been some evidence to suggest that family environment may influence the relationship between the aggressive functions and the related forms of psychopathology (Dodge, 1991). However, given the limited research pertaining to the relationships among aggression, family environment, and subsequent psychopathology, the current study explored the nature of the relationships among these variables in more detail. The present study hypothesized that proactive aggression would be related to externalizing symptoms (delinquency, hyperactivity), and these relationships would be moderated by family conflict. In addition, it was predicted that reactive aggression would be related to internalizing symptoms and inattention, and these relationships would be moderated by family conflict, cohesion, and control. The study included a sample of 135 children and their parents who completed several self-report measures. Overall, the findings did not support the hypotheses, though there was mixed support for the relationship between the aggressive functions and internalizing and externalizing symptoms.

Acknowledgements

First and foremost, I would like to thank my committee members, Drs. Angela Scarpa, Julie Dunsmore, and Tom Ollendick, for their assistance throughout this process. I would also like to thank my mentors, current and past, for their contribution to my development as a young professional. In particular, I owe a special thanks to Dr. Peter Jensen for his encouragement and support. I would also like to thank my friends and family for their encouragement. I offer a special thanks to my cohort-mates. I look forward to continuing this journey with all of you. Lastly, I would like offer a special thank you to my mother, Michele. You are my inspiration. I hope that I can continue to make you proud.

Table of Contents

Acknowledgements.....	iii
List of Tables.....	v
List of Figures.....	vi
Introduction.....	1
Relations to Internalizing and Externalizing Characteristics.....	4
Anxiety.....	4
Depressive Symptoms.....	5
ADHD.....	5
Disruptive Behavior Disorders and Related Behaviors.....	6
Relations to Family Factors.....	7
Integrating Family Factors, Aggression, and Psychological Outcomes.....	9
Conclusions and Implications.....	10
Moderator Models.....	11
Method.....	13
Participants.....	13
Procedure.....	13
Measures.....	13
Data	
Analysis.....	16
Results.....	16
Descriptive and Demographics.....	16
Pearson Correlations.....	17
Hierarchical Multiple Regression Analysis.....	17
Main Effects on Maternal-Reported Symptomatology.....	18
Main Effects on Teacher-Reported Symptomatology.....	19
Interactive Effects of on Maternal- and Teacher-Reported Symptomatology.....	19
Exploratory Analyses.....	19
Main Effects on Maternal-Reported Symptomatology.....	19
Main Effects on Teacher-Reported Symptomatology.....	20
Interactive Effects on Maternal-Reported Symptomatology.....	20
Interactive Effects on Teacher-Reported Symptomatology.....	20
Discussion.....	21
References.....	29

List of Tables

Table 1. Most Common Sample Diagnoses.....	34
Table 2. Means and Standard Deviations of CBCL, TRF, R-TRPA, and FES subscales.....	35
Table 3. Pearson Correlations Among Reactive/Proactive Aggression, FES subscales, and CBCL/TRF Factors.....	36
Table 4. Partial Correlations of the Aggressive Functions, Family Factors, and Internalizing and Externalizing Symptoms.....	37
Table 5. PA/RA and Family Cohesion, Conflict, and Control Predicting Anxiety/Depression....	38
Table 6. PA/RA and Family Cohesion, Conflict, and Control Predicting Withdrawal.....	39
Table 7. PA/RA and Family Cohesion, Conflict, and Control Predicting Somatization.....	40
Table 8. PA/RA and Family Cohesion, Conflict, and Control Predicting Attention Problems.....	41
Table 9. PA/RA and Family Cohesion, Conflict, and Control Predicting Delinquency.....	42
Table 10. PA/RA and Family Variables Predicting Social Problems.....	43
Table 11. PA/RA and Family Expressiveness/Organization Predicting Anxiety/Depression.....	44
Table 12. PA/RA and Family Expressiveness/Organization Predicting Withdrawal.....	45
Table 13. PA/RA and Family Expressiveness/Organization Predicting Somatization.....	46
Table 14. PA/RA and Family Expressiveness/Organization Predicting Attention Problems.....	47
Table 15. PA/RA and Family Expressiveness/Organization Predicting Delinquency.....	48

List of Figures

Figure 1. PA X Expressiveness = Attention Problems.....49

Figure 2. RA X Family Control = Social Problems.....50

Figure 3. PA X Family Organization = Social Problems.....51

Introduction

Childhood aggression has long been regarded as a risk factor for various forms of psychopathology in childhood, adolescence, and adulthood. Childhood aggression has been typically associated with the maintenance of externalizing disorders; moreover, aggression has been linked to the development of internalizing disorders (Russo & Beidel, 1994). In addition, family environment may play an important role in the relationship between childhood aggression and other forms of psychopathology (Dodge, 1991). To date, there has been a paucity of research that explores the nature of the relationships among these variables. Perhaps, the relationships among these variables may be better understood by categorizing the functions of aggression.

Aggression and its various forms are considered a specific type of antisocial behavior, a behavior by which people are disadvantaged and basic norms and values are violated (Kempes, Matthys, de Vries, & van Engeland, 2005). Aggression has been defined as behavior that is deliberately aimed at harming people and/or objects (Dodge, 1991; Dodge & Coie, 1987). Physical harm may or may not be part of this conceptualization of aggression. In addition to physical or overt aggression, other forms of aggression have been studied in children. These include indirect forms of aggression, such as psychological, social, and relational aggression (Crick & Grotpeter, 1995; Underwood, 2003). As compared to physical aggression, the indirect forms of aggression are typically categorized by verbal aggression, such as threatening language or gossiping.

Within these various forms of aggression, two functions of aggression have been posited (Dodge & Coie, 1987). One function of aggression is known as proactive aggression (PA), which is a goal-oriented aggressive behavior that does not require provocation or anger. PA is considered an instrumental type of aggression geared towards possession of objects or other goals. Other terminology used to classify PA is offensive, predatory, and “cold tempered.” The conceptualization of PA originally evolved from Bandura’s social learning theory (Bandura,

1973), which posited that aggression was an acquired behavior that was controlled by anticipated rewards.

The other aggressive function is known as reactive aggression (RA). RA occurs in response to a perceived threat (Kempes et al., 2005). RA is considered affective, defensive, and a “hot tempered” manifestation of aggression. The principle of RA was derived from Dollard and colleagues’ (1939) frustration-aggression model, which has since been reformulated by Berkowitz (1978). According to this theory, a perceived threat or an anger response were considered factors that precipitate aggressive behaviors. Both dispositional characteristics as well as environmental stimuli served to exacerbate the aggressive response in this model. While the frustration-aggression theory and the social learning theory of aggressive behaviors were considered competing theories in understanding aggression, it was eventually hypothesized that these theories conceptualized two distinct manifestations of aggression: the social learning theory conceptualized PA and the frustration-aggression theory conceptualized RA (Bandura, 1983; Berkowitz, 1983).

Interestingly, while there appear to be gender differences among different forms of aggression (e.g., more physical aggression in boys, more relational aggression in girls), there has been no known gender differences in the functional types of PA and RA in children presented in the literature (Little, Henrich, Jones, & Hawley, 2003). There has been, however, some indication that RA may be more common in younger than older children, and that RA may actually be precipitated by the development of PA in aggressive youth (Connor, 2002).

To date, there has been mounting support for the two factor model of PA and RA (Brown, Atkins, Osborne, & Milnamow, 1996; Poulin & Boivin, 2000; Vitaro, Brendgen, & Tremblay, 2002; Waschbusch, 1998). Although PA and RA are significantly correlated ($r = 0.67$), there has been some evidence to support discriminant validity between these constructs (Brown et al., 1996). Specifically, PA and RA appeared to differentially predict certain outcomes, where children high in PA may be more prone to developing externalizing behaviors

and children high in RA may be more vulnerable to developing internalizing symptoms (Raine et al., 2006; Vitaro et al., 2002). Moreover, there has been support for the differentiation of the constructs in a teacher-rating measure of PA and RA (Poulin & Boivin, 2000). Specifically, although the two constructs were significantly inter-related, a two-factor model provides a better fit than a single-factor model. The study by Poulin and Boivin (2000) examined teacher-reported aggressive behaviors in a community sample of 149 boys attending school (grades four through six) in a middle-class socioeconomic neighborhood in France. Poulin and Boivin (2000) completed a second examination of a middle-class community sample of 193 boys in grades three through six, and found that parent ratings of PA and RA presented distinct behavioral patterns consistent with theoretical definitions in the areas of peer status, victimization, leadership, and social withdrawal. Specifically, social preference was negatively associated with RA, but was not related to PA. Peer victimization was positively associated with RA, but not with PA. Leadership was negatively associated with RA, but was not associated with PA, and social withdrawal was positively associated with both functions of aggression, but the relationship was stronger with RA.

In addition, another investigation of a teacher-rated measure of aggression (Dodge & Coie, 1987) that used a sample of 405 kindergarten children found good evidence of criterion validity for both RA and PA, but mixed evidence for their utility, after each function of aggression was controlled for (Waschbusch, 1998). Similarly, a teacher-reported measure of PA and RA in a community sample of boys aged 10-12 found that although the two aggressive functions were highly correlated, the two constructs appeared to have distinct profiles of antecedent and consequent symptoms (Vitaro et al., 2002). Antecedent characteristics (defined as occurring at age six) of PA in children included withdrawal, less reactivity, and more attentiveness while characteristics of RA included more reactivity and less attentiveness. At age thirteen, consequent symptoms of PA in children included increased risk of delinquency, while children who exhibited symptoms of RA were more likely to develop symptoms of depression.

A more recent measure of aggression has been developed based on the previous work of Dodge and Coie (1987), and this measure also attempted to distinguish between PA and RA (Brown et al., 1996). This measure of aggressive behavior revealed independent and internally consistent RA (six reactive items), and PA (five proactive items, five covert “instrumental” items) factors in teacher reports.

In sum, while PA and RA appear to be discrete but highly correlated entities, the majority of aggressive children have a mixed proactive-reactive aggressive profile, as opposed to “pure” RA or PA. As a result, a recent review has suggested that the PA-RA dichotomy might be false and should be abandoned (Bushman & Anderson, 2001). While the two constructs appear to be highly correlated (Dodge & Coie, 1987), they also appear to be differentially predictive of varying measures of internalizing and externalizing behaviors (Poulin & Boivin, 2000). Thus, there may be utility in researching the distinction as they relate to other child behavior problems.

Relations to Internalizing and Externalizing Characteristics

Anxiety

There has been conflicting evidence with regards to co-occurring aggressive and anxiety symptoms in youth. One study indicated that approximately 1/3 of a community sample of children experienced covarying anxiety and aggressive symptoms, while between 2/3 of a clinical sample of children showed this covariation, with adverse treatment effects (Russo & Beidel, 1994). Contrary evidence suggested that anxiety may serve as a potential protective factor in the development of aggression in children; however, outcomes of comorbid anxious-aggressive children may worsen as the children transition into adolescence (Walker et al., 1991). Thus, comorbid anxiety and aggression in adolescents may lead to reduced effectiveness of treatment outcomes (Zoccolillo, 1992).

With regards to the relationship between the aggressive functions and anxiety, the literature has indicated that children with features of RA may experience greater symptoms of anxiety than children with characteristics of PA or normal controls (Scarpa & Haden, 2006;

Vitaro et al., 2002). Another investigation found that RA at age 7 was positively associated with anxiety at age 16 (Raine et al., 2006). Perhaps the relationship between RA and child anxiety may be due to temperamental differences in such children that led to the expression of both anxiety and RA behaviors (Vitaro et al., 2002).

