AN INVESTIGATION OF PATHWAYS TO ACADEMIC AMOTIVATION AND REACTIVE AGGRESSION AMONG HIGH SCHOOL STUDENTS: DOMAIN SPECIFICITY OR MULTIFINALITY?

BY

Isaiah B. Pickens

B.A., George Washington University, May 2005

M. A., Fordham University, February 2008

DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE DEPARTMENT

OF PSYCHOLOGY AT FORDHAM UNIVERSITY

NEW YORK

August 18, 2011

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Acknowledgements

This dissertation is a testament of the support and guidance I have received from numerous individuals during my tenure at Fordham University. First, I would like to thank Dr. Keith Cruise for his tremendous patience, diligence, encouragement, and guidance throughout the dissertation process. With his steady support, the rigors of the dissertation process were significantly more manageable ($p < .001$) and thoroughly fulfilling. I also want to express my gratefulness to a supportive and insightful dissertation committee who helped guide me toward successful completion. Thank you Drs. Joshua Brown, Rivera-Mindt, Kathy Schiaffino, and Howard Everson. Finally, I want to thank the graduate and undergraduate students who were responsible for the data collection process. Fondly known as "Fordham Domination", I extend a personal thanks to Jesse Barglow, Spencer Cruz-Katz, Christine Lewis, Stephane Plantin, and Tom Quinn.

I also would like to express my gratitude to several organizations and individuals outside of Fordham University for their support. A special thanks to St. Luke's Roosevelt Hospital Center for provision of the School Based Health Clinics for data collection and the American Psychology and Law Society for partially funding the data collection process. I would like to thank Dr. Desiree-Byrd for her tremendous support during my initial years in graduate school. I am hugely grateful for the support of my parents, Drs. David and Wanda Pickens, and my brothers, Darius and David Pickens. Without their continuous encouragement and support, the dissertation process would have been substantially more difficult. Finally, I want to express gratefulness to God and my faith for providing the fortitude to successfully complete the dissertation process.

CHAPTER I: INTRODUCTION

Thesis

The high school experience presents several academic and social challenges that require youths to choose behaviors that will counter these challenges while contributing to adaptive academic and social outcomes. For example, the process of transitioning from the familiarity of middle school to the new environment of high school represents a potential challenge that can overwhelm many youths (Ratelle, Guay, Larose, & Senecal, 2004). Youths' cognitive processes for interpreting and understanding academic and social challenges represent commonly explored antecedents of situational behavioral responses. For youths who are capable of interpreting social and academic challenges in a variety of ways, difficulties within social and academic achievement domains can generally be navigated using a variety of behavioral responses (Crick & Dodge, 1996; Graham, 1997). However, for youths who generally interpret academic and social outcomes in a biased manner, behaviors which youths decide to enact are often limited to fewer options (Crick & Dodge, 1994; Graham, 2004). In other words, flexibility in cognitive processing, such as readily incorporating situational cues and basing interpretation on a variety of past experiences, is generally associated with adaptive behavioral outcomes. Inflexible cognitive processing that primarily rely on biased interpretation styles and neglect situational information is often associated with maladaptive behavioral outcomes (Dodge, 2006). Attribution theory identifies the phenomena of maladaptive biased interpretation (i.e., maladaptive biased attribution styles) as a chief contributor to poor behavioral outcomes (Dodge, 2006; Graham, 2004).

As such, scholars have utilized attribution styles to explore the development and maintenance of achievement and social behaviors among youths.

Support for the relationship between poor academic outcomes and greater aggression is well-established within the psychological and educational literature (Cillessen & Mayeux, 2007). Specifically, cross-sectional and longitudinal studies demonstrate their positive relationship across several developmental stages and the strong predictive validity of early aggressive behavior on negative academic outcomes (Jimerson & Ferguson, 2007; Miles & Stipek, 2006). While evidence for the relationship of attribution styles and behavioral outcomes has been established within both academic and social domains, little is known regarding the cross-domain influences of attribution styles on behavioral outcomes despite the frequently observed interrelatedness of academic and social behavioral outcomes (Risi, Gerharstein, & Kistner, 2003; Xie, Farmer, & Cairns, 2003). More specifically, academic amotivation and reactive aggression represent maladaptive behavioral outcomes that present obstacles for youths to achieve academic and social goals (Taylor, Davis-Kean, & Malanchuk, 2007). However, limited research exists that investigates factors which contribute to higher levels of aggression and academic amotivation among high school students, as compared to children; thus signifying the continued need to explore predictors of academic and social outcomes within this population. Attribution theory is a powerful tool for understanding how youths develop social and academic achievement behaviors by simultaneously examining the influence of attributions within and across both social and academic achievement domains (Graham, 1997, 2004).

The development of reactive aggression is a process that has been consistently linked to specific cognitive antecedents such as hostile attribution bias and hostile schemas. Specifically, a meta-analysis of 51 studies exploring aggression constructs found that youths who consistently attribute hostile intent to the actions of others in social situations in which provocation is ambiguous or absent are more likely to exhibit reactive aggression (Polman, Orobio de Castro, Koops, Boxtel, & Merk, 2007). Further research has indicated that cognitive schemas, comprised of embedded beliefs supporting hostility, contribute to increased hostile attribution styles and the enactment of reactive aggression within social situations (Burks, Laird, Dodge, Petit, & Bates, 1999a). Collectively, these findings suggest a developmental pathway toward reactive aggression which involves both hostile schemas and hostile attribution styles.

Academic amotivation represents a salient aspect of certain high school students' academic experience but has received significantly less attention than reactive aggression from the research community. Research exploring the development of academic amotivation, and the absence of self-regulatory academic behaviors, indicates that these academic outcomes are predicted by cognitive antecedents which strengthen beliefs regarding the futility of academic persistence (Chan & Moore, 2006; Oyserman, Bybee, & Terry, 2006). Specifically, the attribution literature has identified academic learned helplessness as a chief contributor to declines in academic motivation and academic achievement (Chan & Moore, 2006). Academic learned helplessness represents an attribution style in which youths frequently interpret negative academic outcomes as a result of personal lack of ability to achieve. In addition to academic learned helplessness, youths' perceptions of future selves in relation to academic achievement, coupled with

strategies to achieve academic goals and avoid academic obstacles, have been implicated in the development of behaviors indicative of high academic motivation (Oyserman, Bybee, Terry, & Hart-Johnson, 2004). Scholars have designated these future-self cognitive constructs as academic possible selves (Oyserman & Saltz, 1993). Collectively, both academic learned helplessness and academic possible selves have implications for the development of academic amotivation. Despite the potential to gain insight regarding predictors of academic amotivation among high school students, an explicit model exploring the relationship of these constructs with academic amotivation has yet to be explored.

While understanding reactive aggression and academic amotivation respectively has its merits, the psychological and educational literature suggest that social (i.e., aggression) and academic (i.e., amotivation, poor performance) outcomes are often interrelated among children and adolescents (Risi et al., 2003; Xie et al., 2003). However, little is known regarding how attribution styles within the social domain influence behavioral outcomes in the academic domain or how attribution styles within the academic domain influence behavioral outcomes in the social domain. Recent research has suggested that an attribution style within one domain such as academic learned helplessness is associated with the cross-domain outcome of aggression (Maata, Nurmi, & Stattin, 2007). The present study replicated and provided further support for models specifying a direct relationship between domain congruent cognitive schemas, attribution styles, and behavioral outcomes. In addition, the present study tested the adequacy of a combined model testing only domain congruent relationships between

constructs versus a combined model accounting for both direct and cross-domain effects of attribution styles on behavioral outcomes.

A well-established contributing factor to individual differences for behavioral outcomes in both social and academic domains has been differential gender effects. Within the social domain, physical forms of aggression (i.e., overt aggression) are observed more frequently in boys (Polman, Orobio de Castro, Koops, Boxtel, & Merk, 2007). Researchers suggest that girls are more likely to exhibit forms of aggression which are characterized by attempts to disparage the reputation of peers (i.e., relational aggression) (Crick & Grotpeter, 1995). However, other findings indicate that relational aggression may occur equally within boys and girls (Marsee, Weems, & Taylor, 2008). Within the academic domain, boys have consistently exhibited higher levels of academic amotivation than girls (Ratelle, Guay, Larose, & Senecal, 2004; Vallerand, Fortier, & Guay, 1997). Given the evidence that suggests social and academic outcomes differ by gender, examining the extent to which reports for attribution styles and behavioral outcomes differ for boys and girls was also explored.

The present study had two primary objectives. The first objective involved investigating three theoretical models for the developmental pathway toward reactive aggression and academic amotivation among a sample of high school students. The first model used the cognitive constructs of hostile schemas and hostile attribution bias to predict reactive aggression. The second model consisted of academic possible selves and academic learned helplessness constructs predicting academic amotivation. The final model combined both reactive aggression and academic amotivation models to form a unitary model with the purpose of investigating the cross-domain influences of domain

specific attribution styles on behavioral outcomes. The second objective of the current study involved examining differential gender effects within each model. Each objective represented an attempt to provide greater insight into the development of academic amotivation and reactive aggression among high school students.

The overall hypothesis of this study was that maladaptive attributional biases would adversely impact behavioral enactment outcomes within both academic and social domains. Within the reactive aggressive model, it was expected that hostile schemas and hostile attribution bias would be positively associated with reactive aggressive behaviors among youths with the relationship between hostile schemas and reactive aggression being partially mediated by hostile attribution bias. Within the academic amotivation model, it was expected that less academic possible selves would be negatively related to academic learned helplessness attributions, while academic learned helplessness would be positively related to greater academic amotivation. The relationship between academic possible selves and academic amotivation was expected to be partially mediated by academic learned helplessness, with a negative direct relationship between academic possible selves and academic amotivation expected. Finally, two combined models were explored to test for the impact of cross-domain influences. The first combined model examined domain-congruent cognitive processes on behavioral outcomes while examining the covariance between cross-domain cognitive processes. This first combined model was compared to the second combined model that accounted for both the direct and cross-domain influence of attribution styles on behavioral outcomes. Therefore, the second combined model examined the unique variance attributed to the cross domain influences. Given that prior research has identified gender

differences on key model variables, gender effects were controlled within each model. By exploring models for social and academic behavioral enactment outcomes that are infrequently examined together, the present study provided further insight on individual differences contributing to behaviors that have significant consequences for youths social and academic well-being.

The following literature review examines the role of attribution theory in explaining behavioral outcomes. Second, theoretical and empirical findings for the development of reactive aggression and academic amotivation are discussed. Finally, a synthesis of attribution theory, gender differences, and behavioral outcomes within social and academic domains are discussed within the context of the proposed combined model to explain direct and indirect effects of attributional styles on the outcomes of academic amotivation and reactive aggression.

Literature Review

Attribution Theory as a Framework

Understanding why an outcome occurs within a given situation represents a universal human desire (Weiner, 1986). Explaining the cause of an outcome becomes particularly important in situations in which the outcome is negative, such as being teased by a peer or receiving a bad grade for an assignment. Scholars designate attributions as the interpretations used to explain the cause of situational outcomes. Attribution theory represents the formal framework designed to systematically explore how individuals develop and maintain attributions (Heider, 1958). While attribution theory has expanded to accommodate several domains, ranging from mood disorders to social and achievement behavioral outcomes, the basic tenets of attribution theory remain

consistent. Attributions are considered a cognitive process, and as such, schemas are often utilized to predict attributions (Kelley, 1971; Markus, 1977). Furthermore, attributions are often explored in an attempt to understand how these cognitive processes influence behavioral outcomes (Weiner, 1992). As such, a comprehensive model exploring the development of behavioral outcomes utilizing attribution theory should assesses the impact of schemas on attributions and the subsequent impact of attributions on behavioral outcomes.

To explain achievement and social behavioral enactment within an attribution framework, Weiner (1986) developed the behavior motivation model. The behavior motivation model uses attribution principles to focus on how attribution styles influence behavior enactment. Initially, Weiner's model solely focused on attributions within the achievement domain. Subsequent research has used Weiner's behavior motivation model to explain behavioral outcomes within the social domain, with the focal social behavior often being aggression (Graham, 2004). Specifically, Weiner utilized three specific causal dimensions to explain how attributions are formed. Locus, stability, and controllability represent the causal dimensions utilized within the Weiner model to understand the motivation of individual behavior (Weiner, 1986). The dimension of locus refers to whether causality is internal or external to the individual. In other words, an individual determines whether an outcome is a result of internal dispositional factors or external situational factors. For instance, a poor grade in class may result from a personal inability to achieve (internal) or inadequate teaching (external). Stability refers to the propensity for causality to vary over time or remain constant. Thus, an individual assesses whether an outcome is a chance occurrence or occurs with consistency. For

example, an individual whose books are knocked over as a person walks by can either infer that the behavior of the other person is an accident because it is an infrequent behavior (unstable) or the action was done purposefully because the person consistently exhibits this behavior (stable). The final dimension of controllability refers to an individual's ability to influence causality. In other words, an individual assesses their level of volitional control over a particular outcome. For instance, an individual may infer that academic failure results from an inadequate level of academic competence to complete academic tasks (uncontrollable) or insufficient effort exerted to achieve academically (controllable). Collectively, empirical findings suggest that these attribution dimensions account for a significant proportion of individual behavioral enactment variability across situations (Weiner, 1986).

The behavior motivation model of attribution theory outlined by Weiner enables researchers to examine the development of maladaptive attribution styles that can lead to maladaptive behavioral enactment outcomes such as academic amotivation and aggression (see Graham, 1997). It should be noted that antecedents of attributions and subsequent behavioral enactment outcomes are generally conceptualized as domain-congruent despite the use of a unifying attribution theory model (Graham, 2004). For instance, academic attributions regarding a grade on an exam will be influenced by prior schemas for academic situations and will likely influence future academic relevant behaviors such as studying. Each antecedent, attribution, and subsequent behavior is based on the domain cued by the situation. Given its applicability to both achievement and social domains, the behavior motivation model provides the optimal attribution framework for the present study.

Schemas as Antecedents to Attributions

While several factors are hypothesized to impact the development of attributions, cognitive processes that identify and filter situational stimuli are consistently found to directly impact attribution styles (Crick & Dodge, 1996; Weiner, 1992). Researchers theorize that as individuals derive causal explanations within a given situation, specific situational cues are combined with memories from prior experiences to form the basis for attributing causality and behavioral intent (Crick & Dodge, 1994; Weiner, 1986). The cognitive structure which organizes and creates coherent concepts and relationships between prior outcomes, experiences, and attributions are often defined as schemas (Kelley, 1971). Therefore, schemas provide an efficient mechanism for organizing memories and integrating new information to guide attribution formation (Kelley, 1971; Weiner, 1992).

