

Running head: SUBTYPES OF AGGRESSION IN YOUTH

Social Likeability, Subtypes of Aggression, and the Attributional Style of Aggressive Youth

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## ABSTRACT

Recent efforts to understand and predict the onset and maintenance of aggression have considered the heterogeneity of this behavior. Dodge (1980) and others, have suggested a distinction in aggression based on two primary subtypes: reactive and proactive aggression. The form, severity and persistence of these aggressive subtypes may depend on an on-going interaction between individual characteristics and environmental characteristics that elicit varying antecedents and consequences (Frick, 1998; Lahey et al., 1999). In particular, there exists some empirical support for the existence of relations among social likeability, attributional style, and particular subtypes of aggression symptomology. However, the exact nature of this relation is unclear.

The current study examined two competing models, the mediator and moderator models, to assess the nature of the relations among social likeability, attributional style, and aggression subtypes in a sample of 419 youth in a non-clinical community setting. Results suggest that the external, stable, global attributional style serves to mediate the relation between social likeability and reactive, but not proactive aggression. Implications for assessment and treatment of aggression in adolescents are discussed.

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## Table of Contents

Abstract	ii
Acknowledgments	iii
Table of Contents	iv
List of Multimedia Objects	v
Introduction	1
Method	9
Results	12
Discussion	17
Summary	25
References	27
Tables	33
Figures	38
List of Appendices	40
Appendices	41
Curriculum Vitae	46

## List of Multimedia Objects

### Tables

1. Demographic Characteristics of Sample	33
2. Summary of Variables – Means, Standard Deviations, and Alpha Coefficients	34
3. Intercorrelations for Measures of Aggression, Likeability, and Attributional Style	34
4. Hierarchical Regression Analyses: Tests for Moderation and Mediation	35
5. Hierarchical Regression Analyses II: Tests for Moderation and Mediation	36
6. Hierarchical Regression Analyses III: Post Hoc Tests for Moderation and Mediation	37

### Figures

1. Mediation model depicting relation between social likeability, attributional style, and reactive aggression	38
2. Moderation model depicting relation between social likeability, attributional style, and reactive aggression	38
3. Moderating effect of internal, stable, global attributional style on the relationship between peer-rated aggression and reactive aggression	39

## Introduction

Delineating Subtypes of Aggression

Difficulties in effectively treating aggressive behavior in children and adolescents have led to increased efforts to understand and predict the onset and maintenance of these behaviors. Empirical findings suggest the heterogeneity of aggression, a factor often overlooked in the development and application of most clinical interventions. This heterogeneity may best account for treatment complications and failures frequently observed in the literature (Dodge, Lochman, Harnish, Bates, & Petit, 1997; Frick, 1998; Greene & Doyle, 1999; Loeber & Stouthamer-Loeber, 1998; Price & Dodge, 1989). Differentiation of subtypes of aggression may not only serve to increase precision in defining aggressive behavior, but also lead to more appropriate assessment and treatment practices for youths who evidence such behavior.

Early attempts to identify subtypes of aggression proved either inaccurate or incomplete in accounting for the many expressions of aggression. These early conceptualizations were based largely on findings obtained in groups of delinquent youths and focused primarily on patterns of antisocial behavior in general rather than aggression per se (Loeber & Stouthamer-Loeber, 1998). However, recent efforts, inspired by Dodge's (1980) large-scale studies of aggressive boys, have suggested a distinction in aggression based on two primary subtypes: reactive and proactive aggression.

The first subtype, reactive aggression (i.e., hostile, affective), is characterized by a maladaptive defensive response following perceived or actual threat or provocation (Price & Dodge, 1989; Vitaro, Gendreau, Trembly, & Oligny, 1998; Waschbusch, Willoughby, & Pelham, 1998). This subtype has its roots in the frustration-aggression hypothesis first proposed by Dollard, Doob, Miller, Mowrer, and Sears (1939). According to this model, the two elements that occasion emergence of aggressive behavior include dispositional factors and eliciting circumstances (Wells & Miller, 1993). More specifically, one's aggressive potential is determined through the identification of both individual characteristics (i.e., self-perception,

guilt, cognitive development) and environmental correlates (i.e., social context, family atmosphere) that relate both to the ability to control anger and the resulting aggression propensity (Wells & Miller, 1993). Once present, a frustrating circumstance elicits an aggressive response by way of heightened emotional arousal and an inability to adaptively cope with this arousal. Consequently, as this model suggests, the identification of reactive aggression should take into account both individual and environmental elements. The frustration-aggression model fails to accurately conceptualize all patterns of aggression, however.

A second subtype, proactive aggression (i.e., instrumental, predatory), is recognized as a pattern of unprovoked, instrumental, goal-oriented aggressive actions (Dodge et al., 1997; Dodge & Coie, 1987; Vitaro et al., 1998). In proactive aggression, the presence of a frustrating circumstance is largely unrelated to the expression of aggressive behavior; rather the behavior is based on an expected future outcome. This construct is largely explained by processes outlined in Bandura's (1973) social learning theory. According to this theory, aggression can be defined as a learned behavior regulated by external rewards and outcome expectancies (Brown, Atkins, Osborne, & Milnamow, 1996). Subsequently, this subtype of aggression is associated with the overvaluing of outcomes of aggressive behavior and the deliberate manner in which such behavior is expressed in the absence of precipitating stimuli.

Although recognition of both proactive and reactive forms of aggression helps to explain much of the variability found in aggressive youth, there exists a continued paucity of empirical findings due to the complex presentation of these forms of aggression both within and across individuals (Dodge & Coie, 1987; Vitiello & Stoff, 1997). Contrary to early hypotheses, proactive and reactive forms of aggression are not mutually exclusive and may present simultaneously, in some consecutive manner, or independent of one another (Dodge & Coie, 1987). The form, severity and persistence of aggressive subtypes depend on an on-going interaction between individual characteristics such as age, aggression onset, intellectual level, and the existence of comorbid conditions as well as environmental characteristics found within the community, family, and peer environments that elicit varying antecedents and consequences

(Frick, 1998; Lahey et al., 1999). The understanding of aggression is further complicated by the very nature of the aggressive child, who often displays limited awareness regarding the nature of his/her aggression and the impairment associated with his or her behavior.

Greater accuracy in describing the various manifestations of aggression may, therefore, be dependent on the recognition and identification of more stable indicators of aggression subtypes. Given the influence of both individual and environmental factors on the expression of aggression, the study of these associated features of aggression, particularly those that may be present before the onset of more serious and detrimental expressions of aggressive behavior, will likely prove useful. In particular, interpersonal relations, measured by either direct or observed social likeability ratings, often serve as a consistent indicator of one's social environment; moreover, interpersonal relations have gained empirical support as factors distinguishing those with high reactive and/or high proactive aggression subtype ratings (Crick & Dodge, 1996; Price & Dodge, 1989; Waschbusch et al., 1998). More specifically, results indicate that peers consistently tend to evaluate reactive aggression more negatively than proactive aggression (Price & Dodge, 1989). Additionally, the manner in which a negative social environment is perceived and interpreted also likely contributes to the expression of aggression in that environment. Despite the wealth of research independently investigating the nature of an aggressive child's social interactions and the deficits and distortions in his/her cognitive processing, little progress has been made in the understanding of this interaction.

### Interpersonal Relations

The relation between early social experiences and subsequent psychological adjustment has been the foundation for a multitude of empirical investigations addressing the etiology and development of childhood psychopathology (Coie et al., 1991). In the realm of aggression research, the identification and evaluation of this relation has provided a framework for further delineation of aggression subtypes and, consequently, a better understanding of both unique and common antecedents. Initial work by Dodge and colleagues provided the foundation for further

study of aggression subtypes and social likeability in children, suggesting a link between peer-directed aggression and social rejection (Dodge, 1983; Dodge & Coie, 1987). However, when this relation was later assessed in the context of proactive and reactive subtypes of aggression, the link between peer-directed aggression and social rejection (i.e., low likeability) held true for those children with high scores on the reactive aggression subscale, but not for those high in proactive aggression (Crick & Dodge, 1996; Dodge & Coie, 1987; Price & Dodge, 1989). Waschbusch et al. (1998) confirmed the differential relation between subtypes of aggression and social likeability, finding that social likeability served as a factor in establishing the criterion validity of these subtypes.

Despite this finding, the pathway by which this relation is maintained remains less certain. It has been hypothesized that angry retaliation (i.e., reactive aggression) may be governed by social cognitive factors rather than social learning or modeling influences (Price & Dodge, 1989). Conversely, it has been suggested that instrumental aggression (i.e., proactive aggression) is related more strongly to the outcome obtained by the aggressive acts than social cognitive factors per se. This is consistent with early theoretical models of the aggression subtypes, suggesting that a distinctive set of social correlates exists that serve to highlight concurrent differences in subtypes. Given the potential influence of social cognitive factors in this relation, it is necessary to examine specific manifestations of this influence in more detail.

### Social Cognitive Factors

Contemporary theories of aggression emphasize the role of cognitive processes in the relation between environmental circumstances and aggressive behavior (Bandura, 1973; Berkowitz, 1977; Cornell, Peterson, & Richards, 1999; Quiggle, Garber, Panak, & Dodge, 1992). Specifically, the perception of stimuli, rather than the stimuli themselves, may define the properties of stimuli, which, in turn, lead to particular reactions to those stimuli. Berkowitz (1977) further extended this notion in suggesting that an individual must attribute aggressive intent to an aversive stimulus for it to serve as an aggressive cue that then facilitates an

aggressive reaction. This initial work led to an increased interest in identifying the role of cognitions in aggressive behavior. Dodge (1980) and others have developed and tested a social information processing model of aggression that has served to guide and inform the further delineation of underlying cognitive pathways to aggressive behavior. This model characterizes specific processing and judgment of events leading to aggression in situations of interpersonal conflict, involving a sequence of distinct and relatively independent cognitive tasks to which aggression can be linked (Crick & Dodge, 1996; Zelli, Dodge, Lochman, & Laird, 1999).