Depressive Symptoms

In addition, aggression, but more specifically RA, has been commonly linked to the development of depressive symptoms in youth (Capaldi, 1992; Vitaro et al., 2002; Windel, 1992). Thus, like comorbid anxiety and aggressive behaviors, children with high level of RA were more likely to develop symptoms of depression than children with features of PA and non-aggressive controls (Vitaro et al., 2002). Unlike co-occurring anxiety and aggression, the RA behaviors in children appeared to precede the development of depression (Russo & Beidel, 1994). These findings may be because the development of depression has typically been more common during adolescence, whereas symptoms of anxiety may be more likely to precipitate aggressive behaviors. However, there has also been some support for depression preceding the development of aggression in children (Wolff & Ollendick, 2006).

Another explanation of the temporal differences between aggression and co-occurring anxiety or aggression and comorbid depression may be that children with features of RA may be more anxious; thus, they may be more prone to the development of depressive symptoms (Kovacs & Devlin, 1998; Maser & Cloninger, 1990). It should also be noted that the definition of “depressive symptoms” has varied from study to study (e.g., self-reports, DSM-IV criteria); thus, caution should be taken in making broad generalizations about the overall findings with regards to the relationship between the functions of aggression and depressive symptoms.

ADHD

Overall, a large number of children with symptoms of aggression also endorsed comorbid ADHD. In fact, approximately 65%-90% of children experienced co-occurring symptoms of aggression and ADHD (Jensen, Martin, & Cantwell, 1997; Stewart, Cummings,

Singer, & deBlois, 1981). The comorbidity between aggression and ADHD is considered of notable importance because the co-presentation of these disorders may adversely affect treatment outcome (Abikoff & Klein, 1992).

As noted above, aggression, and more specifically, PA, has been most commonly related to symptoms of hyperactivity. For example, a recent examination found that PA and not RA was related to ADHD in a community sample of 64 children aged 7-13 (Scarpa & Haden, 2006).

Additionally, in a community sample of low socio-economic status (SES) boys, PA, but not RA, in preadolescence (age 12) predicted impulsivity (a common feature of the impulsive and mixed subtypes of ADHD) in mid-adolescence (Vitaro et al., 1998). Moreover, features of PA at age 7 were related to hyperactivity and impulsivity at age 16 (Raine et al., 2006).

However, there has been conflicting evidence to suggest that the inattentive subtype of ADHD may be related to RA in children. For example, a study involving a community sample of low SES boys found that RA youth and mixed reactive-proactive aggressive youth experienced more symptoms of inattention at age six than PA youth and non-aggressive controls (Vitaro et al., 1998). Moreover, this finding was consistent with an independent study, which indicated that RA, but not PA, was associated with errors of omission in the Conners' Continuous Performance Task (Conners, 1995), a cognitive test of inattention (Scarpa & Haden, 2006). This suggested that RA was associated with inattention or poor vigilance; thus, RA may be associated with the inattentive features of ADHD, whereas PA may be associated with the behavioral features of ADHD.

Disruptive Behavioral Disorders and related behaviors

Conduct Disorder (CD) is the psychiatric disorder that has most commonly been associated with symptoms of aggression (Connor, 2002). In fact, seven of the fifteen DSM-IV diagnostic criteria of CD have involved direct aggression towards others. The majority of these behaviors appeared to be proactive in nature (e.g., unprovoked threatening behavior towards others). With regards to Oppositional Defiant Disorder (ODD), there appeared to be a mix of

proactive (e.g., deliberately trying to annoy others) and reactive (e.g., temper tantrums) behaviors associated with the disorder.

Similarly, PA has been found to be a predictor of physical aggression and physical violence (overt delinquency; (Vitaro et al., 1998). Specifically, in a sample of 742 boys assessed at ages 12 and 15, respectively, PA predicted delinquency and disruptive behavior disorders at the outcome. A similar longitudinal study found that PA males at age 14 were significantly more prone to externalizing problems, such as aggression, criminality, and antisocial behaviors, in adulthood as compared to RA youth (Pulkkinen, 1996). However, there has been conflicting evidence to suggest that interpersonal violence (in the form of dating violence) may be specifically related to RA, but not PA (Brendgen, Vitaro, Tremblay, & Lavoie, 2001).

Relations to Family Factors

Overall, there has been mounting evidence to suggest that family environment may serve as a risk factor in the development of aggression (Connor, 2002). One proposed model of the role of family interactions in the development of aggression postulated that the relationship between parent and child is bi-directional, dynamic, and interactive (Lytton, 1990). This relationship is considered a coercive style of parent-child interaction (Patterson, Reid, & Dishion, 1992). In this model, child aggression may be influenced by negative parental reactions, which may precipitate further child aggression. Thus, the paren-child relationship may reinforce aggressive behavior in a cyclical manner. It should be noted, however, that there has been some contrary evidence to suggest that family dysfunction may be an antecedent to childhood aggression (Tremblay et al., 2004). Similarly, Bandura's Social Learning Theory suggested that children model aggressive behaviors as a result of observing maladaptive family interactions (Laible, Carlo, Torquati, & Ontai, 2004).

While the direction of the relationship between family environment and child aggression may be less clear, there have been a number of investigations that support a relationship between these variables. For example, Barnow and colleagues (2001) postulated that aggressive youth are

more likely to have suffered child abuse, or come from broken homes. Moreover, there is evidence to suggest that many aggressive children in an inpatient setting appeared to have a history of family conflict or trauma (Dodge, Lochman, Harnish, Bates, & Pettit, 1997).

Several research examinations have suggested that the aggressive functions are correlated with specific forms of family dysfunction. RA in children has been linked to harsh parental discipline, physical abuse, exposure to violence, family instability, and parental overcontrol (Connor, 2002; Dodge, 1991). On the other hand, PA in children has been correlated to observing family conflict and for being reinforced for displaying aggressive behaviors (Connor, 2002). Moreover, Connor and colleagues (2003) found that experiences of maladaptive parenting, such as parental substance abuse, were also correlated with PA in youth of both genders. However, it is important to note that this research was largely correlational and did not attempt to discern the nature of the relationship between aggression and family environment.

Overall, RA may be related to an array of family environment variables that can be conceptualized as family conflict, family stability, and family control. PA, on the other hand, appears to be linked to family conflict and parental substance abuse. It should be noted that family conflict appears to be related to both PA and RA. Although this could be an indication of the questionable discriminant validity of the two aggressive functions, it may also be that PA and RA are differentially related to family conflict. Perhaps, PA is related to family conflict because youth may be reinforced for using aggressive behaviors in an aggressive family environment, which in line with Bandura's theory (1971). On the other hand, RA may be related to family conflict because youth who experience family conflict may be prone to exhibit emotional-aggressive reactivity, in line with Berkowitz' frustration-aggression hypothesis, which posits that RA occurs in response to a threatening environment (1978, 1983).

Furthermore, there has been some evidence to suggest that specific forms of family conflict may be differentially related to RA in youth. For example, physical family conflict (as apposed to verbal family conflict) may be more likely to invoke an RA response in children (El-

Sheikh & Reiter, 1996). Perhaps, in families where conflict is expressed in a physical means, the environment may be perceived by the child as more threatening. Additional literature suggests that chronic or unresolved family conflict may specifically be linked to RA responses in youth (El-Sheikh, Cummings, & Reiter, 1996). Thus, there may be specific contextual factors that may influence the relationship between family conflict and aggression in youth.

Integrating Family Factors, Aggression, and Psychological Outcomes

To date, several studies have indicated co-occurring symptoms of aggression and internalizing symptoms in maladaptive families. Specifically, there have been several studies that have linked aggression, anxiety, and family conflict (Jouriles, Barling, & O'Leary, 1987; Lansford et al., 2002). For example, there has been evidence to suggest that family conflict in the form of parent-child aggression was correlated to anxiety withdrawal (Jouriles et al., 1987). Further data on the inter-relationship between family conflict, anxiety, and aggression has been documented in a prospective longitudinal study of 585 youth followed from kindergarten until eleventh grade (Lansford et al., 2002). The results of this study indicated that youth who experienced parental maltreatment early in life were at increased risk for elevated rates of aggressive and anxious symptomatology in adolescence. Moreover, these findings were consistent even when other factors related to child maltreatment were controlled. Moreover, there have been correlational analyses which have linked RA and depression to various family factors. The correlates of RA and depression in children included family factors such as parental rejection, harsh discipline, and child victimization (Dodge et al., 1997; Panak & Garber, 1992). The nature of the relationship between these variables, however, is currently unclear.

Overall, there are limited findings that indicate the exact nature of the relationship between family environment, aggression, and additional psychopathology. One known study that has examined the nature of the relationship between these variables examined a sample of 525 Caucasian boys, and found that parental supervision moderated the relationship between PA and delinquency-related violence (Brendgen et al., 2001). Moreover, maternal warmth and caregiving

behavior appeared to moderate the relationship between RA and later dating violence in this study.

Conclusions and Implications

Although there have been notable advances in understanding the differences between PA and RA, there are some limitations to the current body of literature. For example, the majority of the literature in the area of aggression has been limited to predominantly male samples.

Moreover, the majority of child participants have been drawn from community settings. Thus, future work in this field would benefit from including clinical samples and children representative of both genders.

Furthermore, there is an array of fundamental differences in which aggression and related symptoms are categorized, which may lead to confusion in meta-analytic studies. Some research distinguishes between forms of aggression (e.g., relational or physical) but does not focus on functions of aggression (i.e., proactive and reactive). Moreover, many of the research studies limited their findings based on teacher reports of PA and RA (Dodge & Coie, 1987; Poulin & Boivin, 2000). Other studies have utilized a multi-informant (e.g., youth, parents, teachers) approach to assessment, which may be preferable to obtain multiple perspectives. Lastly, there is limited attention to the factors that contribute to the relationship between aggression and other internalizing and externalizing symptoms. To date, it is not clear whether or how family factors influence such trajectories.

Overall, there has been mounting support for the validity of a two factor model of PA and RA to explain the function of aggressive behaviors in children (Poulin & Boivin, 2000; Vitaro et al., 2002). RA has been linked to internalizing problems such as anxiety and depression, and to the inattentive subtype of ADHD. Poor parent-child relations and parental maltreatment may play a role in the relationship between aggression and internalizing symptoms. Conversely, PA has been linked to symptoms such as delinquency, physical aggression, and the

hyperactive/impulsive subtype of ADHD. Family factors, such as family violence, may play a role in the relationship between PA and other externalizing behaviors.

Given that the current nature of the relationship between these variables remains unclear, the current study has attempted to test several moderator models. These hypotheses are based on the literature regarding the relationships among aggression, family environment, and internalizing and externalizing symptomatology. Moreover, given the current literature, it is expected that there will not be gender differences in expression of PA and RA; however, it is probable that teachers and parents will perceive younger children to be more likely to endorse RA than older children (Connor, 2002; Little et al., 2003). In all analyses, age and gender will be controlled as needed.