Given the importance of schemas for informing attributions, acknowledging factors that contribute to schemas is warranted. Schema development is a process that represents the confluence of environmental factors such as interactions with others and biological factors such as personality and temperament (Dodge, 2006). In terms of biological determinants, personality traits such as neuroticism are indicated in the development and maintenance of schemas. For instance, Muris (2006) conducted a study exploring the relationship between personality traits and maladaptive schemas among 173 adolescents and found that neuroticism predicted emotional deprivation, mistrust/abuse, and abandonment schemas. Environmental determinants generally involve domain relevant early experiences such as exposure to violence or peer interactions (Burks, Dodge, Price, & Laird, 1999b). As such, poorly developed schemas have been theorized

to derive from minimal variation in early environmental experiences within a particular domain (Dodge, 2006; Kelley, 1971).

Given that the primary purpose of schemas is to organize prior experiences and guide attribution formation, memories from prior experiences are streamlined and condensed to improve efficiency of the schema and promote generalizations that are consistent and logical (Kelley, 1971). As such, schemas exclude details in exchange for generalizations and therefore aid with the efficiency of cognitive processing. As a normative process, schemas provide the basis for efficient and accurate cognitive processing of situations by integrating appropriate situational cues with prior domain-congruent experiences. However, when schemas fail to integrate important situational cues, or are predominantly comprised of prior experiences which are incongruent with the current situation, maladaptive biases are likely to emerge (Markus, 1977). Biases often manifest during the process of integrating new information with incongruent schemas. Integrating new information that lacks consistency with schemas involves increased cognitive processing and detracts from quick and efficient filtering of new information through existing schemas. As such, individuals may selectively attend to situational cues that are consistent with the existing schemas to maintain rapid and efficient cognitive informational processing (Dodge, Laird, Lochman, & Zelli, 2002; Kelley, 1971).

The manifestation of schemas which lead to maladaptive attribution styles takes varying forms based on the domain in which the schema operates (Dodge, 2006; Weiner, 1986). Within the social domain, schemas pertaining to perceived hostility in others lead to attribution styles that are biased toward interpreting situations as hostile (Crick &

Dodge, 1994). Researchers utilize social information processing and attribution principles to explain how this process contributes to the development of hostile attribution bias. Among individuals who frequently attribute the actions of others as reflecting hostile intent, social information processing suggests that the cognitive processes of encoding situational cues, mental representation and integration of cues with prior experiences contribute to the maintenance of hostile attributions via the formation of hostile schemas (Dodge et al., 2002; Weiner, 1992). Within the achievement domain, schemas pertaining to current and future academic ability represent achievement related schemas that have the potential to lead to maladaptive attribution styles (Graham, 1997; Ng, 2005; Oyserman et al., 2004). Therefore, schemas dominated by prior experiences supporting maladaptive attributions contribute to the development of maladaptive attribution styles and set the stage for biased attribution styles that adversely impact behavioral enactment outcomes within both achievement and social domains.

Attributions and Behavioral Enactment within Achievement and Social Domains

How do attribution styles lead to different achievement and social behavioral enactment outcomes? As a normative process, adequately developed schemas that sufficiently incorporate situational cues lead to accurate situational attributions. Subsequently, accurate situational attributions are likely to evoke adaptive behavioral enactment (Woodworth & Waschbusch, 2007). Conversely, impoverished schemas and selectively attended situational cues share the common effect of limiting the range of possible attributions (Markus, 1977). As a result, maladaptive attributional biases may emerge that reflect a consistent and narrow pattern of interpreting and explaining outcome causality and behavioral intent of others (Hubbard, Dodge, Cillessen, Coie, &

Schwartz, 2001). In general, attributions inform individual behavioral enactment by providing the basis for situational goal expectations and evaluation of possible behavioral responses (Crick & Dodge, 1994). In the case of maladaptive attributional biases, limited explanations for outcomes within a particular domain may lead to maladaptive behavioral responses within domain congruent situations.

Understanding maladaptive attributional biases has been particularly useful in accounting for individual behavioral enactment differences within achievement and social domains. Within the social domain, researchers often explore attributions of intent to better understand attributional processes. Consistent findings support the link between attributions of hostile intent with aggressive behavior (Card & Little, 2006; Polman et al., 2007). Specifically, youths who exhibit biased attributions of hostile intent are more likely to use aggression as a self-protective strategy despite the presence of situational cues which signal benign or ambiguous intent on behalf of the perceived provocateur. Within the achievement domain, researchers often utilize attributions of causality to better understand the impact of maladaptive attributional styles on behavioral enactment outcomes. Findings indicate that youths who perceive a poor academic outcome as indication of their inability to achieve are less likely to employ academic behaviors that lead to academic achievement (Chan & Moore, 2006). Specifically, when youths attribute academic failure and difficulty to their level of ability then failure is perceived as a causal outcome that youths have minimal control over. Frequently perceiving an outcome as uncontrollable can lead to an attribution style that facilitates disengagement from activities related to the outcome. As such, youths may fail to exhibit academic

behaviors necessary for achievement due to their perceived futility (Sutherland & Singh, 2004).

When attributional biases result in maladaptive behavioral enactment such as aggression or poor regulation of academic achievement behaviors, scholars theorize that alternative attributions are needed to elicit more adaptive behavioral outcomes (Crick & Dodge, 1996; Graham, 1997). As such, scholars have explored interventions that target these maladaptive attributional styles in an attempt to counter the aversive impacts of biased attributions. Interventions teaching youths alternative attributions have resulted in improved behavioral outcomes within domains ranging from depression to social and achievement behaviors (Hudley, Graham, & Taylor, 2007; Robertson, 2000; Rooney et al., 2006). For example, Hudley et al. (1998) illustrated the importance of alternative attributions with the implementation of an attribution retraining program for 168 aggressive Latino and African-American elementary school students. Findings indicate that youths who received attributional training exhibited fewer attributions of hostile intent and less aggression as reported by teachers over a 12 month period post attribution retraining.

In essence, attribution theory provides a theoretical framework for understanding how individuals make sense of their world based on causal explanations of outcomes and behavioral intent. The processes that contribute to the development and maintenance of these attributions are primarily based upon prior experiences and the cognitive integration of these prior experiences with current situational cues. Given the unique task of learning to navigate increasingly complex social and academic environments during adolescence, attribution theory has been particularly useful in understanding and predicting youths'

behavior in both social and achievement domains by accounting for youths' explanations for these personal outcomes (Dodge et al. 2003; Graham, Bellmore, & Mise, 2006). As youths navigate their changing world during adolescence, it becomes increasingly important for them to create perceived stability within their environments by understanding how self motives and the motives of others contribute to personal outcomes. For some youths, these explanations for outcomes are based on schemas dominated by experiences highlighting undesired outcomes, and thus, lead to maladaptive behavioral enactment. In summary, attribution theory provides the optimal framework for understanding how and why youths develop maladaptive behaviors within achievement and social domains of functioning. The utility of the attribution framework is particularly evident in research exploring reactive aggression among youths.

Reactive Aggression Model

Aggression as a self-protective mechanism for perceived threat has been a widely observed phenomena (Crick and Dodge, 1996; Dodge, Lochman, Harnish, & Bates, 1997; Polman et al., 2007). While aggression as a response to perceived threat is an innate human characteristic, the ability to identify benign intent for others actions represents a form of cognitive processing that is socialized, and thus, deficient within certain aggressive individuals (Dodge, 2006). As such, aggression may become a normative response to threat among individuals who frequently have difficulty accurately perceiving benign intent in the actions of others (Haff, Floyd, & Shinn, 2006). Given the association of aggression with maladaptive outcomes such as delinquency and peer rejection (Card & Little, 2006), exploring how individuals identify and interpret threat within situations becomes essential to understanding the development and maintenance of

aggressive behaviors among youths. Furthermore, evidence for increased acceptance of aggressive behavior in response to threat among reactive aggressive adolescents as compared to non-reactive aggressive peers further underscores the importance of exploring aggression among youths (Haff et al., 2006; Lochman & Dodge, 1994).

A large body of research supports conceptualizing aggression as a multi-dimensional construct with differential forms (i.e., how aggression is exhibited) and functions (i.e., why aggression is exhibited) (see Little, Jones, Henrich, & Hawley, 2003; Polman et al., 2007). The functional role of aggression is generally operationalized as either reactive or instrumental (proactive) aggression. Reactive aggression refers to a hostile defensive response to perceived threat while instrumental aggression is the use of aggression to attain a reward or goal (Card & Little, 2006; Little, Brauner, Jones, Nock, & Hawley, 2003; Polman et al., 2007). While the functional role of aggression provides insight about *why* youths aggress, the form of the aggression provides insight about *how* youths aggress. Overt forms of aggression are often characterized by physical or verbal acts that are intended to harm while relational forms of aggression are generally characterized by acts to damage a peer's reputation or impede a peer's group acceptance (Fite, Stauffacher, Ostrov, & Colder, 2008; Little, Jones et al., 2003). Understanding factors which contribute to how and why aggression occurs is integral to informing prevention and intervention strategies for aggressive youths.

Understanding the development of reactive aggression has often occurred in the context of examining both reactive and proactive aggression simultaneously. Correlations between reactive and proactive aggression have ranged from -.10 (Little, Jones, et al., 2003) to .87 (Camodeca, Goosens, Terwogt, & Schuengel, 2002; Polman et

al., 2007) indicating potentially high levels of covariance of aggression types, with the magnitude of this association varying by study methodology. This has led some commentators to question the utility of the proactive/reactive distinction (Polman et al., 2007). However, findings indicate that each type of aggression is differentially associated with various psychosocial correlates. Youths exhibiting proactive aggression have been observed to exhibit less empathy, expect positive outcomes associated with aggression, and have a higher propensity to engage in antisocial and delinquent behavior as compared to non-aggressive youths (Card & Little, 2006; Mayberry & Espelage, 2007). Conversely, youths who exhibit reactive aggressive behavior often report more peer rejection and social competence deficits than non-aggressive youths and youths who exhibit proactive aggression (Dodge et al, 1997). In general, differences between reactive and proactive aggression correlates support differentiating the functions of aggression despite evidence for moderate correlations between the two functions.

Social-cognitive theory provides the basis for understanding proactive aggression as a calculating behavior that is learned and exerted to achieve desired outcomes (Bandura, 1983). The frustration-aggression model explains reactive aggression as a behavioral response based on frustration with perceived threat (Berkowitz, 1989). As such, reactive aggression has become the focus for researchers attempting to understand how perceptions of threat impact aggressive behavior among youths (Dodge, 2006). When exploring the development of reactive aggression, scholars often utilize attribution theory as a framework for understanding how youths develop and maintain reactive aggressive behavior (Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Consistent with attribution theory, the reactive aggression literature has identified

maladaptive attribution biases and schemas as the primary antecedents to reactive aggressive behavior (Burks, Dodge, Price, & Laird, 1999b; Lansford et al., 2006).

Hostile Schemas and Social Information Processing

A distinguishing cognitive feature of reactive aggressive youths is their tendency to perceive the actions of others as hostile during social situations (Lansford et al., 2006; Dodge et al., 1995). To account for this tendency, scholars have examined the schema development of reactive aggressive youths (Dodge & Frame, 1982). Consistent with attribution theory, early experiences of reactive aggressive youths often coalesce into schemas which selectively attend to hostile situational cues within social situations (Burks, et al., 1999a; Dodge, 2004). These hostile schemas represent a paucity of prior experiences providing alternatives to aggression when threat is perceived (Dodge, 2004). Furthermore, hostile schemas inform situational attribution, and thus, contribute to the development of hostile intent attributions (Dodge, 2006; Crick & Dodge, 1996).

While studies specifically exploring the relationship between schemas and the development of hostile attributions are limited, findings consistently support that schemas consisting of hostile and self-threat perceptions influence social information processing and externalizing behaviors (Crick & Dodge, 1996; Dodge & Frame, 1982). In a nine-year longitudinal study, Burks et al., (1999a) explored the relationship between knowledge structures, social information processing, and externalizing behavior among 393 pre-kindergarten students. Findings indicated that youths who reported more hostile schemas in pre-kindergarten processed social situations in a more a hostile manner in eighth grade. In other words, youths with schemas consisting of hostile memories were more likely to perceive threat in a social situation and attribute hostile intent to the

actions of others. Burks, et al. (1999b) provided further support for hostile schemas contributing to antisocial behavior with findings from a nine year prospective study. Results indicated that knowledge structures that were easily accessible and pertained to antisocial behavior in elementary school were associated with externalizing behavior in middle school and high school among a sample of 155 students. Furthermore, findings suggested that early experiences of aggression were associated with easier and more frequent accessibility to antisocial knowledge structures in later years. This is consistent with findings indicating that selective attention to self-threat situational cues contributes to hostile bias attribution styles within social situations (Crick & Dodge, 1994; Crick & Dodge, 1996). Collectively, findings from these studies suggest that hostile schemas contribute to increased perceptions of threat, and subsequently, more frequent hostile intent attributions. Furthermore, these findings highlight the early and long-term impact of hostile schemas on the development of aggressive behavior.

Consistent with theoretical underpinnings of social information processing (Dodge, 2006), the propensity of hostile schemas to cue perceptions of self-threat have led researchers to acknowledge the deleterious impact of cognitive processing errors that contribute to hostile attribution biases. Based on findings supporting the relationship between antisocial knowledge structures and prior aggression, Burks et al. (1999b) theorized that youths who have a general negative outlook on the world may believe that others are constantly behaving in a hostile manner toward them. With reactive aggression often emerging based on perceived provocation, the presence of hostile schemas provide a plausible explanation for the maintenance of hostile attribution styles and subsequent enactment of self-protective aggressive behavior.

Hostile Attribution Bias

The aggression literature consistently identifies hostile attributions of intent during social situations as a predictor of reactive aggressive behavior (Dodge, 2006; Lansford et al., 2006). While hostile schemas inform how an individual attributes behavioral intent during a social situation, youths' hostile attribution for other's behavioral intent (hostile attribution bias) often lead to reactive aggressive behavior responses when provocation is ambiguous or absent (Polman et al., 2007). While the relationship between hostile attribution bias and reactive aggression is frequently conceptualized as a function of excessive perceptions of hostile intentions, Dodge (2006) recently posited that the paucity of benign intent attributions within social situations significantly contributes to the enactment of reactive aggressive behavior. In other words, the relationship observed between hostile attribution bias and reactive aggression is strengthened by the absence of benign intent attributions. By crediting reactive aggressive behavior to both under-perceiving benign intent and over-perceiving hostile intent, Dodge's expansion highlights the role of causal dimensions such as locus and stability for hostile attribution formation. Specifically, when an individual interprets a person's negative behavior as the result of internal factors and this behavior occurs frequently, it is more likely that hostile intent is attributed. Thus, Dodge's expansion further supports attribution theory tenets which suggests maladaptive biased attribution styles can potentially lead to maladaptive behavioral outcomes. Studies have shown that both pervasively aggressive and non-aggressive youths equally exhibit reactive aggression when provocation is present (Dodge, 1980). However, youths exhibiting

hostile attribution bias continue to respond to perceived threats with reactive aggressive behavior when provocation cues are absent or ambiguous.