According to this influential work, aggressive behavior may result from deficits or distortions at one or more of these cognitive tasks. Furthermore, evidence from a number of longitudinal studies suggests that these patterns of deviant social cognitive processing lead to, rather than merely correlate with, aggressive behavior across development (cf, Zelli et al., 1999). Thus, the identification of specific dysfunctional cognitive patterns as precursors to aggression may serve to better characterize the etiology and phenomenology of aggression itself.

The assessment of specific social-cognitive processing deficits and distortions among aggressive youth has led to a better understanding of the processes leading to aggressive behavior. As a whole, this research has supported the notion that aggressive youth tend to externalize blame to others when evaluating negative circumstances regardless of the ambiguity of the actual intentions inherent in a given situation (Dodge, 1980; Dodge & Frame, 1982). This tendency, termed hostile attributional bias, may be related to the externalizing of negative affect and serve as one of the mechanisms underlying maintenance of these aggressive responses (Dodge et al., 1997; Fondacaro & Heller, 1990; Schwartz et al., 1998; Waas, 1988). Whereas the study of attributional bias in aggressive youth has led to a better understanding of some cognitive patterns in these individuals, it falls short of explaining the overall attributional style associated with aggression. However, the role of attributional style in the etiology of aggression is poorly understood and relatively underrepresented in the extant literature, though it is a well-established factor in the onset and maintenance of a related emotional disturbance, namely, depression.

According to work in the area of attributional style, there are three dimensions (i.e., internal/external, stable/unstable, global/specific) upon which an individual attributes the causes of negative and positive events (Curry & Craighead, 1990). The response to any given situation is based on an appraisal along these dimensions. For example, depressive symptomology often results from an internal, stable, and global attributional style when interpreting negative events, such that the cause of the event is likely perceived as a stable personality flaw in one's self that is likely to permeate across conditions (Curry & Craighead, 1990). In a similar vein, given the external direction of cognitions and behavior resulting from heightened emotional arousal in negative or aversive situations in individuals characterized by high reactive aggression, it is likely that an external attribution, in contrast to an internal attribution, will be present. This is partially supported in the work of Fondacaro and Heller (1990), who found that aggression in adolescent offenders is associated with the tendency to attribute blame for negative events to the global, dispositional characteristics of others (particularly when the intentions of the peer were ambiguous). This finding is similar to those showing that aggressive juvenile delinquents evidence an external, in contrast to internal, locus of control orientation (cf, Beck & Ollendick, 1976). These initial findings that suggest a relation between social attributional style and subtypes of aggressive behavior notwithstanding, the dearth of findings is evident, highlighting the need for further investigation.

### Implications and Conclusions

Limitations in this work, resulting from inconsistent findings among researchers as to the roles of social environment and cognitive styles in the etiology of aggressive behavior, have challenged the notion that these factors can be explained independent of the interaction between them. It seems probable that neither factor alone is sufficient to predict the onset and course of aggressive behavior; rather, their interactive and synergistic effects likely need to be considered.

While many differences exist in the definition and understanding of aggression, a common bond among all theoretical and empirical work is the recognition of the need for

accurate prediction and effective interventions. As recognized early on by Nasby, Hayden, and DePaulo (1980), aggression stands as one of the most common and serious problems of children referred for treatment. Further, it is widely accepted that excessive and inappropriate aggression puts the aggressive child at risk for not only current social conflicts but also mars his/her long-term interpersonal adjustment. The limitations of current clinical work stem from the questionable treatment of aggression as a unidimensional construct, without an understanding of the heterogeneity within both the expression of aggressive behavior and the processing of environmental stimuli. Given the relatively distinct phenomenology and outcomes of reactive and proactive aggression subtypes, it is essential to identify and address underlying mechanisms associated with these two types of classification.

In conclusion, there exists limited empirical support for the existence of a relation among social likeability, attributional style, and particular subtypes of aggression symptomology. Moreover, the specific pathway among these variables remains unclear, given the complex presentation of all three components of the relation. Consequently, the current study attempts to examine two competing models, the mediator and moderator models (see Figures 1 and 2), based on the available literature regarding the relations among social likeability, attributional style, and aggression subtypes.

#### Mediator Model:

The first model (Figure 1) suggests that low social likeability will lead to an external attributional style in the evaluation of negative events that will, in turn, precipitate higher levels of reactive, but not proactive, aggression during interpersonal exchanges as indicated on peer- and self-report measures of these variables. This model is partially supported in early evaluations of social cognition, suggesting relevant past social experiences influence causal attributions about current events (Waas, 1988; Zelli et al., 1999). Consistent with the empirical findings indicating that deviant social cognitive processing leads to reactive aggressive responses (Fondacaro & Heller, 1990; Zelli et al., 1999), it seems likely that a dysfunctional pattern of

attributing most negative social events to external factors (e.g., peer behavior) will serve to externalize negative affect in the context of a negative social environment marked by peer hostility and poor interpersonal exchanges. As recognized by Dodge, Bates, and Petit (1990), the acquisition of such deviant processing patterns may be the critical link in understanding and *mediating* the long-lasting effects of early negative socializing experiences (e.g., low social likeability) on later aggressive response styles.

Thus, it is suggested that attributional style may serve as a mediator in the anticipated relation between levels of social likeability and reactive aggression. A mediating effect for attributional style will be established if the statistical relation between social likeability and reactive, but not proactive, aggression is found to be reduced once the association between attributional style and aggression is controlled for (Baron & Kenny, 1986).

#### Mediating Model Hypotheses

1. Low levels of social likeability will be associated with reactive aggression.
2. Low levels of social likeability will be associated with an external attributional style.
3. External attributional style is expected to be associated with higher rates of reactive aggression.
4. The relations between levels of social likeability and reactive aggression will be attenuated when the relation between external attributional style and reactive aggression is controlled for statistically.

#### The Moderator Model

The second model (Figure 2) to be examined in the present study concerns the potential moderating role of attributional style in the relation between social likeability and reactive aggression. Specifically, this model will assess whether high or low externality in attributional

style differentially influences (i.e., *moderates*) the severity of reactive aggression as a result of low social likeability in the peer environment. This model is based on empirical findings indicating that specific cognitive processes founded upon an external attributional style (i.e., hostile attributional bias) serve as a risk factor for the development of higher rates of reactive aggression among a wide variety of child and adolescent populations, whereas internal attributional styles may serve as a protective factor against aggression towards others (Craighead, 1990; Renouf, Kovacs & Mukerji, 1997). It is expected that adolescents who experience lower social likeability and report an external attributional style will report greater reactive, but not proactive, aggression symptomology.

Thus, the current study will examine the potential moderating role of attributional style in the hypothesized relation between social likeability and self-reported reactive aggression. A moderating effect for these variables will be established if the statistical relation between social likeability and reactive aggression is found to be stronger for children reporting an external attributional style (Baron & Kenny, 1986).

#### Moderator Model Hypotheses

1. Low levels of social likeability will be associated with reactive aggression.
2. The association between low levels of social likeability and reactive aggression will be most evident when external attributional style is present.

#### Method

##### Participants:

Data collection for this study was undertaken in conjunction with a longitudinal prospective study of a cohort of approximately 700 youth enrolled in the Montgomery County School System, conducted for purposes of identifying students at risk for school dropout. This group of students, from high schools within the county school system, has been assessed every

two years on three separate occasions (6<sup>th</sup>, 8<sup>th</sup>, and 10<sup>th</sup> grade). A subsample of 419 youth from the longitudinal prospective study was identified as having complete data on all three measures of interest. Demographic characteristics of this sample are reported in Table 1. This subsample of youth is consistent with the overall sample assessed on indices of age, sex, living situation, school attended, and race. In particular, the sample consisted of 49.1% (N=209) males and 50.1% (N=210) females. This sex distribution did not differ significantly from the sex distribution in the overall population of 53.3% (N=416) males and 46.7% (N=364) females ( $p=.32$ ). Similarly, the mean age of the study subsample in both 8<sup>th</sup> grade (13.62) and 10<sup>th</sup> grade (15.68) was commensurate with that of the overall sample at each time of the assessment (8<sup>th</sup> grade, mean age=13.68, NS; 10<sup>th</sup> grade, mean age=15.74, NS). Further, the subsample mean score of 3.54 (0.64) on the PEI likeability scale did not significantly differ from a mean of 3.48 (0.64) in the overall sample (NS).

### Instruments:

At each phase of data collection, a battery of paper-and-pencil self-report measures was administered to students. In particular, the assessment of attributional style and peer-reported sociometric status was administered in fall of the 8<sup>th</sup> grade. The aggression rating scale was administered in spring of the 10<sup>th</sup> grade, approximately 30 months following the completion of the 8<sup>th</sup> grade assessment.

*Aggression Rating Scale (Appendix 1).* The aggression rating scale (Brown et al., 1996) is a 28-item self-report questionnaire measuring proactive aggression, reactive aggression, covert antisocial behavior, and prosocial behavior on a 3-point scale (0 = never, 1 = sometimes, 2 = very often). Thus, higher scores indicate greater levels of aggression. The reactive and proactive subscales were comprised of 10 and 7 items, respectively. Scores can range from 0 to 20 on the reactive subscale and from 0 to 14 on the proactive subscale. This measure is based on the work of Dodge and Coie (1987), who first distinguished the constructs of reactive and proactive

aggression with teacher ratings of elementary school boys. While not yet validated as a self-report measure, this scale has been replicated in a number of clinical and research investigations utilizing teacher ratings of aggression (cf, Brown et al., 1996).