Moderator Models

Hypothesis 1. The first moderator model tested the hypothesis that family factors (e.g., cohesion, control, conflict) would moderate the relationship between RA and internalizing symptoms (anxiety/depression, withdrawn behaviors, and somatic complaints) when symptoms of PA were controlled for. Specifically, it was expected that the association between high levels of RA and high levels of internalizing symptoms would be strongest with high levels of family conflict, low levels of family cohesion, and high levels of family control. This hypothesis was based on the relationship between RA, internalizing symptoms, and family factors such as child victimization, physical abuse, exposure to violence (conflict), family instability (cohesion), and parental over-control (Connor, 2002; Dodge, 1991; Dodge et al., 1997; Panak & Garber, 1992).

Hypothesis 2. A model was examined where attention problems were explored in relation to RA (Vitaro et al., 1998). In this model, family conflict, cohesion, and control served as moderator variables, given the evidence linking RA to such family factors. Specifically, RA has been linked to family factors such as family instability (cohesion), harsh discipline (conflict), and parental overcontrol (control) (Connor, 2002; Dodge, 1991; Dodge et al., 1997; Panak & Garber, 1992). While family conflict also was linked to PA, it may be more likely linked to RA in certain

contexts of family conflict (e.g, harsh discipline, child abuse), and may lead to an RA response from the child (Berkowitz, 1978, 1983). As such, it was expected that, when PA is controlled, the association between high levels of RA and high levels of attention problems would be strongest with low family cohesion, high family conflict, and high family control.

Hypothesis 3. In light of the findings linking PA to hyperactivity, a competing model was also examined to assess whether family conflict would moderate the relationship between PA and attention problems, after controlling for the influence of RA. Specifically, it was expected that the association between high levels of PA and high levels of attention problems would be strongest when high family conflict is present. This hypothesis was supported by the findings of Scarpa and Haden (2006) and Raine and colleagues (2006), which found that ADHD was related to PA, but not RA. Moreover, the research has supported a positive association between PA and family conflict. Specifically, the relationship between PA and family conflict has been supported by the work of Bandura and colleagues (1973, 1983) and Connor and colleagues (2004) on the importance of observing family conflict and being reinforced for displaying PA behaviors.

Hypothesis 4. The fourth moderator model tested the hypothesis that family conflict would moderate the relationship between PA and delinquency, after controlling for the influence of RA. Specifically, it was expected that the association between high levels of PA and high levels of delinquency will be strongest when high family conflict is present. This hypothesis was supported by the findings of Brendgen and colleagues (2001), who found that parental supervision moderated the relationship between PA and delinquency-related violence, and the work on social learning theory presented above (Bandura et al., 1973, 1983; Connor et al., 2004).

Lastly it should be noted that in addition to the competing models that explored the relationship among aggression, family environment, and attention problems, competing models for all of the hypotheses were tested. Thus, all family environment variables (cohesion, conflict, and control) served as moderators in the relationship between PA and delinquency and attention problems and between RA and internalizing symptoms (anxiety/depression, withdrawal, and

somatic complaints) and attention problems. Moreover, the main effects of PA and RA were tested for in each of the proposed hypotheses. Specifically, RA was tested for its predicted relationship to delinquency and PA was tested for its predicted relationship to internalizing symptoms (anxiety/depression, withdrawal, and somatic complaints).

In order to attempt to detect strong effects, the recommendations of Cohen (1992) were utilized in this examination. Specifically, to detect a medium effect for an alpha level at 0.05, the required sample size for four independent variables was 84 (Cohen, 1992).

Method

Participants

The participants for this study were youth, teachers, and families who underwent psychological assessment at the Child Study Center at Virginia Polytechnic Institute and State University. 135 children, who ranged in age from 6 to 16 years (mean age 9.95), participated. 91 of the children were boys (67.4%) and 44 were girls (32.6%). Approximately 91.9% of the children were Caucasian, 4.4% African-American, 1.5% Hispanic, and 0.7% another ethnicity. The most common diagnoses represented in the sample are presented in Table 1, indicating a broad range of internalizing, externalizing, and learning disorders.

Procedure

During the assessment procedure, a battery of parent- and self-report measures was administered. Notably, measures of family factors, child aggression, and internalizing and externalizing symptoms were obtained.

Measures

Revised Teacher Rating Scale for Reactive and Proactive Aggression (R-TRPA). The R-TRPA (Brown et al., 1996) is a 28-item self-report measure of PA, RA, covert antisocial behavior, and pro-social behavior completed by the parents. This measure was adapted from the teacher version of the same scale. The measure ranked each item on a three-point scale (1 = never, 2 = sometimes, 3 = very often). The RA scale was comprised of six items, with scores ranging from

6 to 18. The PA scale consisted of ten items, with scores ranging from 10 to 30. These subscales were developed based on the work of Dodge and Coie (1987), who originally formulated the concepts of PA and RA. Brown and colleagues (1996) reported good internal consistency for this measure; the PA scale had an alpha of 0.91 and the RA scale had an alpha of 0.90. The kappa coefficient for the total scale was 0.93. Furthermore, the measure has been used in a number of research investigations (Bennett, Macri, Creed, & Isom, 2001; Brown et al., 1996). In the current investigation, the PA subscale of the R-TRPA yielded a reliability rating of 0.86 while the RA scale yielded a reliability of 0.85. The total reliability of the R-TRPA was 0.84.

In the current investigation, it should be noted that several overlapping items were removed from the R-TRPA when the PA subscale was compared to the delinquent behavior scales of the TRF and CBCL. The two excluded items of the R-TRPA were “Tells people things that aren’t true” and “Takes things from others without their knowledge”.

Family Environment Scale. The Family Environment Scale (Moos & Moos, 1981) is a 90-item measure that assessed family function based on parent reports. Dimensions and related subscales included: personal growth (independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious emphasis), system maintenance (organization and control), and relationship (cohesion, expressiveness, and conflict). The subscales of conflict, cohesion, and control were of particular interest for purposes of the current investigation. Internal consistency estimates for the subscales ranged from 0.61 to 0.78, while intercorrelations among the subscales ranged from -0.53 to 0.45. Overall, the subscales identified relatively distinct features of the family environment with reasonable consistency. There was also reasonable test-retest reliability reported for up to one year (range: 0.52 - 0.91). In addition, the manual reported strong content and construct validity, as supported by an array of studies that utilize the Family Environment Scale. Individual item values were not available, and so alpha coefficients could not be calculated for the current study.

Child Behavior Checklist (CBCL). The CBCL is a 118-item parent-report questionnaire that assessed for internalizing and externalizing symptoms in children between the ages of 4-18 (Achenbach, 1991). This scale is used for parents to rate their child based on a Likert-type scale for how true a given behavior is currently or within the past six months (0 = not true, 1 = sometimes true, 2 = very true). Scales included: anxious/depressed symptoms; withdrawn/depressed symptoms; somatic complaints; attention problems; delinquent behavior (delinquency); social problems; thought problems; and aggressive behaviors. The scales of focus for the current investigation included anxious/depressed symptoms, withdrawn/depressed symptoms, somatic complaints, attention problems, and delinquent behavior. These scales were created based on factor analysis of data from parent reports of clinic-referred youth and youth demographically representative of the United States. Reliability and validity of the scales of the CBCL has been demonstrated. The Achenbach manual (1991) reported the following reliabilities for the subscales of interest in this examination: anxious/depressed = 0.84, withdrawn/depressed = 0.80, somatic complaints = 0.78, attention problems = 0.86, delinquent behaviors = 0.85. In the current investigation, the reliability of the anxious/depressed scale was 0.79; the reliability of the withdrawn/depressed symptoms was 0.71; the reliability of the somatic complaints subscale was 0.72; the reliability of the attention problems subscale was 0.75; and the reliability of the delinquency subscale was 0.67.

Teacher's Report Form (TRF). The TRF is a 113-item measure that asks a teacher to identify if each behavior/characteristic is often/always true, not true, or sometimes true of the student being assessed. This measure yielded the same factors as the CBCL (see above). Test-retest reliability over a 15-day period is .90 for adaptive behavior scales and .95 for problem behavior scales. Subscales of interest for the current study were anxious/depressive symptoms, withdrawn symptoms, somatic complaints, attention problems, and delinquent behaviors. The Achenbach (1991) manual reported the following reliabilities for the subscales of interest in this examination: anxious/depressed = 0.86, withdrawn/depressed = 0.81, somatic complaints = 0.72,

attention problems = 0.95, delinquent behaviors = 0.95. Item values were not available, and so alpha coefficients could not be calculated for the current study.

Data Analysis

Data were initially screened for outliers with z-scores greater than 3. These variables were then converted by substituting the highest score below 3 standard deviations and adding 1 unit to the value (Field, 2005). Then, hierarchical regression analyses were conducted to examine the main and interactive effects of PA and RA on family environment (cohesion, conflict, and control) in relation to various forms of parent- and teacher-reported psychopathology (Holmbeck, 1997). As recommended by Holmbeck (2002), the main effect variables were centered prior to data analysis. The process of centering involves subtracting the sample mean from each individual score on the variable, which results in a new mean that equals zero. Centering is performed to reduce multicollinearity between the two predictors and the interaction term between them (Holmbeck, 2002). It should be noted that this procedure does not alter the significance of the interaction or the values of the simple slopes. Post-hoc probing guidelines were used to explore moderation (Aiken & West, 1991; Holmbeck, 2002). Significant interactions found in the full model were run again in a reduced model, which included only the main effect variables and the interaction terms. Simple slopes were then calculated for conditional moderators by manipulating the zero-point of the variables (see Holmbeck, 2002). These slopes were then evaluated to see whether they were significantly different from zero. Only slopes that were significantly different from zero were reported. All analyses in the study were two-tailed and statistical significance was defined at the .05 level.

Results

Descriptives and Demographics

Means, standard deviations, and observed range for maternal- and teacher-reported measures are presented in Table 2. Moreover, Table 2 summarizes gender differences in the subscale reports. There was a significant gender difference in maternal-reported symptoms of

attention problems, with higher scores in girls than boys. Since this correlation affected one of the dependent variables, gender differences were controlled for in the analyses pertaining to maternal-reported attention problems. Age was not significantly correlated with PA, RA, or any of the dependent variables in the study; thus, age was not controlled for in subsequent hierarchical analyses.

Pearson Correlations

Table 3 shows the correlations between all the primary subscales in this study. There was a high correlation between RA and PA (0.59, $p < 0.01$); thus, all analyses controlled for the other function of aggression. Both PA and RA were significantly and positively correlated to all subscales of interest on the CBCL, and to somatic symptoms, attention problems, and delinquency on the TRF. The correlations between the Family Environment Scale and CBCL indicated a positive relationship between family conflict and delinquency and a negative relationship between family cohesion and delinquency. Lastly, there were significant correlations between the corresponding subscales of the CBCL and the TRF.

Because of the overlap between PA and RA, partial correlations were performed to compare PA and RA to the study variables, while controlling for each respective aggressive function (see Table 4). The results indicated that PA was uniquely and significantly correlated to the CBCL measure of attention problems, with higher levels of PA related to greater attention problems. Both PA and RA remained significantly and positively related to delinquency. RA was uniquely and significantly positively correlated to several subscales of the CBCL and TRF, including anxious/depressed symptoms on the CBCL and somatic complaints on both. No other significant partial correlations were found.