Support for hostile attribution bias as a consistent predictor of reactive aggression has been observed in numerous clinical and community samples of youths (Crick & Dodge, 1996; Dodge et al., 2003; Lansford et al., 2006; Orobio de Castro et al., 2002; Polman et al., 2007). By using vignettes depicting situations in which the actions of others are ambiguous (i.e., a kid runs by your desk and your books fall on the floor), scholars derive a composite score based upon the summation of affirmative responses by youths indicating whether actors across the vignettes were rated as intending to act with hostility (Orobio de Castro et al., 2002). When measured through this methodology, findings indicate a positive association between hostile attribution bias and externalizing behaviors, peer victimization and social skills deficits (Nyborg & Curry, 2003; Yeung & Leadbeater, 2007). In a meta-analysis of 41 studies examining the impact of hostile attributions of intent on aggression, Orobio de Castro et al., (2002) reported an overall effect size of .17 and supported a consistent relationship between hostile attribution bias and aggression. It should be noted that Orobio de Castro et al. utilized a general definition of aggression which lacked delineation of forms or functions, thus possibly contributing to an artificially depressed effect size. In a study examining the impact of hostile attribution bias among a community sample of 84 African-American preadolescent and adolescent boys, Nyborg and Curry (2003) found that higher levels of hostile attribution bias predicted more externalizing aggressive and delinquent behavior and partially mediated the relationship between perceived racial discrimination and these externalizing behaviors. Tremblay and Belchevski (2004) provided evidence for the

deleterious impact of hostile attributions of intent on behavioral outcomes among 118 college male and female students with findings indicating that aggression across situations was predicted by the level of perceived intentionality represented via a measure of hostile attribution bias. Specifically, verbal and physical aggressive behavior was more consistent between situations for individuals who perceived the actions of the provocateur as intentional. Studies exploring predictors of anti-social and delinquent behavior among adult male offenders have also indicated a positive association between hostile attribution and a history of violent crimes (James & Seager, 2006; Walters, 2007). Thus, research has supported the role of hostile attribution bias in predicting aggressive behaviors across childhood and adolescence.

In summary, research for aggressive outcomes suggests that hostile attribution bias is a robust predictor of reactive aggressive behavior among youths (Orobio de Castro et al., 2002). Furthermore, social information processing models suggest a direct relationship between cognitive structures which cue perceptions of hostility and hostile attribution (Crick & Dodge, 1994, 1996). Collectively these findings highlight the importance of understanding how youths assign hostile intent to others and the impact of hostile attribution bias on the development and maintenance of reactive aggressive behavioral enactment among youths.

Differentiating Forms of Reactive Aggression and Relevance of Gender

Relational and overt aggressive behaviors represent the two primary forms of aggression identified by scholars (Crick, Grotpeter, & Bigbee, 2002; Crick & Zahn-Waxler, 2003; Little, Brauner et al., 2003; Yu & Gambe, 2008). As aggressive behavior research expanded to explore both functions and forms of aggression, support for

significant differential gender effects by form have emerged. In a study exploring gender differences for relational and overt aggression among 904 second and third grade boys and girls, Henington, Hughes, Cavell, and Thompson (1998) found that when peer-relational aggression was controlled, 60% of aggressive girls were declassified as aggressive compared to only 7% of boys. Furthermore, girls were more likely than boys to be rejected by peers when exhibiting overt aggression. In a study exploring differential gender effects for aggression and psychological outcomes among 491 students between third and sixth grades, Crick and Grotpeter (1995) found that girls were nominated by peers as exhibiting significantly greater levels of relational aggression than boys while boys were nominated by peers as exhibiting significantly greater levels of overt aggression. Zimmer-Gembeck, Geiger, and Crick (2005) conducted a three-year prospective study exploring gender differences for aggression outcomes among 458 third graders. Findings indicated no gender differences in the third grade, but by the sixth grade, girls reported higher levels of relational aggression and boys reported higher levels of overt aggression. Overall, findings indicate that gender differences exist among children and are likely observed when accounting for aggression forms.

The limited studies exploring reactive aggression among adolescent youths provide less clarity regarding reactive aggression gender differences. In a study exploring social cognitive mediators of victimization and adjustment problems among 337 sixth and seventh grade students, boys reported significantly higher levels of overt aggression than girls (Hoglund & Leadbeater, 2007). Bailey and Ostrov (2008) had similar findings in a study exploring the relationship between hostile attribution bias and aggression among 165 young adults with an average age of 19. Findings indicated that

men reported significantly higher levels of reactive overt aggression than women, while no gender difference were found for reactive relational aggression. Furthermore, findings by Marsee and Frick (2007) failed to support a relationship between hostile attribution bias and both reactive relational and reactive overt aggression among a sample of 58 detained girls, whereas in several other studies using a male sample the relationship between hostile attribution bias and overt aggression was supported (Orobio de Castro et al., 2002).

While research explicitly exploring gender differences in relational and overt reactive aggression among high school students is limited, a growing body of research suggests that differential gender effects observed in early childhood may persist into adolescence. It should be noted that similar to aggression findings for child samples, the gender effect was characterized by quantity of reactive overt aggression and not magnitude of the relationship between aggression and hostile attribution bias. In other words, boys generally reported higher levels of reactive overt aggression than girls, but the magnitude of the relationship between hostile attribution bias and reactive aggression did not differ between genders (Crick et al., 2002). As explained earlier, when hostile attribution bias is present, findings support a robust relationship between hostile attribution bias and reactive aggression regardless of gender (Orobio de Castro et al., 2002).

It should be noted other potential demographic variables that may contribute to reactive aggression outcomes include age, race/ethnicity, socioeconomic status (SES), and characteristics of primary caregivers. More specifically, research indicates early adolescent youth are at greater risk for reactive aggressive behavior than older youth

(Huesmann & Guerra, 1997; Fontaine, 2006). Research specifically exploring the impact of race/ethnicity, SES, and primary caregiver influences on reactive aggression is minimal. When these variables are included it is often as control variables for behavioral outcomes, with a minority of studies reporting greater levels of reactive aggression among African-American youth (Lansford et al., 2006). While exploring these factors are beyond the scope of this study, it is important to highlight their potential influence on reactive aggression outcomes.

Given the potential deleterious impact reactive aggression has on a variety of psychosocial outcomes, it becomes increasingly important for researchers to understand how reactive aggression develops among youths. Reactive aggressive behavior exhibited in relational and overt forms are associated with several maladaptive outcomes such as peer rejection, low-frustration tolerance, and internalizing disorders within both clinical and community samples (Card & Little, 2006; Polman et al., 2007). Recent disaggregation of forms of reactive aggression has highlighted potential gender differences that may exist, with boys evidencing higher levels of reactive overt aggression relative to girls. However, the majority of research is limited to child and pre-adolescent samples, thus making it difficult to verify gender differences among adolescent youths (Crick et al., 2002).

Summary and Limitations

In summary, the development of reactive aggression appears to be optimally understood when one accounts for cognitive processes involving hostility and self-threat. The perception of constant threat in one's environment can be distressing and using aggression may become a frequently used technique to counter such threats (Burks,

Laird, et al., 1999; Haff et al., 2006; Orobio de Castro et al., 2002). Furthermore, research on the influence of hostile cognitive processes on reactive aggression suggests that beliefs about hostility can strengthen over time and further exacerbate aggressive behavior among youths (Burks, Dodge et al., 1999). Specifically, social information processing models, in combination with research examining hostile knowledge structures, suggest that stronger hostile schemas predict increased hostile attributional bias and reactive aggression (Crick & Dodge, 1994). Furthermore, robust findings for the association of hostile attribution bias and reactive aggression suggest that hostile attribution bias is linked to increased reactive aggression (Bailey & Ostrov, 2008; Orobio de Castro, 2002).

While the relationships between reactive aggression and hostile cognitions are well established in the research literature, methodological and research sample limitations exist for respective constructs. Methodological variations for exploring both reactive aggression and hostile attribution bias have resulted in a range of findings (Card & Little, 2006). For reactive aggression, methodological variations are primarily based on operationalization. The majority of prior research has operationalized reactive aggression solely based upon overt forms of aggression while recent research has incorporated both overt and relational forms of aggression (Polman et al., 2007, Winstok, 2009). Robust findings for the relationships between reactive aggression and hostile cognitive constructs have emerged when operationalizing reactive aggression solely based on overt forms (Orobio de Castro et al., 2002). While the extant literature supports the relationship between hostile cognitive constructs and relational forms of reactive aggression, studies exploring this relationship are limited (Bailey & Ostrov, 2008, Crick and Grotpeter, 1995,

Little et al., 2003). For hostile attribution bias, variation in research instruments has contributed to a range of findings for the relationship between hostile attribution bias and reactive aggression (Orobio de Castro et al., 2002). Often, researchers have used self-report measures that present social vignettes and ask questions about how youth would respond in situations where an act was committed that can be interpreted as benign or aggressive. Given the importance of providing relatable vignettes, researchers often adjust scenarios and formatting of questions based on developmental stage and other demographic characteristics (i.e., ethnicity, socio-economic status etc.) of specific samples. These adjustments may contribute to findings that indicate the strength of the relationship between hostile attribution bias and reactive aggression ranges from very strong to marginal (Polman et al., 2007). Finally, previous research has frequently explored the relationship between hostile cognitive constructs and reactive aggression among pre-adolescent boys (Card and Little, 2006). Greater exploration of this relationship among girls and adolescent samples is needed to delineate whether developmental patterns observed among pre-adolescent boys are present within more gender and age diverse samples.

The present study addressed limitations in prior research by employing advanced statistical techniques to measure and model cognitive antecedents and overt reactive aggression while also controlling for gender effects. The use of a mixed gender high school sample also expands the research base investigating cognitive antecedents to individual and developmental factors, which are well investigated in younger children, to adolescents. Attribution theory provides the framework for understanding how youths interpret their environment and use this information to inform behavior. Understanding

how these constructs operate during middle and late adolescence can inform development of effective prevention and intervention strategies targeting the cognitive antecedents to reactive aggression in this age group. Furthermore, the importance of understanding the contribution of hostile cognitive processes for the development and maintenance of reactive aggression among high school students is further underscored by the several adverse psychosocial correlates of reactive aggression such as peer rejection and academic difficulties (Fite, Colder, & Wells, 2007; Maata et al., 2007).

Academic Amotivation Model

Motivation to achieve academically represents one of the most studied predictors of academic achievement among high school students (Pintrich, 2003). Furthermore, academic motivation has garnered increasing attention from researchers exploring academic outcomes among low performing students as declining academic performance in high school remains a problem for many youths (Long, Monoi, Harper, Knoblauch, & Murphy, 2007). Academic motivation is identified in the psychological and educational literature as a significant contributor to improved academic performance (Leonardi, Syngollitou, & Kiosseoglou 1998). Thus, understanding youths' motivation to engage in academic tasks is essential for informing efforts to improve academic performance among high school students. Conversely, factors that contribute to lower motivation to engage in academic tasks have equally important implications for understanding poor academic performance. However, the lack of motivation to engage in academic tasks remains an infrequently explored aspect of the high school academic experience (Legault, Green-Demers, & Pelletier, 2006). The importance of understanding factors that contribute to disengagement from academic tasks due to a lack of motivation is

heightened during high school due to the steep decline in academic motivation that is observed at this stage among youths who have fewer supports to promote academic motivation (Ratelle, Guay, & Larose, 2004).

Students' desire to engage in academic tasks is often conceptualized within a social-determination framework and explored as a multi-dimensional construct (Pintrich, 2003; Vallerand & Bissonnette, 1992). Utilizing the social-determination framework, academic motivation represents the level of desire to engage in academic tasks due to factors internal to the individual or situational factors that are external to the individual. Based upon theoretical and empirical support for multiple dimensions of motivation, Deci and Ryan (1985) derived the three dimensions of intrinsic motivation, extrinsic motivation, and amotivation to represent the fundamental dimensions of academic motivation. Intrinsic motivation refers to the desire to engage in an activity based upon the enjoyment derived from the activity (Deci & Ryan, 1987). Vallerand and Bissonnette extended prior research on motivation by subdividing intrinsic motivation into three sub dimensions. Vallerand and Bissonnette based this division on prior theoretical assertions by Deci (1975) suggesting that intrinsic motivation may be driven by multiple factors. The three subtypes of intrinsic motivation: intrinsic motivation to know, intrinsic motivation to accomplish, and intrinsic motivation to experience stimulation manifest as dimensions of a continuum ranging from complete desire to engage in an activity for the purpose of enjoyment to approaching a desire to engage for external purposes, respectively. Extrinsic motivation refers to the desire to engage in an activity based upon external contingencies, or in other words, activity engagement is a means to an end. Extrinsic motivation is also subdivided into three subtypes: introjected

extrinsic motivation, identified regulation extrinsic motivation, and intrinsic-extrinsic motivation (Vallerand & Bissonnette, 1992). Similar to intrinsic motivation, extrinsic motivation subtypes are conceptualized as manifesting on a continuum ranging from intrinsic-extrinsic motivation, which is closest to intrinsic motivation on the motivation continuum, to introjected extrinsic motivation which is furthest on the continuum of the extrinsic forms as a result of being predominantly externally contingent. For example, intrinsic-extrinsic motivation represents little external incentive for engaging in a task while introjected extrinsic motivation represents the form of academic motivation that relies most heavily on external contingencies. Academic amotivation is defined as the absence of motivation to engage in academic activities and represents the least motivated dimension along the academic motivation continuum. Collectively, these seven dimensions are theorized as manifesting on an academic motivation continuum with intrinsic motivation at one end and amotivation at the opposite end. Academic achievement is theorized to increase as one moves closer toward intrinsic motivation on the academic motivation continuum (Cokely, Naijean, Cunningham, & Motoike, 2001; Fairchild, Horst, Finney, & Barron, 2005).

The development of academic amotivation has often been overshadowed by research exploring the development of other dimensions (Cokely et al., 2001). While support for the relationship between dimensions of the academic motivation continuum (i.e., intrinsic and extrinsic motivation) and academic outcomes has been mixed (Fairchild et al., 2005), findings for the deleterious impact of academic amotivation on various academic outcomes have been consistent. Exploration of academic amotivation and academic correlates typically are measured among high school students utilizing

close-ended self-report measures. In a study of 4,498 francophone high school students, Ratelle et al. (2007) found that academic amotivation was associated with higher levels of school anxiety, distraction in class, and school dropout across both boys and girls. Furthermore, boys reported significantly higher levels of academic amotivation relative to girls suggesting gender differences in level of academic amotivation. In a study of 4,537 ninth and tenth grade students, greater academic amotivation was linked to higher levels of school dropout, with boys reporting significantly higher levels of academic amotivation than girls (Vallerand et al., 1997). Gender differences observed within these studies reflect a greater likelihood of boys reporting significantly higher levels of academic amotivation, but do not support gender differences in the magnitude of the relationship between academic amotivation and poor academic outcomes. Findings by Fairchild et al. (2005), exploring the relationship of academic amotivation with numerous academic outcomes among 1,406 first year college students, suggested a negative association between academic amotivation and grade point average. These results highlight the deleterious effect of academic amotivation on a variety of negative academic outcomes across gender and age.