Peer Evaluation Index (Appendix 2). A score of social likeability was derived from a composite of scale items on an abbreviated version of the Peer Evaluation Index (PEI) developed by Ollendick, Greene, Weist, and Oswald (1990) and based on the original 35-item measure (Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976). The abbreviated PEI is a nine-item peer-nomination measure of social behavior in which children are rated by their peers on dimensions of aggression (e.g., “those who start a fight over nothing”), withdrawal (e.g., “those who are too shy to make friends easily”), and likeability (e.g., “those who are liked by everyone”), using a 6-point likert scale ranging from 1 (“Not at all/never like this”) to 6 (“A lot like this/does this all the time”). Each dimension is comprised of three items, where the mean is calculated across peer-reported scores. A higher mean score suggests elevations on that dimension. This measure has been used in similar studies of youth where it has been found to be reliable and valid and has been shown to be stable and meaningfully related to concurrent and later indices of social adjustment (Lardon & Jason, 1992; Ollendick, Weist, Borden, & Greene, 1992; Ollendick, Greene, Francis, & Baum, 1991; Ollendick et al., 1990; Schwartz, 2000).

Children’s Attributional Style Questionnaire – Revised (Appendix 3). Attributional style was measured with the Children’s Attributional Style Questionnaire – Revised (CASQ –R; Kaslow & Nolen-Hoeksema, 1991), a 24-item shortened measure derived from the 48-item CASQ designed to assess children’s self-reported attributional styles for positive and negative events (Kaslow, Tanenbaum, & Seligman, 1978). Each item presents a hypothetical situation followed by two statements suggesting reasons for the situation. The items are measured along three dimensions: internal vs. external, stable vs. unstable, global vs. specific. In each item, one dimension is varied while the other two remain constant. Positive and Negative sub-scores of

these dimensions are calculated to measure attributions for good and bad events. From this, a composite score is generated. The composite score is a measure of the relation between the attributional style for positive events and for negative events (represented by the subtraction of the latter from the former). A positive composite score indicates that the attributional style for good events exceeded that for bad events, whereas a negative composite score indicates the opposite. While the instrument is primarily designed to measure attributional styles of depressed and anxious individuals, following the learned helplessness model of depression in children (Abramson, Seligman, & Teasdale, 1978), it was used in the current study to explore the attributional styles of children and their relation to reactive and proactive aggression. Earlier evaluations of the CASQ and CASQ-R composites with samples of middle school aged children revealed internal consistency reliabilities ranging from 0.31 to 0.53 (Kaslow, Tanenbaum, & Seligman, 1978; Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998).

#### Procedure:

Measures were administered in assessment packets to students in a classroom format (n=15 to 20 students per classroom). Prior to completion of the measures, trained evaluators (graduate clinicians, teachers, and/or a school social worker) read each set of directions and identified all students requiring additional assistance. Evaluators were present to monitor and assist students as well as collect and review the assessment packets upon completion. School records were later ascertained through the guidance department.

#### Results

Means, standard deviations, observed range, possible range, and alpha coefficients for the self- and peer-reported measures are presented in Table 2. On the measure of aggression, mean ratings (standard deviation) for reactive and proactive aggression were 3.55 (2.86) and 1.36 (2.03), respectively. Internal consistency (as measured by Cronbach's alpha coefficient) was 0.79 for the reactive subscale and 0.85 for the proactive subscale. There was also a high

correlation between the two subscale scores ( $0.61, p < .01$ ; see Table 3). These results are consistent with recent literature utilizing these items to assess aggression in both children and adolescents (Brown et al., 1996; Poulin & Boivin, 2000; Price & Dodge, 1989; Vitaro et al., 1998). On the abbreviated version of the Peer Evaluation Inventory, the mean (standard deviation) of the likeability composite, based on three items, was 3.54 (0.64). The alpha coefficient for this measure was 0.87. On the CASQ-R, means and standard deviations are listed for the two subscale combinations of interest (i.e., external/stable/global, internal/stable/global). High correlations were also found between the two composite scores ( $r = 0.60, p < .01$ ; see Table 3). Internal consistency of this measure was 0.33 for positive events and 0.34 for negative events. These estimates are commensurate with internal consistency measurements of the original CASQ and CASQ-R composite scores, which ranged from 0.31 to 0.53 (Kaslow, Tanenbaum, & Seligman, 1978; Thompson et al., 1998).

Table 3 shows correlations between the two types of reported aggression and the other measures of interest, including the two attributional style composites and peer-ratings of social likeability. As can be seen, reactive and proactive aggression were significantly correlated ( $r = 0.61; p < .01$ ). Additionally, social likeability was related inversely to both reactive ( $r = -.10; p < .05$ ) and proactive aggression ( $r = -.16; p < .01$ ); that is, the lower the likeability the higher the aggression scores. Social likeability was also significantly related to the two attributional style composites in the expected direction. These correlations indicate that as social likeability increased so did the tendency to make more positive (and less negative) external, stable, global attributions ( $r = 0.19$ ), and more positive (and less negative) internal, stable, global attributions ( $r = 0.24; p < .01$ ), as reflected by relations with the composite scores. The results also show that the tendency to make more internal, stable, global scores for positive events (and less for negative events, as defined by the composite score) was inversely related to severity of self-reported aggression (reactive,  $r = -.13, p < .01$ , and proactive,  $r = -.13, p < .01$ ). Alternatively, when external, stable, global attributional styles were examined, the relation diminished for proactive

aggression and was no longer significant ( $r=-.07$ , NS), though it remained significant for reactive aggression ( $r=-.13$ ,  $p<.01$ ). Given the relation obtained, it can be seen that an external attributional style is significantly related to reactive, but not proactive, aggression. However, using Fisher's Z-transformation to compare the correlation coefficients, the correlations did not differ significantly ( $z=-.81$ , NS).

In further determining the nature of the relation among aggression, attributional style, and social likeability, hierarchical multiple regression analyses were conducted. Following the original hypothesis, in each analysis, either reactive or proactive aggression served as the criterion variable, whereas social likeability and attributional style served as predictor variables. In particular, it was hypothesized that an external attributional style would either moderate or mediate the relation between social likeability and later reactive aggression, but not proactive aggression. In all analyses, social likeability was entered in the first step, attributional style was added to social likeability in the second step and the interaction of the main effects was included in the third step. Further, as recommended by Holmbeck (in press), the independent and predictor variables were first centered (i.e., z-scores obtained). The use of z-scores, rather than raw scores in any test of moderation serves to decrease the collinearity effect that may occur when deriving an interaction term from two highly correlated variables.

As suggested by Holmbeck (1997), a moderation effect would be evident if the interaction of social likeability and attributional style were a significant predictor of aggression, when the two main effects had been controlled for. Hierarchical regression analyses revealed that this was not the case for either reactive or proactive aggression. In fact, nonsignificant interaction effects were found across both combinations of attributional style with social likeability. Table 4 details the results of these analyses.

The mediational model of the hypothesized relation was then tested using a series of regression analyses, in accordance with the suggestions of Baron and Kenny (1986). In the first set of regression analyses, the two attributional style composites were regressed upon social likeability to determine that variations in social likeability would significantly account for variations in attributional style (Criterion 1). In the second set of analyses, the dependent variable (either reactive or proactive aggression) was regressed upon each of the two attributional style composites to ascertain that variations in attributional style would significantly account for variations in aggression (Criterion 2). Analyses were repeated a third time to ascertain that variations in social likeability significantly accounted for variations in reactive and/or proactive aggression (Criterion 3). Lastly, a multiple regression equation, with social likeability entered in the first step and attributional style in the second step, was conducted to determine whether the previously significant relation between social likeability and aggression was attenuated when controlling for the effect of attributional style. As shown in Table 4, the mediational model held true for reactive aggression and proactive aggression when predicted by social likeability and the internal, stable, global attributional style composite score. However, this model held true for reactive aggression, but not proactive aggression, when predicted by social likeability and the external, stable, global attributional style composite score. In other words, when external attribution ratings were controlled for, the relation between likeability and reactive aggression, but not proactive aggression, was attenuated. Thus, only ratings of external attributions serve to distinguish reactive from proactive aggression, as hypothesized.

A second set of regression analyses was also conducted to account for the high correlation between proactive and reactive aggression, and to obtain a more stringent test of each subtype predictor. Specifically, by including the measure of aggression not serving as the dependent variable into the first step of the regression analysis, the effect of that aggression subtype was controlled for in testing the role of social likeability and attributional style in predicting aggression. Results indicate that when the variance associated with the other

aggression subtype is controlled for, the relations previously found are no longer evident (see Table 5).

### Post Hoc Analyses

An additional series of post hoc assessments were conducted to further investigate the relation among self-reported aggression and its possible predictors. First, given that the aggression rating scale was administered in 10<sup>th</sup> grade, it was possible that the 8<sup>th</sup> grade ratings of social likeability and attributional style were resultants of on-going aggressive behavior at *that* time, rather than predictors of subsequent aggression in 10<sup>th</sup> grade. Thus, PEI peer ratings of aggression collected in 8<sup>th</sup> grade were also evaluated. The mean aggression score on the PEI was 1.99 (SD=0.61). In a set of regression analyses, early peer-rated aggression was substituted for peer-rated social likeability as the predictor variable, and the aforementioned mediation and moderation models were then tested. Correlational analyses indicated that early peer-ratings of aggression were significantly related to later proactive aggression ( $r=0.23$ ;  $p<.01$ ), but not reactive aggression ( $r=0.10$ ; NS). PEI aggression scores were also significantly inversely correlated with the internal, stable, global attributional style composite ( $r=-.19$ ,  $p<.01$ ), but not with the external, stable, global attributional style composite ( $r=-.06$ , NS).