Hierarchical Multiple Regression Analysis

Hierarchical multiple regression analyses were conducted to test the study hypotheses and to explore competing models put forth in the original study hypotheses. In order to examine the relationships among aggression, family environment, and internalizing (e.g.,

anxious/depressed, withdrawn behaviors, and somatic complaints), externalizing (e.g., delinquency), and attention problems as specified by the CBCL and TRF, hierarchical multiple regressions were conducted separately for each outcome variable. Please see Tables 5-9 for additional details. These analyses controlled for the opposing aggressive function in the first block, main effects for PA or RA in the second block, main effects for family environment variables in the third block, and the interaction terms between the main aggressive function and family environment in the fourth block. For models that explored the association to maternal-reported attention problems, age and the opposing aggressive function was controlled for in the first block, the main effects of PA or RA was controlled for in the second block, the main effects for family environment in the third block, and the interaction between the main aggressive function and the family environment variable in the fourth block. As suggested by Holmbeck (1997), a moderator variable would be significant if the interaction of the family environment term and the main aggressive function were significant predictors of the dependent variable, when the main effects had been controlled.

Main Effects on Maternal-Reported Symptomatology (CBCL)

In the prediction of the CBCL dimensions, RA and family control showed significant main effects on anxiety/depressive symptoms (see Table 5). Children with higher levels of RA were rated higher on symptoms of anxiety/depression. However, the direction of the main effect of family control on anxiety/depression was in the counterintuitive direction. Specifically, lower levels of family control were related to higher reported levels of anxiety/depression. PA had a significant positive main effect on withdrawn symptoms (see Table 6). Moreover, RA demonstrated significant positive main effects on somatic complaints (see Table 7). In addition, PA demonstrated a significant positive main effect on attention problems (see Table 8). Lastly, both PA and RA demonstrated significant positive main effects on delinquent behaviors (see Table 9).

Main Effects on Teacher-Reported Symptomatology (TRF)

In the prediction of the TRF dimensions, the same sequence of variables was used for the regression analyses. There were no significant main effects on anxious/depressed symptomatology, withdrawn behaviors, or attention-problems. However, there were significant main effects of RA and family control on somatic complaints (Table 7). Specifically, higher levels of RA and higher levels of family control were associated with greater reports of somatic complaints. Moreover, PA demonstrated significant positive main effects on delinquent behaviors (see Table 9).

Interactive Effects on Maternal- and Teacher-Reported Symptomatology

In order to examine the interactive effects of predictors, all interaction terms were tested. The findings yielded no statistically significant interaction effects across parent- and teacher-reports.

Exploratory Analyses

Hierarchical regressions were conducted to explore the relationships of RA and PA to teacher- and parent- reported social problems in addition to the other internalizing and externalizing constructs as dependent variables. The influence of additional family moderator variables was also explored (see Tables 10-15). Specifically, these supplemental analyses explored the impact of family expressiveness and family organization (in addition to conflict, cohesion, and control) on parent- and teacher- reported social problems, attention problems, internalizing symptoms (anxiety/depression, withdrawn symptoms, somatic complaints), and externalizing behaviors (delinquency). For a summary of the results, please see Tables 10-15.

Main Effects on Maternal-Reported Symptomatology (CBCL)

There was a significant main effect for PA and RA in relation to social problems. However, this main effect was in the counterintuitive direction. That is, lower levels of PA and RA were related to higher levels maternal-reported social problems. Moreover, there were main effects for family cohesion, organization, and control in relation to social problems. Specifically,

lower levels of family cohesion, lower levels of family organization, and higher levels of family control were positively associated with social problems in youth.

Main Effects on Teacher-Reported Symptomatology (TRF)

There was a significant main effect for family expressiveness in relation to symptoms of anxiety/depression (see Table 11). Thus, lower levels of family expressiveness were associated with higher levels of anxiety/depression. Similarly, there was a significant main effect for family expressiveness in relation to somatic complaints (see Table 13). Thus, lower levels of family expressiveness were associated with higher levels of teacher-reported somatic complaints.

Interactive Effects on Maternal-Reported Symptomatology (CBCL)

There was a significant interaction between PA and family expressiveness in relation to attention problems (See Table 14). This finding was confirmed in a reduced model. Specifically, interaction terms were significant in block four for the interaction between PA and family expressiveness, which was positively associated with attention problems. Figure 1 presents this interaction. Post-hoc probing revealed that the positive relationship between PA and maternal-reported attention problems is stronger for individuals with generally lower familial expressiveness than for those with generally higher familial expressiveness.

Interactive Effects on Teacher-Reported Symptomatology (TRF)

There was a significant interaction effect between RA and family control in relation to social problems (see Table 10). This finding was confirmed in a reduced model. Specifically, interaction terms were significant in block four for the interaction between RA and family control. Figure 2 presents this interaction. Post-hoc probing revealed that a significant positive relationship between RA and teacher-reported social problems only for individuals with generally higher family control compared to those with generally lower family control.

Moreover, there was a significant interaction between PA and family organization in relation to social problems (see Table 10). Thus, interaction terms were significant in block four for the interaction between PA and family organization. This finding was confirmed in a reduced

model. Figure 3 presents this interaction. Post-hoc probing revealed that a significant positive relationship between PA and teacher-reported social problems occurred only for individuals with generally higher familial organization compared to those with generally lower family organization.

Discussion

The purpose of the current study was to examine the relationships among the functions of aggression, family environment, and attention problems, internalizing symptoms, and externalizing behaviors. Specifically, it was hypothesized that family factors would moderate the relationships between aggressive functions and child behavior problems. Overall, the findings of the current investigation failed to support the moderating role of family environment in the relationship between PA, RA, and associated psychopathology.

In the current investigation, the correlation between RA and PA was 0.59. This is consistent with the correlations reported in previous literature (Brown et al., 1996). Thus, partial correlations were performed between each function of aggression with the other study variables, while controlling for the other function of aggression. The findings indicated that PA was uniquely and positively associated with attention issues, when controlling for RA. Moreover, RA was uniquely related to anxious/depressed symptoms and somatic complaints, when controlling for PA. However, both RA and PA appeared to be related to delinquency. Although the relationship of RA to delinquency was not predicted, these findings were consistent with prior literature showing relationships between RA and internalizing disorders (Vitaro et al., 2002) and between PA and RA with externalizing disorders (Brendgen et al., 2001)

Next, several hierarchical regressions were conducted to test for interaction effects. These moderating hypotheses were not supported in the current examination. However, several main effects were found that showed mixed support in relating PA and RA to maternal-reported psychopathology. For example, PA was associated with maternal-reported attention problems; but RA was not. Perhaps this finding may have resulted from the hyperactive features of the

attention problems (thought to be related to PA) subscale manifesting more strongly than the inattentive features (thought to be related to RA). These findings partially replicate the findings of previous investigations (Raine et al., 2006; Scarpa & Haden, 2006).

Similarly, PA was positively associated with maternal- and teacher- reported delinquency. However, this finding was somewhat problematic from an interpretive standpoint because RA was also positively associated with maternal-reported delinquency. Perhaps the relationship of both aggressive functions to delinquency is partially explained by findings that link RA to later dating violence (Brendgen et al., 2001). Thus, both PA and RA have been shown to be related to later illegal activity. On the other hand, the overlap RA and PA to delinquency may provide support to researchers who have posited that the division of aggressive behaviors into a PA-RA dichotomy is an oversimplification in understanding aggressive behaviors (Bushman & Anderson, 2001).

Another main effect indicated that RA was positively associated with maternal-reported symptoms of anxiety/depression and somatic complaints. These findings partially replicated the examinations of Vitaro and colleagues (2002) and Raine and colleagues (2006), who found that RA and not PA were positively related to internalizing symptoms. However, RA was not related to maternal-reported withdrawn/depressed symptoms, as might have been expected if it were related to internalizing problems overall. It should be noted also that there was a main effect of PA on parent-reported withdrawn symptoms, which is also inconsistent with prior literature, but is in line with literature linking conduct disorder and depression (Wolff & Ollendick, 2006). One potential explanation is that RA is related more to the affect-laden features of depression (measured in the anxiety/depressed subscale), while PA is related to the behavioral features of social isolation (measured in the withdrawn/depressed subscale).

Overall, inconsistent with prior literature, the study also generally failed to find main effects linking family environment factors to PA and RA. The lack of results may be partially due to the fact that the family environment variables of the Family Environment Scale were not designed to

capture the theoretical relationship between PA, RA, and family environment. For example, the family conflict subscale of the FES captured the construct of family conflict generally; however, there may be specific elements of family conflict that distinctly relate to PA and RA. For example, the chronicity of family conflict may be related to RA (El-Sheikh et al., 1996). Physical family conflict may also be related to RA (El-Sheikh & Reiter, 1996). On the other hand, observing family conflict (e.g., witnessing parental conflict) may be more directly related to PA (Connor, 2002). The family conflict subscale of the FES does not capture these distinctions.

Note that the one exception to these unsupported findings (regarding the relationship between aggression and family environment) was that high levels of RA were positively associated with high levels of family control in association with teacher-reported somatic complaints. Again, this finding may have partially been a result of a robust relationship between RA and somatic complaints. Moreover, this finding was partially supported by previous literature, which has linked RA and parental overcontrol (Connor, 2002; Dodge, 1991).

None of the proposed interactive effects were supported in the current investigation. One potential explanation for the lack of findings may be that family environment actually does not play a moderating role in the relationship between the aggressive functions and maternal- and teacher- reported psychopathology. Another possible explanation is that the measures used in the current examination did not capture the theoretical constructs that they were intended to capture.

Since the initial hypotheses were not supported, several supplemental analyses were conducted to further explore the lack of effects. Specifically, additional family factors (e.g., family expressiveness and family organization) were added as moderator variables and maternal- and teacher- reported social problems were added as additional dependent variables in the analyses. These analyses produced several significant interaction effects. Specifically, these analyses revealed that PA but not RA was related to parent-reported inattention as moderated by family expressiveness. Additionally, PA was uniquely related to teacher-reported social

problems as moderated by family organization. Moreover, RA but not PA was uniquely related to teacher-reported social problems as moderated by family control.

Due to the exploratory nature of this examination, experiment-wide error rate was not controlled. However, given the number of analyses performed, it may be that these significant findings were a result of chance. On the other hand, these finding may have theoretical relevance. For example, the findings that linked PA to low family expressiveness in relation to attention problems may be theoretically sound. Low family expressiveness has been shown to be indicative of deficits in family problem solving skills (Achenbach, 1992). Thus, perhaps children in families with less collaborative family problem solving (e.g., low family expressiveness) may be at an increased risk to consider aggressive tactics as a means of obtaining a goal (Bandura, 1973, 1983). This interaction may be related to expression of attention problems because of the high correlation between PA and ADHD symptomatology (Abikoff & Klein, 1992; Stewart et al., 1981).

Similarly, the findings that suggested that high family organization was a moderator of PA and social problems may also be theoretically relevant. For example, children with PA in a family with high organization may become isolated or withdrawn from others, which may create social problems.

Lastly, a potential theoretical explanation for the interaction between RA and family control in relation to social problems may have been best understood through the theory of Berkowitz (1978, 1983). For example, RA children may have experienced reactivity to high levels of parental control. If such a child was constantly in environment of high family control, the child may have become persistently reactive, and these RA behaviors may have globalized to other realms of life outside of the home environment, including social situations (e.g., interpersonal interactions, school work).