Predictors of Academic Amotivation

Given the importance of understanding academic amotivation among high school students, how does one predict individual levels of academic amotivation? Consistent with attempts to explain the development of adaptive and maladaptive youth outcomes in other domains of functioning, theorists have utilized attribution theory to understand academic motivation (Graham, 1997). With the use of attribution principles, Graham outlined the process by which youths employ self-perceptions that counter

academic responsibility and lead to a lack of desire to achieve academically. In essence, Graham theorized that academic performance improves when youths accept responsibility for academic outcomes by attributing failure to the absence of self-regulating behaviors that would contribute to greater academic motivation. For example, youths who attribute a poor grade to inefficient study habits are more likely to improve academic performance than youths who attribute the grade to a personal inability to achieve. Based on Graham's theoretical conception of academic motivation, one can conceptualize academic amotivation as being the result of attributions that fail to accept responsibility, and instead, place the youth in a position of academic helplessness by attributing failure to fixed factors such as personal ability.

Academic possible selves. When exploring antecedents to attribution styles, attribution theory designates cognitive processes that integrate situational cues with schemas as a primary source for informing interpretations within a given situation (Weiner, 1986). Given the nature of cognitive antecedents for academic amotivation being based upon self-perceptions of ability and control over academic difficulties, cognitive processes involving self-schemas pertaining to academic ability provide the optimal cognitive pathway toward understanding the development of academic amotivation. As such, a growing body of research has focused on how youths' mental representation of future academic states impacts various academic outcomes (Oyserman et al., 2006; Packard & Conway, 2006). Mental representations of one's ability to achieve academically in the future (expected selves) and avoid future academic obstacles (feared selves) are defined as Academic Possible Selves (APSs). APSs are often conceptualized as self-schemas that provide insight into individual cognitive differences

that contribute to differential academic outcomes (Packard & Conway, 2006). The development of the APS constructs represented an advance in understanding antecedent cognitive processes for academic self-regulatory behavior. In an attempt to integrate self-concept and motivation cognitive constructs, academic possible selves constructs utilize open-ended self-reports of future academic states to predict academic behaviors (Oyserman et al., 2004; Oyserman & Markus, 1990a).

APS constructs, as conceptualized in recent studies, represent two related components – APS Balance and APS Plausibility (Oyserman et al., 2006). Both APS Balance and APS Plausibility represent recent advancements on initial conceptualizations of APS. Initially, APS consisted of a simple count of desired academic goal states and feared future academic states that represented obstacles to achieving the desired academic goal states. While early support for the predictive validity of expected and feared future academic selves existed, researchers acknowledged limitations in APSs ability to account for higher order cognitive processes such as plans to achieve (Oyserman et al., 2004). To better account for the complex cognitive processes that contributes to academic self-regulatory behavior, APS Balance was conceptualized and operationalized followed by APS Plausibility (Oyserman et al., 2004). Consistent with the original conceptualization, APS Balance refers to the number of future academic goal states that are counterbalanced by the identification of an obstacle that may impede the achievement of the desired future academic goal (Oyserman et al., 2004). The greater number of future academic goal states that are counterbalanced by related academic states that impede academic achievement, the greater the APS Balance. The addition of academic strategies to achieve future academic goal states and avoid obstacles to achieving academic goals is

defined as Academic Possible Selves Plausibility (APS Plausibility). For their ability to better account for the complex cognitive processes, APS Balance and APS Plausibility generally are the primary predictors of academic self-regulatory behavior when exploring the relationship between the APS constructs and academic outcomes (Oyserman et al., 2006; Oyserman et al., 2004).

Consistent with attribution theory, APS Balance and APS Plausibility are situationally cued and based on prior experiences that reinforce perceptions of future academic states (Oyserman et al., 2004). Specifically, youths who possess richer goals about how to achieve academically (i.e., APS Balance) and strategies to accomplish these goals (i.e.,, APS Plausibility) are more likely to perceive situational cues that prime the use of self-regulatory behaviors that subsequently contribute to improved academic outcomes (Oyserman et al., 2006). However, the process by which APS Balance and APS Plausibility impact academic outcomes is mediated by how youths interpret academic difficulty. When youths are faced with academic difficulty, Oyserman et al. (2006) theorized that youths utilize a "naive theory" to interpret academic difficulty in relation to the self. Thus, possible selves that are not readily available to counter academic difficulty are interpreted as not true for the self. In other words, the difficulty of an academic tasks or feedback of academic failure that is not countered by beliefs espousing academic efficacy is more likely to lead to an appraisal of academic difficulty which is consistent with attribution styles connoting personal inability to achieve. Furthermore, if academic difficulty is perceived as an indication of personal inability to achieve due to the absence of academic goals and strategies (i.e.,, Balance and

Plausibility), then the importance of persisting academically may become more difficult to justify.

The relationship between APS Balance and APS Plausibility is often explored in the context of predicting self-regulatory academic behaviors. It should be noted that the operationalization of both APS Balance and APS Plausibility is predicated upon the number of expected and feared future academic states reported by youths. APS Plausibility has the additional component of strategies attached to APS Balance. Therefore, findings suggest that APS Balance has a direct positive effect on APS Plausibility (Oyserman et al., 2006). In a study exploring the impact of an intervention targeting APSs and APS Balance and Plausibility among 264 African-American, Latino, and European American middle school students, Oyserman et al., (2006) found that improved APS Plausibility was associated with fewer classroom behavior problems and more time spent doing homework while APS Balance improvement was associated with better grades. Furthermore, APS Balance was positively associated with APS Plausibility. In a separate study, APS Plausibility was positively associated with positive affect toward school, class participation, and GPA and negatively associated with referral to summer school among a sample of 160 African-American, Latino, and European American eighth grade students (Oyserman et al., 2004). Among a sample of 105 college students and 55 middle school students, APS Balance predicted increased effort invested in school as assessed by students and teachers (Oyserman, Grant, & Ager, 1995). Furthermore, Oyserman and colleagues (1995) found that girls displayed significantly greater APS Balance than boys among a middle school sample. Oyserman, Bybee, and Terry (2002) highlighted the importance of developing APS Balance and Plausibility

among minority students with findings showing that intervention strategies can help improve APSs and APS Balance and Plausibility and aid youths in integrating academic self-concepts into their ethnic and social identities.

The impact of APS Balance and APS Plausibility on academic outcomes and self-regulatory behaviors are supported across the educational and psychological literature. Consistent with attribution theory, academic possible selves constructs represent cognitive antecedents similar to schemas that may provide insight into the development of academic attribution styles that contribute to academic amotivation (Packard & Conway, 2006). However, the role of academic possible selves constructs in predicting interpretations of academic difficulty has been theorized, but not yet empirically tested. The relationship between the academic possible selves constructs (APS Plausibility and APS Balance) and academic attribution styles may provide further insight into how academic amotivation develops among youths. Prior research suggests that APS Balance has direct effects on academic performance, thus suggesting that a negative relationship may exist between APS Balance and academic amotivation (Oyserman et al., 2006). Furthermore, the presence of APS Plausibility has been linked to increased academic behaviors permitting youths to assume control over their academic outcomes (Oyserman et al., 2004). Thus, the absence of APS Plausibility suggests that individuals may possess attribution styles which represent less control over academic outcomes such as academic learned helplessness.

Academic learned helplessness. The study of factors that empower students to achieve in school has a rich history ranging from increasing self-efficacy beliefs to cultivating self-regulating behaviors (Pintrich, 2003; Scheel & Gonzalez, 2007).

Attribution theory, however, is unique in that it provides a parsimonious framework for how an individual perceives and interprets an academic outcome to inform behavioral responses (Graham, 1997). Understanding this process is particularly important when individuals encounter academic difficulty, as their interpretation of the reason for academic obstacles informs their behavioral response which can potentially counter academic difficulties and aid in persistence (Oyserman et al, 2004). In accordance with Graham (1997), interpreting academic difficulty as being due to internal factors (i.e., locus to internal or external factors), as an outcome that likely will occur frequently in the future due to similar causal reasons (i.e., stability), and as an outcome that one has little ability to change (i.e., controllability), may contribute to lower perceived responsibility for academic outcomes. Utilizing attribution theory, Weiner (1986) identified four primary causal attributions for achievement outcomes: ability, luck, task difficulty, and effort. Researchers have since coined the term academic learned helplessness as a specific attribution style for individuals who attribute poor academic outcomes to personal ability and luck and successful academic outcomes solely to luck (Chan & Moore, 2006). These attributions collectively represent an individual who believes academic difficulties are due to personal deficiencies that cannot be adjusted (i.e., internal, stable, and uncontrollable) and will continue to result in academic failure and difficulties.

The deleterious impact of academic learned helplessness on academic outcomes is particularly salient for individuals exhibiting academic amotivation (Chan and Moore, 2006; Legault, Green-Demers, & Pelletier, 2006). In a longitudinal study following a cohort of 803 eighth grade students for two years, academic learned helplessness was

associated with lower levels of academic achievement and less frequent use of strategies to achieve academically (Chan & Moore, 2006). Further research exploring differential attributions styles in two groups of students (learning disabled and non-learning disabled in the fifth, seventh, and ninth grades), found that academic learned helplessness was linked to lower perceived cognitive competence, less use of learning strategies, and lower reading comprehension scores among ninth grade students (Chan, 1994). In a study of academic strategy styles of 880 Swedish 14 and 15 year old students, Maata et al. (2002) found that students clustered within an academic learned helplessness group reported higher levels of failure expectation and active and passive task avoidance. This finding supports the positive relationship between academic learned helplessness and academic amotivation as evidenced by youths being less inclined to engage in academic activities when reporting increased academic learned helplessness. Collectively, these findings support academic learned helplessness as a valid predictor of academic amotivation among youths.

Academic learned helplessness represents the bridge between academic cognitive schemas such as APS constructs and behavioral enactment such as academic amotivation. Mental representations for experiences that promote lower academic expectations for academic outcomes have the potential to adversely impact interpretation of poor academic outcomes. A potential result of lower academic expectations is attributions such as academic learned helplessness that detract from the individual controlling future academic outcomes. In a review of academic strategies employed by high-school students to achieve academically, Martin and Marsh (2003) cited academic learned helplessness as a chief contributor to undermining youths perceived control of academic

achievement outcomes. When attribution styles such as academic learned helplessness are prevalent, the utility of exerting energy on an activity that one has no control over the results becomes less apparent. As such, academic amotivation is fostered among these youths who have developed cognitive antecedents detracting from perceived controllability over academic outcomes. Insight regarding the development of academic amotivation among high school students is predicated on understanding the role of academic learned helplessness as a predictor of academic amotivation.

Academic Amotivation and Gender

Collectively, findings support a consistent picture of the damaging impact of academic amotivation among high school students. Additionally, researchers suggest differential levels of academic amotivation between boys and girls (Vallerand et al., 1997). Overall, girls generally report lower levels of academic amotivation than boys (Ratelle et al., 2007). In a longitudinal study exploring cross-gender invariance among 322 boys and 321 girls in 8th grade during a 3-year period, Grouzet, Otis, and Pelletier (2006) reported latent means of .45 and .81 for girls and boys, respectively, during 9th grade and .02 and .49 during 10th grade. Furthermore, standard deviations for latent structures indicated significantly greater academic amotivation homogeneity among girls than boys, with 10th grade girls' possessing a latent standard deviation of .76 compared to 1.24 for boys. As such, it is suggested that boys represent a greater proportion of individuals with deleterious levels of academic amotivation than girls. However, higher levels of academic amotivation are consistently linked to poor academic outcomes such as low academic achievement and school dropout regardless of gender (Long et al.,

2007). Therefore, differential academic outcomes between genders may be ascribed to the higher proportion of boys with high levels of academic amotivation.

It should be noted other potential demographic variables that may contribute to academic amotivation outcomes include age, race/ethnicity, socioeconomic status (SES), and characteristics of the primary caregiver. Research explicitly exploring direct demographic effects specific to academic amotivation outlined above is nonexistent within published literature. However, research examining broader academic outcomes indicates these characteristics may contribute to low academic motivation (Henry, Merten, Plunkett, & Sands, 2008; Quilliams & Beran, 2009). Specifically, research suggests early adolescent, ethnic minority, and low-income youth are at greater risk for low academic motivation than older, higher SES, and Caucasian youth (Acharya & Joshi, 2011; Alfaro, Umaña-Taylor, & Bámaca, 2006; Eccles, Wong, & Peck, 2006; Young, Johnson, Hawthorne, & Pugh, 2011). Furthermore, lower levels of academic motivation have been associated with less parental monitoring and support (Duchesne & Larose, 2007; Ratelle et al., 2004). While exploring these factors are beyond the scope of this study, it is important to highlight their potential influence on academic outcomes.

When specifically exploring the development of academic amotivation, proportional gender differences highlight the need to identify gender differences among academic amotivation antecedents. However, gender differences for academic amotivation antecedents, in addition to the amount of academic amotivation needed to adversely impact academic outcomes among girls versus boys, remain unanswered questions.

Summary and Limitations

In summary, the development of academic amotivation among high school students remains a relatively understudied phenomenon that has significant implications for understanding youths' academic outcomes. Attribution theory provides a framework for understanding how youths perceive and integrate situational cues with memories of prior academic experiences and interpret academic difficulty in a manner that contributes to the development of academic amotivation.

Research limitations for exploring the development of academic amotivation primarily center on research sample limitations and scarcity of studies explicitly exploring the relationship between academic amotivation and academic cognitive constructs in high school students. Despite attribution theory elucidating the relationship between academic cognitive constructs and academic outcomes, researchers have yet to explore the development of academic amotivation as a function of a comprehensive theoretical model incorporating academic cognitive antecedents. Furthermore, few research studies have explicitly explored the relationship between academic amotivation and academic cognitive constructs utilizing an adolescent sample (Maata et al., 2007). To understand the development of academic amotivation and the maintenance of developmental patterns as youth progress through developmental stages, an empirical examination of the relationship of academic amotivation and academic cognitive constructs among adolescents is necessary.