Results of multiple regression analyses, maintaining the more stringent test of subtype predictors, further differentiated the two subtypes of aggression, showing that the relation between early aggression and later reactive, but not proactive aggression was moderated by the internal, stable, global attributional style composite score (see Table 6). No other significant mediation or moderation relations were found among these variables, however. Consequently, as was suggested by the above regression findings, ratings of internal attributions (i.e., ISG composite) seem to distinguish reactive and proactive aggression in the context of interactions with early aggression. In other words, early aggression observed by others is related to later expressions of reactive, but not proactive aggression (as defined by self-report) when an internal,

stable, global attributional style is also present. The moderation effect of internal, stable, global attributional style on the relation between early aggression and later reactive aggression is presented graphically in Figure 3. Specifically, when high internal, stable, global attributional style composite is present (i.e., lower for negative events and higher for positive events) there exists a positive relation between early aggression and later reactive aggression. Alternatively, when a low internal, stable, global attributional style composite is present (i.e., higher for negative events and lower for positive events) this relation is less evident. In fact, the relation is in the negative direction. Results suggest that low internal, stable, global attributional style may serve as a protective factor in later expressions of reactive aggression.

### Discussion

Aggression and violence among adolescents has reached its highest levels in history, becoming a significant public health problem in schools and in the community as a whole. Epidemiological studies of this population suggest that adolescents seem to be at particularly high risk for peer victimization and the perpetuation of violence (Knox, King, Hanna, Logan, & Ghaziuddin, 2000). As noted by Short and Simeonsson (1986), this rise in aggressive behavior among youth calls attention to the need to study causal and mediating factors that would assist in the development of effective intervention techniques. In response, recent investigations have considered means of better understanding and predicting aggression in youth. The current study attempts to accomplish both goals: to better understand the nature of aggression through the classification of the behavior into more homogeneous subtypes and to predict these subtypes through an evaluation of interpersonal and social cognitive correlates.

The present study provides some evidence suggesting the validity in distinguishing between the dimensions of proactive and reactive aggression and details possible etiological pathways underlying these subtypes. Following the original hypothesis, social likeability and attributional style were evaluated as possible predictors of reactive and/or proactive aggression.

This hypothesis was largely based on earlier work distinguishing reactive from proactive aggression on the basis of sociometric status and social cognitive styles (e.g., Frick, 1998; Lahey et al., 1999). Specifically, it was thought that low social likeability and external attributional style would be related to later expressions of reactive aggression, but not proactive aggression.

Earlier findings suggesting that social likeability alone serves to differentiate proactive and reactive aggression (Crick & Dodge, 1996; Dodge & Coie, 1987; Price & Dodge, 1989) were not supported in this study. Both reactive and proactive aggression were significantly and inversely correlated with social likeability, suggesting that social likeability alone may not be sufficient to differentiate these two types of aggression. This unexpected finding may be related to the sample studied, given that earlier results were based on samples of young children whereas the current study examined adolescents. It is likely that, by adolescence, acts of proactive aggression are more complicated by other forms of aggressive and antisocial behavior, leading to less acceptance by one's peer group. This is supported by Dodge and Coie (1987) who reported that proactive aggression came to be more negatively evaluated in adolescent boys, but not younger boys.

On the other hand, external attributional style, when considered as part of the overall stable/global composite served to differentiate the two subtypes of aggression, where significant correlations with reactive, but not proactive aggression, resulted (see Table 3). Specifically, it was found that individuals who make more external, stable, global attributions for negative events (and less for positive events) also tend to report more reactive aggression, but not proactive aggression. This was reflected in the significant inverse relation between the external, stable, global composite and reactive aggression. In other words, these individuals, when faced with a negative circumstance, are more likely to blame others and view the circumstance as having a long-term, cross-situational negative impact. Further, as it is unlikely that one reports a strong tendency to blame others for negative events when negative events are not present, it is

supposed that some prior set of conflicting social circumstances led to this social cognitive style.

Through tests of moderation and mediation, the pathway between negative social factors (i.e., low social likeability), attributional style, and aggressive behavior was evaluated systematically. Results suggested that those adolescents who were less socially accepted (i.e., peer-rated low social likeability) might have begun to focus on this negative social environment for blame when negative events occurred. This, in turn, may have led to a more hostile and aggressive reaction to those in an adolescent's social environment, following a pattern of hostile provocations and externalized blame, as suggested by Dodge and colleagues (1982, 1990, 1992). However, those adolescents with a more instrumental or deliberate style of aggression (i.e., proactive) did not show this particular precipitating course.

It is important to note that this distinction was not longer evident in the second set of regression analyses, when controlling for the variance shared among the two aggression subtypes. This, combined with high correlations found among the subtypes, suggests that reactive and proactive aggression may not be as clearly distinguishable as independent constructs, as was hypothesized.

In further investigating the role of attributional style in the relation between early sociometric status and later aggression, the presence of early aggression as a predictor was also considered. When mediation and moderation models were tested with either reactive or proactive aggression as the dependent measure, differing relations can be seen. First, across analyses the significant main effect between early peer-reported aggression and later ratings of proactive aggression was only marginally affected by attributional style, suggesting that attributional style may not serve as a powerful influence in the longitudinal course of proactive aggression. Alternatively, internal, stable, global attributional style (i.e., ISG composite) moderated the relation between early peer-reported aggression and later reactive aggression.

These findings point to a more prominent role of attributional style in predicting reactive aggression in adolescence from earlier expressions of aggression. Specifically, low internal, stable, global attributional style may serve as a protective factor in the later expression of reactive aggression when early aggression is present. Alternatively, when high internal, stable, global attributional style is present, a positive relation between early aggression and later reactive aggression can be seen.

The role of internal, stable, global attributional style is often cited in disorders of anxiety and depression (Curry & Craighead, 1990; Kaslow & Nolen-Hoeksema, 1991). However, given the overlap between aggression and both anxiety disorders and depression in approximately 20-30% of children (Curry & Craighead, 1990; Russo & Beidel, 1994), and particularly reactive aggression (Vitaro et al., 1998), it seems likely that similarities exist in precipitating circumstances, underlying cognitive processes, and overall behavioral style. For instance, while Russo and Beidel (1994) as well as Ollendick, Seligman, and Butcher (1999) found that anxiety and depression serves to protect the expression of conduct-like symptom patterns (e.g., aggressive behavior) in younger children, by later in adolescence, the once protective influence of these internalizing disorders no longer influences the course and severity of such behavior. Results of the post hoc analyses further suggest that low internal, stable, global attributional style, measured during early adolescence serves as a protective factor in the later expression of reactive aggression, but not proactive aggression. Thus, the differential influence of attributional style on the subtypes of aggression may be informative in the longitudinal study of aggression.

Taken together, results of the current study suggest possible etiological differences in the manifestation of reactive aggression and proactive aggression. However, by adolescence, it is likely that these subtypes largely coexist, developing from a seemingly complex pattern of early aggression, negative social experiences, and related cognitive styles. Thus, though it is clear that subtypes of aggression may not be effective in the labeling and comparison of aggressive youth,

there may be utility in the recognition of specific behavioral expressions for the purposes of continued empirical investigation and clinical treatment of aggression.

### Limitations:

Although the trends mentioned above support the original hypotheses, the findings are certainly not robust, particularly given the large sample size and the small amount of variance accounted for in the regression analyses. Hence, it is likely that the predictor variables utilized in this study were not sufficient in explaining the difference among the aggression subtypes. There exist a number of limitations that may have contributed to the modest level of results found in the current study.

First, while the long-term stability of both the CASQ and PEI have been established (Lardon & Jason, 1992; Thompson et al., 1998), a duration of approximately 30 months separated the administration of the CASQ and PEI, completed in 8<sup>th</sup> grade, with that of the aggression rating scale, completed in 10<sup>th</sup> grade. A number of life changes may have occurred during this time, including the transition from middle school to high school, physiological and psychological changes during maturation, as well as a number of possible experiences that could serve to alter one's self-perception, social status, and level of aggression (e.g., participation in a club or sports team, changes in peer group affiliation, experiencing a traumatic event). In addition, rises in testosterone levels in boys, and estradiol levels in girls, during puberty may influence aggressive behavior (Studer, 1996). Moreover, rates of alcohol and drug abuse increase dramatically from 8<sup>th</sup> to 10<sup>th</sup> grade (Johnston, Bachman, & O'Malley, 1994). Further, cognitive development during this age period suggests that risk awareness and problem-solving skills may be enhanced (Quadrel, Fischhoff, & Davis, 1993).

A second limitation may be related to the instruments selected for data collection. Both the CASQ-R and PEI measures were abbreviated versions of the original measures. While the

original measures have been considered the most utilized and validated assessments of attributional style and sociometric status, respectively (Lardon & Jason, 1992; Thompson et al., 1998), validation studies of the abbreviated versions are limited. Further, as Thompson et al. (1998) report, the CASQ-R shows somewhat less test-retest reliability and internal consistency than the original CASQ. The aggression rating scale is also limited in that its use as a self-report has not been empirically validated as of yet. The items in this scale specifically measuring reactive and proactive aggression have been administered in teacher-report format, where high internal consistency within both reactive and proactive subtypes ( $\alpha_s = 0.90$  and  $0.89$ , respectively) and high correlations between subtypes ( $r=0.87$ ,  $p<.001$ ) have been found (Dodge, Price, Bachorowski, & Newman, 1990). However, this scale in particular has not been evaluated outside of teacher report format. It was used as a self-report measure in the present study. Finally, given the established relation between hostile attributional bias and reactive aggression, as described earlier, it is possible that self-perceived, rather than actual, negative social circumstances better predicts the onset and maintenance of reactive aggression. As the PEI social likeability score relied on peer-report, rather than self-report, the use of this measure in the present study limited the ability to test for the effect of this bias.