Given that there were several significant findings that linked the aggressive functions and family environment to social problems, the relationship between aggression, family environment,

and social problems may have been a more robust finding than the relationship between aggressive functions, family environment, and internalizing and externalizing symptoms. Additionally, there has been an array of literature to support the relationship between the functions of aggression and social deficits (Camodeca & Goossens, 2005; Connor, 2002; Hubbard, 2001). Thus, the relationship between PA, RA, family environment, and social problems may be worthy of further investigation.

Limitations

Overall, the original hypotheses were largely unsupported in this examination. The lack of support may have been a result of methodological and theoretical limitations in this study. For example, one issue pertained to the discriminant validity of PA and RA. In this examination, PA and RA were highly correlated ($r = 0.59$, $p < 0.01$), though this correlation was consistent with previous findings (Brown et al., 1996; Poulin & Boivin, 2000). As mentioned previously, a recent review has suggested that the PA-RA dichotomy is an oversimplification of aggressive behavior and should be allowed to “die a dignified death” (Bushman & Anderson, 2001). Further, Bushman and Anderson suggested that the PA-RA distinction does not enable researchers to explore the multiple motives, both “predatory” and “impulsive” that may underscore any given aggressive behavior. In the current investigation, however, the cumulative results from the partial correlations and hierarchical regressions yielded general support for the discriminant validity of PA and RA when unique variance is examined.

Aside from the potential limitations that pertained to the R-TRPA, there were also several limitations to the additional measures used in this examination. For example, the CBCL reliability in this study ranged from 0.67 to 0.79., which was lower than reported in Achenbach’s (1992) manual. Thus, the reduced reliability of the CBCL subscales may have adversely affected the results. Moreover, another problematic aspect of the CBCL and the TRF was that the attention problem subscales of these measures combined both hyperactive and inattentive symptoms into one category. While the literature may have supported a differential relationship

between PA and hyperactivity and RA and inattention, it may be difficult to tease such a relationship apart given the mixed hyperactive-inattentive symptomatology present in the attention problem subscale of the CBCL and TRF.

In addition, the Family Environment Scale included several subscales which may not directly map onto the family constructs in the literature that were differentially related to PA and RA. Family conflict, for example, may be related to PA and RA for different reasons. Family conflict may be linked to PA, given that children who grow up in homes with high levels of family conflict may be reinforced for engaging in aggressive behaviors (Bandura, 1973, 1983). On the other hand, family conflict may be differentially related to RA, because children who experience certain forms of family conflict (e.g., child abuse) may be more likely to develop RA behaviors (Berkowitz, 1978, 1983). Furthermore, the duration and type (e.g., physical) of the family conflict may also have played a role in the function of the aggressive behavior displayed (El-Sheikh et al., 1996; El-Sheikh & Reiter, 1996). Thus, while family conflict may be differentially related to PA and RA, it would be difficult to tease these distinctions apart given the broad operationalization of family conflict in the FES measure.

Moreover, it should be noted that the study sample may have differed significantly from samples used in previous investigations of PA and RA in children. The current sample, while a clinical sample, was not an aggressive sample *per se*, but rather, a sample that represented a diverse array of child psychopathology. In contrast, several of the most closely related investigations to the current study that have explored the discriminant validity of PA and RA community samples from which the most highly aggressive youth (sometimes in comparison to non-aggressive controls) were used in their analyses, which may have lead to a disparity between findings present in the current study as compared to previous investigations (Raine et al., 2006; Vitaro et al., 2002). Similarly, the original examination of the R-TRPA used normative samples of elementary-school children (Brown et al., 1996). Thus, it may be probable that the findings from the current investigation did not correspond to the study hypotheses, given the high

proportion of child psychopathology evident in the current clinical sample (e.g., nearly half of the sample met diagnostic criteria for ADHD-combined, nearly a quarter of the sample met diagnostic criteria for GAD). Moreover, these aforementioned studies have utilized longitudinal datasets in relation to psychopathologic outcome, whereas the current dataset was cross-sectional (Raine et al., 2006; Vitaro et al., 2002).

Additionally, while the current examination attempted to adopt a multi-informant approach (e.g., parents, teachers), this investigation did not utilize a child report of aggressive symptoms, family environment, or related psychopathology. Moreover, given that the multi-informant reports (e.g., parent and teacher) of attention problems, social problems, and internalizing and externalizing symptoms were not always concordant with one another, the results of the current investigation may be biased as a result of informant discrepancy. Finally, the current examination did not tap into underlying mechanisms (e.g., emotional dysregulation) that may have accounted for the relationship between the aggressive functions and the development of subsequent psychopathology.

Implications and Future Directions

Future investigations may benefit from exploring the underlying mechanisms, such as emotional dysregulation, in predicting the relationship between the aggressive functions and additional child psychopathology. Moreover, it may be useful to include longitudinal investigations in order to better understand how mediating variables may influence the relationship between aggression functions and subsequent psychopathology.

Additionally, it may be beneficial for future investigations to continue to explore the validity of the PA and RA as discrete functions of aggression. Namely, the parent- and teacher-report approach to gauging PA and RA behaviors may not always be clear in delineating the subtypes. Some “PA” seeming behaviors may actually be a reactive response to a prior event. An example of such an item on the R-TRPA is “says mean things about other children behind their back.” While this behavior is coded as PA, it may be in some instances that such a behavior

was precipitated by a perceived or actual threat; thus, in such cases this behavior may be more appropriated coded as RA.

Thus, in order to further assess for distinction between true PA and RA behaviors, it may be useful for future investigations to move beyond teacher- and parent- report measures. For example, behavioral observations may be particularly useful in assessing for differences in aggressive behaviors. Similarly, the development of a PA-RA interview schedule may be useful in order to understand whether aggressive behaviors are seemingly unprovoked (PA) or potentially a reaction to a previous event (RA). While there is already some literature that attempts to tap the intent underlying aggressive behaviors (de Castro, 2005); it may be useful to incorporate such efforts into an interview format, which may allow for intent, family environment, and related psychopathology to be assessed. Overall, the field may benefit from conducting assessments of aggressive behaviors at a multi-contextual level that takes into account underlying cognitive processes, family environment, and related psychopathology.

Concluding Remarks

The current examination proposed a cumulative model in an attempt to link aggressive functions, family environment, and additional psychopathology together. The study hypothesized that PA would be related to delinquency and attention problems, and that these relationships would be moderated by family conflict. In addition, RA would be related to internalizing symptoms and attention problems, and that these relationships would be moderated by family conflict, cohesion, and control. In general, interactions were not supported, but main effects indicated mixed support for the relationship between the aggressive functions and internalizing and externalizing symptoms. In light of the strengths and limitations present in this investigation, a multi-informant, multi-contextual approach may be useful in delineating features of aggression in any future research that takes into account family environmental factors and related psychopathological characteristics.

References

- Abikoff, H., & Klein, R. G. (1992). Attention-deficit hyperactivity and conduct disorder: comorbidity and implications for treatment. *Journal of Consulting & Clinical Psychology, 60*(6), 881-892.
- Achenbach, T. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington, VT: University of Vermont Department of Psychiatry.
- Achenbach, T. (1992). *Manual for the Child Behavior Checklist/2-3 and 1992 Profile*. Burlington, VT: University of Vermont Department of Psychiatry.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Bandura, A. (1973). *Aggression: a social learning theory analysis*. New York, NY: Prentice-Hall.
- Bandura, A. (1983). Psychological mechanisms of aggression. In R. G. Green & E. L. Donnerstein (Eds.), *Aggression: Theoretical and empirical views* (pp. 1-40). New York, NY: Academic Press.
- Barnow, S., Lucht, M., & Freyberger, H. J. (2001). Influence of punishment, emotional rejection, child abuse, and broken home on aggression in adolescence: an examination of aggressive adolescents in Germany. *Psychopathology, 34*(4), 167-173.
- Bennett, D. S., Macri, M. T., Creed, T. A., & Isom, J. A. (2001). Predictors of treatment response in a child day treatment program. *Residential Treatment for Children & Youth, 19*(2), 59-72.
- Berkowitz, L. (1978). Whatever happened to the frustration-aggression hypothesis? *American Behavioral Scientist, 21*(5), 691-708.
- Berkowitz, L. (1983). The experience of anger as a parallel process in the display of impulsive, "angry" aggression. . In R. G. Green & E. L. Donnerstein (Eds.), *Aggression: Theoretical and empirical views* (pp. 103-134). New York, NY: Academic Press.
- Brendgen, M., Vitaro, R., Tremblay, R. E., & Lavoie, F. (2001). Reactive and proactive aggression: predictions to physical violence in different contexts and moderating effects of parental monitoring and caregiving behavior. *Journal of Abnormal Child Psychology, 29*(4), 293-304.
- Brown, K., Atkins, M. S., Osborne, M. L., & Milnamow, M. (1996). A revised teacher rating scale for reactive and proactive aggression. *Journal of Abnormal Child Psychology, 24*(4), 473-480.
- Bushman, B. J., & Anderson, C. A. (2001). Is it time to pull the plug on the hostile versus instrumental aggression dichotomy? *Psychological Review, 108*, 273-279.
- Camodeca, M., & Goossens, F. A. (2005). Aggression, social cognitions, anger and sadness in bullies and victims. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 46*(2), 186-197.

- Capaldi, D. M. (1992). Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: H. A. 2-year follow-up at Grade 8. *Development and Psychopathology*, 4, 125-144.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Conners, C. K. (1995). *Conners' Continuous Performance Test*. Toronto: Multi-Health Systems.
- Connor, D. F. (2002). *Aggression and Antisocial Behavior in Children and Adolescents*. New York, NY: Guilford Press.
- Connor, D. F., Steingard, R. J., Anderson, J. J., & Melloni, R. H. J. (2003). Gender differences in reactive and proactive aggression. *Child Psychiatry & Human Development*, 33(4), 279-294.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, 66(3), 710-722.
- de Castro, B. O., Merk, W., Koops, W., Veerman, J. W., & Bosch, J. D. (2005). Emotions in social information processing and their relations with reactive and proactive aggression in referred aggressive boys. *Journal of Clinical Child & Adolescent Psychology*, 34(1), 105-116.
- Dodge, K. A. (1991). The structure and function of reactive and proactive aggression. In D. J. Pepler & K. H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 201-218). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality & Social Psychology*, 53(6), 1146-1158.
- Dodge, K. A., Lochman, J. E., Harnish, J. D., Bates, J. E., & Pettit, G. S. (1997). Reactive and proactive aggression in school children and psychiatrically impaired chronically assaultive youth. *Journal of Abnormal Psychology*, 106(1), 37-51.
- Dollard, J., Doob, C. W., Miller, N. E., Mowrer, O. H., & Sears, R. R. (1939). *Frustration and aggression*. New Haven, CT: Yale University Press.
- El-Sheikh, M., Cummings, E. M., & Reiter, S. (1996). Preschooler's responses to ongoing interadult conflict: the role of prior exposure to resolved versus unresolved arguments. *Journal of Abnormal Child Psychology*, 24(5), 665-673.
- El-Sheikh, M., & Reiter, S. L. (1996). Children's responding to live interadult conflict: the role of form of anger expression. *Journal of Abnormal Child Psychology*, 24(4), 401.
- Field, A. (2005). *Discovering Statistics Using SPSS* (Second ed.). London: Sage Publications.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, 65, 599-610.

- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology, 27*, 87-96.
- Hubbard, J. A., Dodge, K. A., Cillessen, A. H., Coie, J. D., & Schwartz, D. (2001). The dyadic nature of social information processing in boys' reactive and proactive aggression. *Journal of Personality & Social Psychology, 80*(2), 268-280.
- Jensen, P. S., Martin, D., & Cantwell, D. P. (1997). Comorbidity in ADHD: Implications for Research, Practice, and DSM-V. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(8), 1065-1079.
- Jouriles, E. N., Barling, J., & O'Leary, K. D. (1987). Predicting child behavior problems in maritally violent families. *Journal of Abnormal Child Psychology, 15*(2), 165-173.
- Kempes, M., Matthys, W., de Vries, H., & van Engeland, H. (2005). Reactive and proactive aggression in children--a review of theory, findings and the relevance for child and adolescent psychiatry. *European Child & Adolescent Psychiatry, 14*(1), 11-19.
- Kovacs, M., & Devlin, B. (1998). Internalizing disorders in childhood. *Journal of Child Psychology & Psychiatry & Allied Disciplines, 39*(1), 47-63.
- Laible, D., Carlo, G., Torquati, J., & Ontai, L. (2004). Children's Perceptions of Family Relationships as Assessed in a Doll Story Completion Task: Links to Parenting, Social Competence, and Externalizing Behavior. *Social Development, 13*(4), 551-569.
- Lansford, J. E., Dodge, K. A., Pettit, G. S., Bates, J. E., Crozier, J., & Kaplow, J. (2002). A 12-year prospective study of the long-term effects of early child physical maltreatment on psychological, behavioral, and academic problems in adolescence. *Archives of Pediatrics & Adolescent Medicine, 156*(8), 824-830.
- Little, T. D., Henrich, C. C., Jones, S. M., & Hawley, P. H. (2003). Disentangling the "whys" from the "whats" of aggressive behaviour. *International Journal of Behaviour Development, 27*(2), 122-133.
- Lytton, H. (1990). Child and parent effects in boys' conduct disorder: A reinterpretation. *Developmental Psychology, 26*(5), 683-697.
- Maser, J. D., & Cloninger, R. (1990). *Comorbidity in anxiety and mood disorders*. Washington, DC: American Psychiatry Press.
- Moos, R. H., & Moos, B. S. (1981). *Family Environment Scale*. Palo Alto, CA: Consulting Psychologists Press.
- Panak, W. F., & Garber, J. (1992). Role of aggression, rejection, and attributions in the prediction of depression in children. *Development and Psychopathology, 4*, 145-165.
- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). *Antisocial boys*. Eugene, MI: Castalia.
- Poulin, F., & Boivin, M. (2000). Reactive and proactive aggression: evidence of a two-factor model. *Psychological Assessment, 12*(2), 115-122.

- Pulkkinen, L. (1996). Proactive and reactive aggression in early adolescence as precursors to anti- and prosocial behavior in young adults. *Aggressive Behavior*, 22(4), 241-257.
- Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., et al. (2006). The reactive-proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, 32(2), 159-171.
- Russo, M. F., & Beidel, D. C. (1994). Co-morbidity of childhood anxiety and externalizing disorder: Prevalence, associated characteristics, and validation issues. *Clinical Psychology Review*, 14(3), 199-221.
- Scarpa, A., & Haden, S. C. (2006). *Psychophysiological, Behavioral, and Emotional Distinctions between Childhood Reactive and Proactive Aggression*. Paper presented at the XIX world meeting of the International Society for Research in Aggression, Minneapolis, Minnesota.
- Stewart, M. A., Cummings, C., Singer, S., & deBlois, C. S. (1981). The overlap between hyperactive and unsocialized aggressive children. *Journal of Child Psychology and Psychiatry*, 22(1), 35-45.
- Tremblay, R. E., Nagin, D. S., Seguin, J. R., Zoccolillo, M., Zelazo, P. D., Boivin, M., et al. (2004). Physical aggression during early childhood: trajectories and predictors. *Pediatrics*, 114(1), e43-50.
- Underwood, M. K. (2003). *Social Aggression Among Girls*. New York: Guilford.
- Vitaro, F., Brendgen, M., & Tremblay, R. E. (2002). Reactively and proactively aggressive children: antecedent and subsequent characteristics. *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 43(4), 495-505.
- Vitaro, F., Gendreau, P. L., Tremblay, R. E., & Oligny, P. (1998). Reactive and proactive aggression differentially predict later conduct problems. *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 39(3), 377-385.
- Walker, J. L., Lahey, B. B., Russo, M. F., Frick, P. J., Christ, M. A. G., McBurnett, K., et al. (1991). Anxiety, inhibition, and conduct disorder in children: I. Relations to social impairment. *Journal of the American Academy of Child & Adolescent Psychiatry*, 30(2), 187-191.
- Waschbusch, D. A., Willoughby, M. T., & Pelham, W. E., Jr. (1998). Criterion validity and the utility of reactive and proactive aggression: comparisons to attention deficit hyperactivity disorder, oppositional defiant disorder, conduct disorder, and other measures of functioning. *Journal of Clinical Child Psychology*, 27(4), 396-405.
- Windel, M. (1992). Temperament and social support in adolescence: Interrelations with depressive symptoms and delinquent behaviors. *Journal of Youth and Adolescence*, 21(1), 1-21.
- Wolff, J., & Ollendick, T. H. (2006). The comorbidity of conduct problems and depression in childhood and adolescence. *Clinical Child and Family Psychology Review*, 20, 201-220.

Zoccolillo, M. (1992). Co-occurrence of conduct disorder and its adult outcomes with depressive and anxiety disorder: A review. *Journal of the American Academy of Child & Adolescent Psychiatry*, 31(3), 547-556.

Table 1. Most Common Sample Diagnoses

Diagnosis	n	%
ADHD- Combined	62	45.9
Generalized Anxiety Disorder	33	24.5
Social Phobia	28	20.7
ADHD- Inattentive	27	20.0
Oppositional Defiant Disorder	24	17.8
Disorder of Written Expression	18	15.3
Learning Disorder NOS	17	12.6
OCD Obsessions	13	9.6
OCD Compulsions	11	8.1
Enuresis	9	6.6
Mathematics Disorder	8	5.9
Dysthymia	8	5.9
Specific Phobia- Other Type	8	5.9
Reading Disorder	7	5.2
Pervasive Developmental Disorder	7	5.2
Adj Disorder w/Disturbed Conduct	7	5.2
Conduct Disorder	6	4.4
Separation Anxiety Disorder	6	4.4

Table 2. Means and Standard Deviations of CBCL, TRF, R-TRPA, and FES subscales

CBCL	Mean	SD	Female	SD	Male	SD	t	Obs. Range
Anx/Dep	61.10	9.46	62.52	9.72	61.9	9.37	0.35	50-90
Withdrawn	60.57	8.41	59.9	7.63	60.89	8.78	-0.67	50-85
Somatic	61.38	9.16	61.00	8.52	61.56	9.48	-0.35	50-83
Attention	68.33	10.29	72.57	10.90	66.27	9.37	3.29**	50-97
Delinquency	58.29	7.40	57.86	7.93	58.49	7.68	-0.44	50-76
TRF								
Anx/Dep	57.76	8.87	58.43	8.56	57.43	9.05	0.63	50-85
Withdrawn	58.72	8.59	58.00	7.65	59.07	9.04	-0.71	35-84
Somatic	54.22	6.61	53.59	6.31	54.63	6.74	-1.05	50-73
Attention	61.94	8.72	62.34	9.22	61.75	8.52	0.36	50-89
Delinquency	55.83	6.76	56.12	6.75	56.12	6.79	-0.72	50-74
R-TRPA								
PA	13.82	3.49	13.63	3.79	13.91	3.36	-0.41	10-24
RA	12.16	3.00	12.32	3.30	12.08	2.86	0.42	6-18
FES								
Cohesion	50.81	18.18	53.48	17.79	49.52	18.32	1.20	1-68
Conflict	49.61	12.55	47.00	11.60	50.88	12.85	-1.70^	32-81
Control	52.13	9.26	53.18	9.92	51.62	8.94	0.89	32-76

Note. ^ indicates $p < 0.10$; ** indicates $p < 0.01$.

Table 3. Pearson Correlations Among Reactive/Proactive Aggression, FES subscales, and CBCL/TRF Factors

	Anx/Dep- M	Withdw- M	Somat- M	Atten- M	Delin- M	Anx/Dep- T	Withdw- T	Somat- T	Atten- T	Delin- T	Conflict	Cohesion	Control	PA	RA
Anx/Dep- M	1.00														
Withdrawn- M	0.52**	1.00													
Somatic- M	0.47**	0.33**	1.00												
Attention- M	0.35**	0.34**	0.22**	1.00											
Delinquency- M	0.30**	0.29**	0.33**	0.26**	1.00										
Anx/Dep- T	0.18*	0.07	-0.08	-0.05	-0.11	1.00									
Withdrawn- T	0.07	0.29**	-0.10	-0.15	-0.002	0.51**	1.00								
Somatic- T	0.14	0.08	0.29**	0.10	0.24**	0.27**	0.16	1.00							
Attention- T	0.04	0.03	0.003	0.32**	0.25**	0.15	0.16	0.20*	1.00						
Delinquency- T	0.05	0.12	0.09	0.15**	0.50**	0.10	0.14	0.23**	0.52**	1.00					
Conflict	0.14	0.14	0.09	-0.07	0.27**	-0.04	0.001	0.09	0.03	0.11	1.00				
Cohesion	-0.01	-0.05	-0.07	0.08	-0.22*	0.01	-0.03	-0.16	-0.07	-0.15	-0.65**	1.00			
Control	-0.16	-0.09	0.05	-0.04	0.09	0.03	-0.11	0.16	0.07	0.02	0.23**	-0.07	1.00		
PA	0.35**	0.29**	0.35**	0.34**	0.74**	-0.03	0.01	0.21*	0.17*	0.34**	0.25**	-0.23**	0.07	1.00	
RA	0.49**	0.22*	0.39**	0.21*	0.55**	0.02	-0.12	0.26**	0.20*	0.31**	0.25**	-0.24**	-0.03	0.59**	1.00

Note. * indicates $p < 0.05$; ** indicates $p < 0.01$.

Table 4. Partial Correlations of the Aggressive Functions, Family Factors, and Internalizing and Externalizing Symptoms

Measure	PA1	PA2	RA1	RA2
CBCL				
anx/dep	0.35**	0.08	0.49**	0.37**
withdrawn	0.29**	0.21	0.22*	0.06
somatic	0.35**	0.16	0.39**	0.24**
attention	0.34**	0.28**	0.21*	0.002
delinquency	0.74**	0.58**	0.55**	0.23**
TRF				
anx/dep	-0.03	-0.05	0.02	0.04
withdrawn	0.01	0.10	-0.12	-0.15
somatic	0.21*	0.07	0.26**	0.18*
attention	0.17*	0.07	0.20*	0.12
delinquency	0.34**	0.17	0.31**	0.16
FES				
cohesion	-0.23**	-0.12	-0.24**	-0.13
conflict	0.25**	0.13	0.25**	0.13
control	0.07	0.11	-0.03	-0.10

Note. * indicates $p < 0.05$, ** indicates $p < 0.01$, PA1 and RA1 indicate no control; PA2 and RA2 indicate controlling for other aggressive function; revised PA was compared to CBCL and TRF measures of delinquency.