Consistent with attribution theory, APS Balance and APS Plausibility represent possible cognitive antecedents to attribution styles that may reinforce perceptions of personal inability to achieve when absent, and thus, increase the likelihood of academic

learned helplessness. Furthermore, scholars identify academic learned helplessness as the predominant attribution style contributing to the development of academic amotivation due to its propensity to consistently undermine youth's perceived ability to achieve academically (Martin & Marsh, 2003; Chan & Moore, 2006). Collectively, academic possible selves constructs and academic learned helplessness provide the operational constructs necessary to empirically examine a developmental pathway toward academic amotivation that has been solely explored theoretically. To empirically examine the aforementioned theoretical relationships, the present study employed advanced statistical techniques to measure and model academic amotivation and related antecedents. By controlling for gender within an adolescent sample, this study advanced empirical exploration of individual differences that may contribute to development and maintenance of academic amotivation.

A Combined Model

Youths academic achievement outcomes and maladaptive social behavior outcomes have an extensive history of being interrelated (Jimerson & Ferguson, 2007). During the past few decades, numerous theories have emerged to explain the nature of this relationship (Katsiyannis, Ryan, Zhang, & Spann, 2008). Theoretical models utilizing operant conditioning principles suggest that youths who frequently exhibit disruptive behavior are frequent recipients of punishment and reprimands by their teachers and are less likely to receive positive reinforcement when exhibiting adaptive social behaviors or improved academic performance (Sutherland, Singh, & Conroy, 2004). It is theorized that minimal positive reinforcement leads to declined persistence with academic related tasks by youths and continued disruptive behavior. A related

theory suggests that aggressive youths engage in negative relationships with teachers and peers that increase youths dislike for school related tasks and increase the likelihood that students are being reprimanded instead of engaging in academic tasks (Ladd & Burgess, 1999). Models employing efficacy and self-esteem constructs posit that youths who exhibit disruptive and anti-social behaviors may have lower academic efficacy. In an attempt to maintain efficacy in other domains and preserve self-esteem, youths engage in delinquent behaviors that may increase social standing (Cillessen & Mayeux, 2007; Taylor, Davis-Kean, & Malanchuk, 2007). Developmental models propose that children who exhibit anti-social and delinquent behaviors may have a pattern of maladaptive behaviors, such as inattention and disruptive classroom behavior, which develop at an early age and persist into adolescence and contribute to both academic deficiencies and behavioral self-regulation difficulties (Vitaro, Brendgen, & Wanner, 2005). Collectively, these theories represent a general consensus for the interrelatedness of academic achievement and social behavioral outcomes.

Empirical support for the interrelatedness of aggression and academic achievement outcomes has been demonstrated in numerous studies (Loveland, Lounsbury, Welsh, & Bulbotz, 2007; Schwartz, Gorman, Nakamoto & McKay, 2006). In a study examining aggressive outcomes among first, fourth, and seventh grade students, findings by Xie et al. (2003) indicate that aggressive boys displayed significantly lower grades compared to non-aggressive boys, while no academic performance differences were observed between aggressive and non-aggressive girls. In a 10-year longitudinal study exploring academic and behavioral outcomes of 137 boys followed from kindergarten to high school, Jimerson and Ferguson (2007) found that students who were

retained in a grade displayed more aggression than non-retained students throughout the course of elementary, junior high, and high school. Using a sample of 237 students in kindergarten and first grade, Miles and Stipek (2006) explored the relationship between literacy in early childhood and aggression over time. Results revealed no significant relationship in kindergarten and first grade, but significant relationships were found that increased in magnitude over time in both third and fifth grade. In a study exploring psychosocial and academic differences among 843 aggressive and non-aggressive youths between the ages of 11 and 16, aggressive students who were socially rejected by peers reported significantly lower levels of academic self-esteem than non-aggressive youths (Lopez, Olaizola, Ferrer, & Ochoa, 2006). Lounsbury, Sundstrom, Loveland and Gibson (2003) found a high negative correlation between aggression and both academic performance and academic work drive among a sample of 220 seventh grade and 290 tenth grade students. The magnitude of the relationship between aggression and academic performance was greater among tenth grade students. Collectively, these studies highlight the pervasive pattern of academic difficulties among aggressive youths of all ages. Furthermore, results indicate that this relationship strengthens over time (Lounsbury et al., 2003; Miles & Stipek, 2006). Developmental implications of these findings suggest that when high levels of aggression are present, the relationship between aggression and academic outcomes may be strongest in the latter stages of adolescent development.

Despite the abundance of research supporting the interrelatedness of aggression and academic outcomes, directionality of the relationship has been more difficult to delineate. Longitudinal studies attempt to parse the direction of the relationship, but

suggest mixed findings (Caprara, Barbaranelli, Pastorelli, Bandura & Zimbardo, 2000; Miles & Stipek, 2006). In a ten year longitudinal study examining the association between peer relationships and educational outcomes among 524 children, findings by Risi, Gerharstein, and Kistner (2003) indicate that increased aggression during childhood predicted lower academic achievement and graduation rates during adolescence. In a 17-year longitudinal study exploring the contribution of peers to graduation rates among a sample of 997 six-year old boys, Ve'ronneau, Vitaro, Pederson, and Tremblay (2008) found that aggressive behavior during early childhood was related to lower levels of academic achievement and school commitment during adolescence. French and Conrad (2001) provided further support for the predictive validity of aggression on adolescent academic outcomes when examining the relationship between school dropout and anti-social behavior among 520 eighth grade students. In this two year longitudinal study, higher levels of aggression during eighth grade increased the likelihood of school dropout by tenth grade. In a 20 year longitudinal study following 412 youths beginning at age five, Brook and Newcomb (1995) found that aggressive behavior during childhood predicted lower grade point averages, fewer educational aspirations, and lower educational level during adolescence and young adulthood. Findings from Masten et al. (1995) indicate that early childhood conduct competence predicted adolescent academic competence, but not vice versa among a sample of 191 third through fifth grade students who were reassessed six and nine years later. Collectively, these studies generally identify aggression as a predictor of maladaptive academic outcomes; however, methodological concerns of not controlling for prior academic outcomes preclude

determining whether aggression is the only predictor of poor academic outcomes or whether early academic problems are similarly predictive of later negative outcomes.

The minority of studies indicating that academic achievement outcomes predict aggressive outcomes suggest a bi-directional relationship (Maata et al., 2007). For instance, Miles and Stipek (2006) found that lower levels of literacy in kindergarten and first grade predicted increased aggressive behavior in third and fifth grades. Ve'ronneau et al. (2008) found that higher levels of academic performance during childhood predicted lower levels of aggressive behavior during childhood. While fewer in quantity, these studies highlight the direct impact that academic factors can have on aggressive behavioral outcomes. Furthermore, evidence of a bi-directional relationship suggests that these variables may have an ongoing influence which continues over time, and thus, lends further support to cross-sectional findings suggesting a strengthened relationship between academic and aggression constructs over time (Jimerson & Ferguson, 2007; Lounsbury et al. 2003).

Given support for the interrelatedness of aggression and academic achievement outcomes and the strengthening of this relationship over time, a developmental model that accounts for cognitive antecedents that facilitate both poor academic and social behaviors may provide the basis for better identification and prevention of maladaptive social and academic patterns among high school youths. As described above, scholars have demonstrated the potential utility of attribution-based interventions in reducing aggression and poor academic outcomes by targeting maladaptive attribution patterns in both social and academic domains. In a study exploring attributional biases influencing behavioral enactment in a sample of 66 elementary school boys, Hudley et al. (2007)

utilized an intervention aimed at challenging attribution biases that involve youths attributing hostile intent to the behaviors of others within social situations (i.e., HAB) and attributing academic failure to uncontrollable factors within academic achievement situations (i.e., Academic Learned Helplessness). Findings show that youths who were able to develop domain-specific attributions that challenge attributional biases were likely to exhibit more adaptive behavior in the congruent domain. Specifically, significant decreases in hostile attribution were observed for boys involved in the intervention, which in turn, resulted in fewer aggressive behaviors post-intervention. Furthermore, youths assumed greater responsibility for academic outcomes which led to greater academic motivation. It should be noted that the intervention targeted attributional domains (i.e., academic learned helplessness and hostile attribution bias) separately and did not explore influences of challenging attributions on cross-domain behavioral outcomes. In other words, a portion of the intervention focused on the attribution of perceived responsibility as it relates to aggression and a separate portion of the intervention focused on perceived responsibility as it relates to academic motivation. In a similar intervention study targeting attributions that contributed to deleterious academic outcomes among 803 high school boys and girls, Chan and Moore (2006) found that academic learned helplessness declined for intervention youths relative to control group youths who did not receive the intervention. Furthermore, lower academic learned helplessness contributed to improved academic achievement and increased strategies for achieving academically. Collectively, these intervention studies underscore the importance of accounting for maladaptive attribution biases when seeking to explain the development of maladaptive social and academic behavioral outcomes and reinforce the

theories asserting that changing domain specific attributions leads to congruent outcome change.

While interventions have generally proven successful, the studies have focused on challenging attributional biases and changing domain congruent behavioral outcomes despite evidence for the interrelatedness of aggression and academic outcomes (Graham, 2004). As noted earlier, a developmental model accounting for factors contributing to both aggression and academic achievement outcomes should examine factors that reinforce the relationship between the aggression and academic achievement constructs. As attribution theory provides a framework for understanding developmental antecedents to both academic and social outcomes separately, it stands to reason that domain specific antecedents may contribute to the interrelatedness of behavioral outcomes within respective domains. As such, understanding how reactive aggression and academic amotivation develop among high school students may necessitate exploring both the domain congruent and domain incongruent influence of maladaptive attributional biases.

Intervention research by Graham (1997, 2004) and Hudley et al. (2007) represent the sole attempts to utilize an attribution framework to unify aggression and academic motivation antecedents to predict respective behavioral outcomes. Graham (1997) introduced the concept of perceived responsibility as an explanation for youths' aggression and academic motivation outcomes. Graham suggested that perceived responsibility represents perceived controllability within both social and academic situations, and thus, informs behavioral responses to negative outcomes such as bad grades and social interaction frustrations. An intervention was designed to train African-American and Latino youths how to assume greater responsibility for academic outcomes

and better assess the responsibility of others for negative social outcomes. While Graham's conceptualization identified a single attributional construct which could predict academic and aggression outcomes, she maintained that this construct is domain specific, and thus, can operate differentially between social and academic domains. In other words, perceived responsibility within the academic achievement domain may increase academic motivation, but the operation of perceived responsibility in the social domain may not influence academic motivation.

Understanding the role of maladaptive attributional biases, Graham hypothesized that altered attributions for perceived responsibility within respective domains would foster greater academic motivation and discourage use of aggressive behavior. This hypothesis was empirically tested in an intervention study which targeted the perceived responsibility attribution within achievement and social domains among a sample of 66 late childhood boys. Findings suggested that training youths to adjust perceptions of responsibility within the social and academic domains contributed to lower aggression and improved academic motivation among youths who participated in the intervention (Graham, 2004; Hudley et al., 2007). As noted earlier, a portion of the intervention focused on perceived responsibility as it related to aggression and a separate portion of the intervention focused on perceived responsibility as it related to achievement; thus focusing on domain-specific relationships between attributions and behavioral outcomes. While cross-domain influences were not explored, Graham provided preliminary support for possible cross domain influences of attributions. Specifically, a single attribution construct which operates within both domains suggests that a portion of the underlying structure of perceived responsibility may not be specific to a particular domain, and

instead, may account for variance in both aggression and academic amotivation. Given this possibility, in combination with support for the relationship between academic and aggression outcomes, it is plausible to consider that attribution biases which impact domain congruent behavioral outcomes have the potential to account for variance both within and across domains.

The pattern of exploring relationships between domain specific antecedents and domain congruent behavioral outcomes represents the majority of aggression and academic motivation literature to date. Few researchers have explored the cross-domain influence of aggression and academic amotivation antecedents despite the interrelatedness of aggression and various academic outcomes. Maata et al. (2007) provided empirical support for the cross-domain effect in a study exploring the relationship between academic achievement orientation and various school adjustment outcomes over a two year period among a sample of 734 youths between the ages of 14 and 15. Findings indicated that an academic learned helplessness achievement style was predictive of increased norm-breaking behavior. Furthermore, results revealed a gender effect in which boys in the academic learned helplessness group reported higher levels of norm-breaking behavior than boys clustered within the other four achievement orientation styles. Maata et al. asserted that the scarcity of research exploring multiple developmental pathways to behavioral outcomes such as norm-breaking behavior may be a function of the relative paucity of developmental research on adolescent academic and behavioral outcomes compared to research utilizing child samples.

While a study has yet to explicitly explore the relationship between hostile attribution bias and academic outcomes, a combination of findings support the

plausibility of this relationship. In a study exploring the social information processing model among 26 adolescents, Hartman and Stage (2000) found a positive relationship between hostile intent attributions and in-school suspension. Frequent disciplinary actions such as this have the potential to adversely impact academic outcomes. This finding coupled with the frequent co-occurrence of poor academic outcomes with aggressive behavior further underscores the plausibility of cross-domain relationships between hostile attribution bias and academic amotivation. Furthermore, intervention research exploring a unitary attributional construct that impacted both academic motivation and aggression lends further support for the presence of cross-domain influence of hostile attribution bias on academic amotivation outcomes (Graham, 2004; Hudley et al., 2007). To enhance understanding of how youths develop aggression and academic amotivation behaviors, research must address the extent to which the cross-domain influence of attributional antecedents impact these two interrelated and salient constructs among high school youths.

While cross-domain influences of attribution styles may shed considerable light on the development of behavioral outcomes, uniform gender differences observed within both achievement and social domains indicate that investigating gender effects may further enhance understanding of the attribution bias to outcome relationships among high school students (Crick & Grotpeter, 1995; Ratelle et al., 2007). Within both achievement and social behavioral domains differential gender effects were observed for both behavioral outcomes and attribution styles. For achievement domains, girls were less likely to exhibit academic amotivation and academic learned helpless attribution styles and were more likely to have better developed academic possible selves than boys

(Oyserman et al., 1995; Ratelle et al., 2007; Vallerand et al., 1997). Within the social domain, boys were more likely to exhibit aggression in general. Mixed findings regarding the differential gender effects regarding hostile attribution bias on reactive forms of aggression suggest further research is necessary to optimally understand reactive aggression outcomes for boys and girls (Crick & Grotpeter, 1995; Orobio de Castro et al., 2002). Findings within both social and academic achievement domains indicate gender plays a significant role in understanding how aggression and academic amotivation behaviors develop and are maintained among youths.

In summary, investigating the cross-domain influences of attribution styles on aggression and academic amotivation outcomes can provide further insight into the development and maintenance of these maladaptive behaviors among high school students. While prior findings support the interrelatedness of aggression and academic outcomes, the present study advanced previous research by employing advanced statistical techniques to empirically investigate the interrelatedness of behavioral outcomes and their antecedents. By utilizing a research design that examined aggression and academic behavioral outcomes independently and collectively, the present study permitted a comprehensive exploration of domain-specific and cross-domain relationships. As many youths continue to encounter social and academic challenges within school and in their community, a greater understanding for how maladaptive behaviors are developed and maintained will inform strategies for improving youths' academic and social behavioral outcomes.