A third potential limitation may have resulted from the sample selected to participate in the study. Earlier studies of aggression focused largely on clinical or highly delinquent populations of youth, including those reporting comorbid diagnoses of depression, conduct disorder, attention deficit hyperactivity disorder, and/or high rates of illegal activity. Alternatively, the sample selected for this study was derived from a non-clinical, school-based, community sample of adolescents. Thus, relations among variables of interest may have been attenuated, as ratings on the measures were less extreme (as shown in Table 2).

Fourth, question remains as to whether the constructs of reactive and proactive aggression are as distinct in adolescents as was originally proposed. The theoretical formulation

outlining these subtypes of aggression, based on the work of Dodge (1980) and others, is a result of direct observation, teacher report, and parent report of young children's interpersonal interactions. While there is clearly a difference between the goals, cognitive processes, and precipitating circumstances underlying each proposed subtype, it is less likely that by adolescence, one's repertoire of aggressive responses is limited to one type versus another. Interpersonally, those who exhibit reactive aggression are as negatively evaluated by adolescent peers as those who exhibit proactive aggression (Dodge & Coie, 1987). It is further possible that adolescents who were once exhibiting more proactive aggression, also showed a reactive aggressive style following this negative change in social evaluation from their peers. This is supported in results from this sample revealing a high correlation between reactive and proactive aggression ( $r=0.61$ ,  $p<.01$ ).

#### Implications and Future Direction

It is clear from this investigation as well as earlier efforts to understand and predict types of aggression in youth that manifestations of this behavior are highly complex, rooted in a wide range of etiological factors, and associated with a multitude of outcomes. Thus, further exploration of aggression subtypes is warranted, given the widespread implications in the theoretical understanding of this behavior as well as in areas of clinical assessment, intervention, and prevention.

First, it seems likely, given the changes in severity and phenomenology of aggression occurring with development, that to understand the nature of this behavior, it is essential to further investigate its developmental progression. By adolescence, the picture of aggression in children may already be highly complicated by on-going situational changes and differing responses to aggressive behavior, cognitive and physiological development, as well as changes in social and intimate relations. For instance, the development of one's ability to reason abstractly, hypothesize, and value less immediate goals and outcomes may lead to changes in aggression

phenomenology. In this sense, greater recognition of delayed reinforcing situations associated with instrumental types of aggression, such as changes in social status and access to resources as a result of bullying and manipulation, may lead to increases in that type of aggression.

Additionally, though the conceptualization of aggression as distinct subtypes originated in the 1980's with Dodge's (1980) original investigation of aggressive boys, there remains a dearth of empirically validated assessment and intervention strategies to address the expression of these subtypes. Assessment techniques have largely relied on observer report (e.g., teacher, direct observation) in the identification of reactive and proactive aggression. However, as Frick (1998) notes, aggression and antisocial behavior is often context-dependent, such that the most accurate assessment of this behavior acknowledges multiple informants (i.e., self, peer, parent, teacher) across areas of functioning. Further assessment of related cognitive processes, environmental circumstances, and comorbid psychopathology will also likely aid in the understanding of aggression and further the development of clinical interventions for this behavior.

As most current interventions are often implemented without regard to the complexity of aggressive behavior being exhibited, it is likely that interventions aimed at addressing either the behavior itself, underlying cognitions, or overall interpersonal relations associated with aggressive adolescents have less impact than what would result from a more specific, multidimensional approach. The current study purported to address this issue by delineating possible reasons for elevated levels of aggression. According to the findings described above, adolescents who tend to react to others in a more hostile or aggressive manner (i.e., reactive) may have been exposed to earlier negative social experiences (i.e., low social likeability) and have developed a cognitive style where others in this social environment are often blamed for current or anticipated negative circumstances (i.e., external, stable, global attributional style). These adolescents may also show earlier aggressive behavior combined with internal, stable,

global attributions. Alternatively, those expressing more deliberate, instrumental acts of aggression (i.e., proactive aggression) show a more direct relation with early aggression and negative social experiences, such that one's cognitive style does not influence the likelihood of later proactive aggression when either early aggression or negative social experiences are elevated.

The implications of the current findings are useful in considering effective intervention programs targeting aggressive behavior in adolescents. First, given the observed co-occurrence of reactive and proactive aggression by adolescence, there exists a need to specifically focus on both subtypes in the course of intervention efforts. For example, by late childhood, peers tend to evaluate both proactive and reactive aggression negatively. However, whereas the expression of reactive aggression is more uniformly disliked, reactions to the expression of proactive aggression are often mixed, given greater leadership qualities among those expressing the latter subtype of aggression (Dodge, Bates, & Petit, 1990). Thus, intervention efforts might focus on the lack of (in reactive aggression) or appropriate use of (in proactive aggression) prosocial assertive behavior in these youths.

### Summary

In sum, results of the current investigation, combined with earlier studies of aggression in youth, allow a number of conclusions to be drawn. First, it seems likely that a more complete understanding of the nature of aggression requires recognition of both normative and atypical developmental transitions that are associated with the manifestation and variation of aggression in youth. For instance, a melding of cognitive developmental theory with the identification of processing biases and distortions related to aggressive behavior will likely contribute to the understanding of the severity of those problematic cognitions. Second, given the complexity of aggression across individuals, it is necessary to adopt a more idiographic approach that accounts not only for development, but also for environmental context (e.g., presence of social support),

physiological characteristics (e.g., emotion dysregulation), co-morbid conditions (e.g., depression), and specific behavioral manifestations (e.g., instrumental aggression). From this, greater breadth in assessment procedures and greater flexibility and specificity in intervention techniques should follow. Continued empirical advances in understanding the nature of aggression, through the identification of subtypes and efforts to relate these subtypes to associated individual and environmental characteristics, are valuable only inasmuch as they inform clinical practice. While the foundation is underway, the future lies in the application of these findings and the reduction of aggression in youth.

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Table 1  
Demographic Characteristics of Sample

Demographic Characteristics		Thesis Sample
Sex (N, %)	Male	209 (49.9)
	Female	210 (50.1)
Age (Mean, SD)	8 <sup>th</sup> Grade	13.62 (0.60)
	10 <sup>th</sup> Grade	15.68 (0.62)
School Attended (N, %)	School 1	56 (13.4)
	School 2	151 (36.0)
	School 3	146 (34.8)
	School 4	66 (15.8)
Race (N, %)	Caucasian	364 (86.9)
	African-American	10 (2.4)
	Bi/Multi-Racial	14 (3.3)
	Other	31 (7.4)
Living Situation (N, %)	Biological Parents	303 (72.3)
	Biological Parent & Step-parent	61 (14.6)
	Relative (e.g., sibling, grandparent)	12 (2.8)
	Foster/Adoptive Family	7 (1.7)
	Other	29 (6.9)
	Item not Completed	7 (1.7)

Table 2  
Summary of Variables – Means, Standard Deviations, and Alpha Coefficients

Measure	Mean	SD	Observed Range	Possible Range	Alpha
1. Reactive Aggression	3.55	2.86	0 to 15	0 to 20	0.79
2. Proactive Aggression	1.36	2.03	0 to 12	0 to 14	0.86
3. PEI Likeability	3.54	0.64	1.88 to 5.33	1 to 6	0.87
4. CASQ: ESG Composite	1.76	2.30	-4 to 7	-12 to 12	*
5. CASQ: ISG Composite	2.68	2.90	-5 to 9	-12 to 12	*

\* Alpha = 0.33 for positive events, .34 for negative events

Table 3

Intercorrelations for Measures of Aggression, Likeability, and Attributional Style

Measure	1	2	3	4	5
1. Reactive Aggression	--	0.61**	-.10*	-.13**	-.13**
2. Proactive Aggression		--	-.16**	-.07	-.13**
3. PEI Likeability			--	0.19**	0.24**
4. CASQ: ESG Composite				--	0.60**
5. CASQ: ISG Composite					--

\*\*=  $p < .01$ , \*=  $p < .05$

Table 4  
 Hierarchical Regression Analyses: Tests for Moderation and Mediation

	<i>REACTIVE AGGRESSION</i>			<i>PROACTIVE AGGRESSION</i>		
	R <sup>2</sup> change	$\beta$	Sig	R <sup>2</sup> change	$\beta$	Sig
<b>Model A.</b>						
STEP ONE						
Social Likeability	0.01	-.10	0.04	0.03	-.16	0.00
STEP TWO (Test of Mediation)						
Social Likeability		-.08	0.10		-.15	0.00
ESG Composite	0.01	-.11	0.03	0.002	-.04	0.40
STEP THREE (Test of Moderation)						
Social Likeability		-.08	0.21		-.19	0.00
ESG Composite		-.11	0.68		-.27	0.32
ESG x LIKE Interaction	0.00	0.00	0.99	0.002	0.24	0.39
<b>Model B.</b>						
STEP ONE						
Social Likeability	0.01	-.10	0.04	0.03	-.16	0.00
STEP TWO (Test of Mediation)						
Social Likeability		-.08	0.13		-.13	0.01
ISG Composite	0.01	-.11	0.03	0.01	-.10	0.04
STEP THREE (Test of Moderation)						
Social Likeability		-.07	0.18		-.14	0.07
ISG Composite		-.11	0.03		-.10	0.46
ISG x LIKE Interaction	0.001	-.04	0.47	0.000	0.01	0.85

Table 5  
 Hierarchical Regression Analyses II: Tests for Moderation and Mediation