Table 5. PA/RA and Family Cohesion, Conflict, and Control Predicting Anxiety/Depression

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	B	ΔR^2
Block 1								
RA	1.55	0.24	0.49**	0.24**	0.05	0.26	0.02	0.000
Block 2								
PA	0.26	0.25	0.10	0.01	-0.15	0.28	-0.06	0.002
Block 3								
Cohesion	0.07	0.04	0.13	0.02	0.003	0.04	0.01	0.000
Conflict	0.01	0.06	0.01	0.00	-0.03	0.06	-0.04	0.001
Control	-0.16	0.08	-0.16*	0.02*	0.04	0.08	0.05	0.002
Block 4								
PAXCohesion	0.02	0.01	0.12	0.01	-0.001	0.01	-0.01	0.000
PAXConflict	-0.02	0.02	-0.08	0.01	-0.002	0.02	-0.01	0.000
PAXControl	-0.03	0.02	-0.08	0.01	0.02	0.03	0.07	0.004
Block 1								
PA	0.96	0.22	0.35**	0.13**	-0.07	0.22	-0.03	0.001
Block 2								
RA	1.37	0.30	0.44**	0.12**	0.15	0.32	0.05	0.002
Block 3								
Cohesion	0.07	0.04	0.13	0.02	0.003	0.04	0.01	0.000
Conflict	0.01	0.06	0.01	0.00	-0.03	0.06	-0.04	0.001
Control	-0.16	0.08	-0.16*	0.02*	0.04	0.08	0.04	0.002
Block 4								
RAXCohesion	0.01	0.01	0.08	0.01	-0.01	0.01	-0.10	0.01
RAXConflict	-0.02	0.02	-0.08	0.01	0.02	0.02	0.09	0.01
RAXControl	0.02	0.03	0.05	0.003	0.04	0.03	0.11	0.01

Note. * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 6. PA/RA and Family Cohesion, Conflict, and Control Predicting Withdrawal

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	B	ΔR^2
Block 1								
RA	0.60	0.24	0.22*	0.05*	-0.33	0.25	-0.12	0.01
Block 2								
PA	0.60	0.25	0.25*	0.04*	0.29	0.26	0.12	0.01
Block 3								
Cohesion	0.02	0.04	0.03	0.001	-0.02	0.04	-0.05	0.002
Conflict	0.04	0.06	0.06	0.003	0.01	0.06	0.02	0.000
Control	-0.09	0.08	-0.10	0.01	-0.12	0.08	-0.13	0.02
Block 4								
PAXCohesion	0.02	0.01	0.14	0.02	0.01	0.01	0.08	0.01
PAXConflict	-0.02	0.02	-0.12	0.01	-0.01	0.02	-0.03	0.001
PAXControl	0.001	0.02	0.002	0.00	0.02	0.03	0.08	0.01
Block 1								
PA	0.70	0.20	0.29**	0.08**	0.02	0.21	0.01	0.000
Block 2								
RA	0.19	0.29	0.07	0.003	-0.54	0.31	-0.19^	0.02^
Block 3								
Cohesion	0.02	0.04	0.03	0.001	-0.02	0.04	-0.05	0.002
Conflict	0.04	0.06	0.06	0.003	0.01	0.06	0.02	0.000
Control	-0.09	0.08	-0.10	0.01	-0.12	0.08	-0.13	0.02
Block 4								
RAXCohesion	0.01	0.01	0.08	0.01	0.004	0.01	0.03	0.001
RAXConflict	-0.01	0.02	-0.06	0.004	-0.001	0.02	-0.01	0.000
RAXControl	0.02	0.03	0.06	0.003	0.03	0.03	0.09	0.01

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 7. PA/RA and Family Cohesion, Conflict, and Control Predicting Somatization

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
Block 1								
RA	1.20	0.24	0.39**	0.15**	0.58	0.18	0.26**	0.07**
Block 2								
PA	0.48	0.26	0.18^	0.02^	0.15	0.20	0.08	0.004
Block 3								
Cohesion	0.02	0.04	0.05	0.002	-0.04	0.03	-0.10	0.01
Conflict	-0.02	0.06	-0.03	0.001	0.01	0.05	0.02	0.000
Control	0.05	0.08	0.05	0.002	0.12	0.06	0.17*	0.03*
Block 4								
PAXCohesion	0.01	0.01	0.11	0.01	-0.01	0.01	-0.07	0.005
PAXConflict	-0.002	0.02	-0.01	0.000	0.02	0.01	0.15^	0.02^
PAXControl	0.01	0.02	0.04	0.001	0.01	0.02	0.02	0.001
Block 1								
PA	0.92	0.21	0.35**	0.12**	0.39	0.16	0.21*	0.04*
Block 2								
RA	0.86	0.30	0.28**	0.05**	0.47	0.23	0.22*	0.03*
Block 3								
Cohesion	0.02	0.04	0.05	0.002	-0.04	0.03	-0.10	0.01
Conflict	-0.02	0.06	-0.03	0.001	0.01	0.05	0.02	0.000
Control	0.05	0.08	0.05	0.002	0.12	0.06	0.17*	0.03*
Block 4								
RAXCohesion	0.02	0.01	0.10	0.01	-0.004	0.01	-0.04	0.001
RAXConflict	0.000	0.02	-0.002	0.000	0.01	0.01	0.06	0.004
RAXControl	0.02	0.03	0.05	0.003	0.002	0.02	0.01	0.000

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 8. PA/RA and Family Cohesion, Conflict, and Control Predicting Attention Problems

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	B	ΔR^2
Block 1								
Gender	-6.13	1.79	-0.28*					
RA	0.67	0.28	0.20**	0.12**	0.57	0.25	0.20*	0.04^
Block 2								
PA	1.09	0.29	0.37**	0.09**	0.21	0.26	0.08	0.004
Block 3								
Cohesion	0.08	0.05	0.15^	0.02^	-0.01	0.04	-0.02	0.000
Conflict	-0.10	0.07	-0.12	0.01	-0.02	0.06	-0.03	0.001
Control	-0.11	0.09	-0.10	0.01	0.07	0.08	0.07	0.01
Block 4								
PAXCohesion	0.002	0.01	0.01	0.000	0.003	0.01	0.02	0.000
PAXConflict	0.01	0.02	0.05	0.002	0.01	0.02	0.05	0.002
PAXControl	0.02	0.03	0.06	0.004	-0.02	0.03	-0.05	0.003
Block 1								
Gender	-6.58	1.70	-0.30**					
PA	1.05	0.23	0.36**	0.21**	0.43	0.21*	0.17*	0.03
Block 2								
RA	-0.09	0.33	-0.03	0.00	0.43	0.31	0.15	0.01
Block 3								
Cohesion	0.08	0.05	0.15^	0.02^	-0.01	0.04	-0.02	0.000
Conflict	-0.10	0.07	-0.12	0.01	-0.02	0.06	-0.03	0.001
Control	-0.11	0.09	-0.10	0.01	0.07	0.08	0.07	0.01
Block 4								
RAXCohesion	-0.02	0.01	-0.12	0.01	0.001	0.01	0.01	0.000
RAXConflict	0.02	0.02	0.10	0.01	0.004	0.02	0.02	0.000
RAXControl	0.06	0.03	0.15^	0.02^	0.02	0.03	0.05	0.002

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 9. PA/RA and Family Cohesion, Conflict, and Control Predicting Delinquency

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
Block 1								
RA	1.41	0.19	0.55**	0.30**	0.69	0.19	0.31**	0.09**
Block 2								
PA	1.42	0.16	0.64**	0.26**	0.46	0.20	0.24*	0.04*
Block 3								
Cohesion	-0.02	0.03	-0.04	0.001	-0.02	0.03	-0.06	0.003
Conflict	0.04	0.04	0.07	0.01	0.01	0.05	0.01	0.000
Control	0.04	0.05	0.05	0.002	0.01	0.06	0.01	0.000
Block 4								
PAXCohesion	0.004	0.01	0.04	0.001	0.01	0.01	0.01	0.01
PAXConflict	-0.001	0.01	-0.01	0.000	0.01	0.01	-0.05	0.002
PAXControl	0.000	0.02	0.000	0.000	0.01	0.02	0.03	0.001
Block 1								
PA	1.64	0.13	0.74**	0.55**	0.65	0.16	0.34**	0.11**
Block 2								
RA	0.44	0.18	0.17*	0.02*	0.37	0.23	0.16	0.02
Block 3								
Cohesion	-0.02	0.03	-0.04	0.001	-0.02	0.03	-0.06	0.003
Conflict	0.04	0.04	0.07	0.01	0.01	0.05	0.01	0.000
Control	0.04	0.05	0.05	0.002	0.01	0.06	0.01	0.000
Block 4								
RAXCohesion	0.01	0.01	0.05	0.002	0.002	0.01	0.02	0.000
RAXConflict	0.003	0.01	0.02	0.000	-0.01	0.01	-0.03	0.001
RAXControl	0.01	0.02	0.04	0.002	0.04	0.02	0.15^	0.02^

Note. Several items were removed from PA scale that overlapped with delinquency scale, ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 10. PA/RA and Family Variables Predicting Social Problems

Variable	CBCL				TRF			
	B	SE B	B	ΔR^2	B	SE B	β	ΔR^2
Block 1								
RA	-1.20	0.25	-0.40**	0.16**	0.29	0.24	0.11	0.01
Block 2								
PA	-0.58	0.26	-0.22*	0.03*	0.31	0.26	0.13	0.01
Block 3								
Cohesion	0.14	0.04	0.26**	0.06**	0.01	0.04	0.02	0.000
Conflict	-0.04	0.06	-0.06	0.003	-0.04	0.06	-0.06	0.004
Control	0.18	0.08	0.18*	0.03*	0.07	0.08	0.08	0.01
Expressive	0.06	0.07	0.08	0.01	-0.07	0.07	-0.10	0.01
Organization	0.14	0.06	0.20*	0.04*	0.07	0.06	0.11	0.01
Block 4								
PAXCohesion	0.001	0.01	0.01	0.000	0.01	0.01	0.08	0.01
PAXConflict	-0.02	0.02	-0.10	0.01	-0.01	0.02	-0.05	0.002
PAXControl	0.01	0.02	0.04	0.002	0.03	0.02	0.11	0.01
PAXExpress	0.01	0.02	0.07	0.004	0.01	0.02	0.04	0.002
PAXOrgan	-0.004	0.02	-0.02	0.000	0.04	0.02	0.18*	0.03*
Block 1								
PA	-1.00	0.21	-0.38**	0.15**	0.35	0.21	0.14^	0.02^
Block 2								
RA	-0.80	0.30	-0.26*	0.04*	0.08	0.30	0.03	0.001
Block 3 (see above)								
Block 4								
RAXCohesion	0.01	0.01	0.05	0.002	0.002	0.01	0.01	0.000
RAXConflict	-0.02	0.02	-0.10	0.01	0.01	0.02	0.03	0.001
RAXControl	0.01	0.03	0.02	0.000	0.06	0.03	0.18*	0.03*
RAXExpress	0.02	0.02	0.06	0.003	-0.02	0.02	-0.08	0.01
RAXOrgan	-0.001	0.02	-0.01	0.000	0.03	0.02	0.15^	0.02^

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 11. PA/RA and Family Expressiveness and Organization Predicting Anxiety/Depression