Purpose and Rationale

Challenges within academic and social environments are obstacles most youths face during their high school experience. While some youths manage these obstacles

with adaptive social and academic behavioral responses, other youths are prone to engage in maladaptive behaviors, such as aggression, and respond with lower academic motivation when confronted with perceived social or academic achievement frustrations. The development of maladaptive academic and social behavioral responses is often a process explored independently within each domain (Graham 1997; Dodge, 2006). However, findings from educational and psychological literature indicate that social and academic achievement outcomes are interrelated (Katsiyannis et al., 2008; Risi et al., 2003; Taylor et al., 2007). Attribution theory, as applied to each domain, indicates that there are distinct attribution styles or biases that contribute to each outcome. Within the achievement domain, the attribution style of academic learned helplessness is generally linked to greater academic amotivation, while hostile attribution bias is associated with greater reactive aggression within the social domain (Chan & Moore, 2006; Orobio de Castro et al., 2002).

Despite attribution theory providing a unifying framework for social and achievement behavior antecedents, minimal research has focused on the cross-domain influence of attribution styles on aggression and academic amotivation outcomes. Given evidence for the adverse impact of aggression and academic amotivation on academic performance, and support for interventions targeting attribution styles in improving both academic and social behavioral outcomes (Graham 2004, Card & Little, 2006), understanding how domain-specific attribution styles impact cross-domain behavioral outcomes is critical to gaining insight on the development and maintenance of maladaptive academic and social behaviors among youths and what one can expect in

terms of effects based on domain congruent interventions. Thus, the primary purpose of the present study was to explore four models of aggression and academic amotivation among high school students: (1) an independent reactive aggression model, (2) an independent academic amotivation model, (3) a domain-specific integrated model, and (4) cross-domain integrated model. Given that gender effects have been noted in the reactive aggression and academic motivation literature, domain specific and cross-domain effects were investigated controlling for gender.

The development of reactive aggression is a phenomenon that has consistently been traced to antecedent cognitive processes that are biased toward perceiving and interpreting threat within ambiguous social situations (Crick & Dodge, 1994; Crick & Dodge, 1996). With the use of attribution theory, hostile attribution bias has been observed to consistently predict increased reactive aggressive behavior (Orobio de Castro et al., 2002). Given strong support for the impact of hostile attribution bias on reactive overt forms of aggression, and mixed findings for the impact of hostile attribution bias on reactive relational forms of aggression (Crick & Grotpeter, 1995; Putallaz et al., 2007), disaggregating these two forms of aggression is important for understanding the extent to which hostile attribution bias accounts for reactive aggressive behavior for boys and girl. Furthermore, schemas that promote selective perception of situational cues that pertain to threat have been linked to increases in hostile attribution bias and reactive aggression (Burks et al., 1999; Dodge et al., 2002). Thus, the present study explored the direct impact of hostile schemas on both hostile attribution bias and reactive aggression, and the subsequent mediated and direct impact of hostile attribution bias on reactive aggression (Figure 1).

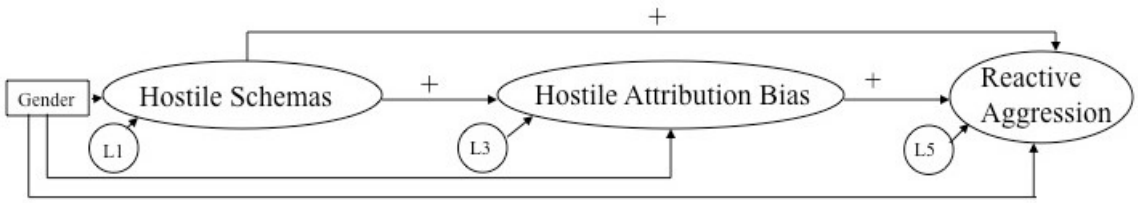

Figure 1. Reactive Aggression Conceptual Model.

While the development of academic amotivation has a relatively limited research base compared to other dimensions of academic motivation, findings within the psychological and educational literature provide useful constructs for understanding the development of academic amotivation among youths. Utilizing attribution theory, scholars have identified academic learned helplessness as a maladaptive antecedent contributing to increases in academic amotivation (Chan & Moore, 2006; Chan, 1994). Additional research by Oyserman and colleagues (2004) suggests that youths' mental representation of future academic states and strategies to achieve goals and avoid obstacles has implications for academic self-regulatory behaviors and perceptions of academic difficulties. These academic possible selves are often conceptualized as self-schemas that reflect youths' past experiences related to academic achievement (Packard & Conway, 2006). Given the dearth of literature exploring the development of academic amotivation, the present study proposed a developmental model initiating with the direct negative impact of Academic Possible Selves (APS; APS Balance and APS Plausibility) on academic learned helplessness and on academic amotivation. Within the model, academic learned helplessness was also conceptualized as having a direct positive effect on academic amotivation. Consistent with the reactive aggression model, academic learned helplessness was proposed as partially mediating the association between APS and academic amotivation (Figure 2).

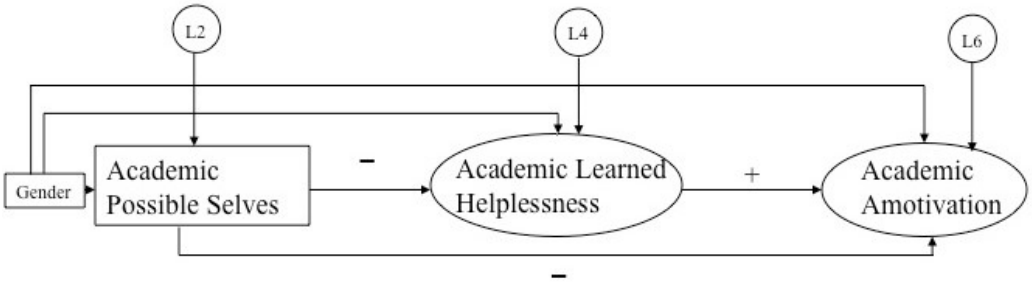

Figure 2. Academic Amotivation Conceptual Model.

Despite research exploring the development of reactive aggression and academic amotivation as products of domain-specific antecedents, findings support the interrelatedness between social and academic achievement behavioral outcomes and suggest that cognitive antecedents within respective domains may have cross-domain effects on behavioral outcomes. This effect is further reinforced by research findings indicating that interventions targeting youths' styles of attribution have improved social and academic behavioral outcomes (Chan & Moore, 2006; Hudley et al., 2007). Yet, minimal research exists that explores the impact of attributional styles within the achievement domain on social behavioral outcomes and academic achievement outcomes being impacted by attributional styles within the social domain (Graham, 2004). Specifically, researchers have yet to examine the cross-domain impact of hostile attribution bias on academic amotivation or the impact of academic learned helplessness on reactive aggression within a unified model. It is possible that there are attributional bias antecedents to behavior across domains (multi-finality) that have yet to be explored and may inform strategies for intervention and prevention of reactive aggression and academic amotivation among youths. Thus, the present study examined two combined models for reactive aggression and academic amotivation that included testing the direct

(Figure 3) and cross-domain (Figure 4) relationships of attribution styles and behavioral outcomes.

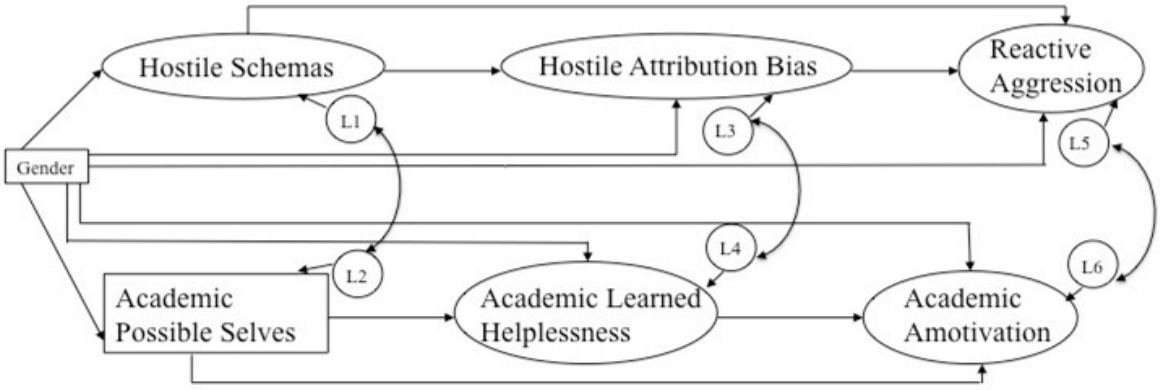

Figure 3. Domain-Specific Integrated Conceptual Model.

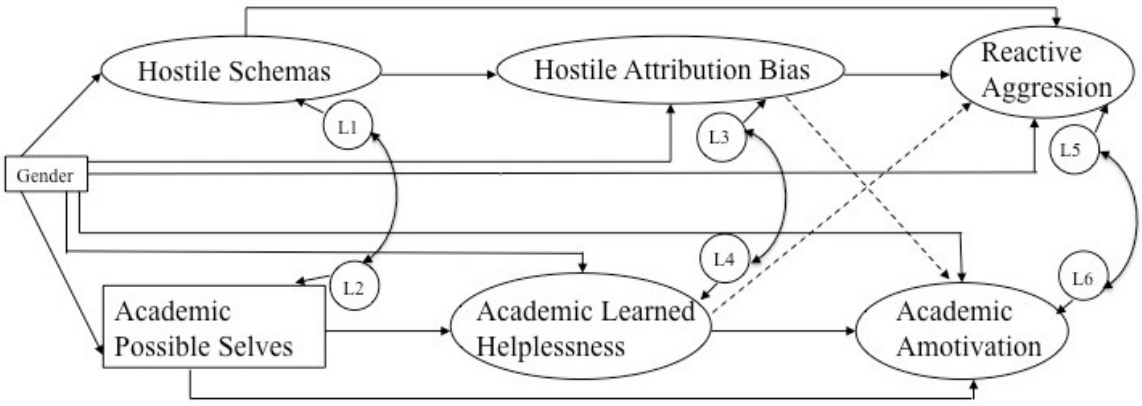

Figure 4. Cross-Domain Integrated Conceptual Model.

Conceptual Hypotheses

Hypothesis 1

After controlling for gender effects, it was hypothesized that hostile schemas and hostile attribution bias would be positively associated with reactive aggressive behaviors with the relationship between hostile schemas and reactive aggression being partially mediated by hostile attribution bias. This hypothesis was based on numerous findings

supporting the association between cognitive constructs representing hostility and reactive aggressive behaviors (Burks et al., 1999a; Polman et al., 2007). Specifically, research has identified hostile schemas as an antecedent to both hostile attribution bias and reactive aggression (Burks et al., 1999b; Dodge et. al., 2002). Furthermore, numerous findings supporting the presence of higher levels of hostile attribution bias among reactive aggressive youths provided the basis of this hypothesis (Crick & Dodge, 1996; Hoglund & Leadbeater, 2007; Orobio de Castro et al., 2002). Finally, boys have generally been observed to exhibit more overt and overall aggression than girls (Marsee et al., 2008; Lento-Zwolinski, 2007), providing the basis for controlling gender effects.

Hypothesis 2

After controlling for gender effects, it was hypothesized that Academic Possible Selves (APS) would be negatively associated with academic amotivation, with academic learned helplessness partially mediating the relationship between APS and academic amotivation. This hypothesis is rooted in research finding that academic amotivation increases as youths' perceived control over academic outcomes decreases (Chan & Moore, 2006; Graham, 1997; Graham, 2004). Both academic possible selves and academic learned helplessness represent cognitive constructs that contribute to youths' perceived control over academic outcomes. Furthermore, the APS research has supported the direct relationship of APS constructs and academic self-regulatory behaviors (Oyserman et al., 2004; Oyserman et al., 2006). While the direct relationships between APS, academic learned helplessness, and academic amotivation have yet to be explored, the educational and psychological literature suggests that cognitive processes that contribute to increased academic self-regulatory behavior foster greater academic

motivation and less academic learned helplessness (Chan & Moore, 2006). Finally, findings consistently indicate that girls report lower levels of academic amotivation than boys (Ratelle et al., 2007; Vallerand et al., 1997), and provided the basis for controlling gender effects.

Hypothesis 3

After controlling for gender effects, it was expected that within the Domain-Specific Integrated Model, cognitive antecedents would maintain consistent and expected associations with the domain congruent outcomes and that significant covariation would be found between schemas, attribution styles, and outcomes. Research supporting the interrelatedness of social and academic behavioral constructs, in combination with findings supporting the relationship between domain-congruent cognitive antecedents and behavioral outcomes, provided the basis for this hypothesis (Chan & Moore, 2006; Orobio de Castro et al., 2002).

Hypothesis 4

After controlling for gender effects, it was expected that the Cross-Domain Integrated Model would account for both the direct and cross-domain influence of attribution styles on behavioral outcomes while also accounting for covariation between cross-domain cognitive processes. Specifically, cognitive antecedents would maintain consistent and expected associations with the domain congruent outcomes and domain-specific attributions would be associated with cross-domain outcomes.

This hypothesis is based on research supporting the interrelatedness of aggression and academic outcomes (Jimerson & Ferguson, 2007; Miles & Stipek, 2006). Furthermore, findings supporting the relationship between domain congruent cognitive

antecedents and behavioral outcomes provided additional support for this hypothesis (Chan & Moore, 2006; Orobio de Castro et al., 2002). Finally, limited research supporting the cross-domain influence of attributional antecedents on behavioral outcomes provided further support for this hypothesis (Maata et al., 2007).

Hypothesis 5

After controlling for gender, it was expected that the Cross-Domain Integrated Model would provide the optimal representation for the relationships between latent constructs by accounting for the direct and cross-domain effects compared to the Domain-Specific Integrated Model. This hypothesis was based on support for the domain congruent relationships between latent constructs present within both models and the additional unique variance accounted for within the Cross-Domain Integrated Model by modeling cross-domain effects of the hostile attribution bias on academic amotivation and academic learned helplessness on reactive aggression (Dodge, 2006; Graham, 2004; Maata et al., 2007). Evidence for the cross-domain effects is derived from attribution intervention research by Hudley and Graham (2007) and Maata et al. (2007).