	<i>REACTIVE AGGRESSION</i>			<i>PROACTIVE AGGRESSION</i>		
	R <sup>2</sup> change	$\beta$	Sig	R <sup>2</sup> change	$\beta$	Sig
<b>Model C.</b>						
STEP ONE						
Aggression (Pro/Rea)		0.61	0.00		0.60	0.00
Social Likeability	0.37	-0.01	0.88	0.38	-0.10	0.01
STEP TWO (Test of Mediation)						
Aggression (Pro/Rea)		0.61	0.00		0.60	0.00
Social Likeability		0.01	0.82		-0.10	0.01
ESG Composite	0.01	-0.09	0.03	0.001	-0.03	0.53
STEP THREE (Test of Moderation)						
Aggression (Pro/Rea)		0.61	0.00		0.60	0.00
Social Likeability		0.01	0.74		-0.11	0.01
ESG Composite		-0.09	0.03		-0.03	0.48
ESG x LIKE Interaction	0.001	-0.03	0.42	0.002	0.05	0.24
<b>Model D.</b>						
STEP ONE						
Aggression (Pro/Rea)		0.61	0.00		0.60	0.00
Social Likeability	0.37	-0.01	0.88	0.38	-0.10	0.01
STEP TWO (Test of Mediation)						
Aggression (Pro/Rea)		0.60	0.00		0.60	0.00
Social Likeability		0.01	0.91		-0.09	0.03
ISG Composite	0.002	-0.05	0.22	0.001	-0.04	0.38
STEP THREE (Test of Moderation)						
Aggression (Pro/Rea)		0.60	0.00		0.60	0.00
Social Likeability		0.01	0.75		-0.10	0.02
ISG Composite		-0.05	0.19		-0.03	0.42
ISG x LIKE Interaction	0.002	-0.04	0.29	0.001	0.03	0.43

Table 6  
 Hierarchical Regression Analyses III: Post Hoc Tests for Moderation and Mediation

	<i>REACTIVE AGGRESSION</i>			<i>PROACTIVE AGGRESSION</i>		
	R <sup>2</sup> change	$\beta$	Sig	R <sup>2</sup> change	$\beta$	Sig
<b>Model C.</b>						
STEP ONE						
Aggression (Pro/Rea)		0.62	0.00		0.59	0.00
Peer-reported Aggression	0.37	-.05	0.22	0.40	0.18	0.00
STEP TWO (Test of Mediation)						
Aggression (Pro/Rea)		0.62	0.00		0.60	0.00
Peer-reported Aggression		-.05	0.18		0.18	0.00
ESG Composite	0.01	-.09	0.03	0.000	0.02	0.69
STEP THREE (Test of Moderation)						
Aggression (Pro/Rea)		0.62	0.00		0.60	0.00
Peer-reported Aggression		-.06	0.15		0.18	0.00
ESG Composite		-.09	0.02		0.02	0.66
ESG x AGG Interaction	0.003	0.05	0.17	0.001	-.03	0.45
<b>Model D.</b>						
STEP ONE						
Aggression (Pro/Rea)		0.62	0.00		0.59	0.00
Peer-reported Aggression	.037	-.05	0.22	0.40	0.18	0.00
STEP TWO (Test of Mediation)						
Aggression (Pro/Rea)		0.62	0.00		0.59	0.00
Peer-reported Aggression		-.06	0.15		0.17	0.00
ISG Composite	0.003	-.06	0.15	0.001	-.02	0.53
STEP THREE (Test of Moderation)						
Aggression (Pro/Rea)		0.61	0.00		0.60	0.00
Peer-reported Aggression		-.06	0.15		0.17	0.00
ISG Composite		-.06	0.10		-.02	0.59
ISG x AGG Interaction	0.01	0.11	0.00	0.002	-.05	0.21

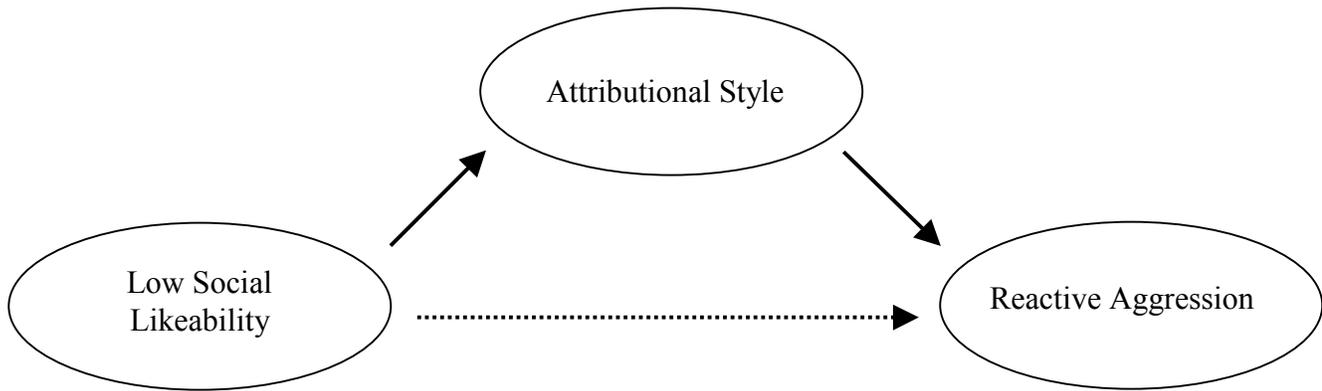


Figure 1. Mediation model depicting relation between social likeability, attributional style, and reactive aggression.

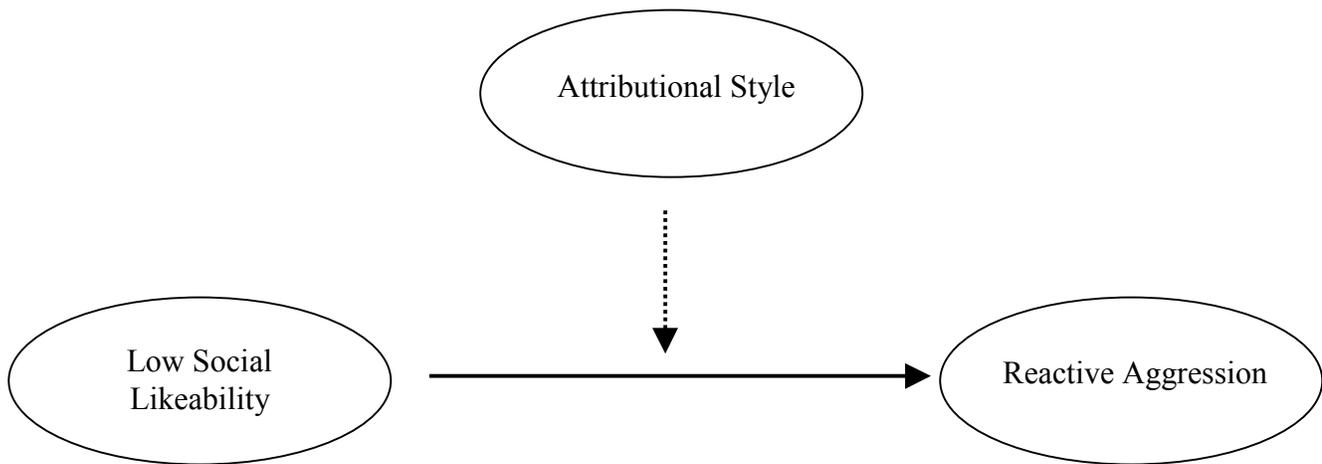


Figure 2. Moderation model depicting relation between social likeability, attributional style, and reactive aggression.

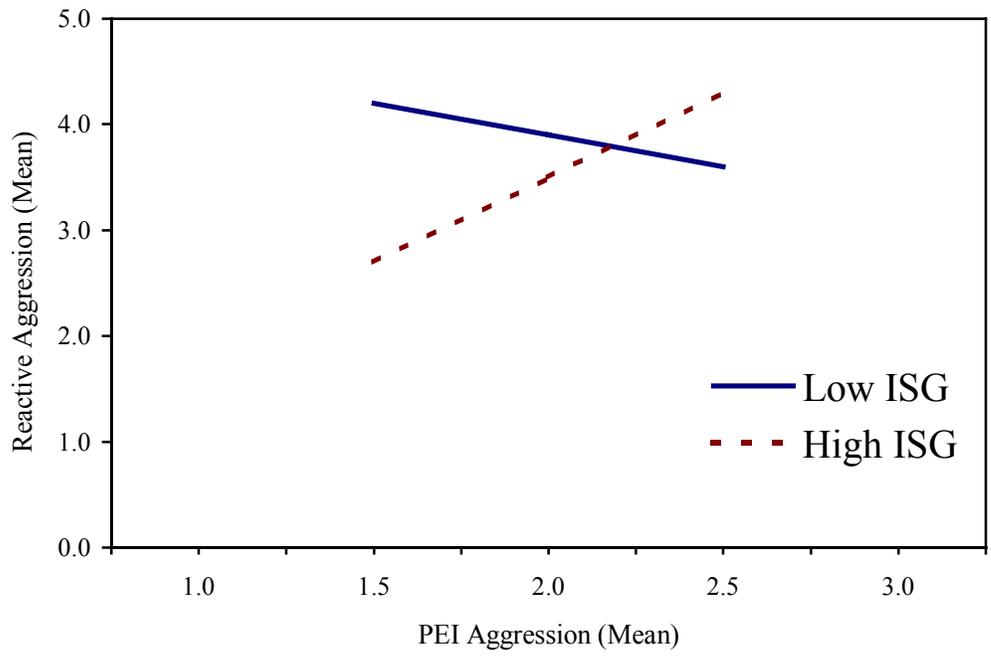


Figure 3. Moderating effect of internal, stable, global attributional style on the relationship between peer-rated aggression and reactive aggression.