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	B	ΔR^2
Block 1								
RA	1.55	0.24	0.49**	0.24**	0.05	0.26	0.02	0.000
Block 2								
PA	0.26	0.25	0.10	0.01	-0.15	0.28	-0.06	0.002
Block 3								
Expressive	-0.03	0.06	-0.04	0.001	-0.15	0.07	-0.19*	.04*
Organization	0.03	0.06	0.05	0.002	0.02	0.07	0.03	0.001
Block 4								
PAXExpress	0.02	0.02	0.12	0.01	-0.01	0.02	-0.06	0.003
PAXOrgan	0.000	0.02	0.002	0.000	0.02	0.02	0.10	0.01
Block 1								
PA	0.96	0.22	0.36**	0.13**	-0.07	0.22	-0.03	0.001
Block 2								
RA	1.37	0.30	0.44**	0.12**	0.15	0.32	0.05	0.002
Block 3								
Expressive	-0.03	0.06	-0.04	0.001	-0.15	0.07	-0.19*	.04*
Organization	0.03	0.06	0.05	0.002	0.02	0.07	0.03	0.001
Block 4								
RAXExpress	0.04	0.02	0.14^	0.02^	-0.03	0.02	-0.10	0.01
RAXOrgan	0.01	0.02	0.02	0.000	0.01	0.02	0.03	0.001

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 12. PA/RA and Family Expressiveness and Organization Predicting Withdrawal

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	B	ΔR^2
Block 1								
RA	0.60	0.24	0.22*	0.05*	-0.33	0.25	-0.12	0.01
Block 2								
PA	0.60	0.25	0.25*	0.04*	0.29	0.27	0.12	0.01
Block 3								
Expressive	0.002	0.06	0.003	0.000	-0.07	0.07	-0.09	0.01
Organization	-0.11	0.06	-0.15 [^]	0.02 [^]	-0.05	0.06	-0.08	0.01
Block 4								
PAXExpress	0.001	0.02	0.01	0.000	0.01	0.02	0.06	0.004
PAXOrgan	-0.01	0.02	-0.05	0.002	0.03	0.02	0.13	0.02
Block 1								
PA	0.70	0.20	0.29**	0.08**	0.01	0.21	0.01	0.003
Block 2								
RA	0.19	0.29	0.07	0.003	-0.52	0.31	-0.18 [^]	0.02 [^]
Block 3								
Expressive	0.002	0.06	0.003	0.000	-0.07	0.07	-0.09	0.01
Organization	-0.11	0.06	-0.15 [^]	0.02 [^]	-0.05	0.06	-0.08	0.01
Block 4								
RAXExpress	-0.01	0.02	-0.04	0.002	0.001	0.02	0.03	0.001
RAXOrgan	-0.02	0.02	-0.08	0.01	0.02	0.02	0.11	0.01

Note. [^] indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 13. PA/RA and Family Expressiveness and Organization Predicting Somatization

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
Block 1								
RA	1.20	0.24	0.39**	0.16**	0.59	0.18	0.27**	0.08**
Block 2								
PA	0.47	0.26	0.18^	.02^	0.14	0.20	0.07	0.003
Block 3								
Expressive	-0.09	0.07	-0.11	0.01	-0.10	0.05	-0.17*	0.03*
Organization	-0.06	0.06	-0.09	0.01	0.030	0.05	0.05	0.002
Block 4								
PAXExpress	0.01	0.02	0.05	0.003	0.00	0.01	0.001	0.000
PAXOrgan	0.002	0.02	0.01	0.000	-0.01	0.01	-0.08	0.01
Block 1								
PA	0.92	0.21	0.35**	0.12**	0.39	0.16	0.21*	0.05*
Block 2								
RA	0.87	0.30	0.29**	0.05**	0.49	0.23	0.22*	0.03*
Block 3								
Expressive	-0.09	0.07	-0.11	0.01	-0.10	0.05	-0.17*	0.03*
Organization	-0.06	0.06	-0.09	0.01	0.030	0.05	0.05	0.002
Block 4								
RAXExpress	0.03	0.02	0.10	0.01	0.01	0.02	0.05	0.003
RAXOrgan	-0.02	0.02	-0.09	0.01	-0.01	0.01	-0.06	0.003

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 14. PA/RA and Family Expressiveness and Organization Predicting Attention Problems

Variable	CBCL				TRF			
	B	SE B	β	ΔR^2	B	SE B	β	ΔR^2
Block 1								
Gender	-6.13	1.79	-0.28**					
RA	0.67	0.28	0.20**	0.12**	0.57	0.25	0.20^	0.04^
Block 2								
PA	1.09	0.29	0.37**	0.09**	0.21	0.27	0.09	0.01
Block 3								
Expressive	0.03	0.07	0.04	0.001	-0.02	0.07	-0.02	0.000
Organization	-0.06	0.07	-0.08	0.01	-0.02	0.06	-0.03	0.001
Block 4								
PAXExpress	-0.04	0.02	-0.17*	0.03*	-0.01	0.02	-0.04	0.001
PAXOrgan	0.002	0.02	0.01	0.000	0.03	0.02	0.13	0.02
Block 1								
Gender	-6.58	1.70	-0.30**					
PA	1.05	0.23	0.36**	0.21**	0.42	0.21	0.17*	0.03*
Block 2								
RA	-0.09	0.33	-0.03	0.000	0.42	0.31	0.15	0.01
Block 3								
Expressive	0.03	0.07	0.04	0.001	-0.02	0.07	-0.02	0.000
Organization	-0.06	0.07	-0.08	0.01	-0.020	0.06	-0.03	0.001
Block 4								
RAXExpress	-0.06	0.02	-0.21^	0.04^	-0.040	0.02	-0.15^	0.02^
RAXOrgan	-0.03	0.02	-0.13	0.02	0.04	0.02	0.17^	0.03^

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Table 15. PA/RA and Family Expressiveness and Organization Predicting Delinquency

Variable	CBCL				TRF			
	B	SE B	B	ΔR^2	B	SE B	β	ΔR^2
Block 1								
RA	1.42	0.19	0.55**	0.31**	0.69	0.19	.31**	0.10**
Block 2								
PA	1.41	0.16	0.64**	0.26**	0.45	0.20	0.23*	0.04*
Block 3								
Expressive	0.03	0.04	0.04	0.001	0.02	0.05	0.03	0.001
Organization	-0.01	0.04	-0.02	0.000	0.05	0.05	0.09	0.01
Block 4								
PAXExpress	0.00	0.01	0.001	0.000	-0.01	0.01	-0.08	0.01
PAXOrgan	0.004	0.01	0.02	0.000	0.02	0.01	0.12	0.01
Block 1								
PA	1.64	0.13	0.74**	0.55**	0.65	0.16	0.33**	0.12**
Block 2								
RA	0.44	0.19	0.17*	0.02*	0.38	0.23	1.67^	0.02^
Block 3								
Expressive	0.03	0.04	0.04	0.001	0.02	0.05	0.03	0.001
Organization	-0.01	0.04	-0.02	0.000	0.05	0.05	0.09	0.01
Block 4								
RAXExpress	0.00	0.01	-0.01	0.000	-0.03	0.02	-0.14^	0.02^
RAXOrgan	-0.004	0.01	-0.02	0.000	0.02	0.01	0.11	0.01

Note. ^ indicates $p < 0.10$, * indicates $p < 0.05$, ** indicates $p < 0.01$.

Figure 1. PA X Family Expressiveness = Attention Problems

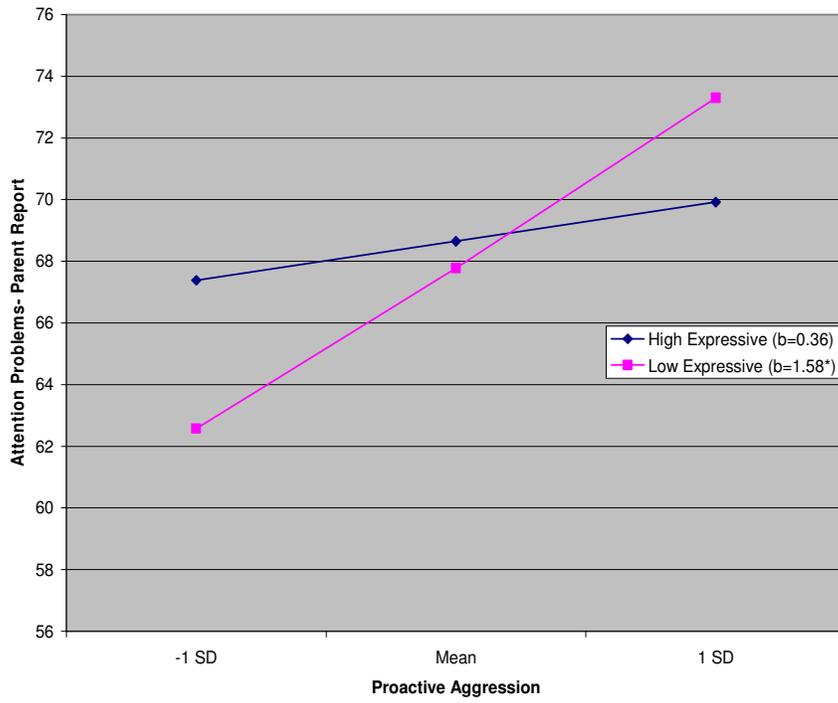


Figure 2. RA X Family Control = Social Problems

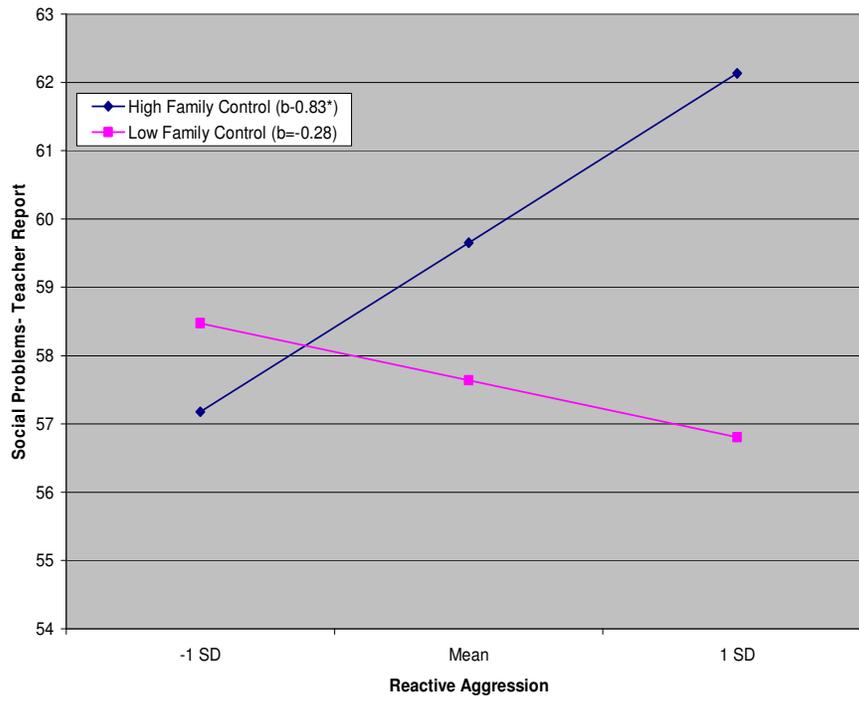


Figure 3. PA X Family Organization = Social Problems