CHAPTER II: METHODS

Participants

A total of 189 high school students enrolled in two school-based health clinics in New York City participated in the study. The sample consisted of 118 girls (62.4%) and 71 boys (37.6%) aged 13 through 19 ($M = 15.79$, $SD = 1.33$), with 62.7% of participants receiving free or reduced lunch. The sample was comprised of participants from 9th (14.3%), 10th (31.7%), 11th (25.4%), and 12th (28.6%) grades. Based on self-reported ethnicity, the sample was 44.2% African-American, 39.2% Hispanic-American, 5.0% Asian-American, 1.1% Caucasian, and 8.8% other ethnicity (1.7% were missing ethnicity information). Participants reported overall current grades ranged from "A" to "F," with 11.8% As, 46.2% Bs, 33.3% Cs, 7.5% Ds, and 1.1% Fs. Based on self-reported home environment, 63.9% of participants reported living with 2 or more adults, with 78.3% of primary caregivers having attained a high school degree or higher. It should be noted that all participants who responded to the demographic question regarding the number of adults in the house reported a minimum of one adult. All demographic data are presented in Table 1.

Independent sample *t*-tests and a series of chi-square analyses were conducted to compare boys and girls on age, ethnicity, grades received in school, current grade level, and reception of free lunch. To satisfy statistical assumptions of chi-square analyses low frequency categories for grades received in school (Ds and Fs) were collapsed into a single category, as were low frequency ethnicity categories (Caucasian, Asian, and Other). Boys and girls did not differ on age, $t(187) = .72$, $p = .39$, ethnicity, $\chi^2(2, N = 178) = 2.78$, $p = .25$, grades received in school, $\chi^2(3, N = 186) = 1.17$, $p = .76$, and

reception of free or reduced lunch, $\chi^2(1, N = 186) = .73, p = .39$. However, boys and girls significantly differed on current grade level, $\chi^2(3, N = 189) = 8.66, p = .03$, with girls representing a significantly greater proportion of participants for grades 10, 11, and 12.

Measures

Measures utilized in the current study are presented below. Prior research reporting on reliability and validity of each measure is reviewed. Furthermore, specific subscales utilized to create latent constructs for structural equation models in the current study are referenced in greater detail. Number and content of final items identified and utilized to model latent constructs are specifically discussed in Chapter III – Results. Additionally, it should be noted that all reliability estimates based on the current study (i.e., internal consistencies and intraclass correlation coefficients for APS constructs) are also presented in Chapter III.

Demographic Information

Participants completed a demographic questionnaire providing information pertaining to gender, grade level in school, race, age, eligibility for free or reduced lunch and estimated overall grade point average from the previous academic year. To further explore demographic variables, the Barratt Simplified Measure of Social Status (BSMSS; Barratt, 2006), was integrated into the demographic questionnaire (see Appendix A). Additional information acquired from the BSMSS included participants' self-reported number of caregivers currently residing at home and primary caregivers' level of educational attainment.

Table 1
Sample Demographics by Gender

Demographic Variables	Total Sample *N (%)*	Boys 71 (37.6%)	Girls 118 (62.4%)
Current Grade Level			
9th Grade	27 (14.3)	17 (23.9)	10 (8.5)
10th Grade	60 (31.7)	20 (28.2)	40 (33.9)
11th Grade	48 (25.4)	16 (22.5)	32 (27.1)
12th Grade	54 (28.6)	18 (25.4)	36 (30.5)
Overall Current Grades			
As	22 (11.8)	8 (11.3)	14 (12.2)
Bs	86 (46.2)	33 (46.5)	53 (46.1)
Cs	62 (33.3)	22 (31.0)	40 (34.8)
Ds	14 (7.5)	7 (9.9)	7 (6.1)
Fs	2(1.1)	1 (1.4)	1 (0.9)
Ethnicity			
African-American	80 (44.2)	26 (36.6)	54 (48.2)
Hispanic-American	71 (39.2)	32 (45.1)	39 (34.8)
Caucasian	2 (1.1)	1 (1.4)	1 (.9)
Asian	9 (5.0)	1 (1.4)	8 (7.1)
Other	16 (8.8)	7 (9.9)	9 (8.0)
Receives Free or Reduced Lunch			
Yes	124 (67.2)	50 (70.4)	74 (64.3)
No	62 (32.8)	21 (29.6)	41 (35.7)
Guardian Educational Attainment			
Less than HS Diploma/GED	38 (21.8)	14 (22.6)	24 (21.2)
HS Diploma/GED	37 (21.3)	18 (29.0)	19 (16.8)
Partial College	31 (17.2)	8 (12.9)	23 (20.4)
College Education	36 (20.7)	11 (17.7)	25 (22.1)
Graduate Degree	33 (19.0)	11 (17.7)	22 (19.5)
Number of Adults in Household			
1 Adult	68 (36.2)	19 (27.1)	49 (58.5)
2 Adults	100 (53.2)	40 (57.1)	60 (58.5)
3 or More Adults	20 (10.7)	11 (15.7)	9 (7.6)

Note. Categories within variables not equaling N =71 boys, and N =118 for girls, is due to missing data.

Hostile Schemas

The Children's Automatic Thoughts Scale (CATS; Schniering & Rapee, 2002) is a self-report measure consisting of 40 items designed to measure a range of negative self-statements in children and adolescents (see Appendix B). The CATS has four subscales (Physical Threat, Social Threat, Personal Failure, and Hostile Intent). Participants are asked how often negative thoughts arise using a 5-point Likert-type scale ranging from "not at all" (0) to "all the time" (4). For the purpose of this study, the Hostile Intent subscale was the sole subscale utilized to assess hostile schemas. The Hostile Intent subscale consists of 10 items and includes items such as "bad people deserve to get punished" and "most people are against me."

The CATS has proven to be a reliable measure as evidenced by reports of high internal consistency (Schniering & Rapee, 2004a). Internal consistency for all subscales has ranged from .85 to .92 (Schniering & Rapee, 2002). Internal consistency for individual subscales ranged from $\alpha = .88$ to $\alpha = .93$, with a Cronbach's alpha coefficient of .90 for the Hostile Intent subscale (Schniering & Rapee, 2004a; Schneiring & Rapee, 2004b). In a longitudinal validation study utilizing a clinical and community sample of 762 children and adolescents, internal consistency for the Hostile Intent subscale was .85 (Schniering & Rapee, 2002). Furthermore, test-retest reliabilities for subscales at 1-month and 3-months ranged from .68 to .80 for all subscales, with an intraclass correlation coefficient of .87 for the Hostile Intent subscale. In a study exploring hostility among a clinical sample of 891 children and adolescents diagnosed with an anxiety disorder, strong internal consistency was observed for the Hostile Intent subscale with a

Cronbach's alpha of .82 (Schniering & Lyneham, 2007). Research does not indicate differential internal consistencies for subscales by age or gender.

The validity of the CATS has been supported by recent validation studies (Micco & Ehrenreich, 2009; Schniering & Rapee, 2002; Schniering & Rapee, 2004a). Assessment of discriminant validity revealed that youths with behavior disorders scored significantly higher on the Hostile Intent subscale than non-clinical samples or anxious samples with depressive disorders (Schniering & Lyneham, 2007). In a study examining convergent validity for the CATS among a clinical and non-clinical sample of 360 youths, Schniering and Rapee (2004b) found that the Hostile Intent subscale had strong positive associations with the Child Behavior Checklist-Externalizing subscale (r = .26) (CBCL; Achenbach, 1991) and Youth Self-Report-Externalizing Behavior subscale (r = .51) (YSR; Achenbach, 1991). Additionally, scores on the Hostile Intent subscale were predictive of externalizing behaviors. Furthermore, a gender effect was revealed for the Hostile Intent subscale, with boys reporting significantly greater negative thoughts pertaining to hostile intent than girls.

Items from the Hostile Intent subscale were utilized to scale the latent construct of Hostile Schemas in the current models. Confirmatory factor analyses (CFA) conducted in prior studies have validated a hierarchal structure with a single higher order latent factor that predicts the four first order latent factors representing CATS subscales (Schniering & Rapee, 2004a; Schniering & Rapee, 2004b). As such, prior research validating the CATS factor structure calculated goodness-of-fit indices for the higher order model. Results indicated good overall fit ($\geq$ .90) across several indices (i.e., GFI, AFGI, & NFI) (Schneiring & Rapee, 2002; Schniering & Rapee, 2004a). Prior research

did not calculate goodness-of-fit for respective first order factors representing subscales, but provided factor loadings of indicators for the Hostile Intent latent construct. Among a community sample of 716 children and adolescents between the ages of 7 and 16, factor loadings for the Hostile Intent latent construct ranged from .43 to .83 (Schneiring & Rapee 2002). Similar results emerged for the Hostile Intent subscale among a community sample of 978 children and adolescents, with factor loadings ranging from .44 to .84 (Schneiring & Rapee, 2004a). Additionally, findings for higher order measurement models indicated factorial invariance by gender. These results indicate that the CATS is an effective tool for assessing youths' hostile schemas and the Hostile Intent subscale displays excellent convergent validity with measures assessing correlates of aggression.

Hostile Attribution Bias

The measure of hostile attribution bias (HAB) was adapted from the Adolescent Stories interview measure (Conduct Problems Prevention Research Group, 1999) and the Why Do Kids Do Things Measure (Crick et al., 2002) which are both assessments of HAB in social situations characterized by an ambiguous provocation (see Appendix C). Each measure utilizes 8-10 hypothetical vignettes in which participants are targets of ambiguous forms of provocation. Vignettes are divided into two categories that consist of relational (i.e., peers whispering and looking at participant) and overt (i.e., books knocked on the floor as peer runs by desk) forms of provocation. Participants identified one of four reasons for the provocateur's actions, rated the degree to which the provocateur acted with hostile intent on a five-point Likert type scale ranging from "not likely" to "very likely," and rated the degree to which the provocateur's actions would make him or her mad on a three-point scale ranging from "not upset" to "very upset."

For the present study, a 10-vignette adapted self-report measure was administered. Researchers often adapt HAB measures for study purposes by making slight modifications to vignettes (i.e., slight scenario adjustments such as using the term "ipod" versus "CD player" to reflect contemporary experiences of targeted youth) while maintaining the general structure of the measure, content of the stories, and rating scales (Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Consistent with the scoring method used by Crick, Grotpeter, and Bigbee (2002), HAB scores were derived from responses to the first two questions (i.e., reasons for actions and degree of hostile intent) using the five vignettes representing overt forms of provocation and combined to form a composite score. More specifically, the first question required participants to choose one reason the provocation occurred, with two of the options representing hostile attributions and two representing benign attributions. Participants choosing one of the hostile attribution options received a score of "1." The second question required participants to assess how likely it was that the provocateur intended to be aggressive. Response options for this question are anchored on a 0 to 4 scale ranging from "not at all likely" to "very likely" with higher scores reflecting a greater belief that the provocateur intended to act aggressively. These two questions were combined to create a vignette HAB score ranging from 0-5 per vignette. These scores were summed across the five vignettes to yield a total HAB score that could range from 0 to 25.

Self-report HAB measures have adequate to high internal consistency with Cronbach alphas ranging from .77 to .90 (Crick & Dodge, 1996; Crick et al., 2002; Nyborg & Curry, 2003), indicating satisfactory internal consistency. In a study exploring cognitive and emotional correlates to proactive and reactive aggression among a sample

of 58 adolescent detained girls, Marsee and Frick (2007) reported an internal consistency estimate of $\alpha = .77$ using a similar self-report HAB measure. Similarly, internal consistency for an adapted What Do You Think measure (Laird, 2000) was adequate ($\alpha = .78$) among a sample of 84 African-American boys.

The validity of self-report vignette HAB measures is well-established (Orobio de Castro et al., 2002). In a study assessing HAB among a sample of 84 African-American boys, HAB partially mediated the relationship between perceived racial discrimination and externalizing behaviors. Crick et al. (2002) explored the relationship of intent attributions and emotional distress among 825 third grade boys and girls and found that youths higher in relational aggression responded to HAB measure vignettes displaying relational provocation with greater emotional distress (i.e., anger or distress) than vignettes displaying overt forms of provocation. Similarly, youths who exhibited more overt aggression responded to vignettes displaying overt forms of provocation with greater emotional distress than vignettes displaying relational forms of provocation.

Despite support for the internal consistency and validity of self-report measures of HAB, confirmatory factor analyses for an HAB latent construct have yet to be investigated. Therefore, the present study conducted a series of CFAs to specify an HAB latent construct and tested factorial invariance by gender. Despite the absence of prior factor analytic studies, based on previous findings for HAB vignette measures, the adapted measure for the present study provided an optimal tool for assessing HAB among an adolescent sample (Orobio de Castro et al., 2002).

Reactive Aggression

The Peer Conflict Scale (PCS; Kimonis et al., 2004) is a self-report measure designed to assess the degree to which youths engage in reactive relational, reactive overt, proactive relational, and proactive overt forms of aggression. The PCS is comprised of 40 items rated on a four-point scale ranging from "0 = not at all true" to "3 = definitely true." Composite scores are derived for relational and overt forms of aggression and reactive and proactive functions of aggression by calculating the sum of responses for items that comprise respective subscales. For the purpose of this study, the reactive overt aggression subscale was the sole subscale utilized. The reactive overt subscale is 10 items and includes statements such as "when someone threatens me, I end up getting into a fight" and "I have gotten into fights, even over small insults from others."

Reliability estimates for the PCS have been adequate. Internal consistency for reactive aggression among a sample of 85 adolescent boys was acceptable, $\alpha = .86$ (Munoz, Frick, Kimonis, & Aucoin, 2008). Marsee et al. (2008) reported an internal consistency of $\alpha = .86$ for reactive aggression among a community sample of 83 youths. Barry, Grafeman, Adler, and Pickard (2007) reported internal consistency for the PCS of $\alpha = .93$ for the reactive overt subscale in a sample of 349 boys and girls. Marsee and Frick (2007) reported a Cronbach alpha of .80 for reactive overt aggression in a sample of 58 detained adolescent girls. In a validation study of the PCS, Cronbach alphas ranged from .85 to .95 for reactive overt aggression subscales among a sample of 470 adolescents (Marsee, Barry, Frick, Kimonis, & Munoz, 2007). Reports of internal consistency do not reveal differential reliabilities by age or gender for the PCS scales.

The validity of the PCS has been established using clinical and non-clinical samples of youth (Marsee & Frick, 2007; Marsee et al., 2008). In a study exploring the relationship between aggression and anxiety among 83 children and adolescents, all forms of aggression were positively associated with anxiety (Marsee et al., 2008). In a study exploring the predictive validity of emotional processing for aggressive outcomes among 88 detained adolescent boys, Kimonis et al. (2007) found that callous/unemotional traits predicted increased proactive and reactive aggression among youths who also evidenced low facilitation to distress cues. In a study examining self-esteem, narcissism, and delinquency among a sample of 349 adolescents enrolled in a military intervention for youth who dropped out of school, Barry, Grafeman, Adler, and Pickard (2007) indicated that narcissism and impulsivity predicted relational and overt forms of aggression as measured by the PCS. Collectively these studies indicate that aggression, as assessed by the PCS, is predicted by known aggression correlates such as maladaptive emotional processing deficits and personality traits. These studies provide growing evidence for the construct validity of the PCS. More specifically, the PCS has proven to be a reliable and valid assessment tool for reactive overt aggression. Furthermore, the PCS has improved upon previous aggression instruments by clearly delineating dimensions of aggression into separate and non-overlapping scales (Marsee & Frick, 2007).