List of Appendices

Appendix A. Aggression Rating Scale	41
Appendix B. Peer Evaluation Inventory – Revised	42
Appendix C. Children’s Attributional Style Questionnaire – Revised	43

Appendix AAggression Rating Scale

Instructions: Listed below are a series of statements describing behaviors that you may show. For each statement, please circle the number that best describes how often this you show that behavior.

1 = Never	2 = Sometimes	3 = Often
-----------	---------------	-----------

- |       |     |  |
|-------|-----|--|
| _____ | 1.  | Have a good sense of humor                                 |
| _____ | 2.  | Get mad when corrected                                     |
| _____ | 3.  | Deliberately play mean tricks on other children            |
| _____ | 4.  | Misbehave when the teacher's or parent's back is turned    |
| _____ | 5.  | Take things from other students without their knowledge    |
| _____ | 6.  | Need to be the leader all the time                         |
| _____ | 7.  | Pick on kids smaller than me                               |
| _____ | 8.  | Am a leader of playground games                            |
| _____ | 9.  | Cause trouble but don't get caught                         |
| _____ | 10. | Blames others when I get into trouble                      |
| _____ | 11. | Get mad when I don't get my own way                        |
| _____ | 12. | Say mean things about other children behind their back     |
| _____ | 13. | Invite others to join games or activities                  |
| _____ | 14. | Fight with other children for no good reason               |
| _____ | 15. | Change the rules of the game to help me win                |
| _____ | 16. | Stay calm when little things go wrong                      |
| _____ | 17. | Get mad for no good reason                                 |
| _____ | 18. | Do sneaky things   |
| _____ | 19. | Have hurt others to win a game or contest                  |
| _____ | 20. | Am a poor loser  |
| _____ | 21. | Get others to gang up on children                          |
| _____ | 22. | Volunteer to help classmates in class or on the playground |
| _____ | 23. | Share things with others                                   |
| _____ | 24. | Tell people things that aren't true                        |
| _____ | 25. | Write things on the walls                                  |
| _____ | 26. | Won't admit that anything is ever my fault                 |
| _____ | 27. | Threaten others  |
| _____ | 28. | Make friends easily  |



Appendix CCHILDREN'S ATTRIBUTIONAL STYLE QUESTIONNAIRE-REVISED

INSTRUCTIONS (Read to participant): Here are some situations. I want you to try really hard to imagine that these situations just happened to you. After each situation is presented, two possible reasons for why the situation might have happened are given. I want you to choose the most likely reason to explain why the situation happened to you. Sometimes both of the reasons may sound true, and sometimes both may sound false, and, you may never have been in some of these situations. But even so, I want you to pick the reason that seems to explain why the situation happened to you. There are no right answers and no wrong answers, so always pick the reason that seems the most likely to you. Circle either "A" or "B" for each question. I can read along with you, if that helps. Do you have any questions before we begin?

## CHILDREN'S ATTRIBUTIONAL STYLE QUESTIONNAIRE-REVISED

1. You get an "A" on a test.
  - a. I am smart.
  - b. I am good in the subject that the test was in.
2. Some kids that you know say that they do not like you.
  - a. Once in a while people are mean to me.
  - b. Once in a while I am mean to other people.
3. A good friend tells you that he hates you.
  - a. My friend was in a bad mood that day.
  - b. I wasn't nice to my friend that day.
4. A person steals money from you.
  - a. That person is not honest.
  - b. Many people are not honest.
5. Your parents tell you something that you make is very good.
  - a. I am good at making some things.
  - b. My parents like some things I make.
6. You break a glass.
  - a. I am not careful enough.
  - b. Sometimes I am not careful enough.
7. You do a project with a group of kids and it turns out badly.
  - a. I don't work well with people in that particular group.
  - b. I never work well with groups.
8. You make a new friend.
  - a. I am a nice person.
  - b. The people that I meet are nice.
9. You have been getting along well with your family.
  - a. I am usually easy to get along with when I am with my family.
  - b. Once in a while I am easy to get along with when I am with my family.
10. You get a bad grade in school.
  - a. I am not a good student.
  - b. Teachers give hard tests.
11. You walk into a door and you get a bloody nose.
  - a. I wasn't looking where I was going
  - b. I have been careless lately.
12. You have a messy room.
  - a. I did not clean my room that day.
  - b. I usually do not clean my room.

13. Your mother makes you your favorite dinner.  
a. There are a few things that my mother will do to please me.  
b. My mother usually likes to please me.
14. A team that you are on loses a game.  
a. The team members don't help each other when they play together.  
b. That day the team members didn't help each other.
15. You do not get your chores done at home.  
a. I was lazy that day.  
b. Many days I am lazy.
16. You go to an amusement park and you have a good time.  
a. I usually enjoy myself at amusement parks.  
b. I usually enjoy myself in many activities.
17. You go to a friend's party and you have fun.  
a. Your friend usually gives good parties.  
b. Your friend gave a good party that day.
18. You have a substitute teacher and she likes you.  
a. I was well behaved during class that day.  
b. I am almost always well behaved during class.
19. You make your friends happy.  
a. I am usually a fun person to be with.  
b. Sometimes I am a fun person to be with.
20. You put a hard puzzle together.  
a. I am good at putting puzzles together.  
b. I am good at doing many things.
21. You try out for a sports team and do not make it.  
a. I am not good at sports.  
b. The other kids who tried out were very good at sports.
22. You fail a test.  
a. All tests are hard.  
b. Only some tests are hard.
23. You hit a home run in a ball game.  
a. I swung the bat just right.  
b. The pitcher threw an easy pitch.
24. You do the best in your class on a paper.  
a. The other kids in my class did not work hard on their papers.  
b. I worked hard on the paper.

## CURRICULUM VITAE

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PhD, anticipated May 2003, Clinical Psychology, Virginia Polytechnic Institute and State University,  
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### **Honors**

Elected to Phi Beta Kappa, Colby College (1997)

Distinction in Major, Colby College (1997)

Dean of Faculty Student Research Grant, Colby College (1996)

Psi Chi officer, Colby College (1996-1997)

Elected to Psi Chi National Honor Society, Colby College (1995)

Dean's List, Colby College (1993-1997)

Travelli Scholar (1993-1997)

### **Research Experience**

September 2000-  
present                      Conference Programming Assistant, World Congress of Behavioral and Cognitive Therapies, Association for the Advancement of Behavioral Therapy (AABT), Blacksburg, Virginia. Responsibilities: Database selection and programming for submission data management; maintenance and supervision of the review of 850 submissions; correspondence with reviewers, participants, and conference coordinators; writing a handbook for conference programming, scheduling conference activities.

Supervisor: Thomas H. Ollendick, Ph.D.

September 2000-  
present

Research Team Co-Leader; School-based Treatment of Aggressive and Antisocial Youth, Christiansburg, Virginia. Responsibilities: Coordination of data assessment, entry, and analysis; presentation and publication of findings. Supervisor: Angela Scarpa-Friedman, Ph.D.

April 2000-  
present

Project Coordinator, Longitudinal Investigation of School Dropout Prediction, Blacksburg, Virginia. Responsibilities: development of data collection, entry, and management activities, undergraduate research supervisor (supervision of data entry and analysis, teaching research and statistical methodology), analysis, presentation, and publication of data from a longitudinal assessment of students in the Montgomery County school system for the purposes of determining dropout risk. Supervisor: Thomas H. Ollendick, Ph.D.

December 1999-  
present

Manuscript Reviewer, Journal of Clinical Child Psychology.

September 1999-  
April 2000

Research Assistant, Longitudinal Investigation of School Dropout Prediction, Blacksburg, Virginia. Responsibilities: supervision of data entry, management and analysis of data from a longitudinal assessment of students in the Montgomery County school system for the purposes of determining dropout risk. Supervisor: Thomas H. Ollendick, Ph.D.

September 1999-  
October 2000

Clinical and Research Assistant, NIMH Residential Fire Grant, Blacksburg, Virginia. Responsibilities: clinical assessment of child and adult victims of residential fires, data management and analysis, participation in data analysis and administrative meetings and case review sessions. Supervisors: Thomas H. Ollendick, Ph.D., Russell Jones, Ph.D.

September 1999-  
December 1999

Project Coordinator, Independence Secondary School Assessment Project, Christiansburg, Virginia. Responsibilities: Development of assessment protocol for intake and outcome evaluations of high-risk adolescents attending a specialized academic program. Supervisor: Thomas H. Ollendick

October 1998-  
1999

Conference Programming Assistant; American Psychological Association March Division 12 Conference, Boston, Massachusetts. Responsibilities: Coordination of candidate review procedure, design and scheduling of Division 12 APA conference. Supervisor: Ross Greene, Ph.D.

June 1997-  
June 1999

Clinical Research Analyst, Pediatric Psychopharmacology Research Office, Massachusetts General Hospital, Boston, Massachusetts. Responsibilities: Coordination of a NIMH-funded grant; diagnostic, cognitive and neuropsychological assessment of children and adults; computer administration; statistical analysis, publication and presentation of data. Research focus: Child and adolescent psychopathology, with a specific concentration in mood and behavior disorders. Supervisors: Joseph Biederman, M.D., Janet Wozniak, M.D.

- May 1996-present Social Psychology Research, Independent Research Project, Colby College. Responsibilities: Development of hypothesis and testing materials, data collection, analysis, publication and presentation of data. Research focus: The association of personal characteristics, at-risk behavior and health risk perception in adolescents. Supervisor: William Klein, Ph.D.
- September 1995-May 1996 Research Assistant, Colby College. Responsibilities: Development of hypothesis and testing materials, data collection, analysis, publication and presentation of data. Research focus: The association of personal characteristics, at-risk behavior and health risk perception in college students. Supervisor: William Klein, Ph.D.
- February 1994-May 1994 Supervised Research Project, Colby College. Responsibilities: Development of experiment, analysis of data, and presentation of findings. Research focus: The effect of visual stimuli on memory and learning in young adults. Supervisor: Diane Winn, Ph.D.

### **Clinical Experience**

- May 2001-present Counselor, *Respond*, Columbia Lewis-Gale Medical Center, Salem, Virginia. Responsibilities: emergency clinical assessment and intervention of children and adults in the medical setting, including bereavement services, suicide and homicide risk assessment and intervention, consultation for long-term psychiatric placement, hospital staff counseling services. Supervisors: Jeannie Ayers, M.S., Kay Kostura, R.N.
- September 2000-present Child Assessment Clinician, Virginia Tech Psychological Services Center/Child Study Center, Blacksburg, Virginia. Responsibilities: psychological, neuropsychological, and intellectual assessment of children using a standardized battery of child evaluation measures as well as child, parent, teacher, and physician reports and interviews; scoring and interpretation of assessment measures; writing assessment reports; meeting with families and schools for presentation of results. Supervisor: Thomas H. Ollendick, Ph.D.
- December 1999-present Graduate Clinician, Virginia Tech Psychological Services Center, Blacksburg, Virginia. Responsibilities: Assessment and treatment of children and adults in individual, group, couples, and family group therapy format, clinical peer supervision, case conceptualization, writing case reports and weekly participation in case review and treatment planning in a team format. Supervisors: Lee Cooper, Ph.D., Angela Scarpa-Friedman, Ph.D., Russell Jones, Ph.D.
- September 1999-May 2000 Teaching Assistant, Virginia Tech Department of Psychology. Responsibilities: Undergraduate psychology classroom instruction, curriculum planning, and

- student evaluation design.  
Supervisor: Helena Chandler, M.S.
- 1999-2000 Psychology Tutor, Virginia Tech Athletic Academic Advising Department.  
Supervisor: Colin Howlett
- 1996-1997 Diagnostic Child Care Clinician, KidsPeace National Centers for Kids in Crisis, Ellsworth, Maine. Responsibilities: Diagnostic assessment, supervision and treatment of children and adolescents in a residential and educational facility.  
Supervisor: David Wentworth
- 1996-1997 Developmental Therapy Aide, Project PEDS, Mid-Maine Medical Center Waterville, Maine. Responsibilities: One-on-one behavioral intervention with autistic children.  
Supervisor: Harold Longnecker, Ph.D.
- 1996-1997 Academic Assistant, Etna-Dixmont Elementary School, Dixmont, Maine. Responsibilities: One-on-one classroom assistance to children diagnosed with attention-deficit hyperactivity disorder or learning disabilities.  
Supervisor: Paul Austin
- 1996-1997 Psychology Tutor, Colby College.  
Supervisor: Edward Yeterian, Ph.D.
- 1996-1997 Academic Tutor, Caravel Middle School, Carmel, Maine.  
Supervisor: Harold Stewart
- 1996-1997 Academic Tutor, Hermon High School, Hermon, Maine.  
Supervisor: Gene MacDonald
- 1996 School Psychology Intern, Eastern Maine Counseling and Testing Services, Bangor, Maine. Responsibilities: Shadowing a psychologist in classroom observation, individual cognitive assessments, and consultations with parents and educators.  
Supervisor: Bruce Chemelski, Ph.D.
- 1995 Behavioral Medicine Intern, Mid-Maine Medical Center, Waterville, Maine. Responsibilities: Follow-up data collection for the chronic pain Intervention clinic.  
Supervisor: Jeff Matranga, Ph.D.
- 1995 Education Intern, Caravel Middle School, Carmel, Maine. Responsibilities: Curriculum design and implementation, individual and group instruction.  
Supervisors: Gertrude Nesin, Ph.D., Karen Kusiak, Ph.D.
- 1993-1997 Substitute Teacher, Maine School Districts #23, #38, Union 34, Carmel, Maine, Hermon, Maine. Responsibilities: Classroom instruction of Grades K-12.

Supervisors: Paul Whitney, Gene MacDonald

### **Relevant Experience**

#### **-Technical**

Computer systems administration and technical support of both IBM and Macintosh operating systems, trained database designer and programmer, web designer, expertise in word processing, presentation of data in slides and figures, the use and support of word processing, statistical, communications, diagnostic and neuropsychological, and graphic design software packages (including Microsoft Office, DeltaGraph, Stata and SPSS statistical packages), and the use and support of scanners, digital cameras, and printers.

#### **-Clinical**

Clinical diagnostic assessment using KSADS-E, SCID-4, and ADIS semi-structured interviews and DICA-2 structured interview; cognitive and neuropsychological assessment of both children and adults (including WISC-III, WIAT, WAIS, WIPSI, WMS, and WRAT assessment and interpretation); child and adult long-term clinical therapy in individual, family, couples, and group formats; preparation and presentation of diagnostic case reports to review committees, parents, schools, and physicians; supervision of clinical assessments; participation in weekly clinical supervision meetings; development of computerized clinical measures; performing electrocardiograms, assessing vitals, blood pressure; certification in child and adult phlebotomy; licensure in Mandt behavior management modification techniques, "Handle with Care" behavior management system, and non-violent crisis intervention.

### **Publications**

Klein, W.M.P, Blier, H.K., & Janze, A.M. (2001). Maintaining positive self-evaluations by reducing attention to unfavorable social comparison information when general self-regard is salient. Journal of Motivation & Emotion: Special Issue, Volume 1.

Greene, R., Biederman, J., Faraone, S.V., Wilens, T., Mick, E., Blier, H.K. (1999). Further validation of social impairment as a predictor of substance use disorders: Findings from a sample of siblings of boys with and without ADHD. *Journal of Clinical Child Psychology.* 28(3): 349-354.

Wozniak, J., Crawford, M.H., Biederman, J., Faraone, S.V., Spencer, T., Taylor, A., Blier, H.K. (1999). Antecedents and complications of trauma in boys with ADHD: Findings from a longitudinal sample. *Journal of the American Academy of Child and Adolescent Psychiatry*. 38(1): 48-55.

Wozniak, J., Biederman, J., Faraone, S.V., Blier, H.K. Heterogeneity of conduct disorder: Is a subtype of conduct disorder linked to bipolar disorder? *American Journal of Psychiatry*. Submitted.

Klein, W.M., Blier, H.K., Helwig, J.E., et al. Social comparison and concern about personal risk for weight problems: The role of target similarity and individuation. *Health Psychology*. Submitted.

### **Presentations**

Blier, H.K., Fox, L.D., Scarpa-Friedman, A., Ollendick, T.H., Littleton, H., & Seligman, L. (2001). School-Based Group Intervention for Aggressive Adolescents: Treatment Outcomes and Implications. Association for the Advancement of Behavior Therapies. Poster accepted for presentation at the November 2001 Annual Conference, Philadelphia, PA.

Blier, H.K., Greene, R.W., Dadds, M.R., Johnston, C., & McMahon, R.J. (2001). Oppositional Defiant Disorder: Diagnostic Conceptualizations and Treatment Applications. World Congress. Clinical Roundtable accepted for presentation at the July 2001 World Congress of Behavioral and Cognitive Therapies, Vancouver, B.C.

Blier, H.K., Fox, L.D., Scarpa-Friedman, A., & Littleton, H. (2001). School-based Group Treatment of Aggressive Youth: Outcomes and Applications. Paper accepted for poster presentation at the July 2001 World Congress of Behavioral and Cognitive Therapies, Vancouver, B.C.

Blier, H.K., Ollendick, T.H., Samuels, Y., Hartsook, J. (2001). A Longitudinal Investigation of School Dropout Risk: Implications for Prediction and Prevention. Paper accepted for poster presentation at the July 2001 World Congress of Behavioral and Cognitive Therapies, Vancouver, B.C.

Biederman, J., Blier, H.K. (Accepted) "Evidence of a Bi-directional Overlap Between Juvenile Mania and Conduct Disorder." Poster presentation at the 1999 American Psychological Association Division 12 Convention, Boston, MA.

Klein, W.M., Blier, H.K. (May 1997). "I'm Still Better Than My Peers: Coping with Undesirable Social Comparison Information Regarding Personal Risk." Invited paper in symposium presentation at American Psychological Society meeting, Washington D.C.

Blier, H.K., Klein, W.M. (April 1997). "Good Feelings, Hard Data, and the 'It won't happen to me' Effect." Maine Psychological Association Conference Presentation, Bangor, Maine.

Blier, H.K., Bissoon, C. (April 1997). "How Strange is the Strange Situation? A Review of Research Which Employs Mary Ainsworth's Attachment Assessment." Maine Psychological Association Conference Presentation, Bangor, Maine.

Blier, H.K., Bissoon, C. (April 1997). "How Strange is the Strange Situation? A Review of Research Which Employs Mary Ainsworth's Attachment Assessment." Luncheon presentation to the Colby College Department of Psychology, Waterville, Maine.

Blier, H.K. (November 1996). Antisocial Behavior and Classroom Management: Strategies for Teachers of Adolescents. Inservice seminar for educators of Maine School Administrative Districts #23, #38, Carmel, Maine.

Blier, H.K., Klein, W.M. (October 1996). "Good Feelings, Hard Data, and the 'It won't happen to me' Effect." Luncheon presentation to the Colby College Department of Psychology, Waterville, Maine.

### **Other Activities**

Black Belt instructor in Tae Kwon Do, awarded in 1992.

Certified Red Cross C.P.R. and First Aid instructor, 1995-present.

Certified Emergency Medical Technician (E.M.T.), 1994-1997.