The PCS was utilized to scale the latent construct of reactive aggression in the current study. Marsee, Barry, Frick et al. (2007) utilized confirmatory factor analysis to support the four factor structure of the PCS, χ^2 (716) = 1997.78, CFI = .837, RMSEA = .062. Furthermore, findings indicated measurement invariance between boys and girls.

Factor loadings for respective subscales were not provided in published findings. However, strong internal consistency estimates and support for convergent validity with measures assessing correlates of aggression supported the use of the PCS as an effective measure for assessing reactive overt aggression in the present study.

Academic Possible Selves

The Possible Selves Questionnaire (PSQ; Oyserman & Saltz, 1993) is an open-ended self-report questionnaire used to assess youth perceptions of possible future selves (see Appendix D). Youths are asked to report possible selves to be obtained by next year (expected possible self), future feared-selves to be avoided by next year (feared possible self), and strategies to accomplish these goals. Responses are coded into one of six categories (Achievement, Interpersonal Relationships, Personality Traits, Physical/Health Related, Material/Lifestyles, or Negative/Non-normative/Risky Behaviors). Generally, coding is conducted by four to five coders and a subset of questionnaires is randomly selected to be double coded to ensure inter-rater reliability. Inter-rater consistency has ranged from 90% to 95% (Oyserman et al., 2006; Oyserman & Markus, 1990b) in prior studies.

To derive the Academic Possible Selves (APS) construct for the present study, APS Balance and APS Plausibility scores were combined to form a single composite score. Following coding procedures outlined by Oyserman et al., (2006), Academic Possible Selves Balance (APS Balance) was coded by assigning one point for each expected possible self (i.e., I want to study harder) that had a congruent feared possible self (i.e., I want to avoid distractions that keep me from studying). Points were summed to derive an APS Balance score. It should be noted that results from prior studies have

indicated that APS Balance scores frequently display limited range (Oyserman et al., 2006; Oyserman et al., 2003). In a multi-ethnic sample of 264 students in 8th and 9th grades, findings from a one year longitudinal study examining APS constructs revealed average APS Balance scores from multiple data collection time points ranged from .30 to .40. Academic Possible Selves Plausibility (APS Plausibility) incorporates strategies that participants report will aid in achieving expected selves or avoiding feared selves. The APS Plausibility score was derived using a coding rubric designed by Oyserman et al., (2004) that instructs coders to assess expected and feared selves and strategies using a scale ranging from "0" (no APS or one vague APS) to "5" (four or more APS and four or more strategies and at least one strategy for an academic self is focused on interpersonal aspects of school context).

For the single composite score which denoted the construct of Academic Possible Selves (APS) in the present study, scores ranged from 0-9 and were derived utilizing methods for coding APS Balance and APS Plausibility as outlined by Oyserman et al. (2006). More specifically, a stepwise procedure for coding all possible selves was designed to facilitate standard procedures for coding APS constructs (see Appendix E). Furthermore, all research assistants were trained on coding procedures and provided a scoring guide to ensure standardized coding procedures. Additionally, a coding sheet was designed to standardize entering coded data (see Appendix F). APS Balance and APS Plausibility scores were derived independently. APS Balance scores ranged from 0-4 and APS Plausibility scores ranged 0-5. To derive a composite APS score, APS Balance and APS Plausibility scores were summed.

Reliability indices and findings from numerous studies consistently support the inter-rater reliability and validity of the PSQ (Oyserman & Saltz, 1993). Reliability estimates for the PSQ reveal high inter-rater reliability. For example, Oyserman et al. (2004) reported inter-rater reliability estimates of 94% agreement between raters for both APS Balance and APS Plausibility. Oyserman et al., 2002 reported a 90% inter-rater reliability for APS Balance. Finally, Oyserman et al. (2006) stated that all APSs were double coded with 94% inter-rater reliability for both APS Balance and APS Plausibility. To derive reliability estimates, PSQ responses for 10% of the sample were chosen at random and coded independently by two trained research assistants.

Validity for the PSQ has been documented across numerous studies. Oyserman et al. (2004) found that APS Plausibility and APS Balance were associated with positive academic outcomes such as improved GPA and increased time spent doing homework among 160 eighth grade African-American and Hispanic students. As part of an educational intervention program with the goal of improving APS Balance among 208 African-American middle school students, Oyserman et al., (2002) found that an intervention to expand academic possible selves increased both APS Balance and APS Plausibility scores. Further research exploring intervention effects on APS Plausibility and APS Balance among 264 African-American and Hispanic middle school students found that APS constructs partially mediated intervention effects on GPA (Oyserman et al., 2006).

Prior research provides strong support for PSQ inter-rater reliability and convergent validity with academic variables. Previous research provides mixed support for differential APS levels between girls and boys, with select studies indicating girls

report more APSs and others indicating no gender difference (Oyserman et al., 1995; Oyserman, 2002). To date, no factor analytic studies have been conducted on the PSQ. In summary, the PSQ represents a sound measure for deriving APS constructs.

Academic Learned Helplessness

The Causal Attribution Scale (CAS; Chan, 1994) is a 40-item self-report measure consisting of ten scenarios designed to assess individual attributions for a variety of academic outcomes (see Appendix G). The ten scenarios represent five success incidents such as "when you did well in an exam at school, it was probably because : " and five failure incidents such as "If you got a low grade, it was likely because:." After reading each scenario, participants rate the degree to which the academic outcome depicted is attributed to effort, strategy use, ability, and luck by rating each attribute on a four point Likert-type scale ranging from "1" (rarely true) to "4" (almost always true). Each attribution forms a separate 5-item subscale for the success incidents (e.g., "if you got a high mark for an assignment, it was likely because: you were lucky," representing the luck attribution for success) and 5-item subscale for the failure incidents (e.g., "if you got a low mark it was likely because: you aren't very good at schoolwork," representing the ability attribution for failure).

Based on prior research, the present study replicated the Academic Learned Helplessness (ALH) latent variable developed by Chan and Moore (2006) utilizing the three subscale composite scores from the CAS: Failure-Ability subscale, Failure-Luck subscale, and Success-Luck subscale. Each subscale is comprised of 5 summed responses (i.e., ability attribute ratings for the five failure scenarios = Failure-Ability subscale) with scores ranging from 0-20. Attribution theory guided the identification of

subscales comprising the ALH latent construct (Weiner, 1984). Specifically, attribution theory posits that individuals who frequently attribute failure to stable internal factors (i.e., ability) and both success and failure outcomes to chance (i.e., luck) reflect a learned helplessness attribution style (Chan, 1994). For the present study, the failure-ability subscale reflects attributing academic failure to stable internal factors and both success-luck and failure-luck subscales reflect attributing academic outcomes to chance. This is consistent with theoretical and operational principles employed by Chan and Moore (2006) to guide development of the ALH construct using the CAS.

Internal consistency for the CAS has been supported in studies utilizing the CAS to predict academic outcomes (Chan, 1994; Chan & Moore, 2006). The researchers reported reliability estimates ranging from $\alpha = 0.63$ to $\alpha = 0.81$ across all subscales. Furthermore, internal consistency estimates ranged from $\alpha = .68$ to $\alpha = .81$ for all subscales across a large sample of primary and secondary students (Moore, Mok, Chan, & Li 2006). Testing psychometric properties for the CAS subscales utilizing a sample of 185 fifth and sixth grade students and 236 eighth and ninth grade students revealed internal consistency estimates of $\alpha = .80$ and $\alpha = .84$ for the Success-Luck subscale, $\alpha = .79$ and .80 for the Failure-Luck subscale, $\alpha = .87$ and $\alpha = .83$ for the Failure-Ability subscale (Fairbarin, Moore, & Chan, 1994). Chan and Moore developed an ALH latent construct comprised of the Success-Luck, Failure-Ability, and Failure-Luck subscales. Findings supported moderate temporal consistency of the ALH latent construct for non-intervention youths of $r = .61$ and $r = .43$ for intervention youths during grades seven through eight across a 12 month test-retest period.

Validity of the CAS has been established utilizing various samples of youths. In a sample of 18,000 secondary and primary school students in Hong Kong, Moore et al. (2006) provided further validation for the CAS by testing the latent factor structure and obtaining goodness of fit indices ranging from .98 to 1.00 for each subscale. In a study exploring the relationships between motivation, strategic learning, and reading achievement among 104 fifth grade students, 133 seventh grade students, and 101 ninth grade students, learning disabled students were more likely to have attributions styles consistent with ALH than non-learning disabled students. In a five-year longitudinal study exploring interventions that impact the development of attributional beliefs among 391 fifth grade students and 803 high school students, ALH predicted less strategy use and declines in academic outcomes (Chan & Moore, 2006).

Confirmatory factor analyses conducted by Chan and Moore (2006) for the academic learned helplessness latent construct revealed factor loadings for indicators representing Failure-Ability, Failure-Luck, and Success-Luck of .33, .57, .87, respectively, among a sample of 803 ninth grade students participating in an intervention targeting maladaptive attribution styles and a control group of no-intervention youths. Factor loadings for no-intervention control group ninth grade students were .29, .80, .84, respectively. Confirmatory factor analysis results indicate moderate variability among factor loadings and provide some consistent support as to the low internal consistency of the ALH construct when tested based on the three composite scales (i.e., low factor loadings for the Failure-Ability subscale). Prior studies did not examine factor invariance by gender. Overall, moderate support for the internal consistency of the CAS (Chan &

Moore, 2006) and for validity (Chan, 1994) exist but suggest that the CAS can be used to develop the latent construct of ALH in the present study.

Academic Amotivation

The Academic Motivation Scale (AMS; Vallerand et al., 1992) is a 28-item self-report measure that assesses seven dimensions of academic motivation (see Appendix H). Participants are asked to rate reasons for attending school on a seven-point scale ranging from "1" (Does not correspond at all) to "7" (Corresponds exactly). The four items that represent each dimension of academic motivation comprise independent subscales. For the purpose of this study, the Academic Amotivation subscale (AMOT) was utilized to assess academic amotivation. The AMOT subscale is comprised of four items: "I don't know; I can't understand what I am doing in school"; "I once had good reasons for going to school; however, now I wonder whether I should continue"; "Honestly, I don't know; I really feel that I am wasting my time in school"; and "I can't see why I go to school and frankly, I couldn't care less."

Vallerand, Fortier, and Guay (1997) supported the internal consistency of the AMS with reports of reliability estimates for subscales ranging from $\alpha = .72$ to $\alpha = .87$ among 4,498 boys and girls with an average age of 14. Validation studies for AMS subscales have supported internal consistency with reliability estimates ranging from $\alpha = .81$ to $\alpha = .84$ for the AMOT subscale (Fairchild et al., 2005; Fortier, Vallerand, & Guay, 1995). Ratelle, Guay, Larose, and Senecal (2004) reported good internal consistency for the AMOT subscale ($\alpha = .85$) among a sample of 729 male and female adolescents in their last year of high school. Fairchild et al. (2005) reported $\alpha = .84$ for the AMOT

subscale among a sample of 1406 male and female adolescents entering their first year of college.

Prior research has explored validity of the AMS by examining its relationship with instruments assessing academic correlates of academic motivation. Among a sample of 263 college students, academic amotivation was inversely associated with academic self-concept (r = -.47; Cokely, Naijean, Cunningham, & Moitoke, 2001). Additionally, divergent validity for the AMOT subscale was supported with findings indicating an inverse relationship with the Work and Family Orientation Questionnaire subscales (Spence & Helmrich, 1983) representing work orientation (r = -.19), work mastery (r = -.11) and a positive relationship with the Motive to Avoid Failure Scale (r = .17) (Hagtvet & Benson, 1997) in a sample of 1,406 college students whose average age was 18 years old (Fairchild et al., 2005). Furthermore, the AMOT subscale was negatively associated with GPA (r = -.15). In a study exploring academic amotivation correlates among a sample of 942 Canadian high school students, Ratelle et al. (2007) found that academic amotivation was associated with greater school absenteeism and poorer academic performance. Findings by Vallerand et al., (1997) exploring predictors of school dropout among a sample of 4,537 ninth and tenth grade students, indicated that students who dropped out of school scored significantly higher on the AMOT subscale than students who persisted.

Researchers have validated the underlying factor structure of the AMS in a diverse sample of youths and college students. Cokely et al. (2001) employed confirmatory factor analysis to support the seven-factor structure of the AMS and reported acceptable fit indices (CFI = .90; NFI = .83; RMSEA = .07). Utilizing a sample

of 1406 college students with an average age of 18, CFA supported the seven factor structure of the AMS, $\chi^2(329) = 2150.33$, CFI = .967, RMSEA = .055 (Fairchild et al., 2005). Furthermore, findings by Grouzet et al. (2006) indicated measurement invariance between genders for the academic amotivation subscale. Grouzet et al. reported factor loadings for items utilized as indicators for the AMOT latent construct ranging from .72 to .81. All four items comprising the AMOT subscale were utilized to scale the latent construct of academic amotivation in the current study. Overall, the AMS has been supported as a valid and reliable measure for various dimensions of academic motivation among youths. Furthermore, reliability estimates and correlates of academic amotivation found for the AMOT subscale supported the use of the AMOT subscale to model the latent construct of academic amotivation in the current study.

Procedure

The sample for the current study consisted of high school students recruited from two primary general health clinics within Manhattan high schools. All recruitment and data collection for the current study occurred during an eleven-month period. Six trained research assistants comprised of three graduate students and three undergraduate students conducted all recruitment, consent/assent, and administration activities. Access to school clinics was acquired through coordination with St. Luke's Roosevelt Child and Family Institute's ongoing services provided to respective high schools. More specifically, the Child and Family Institute operates School Based Health Clinics (SBHC) within three public high schools in New York City. The SBHCs function as the primary care setting for a large percentage of students, offering comprehensive medical, mental health, and health education services delivered by trained professionals. Students enrolled in the

SBHCs generally face a variety of sociodemographic, financial, and geographical barriers to obtaining health care services. One SBHC was not included in the present study due to concerns by the school administration about feasibility of implementation.

According to data provided by the SBHC's Program Manager (T. Stokes, personal communication, October 30, 2009) approximately 70-75% of students enrolled in the SBHCs reside in federally designated "low primary care access areas". While some students have Medicaid or state-subsidized health insurance, most are self-pay or uninsured. The most common services provided include: (1) gynecological exams for annual and episodic care; (2) pregnancy counseling/testing or emergency contraceptive; (3) mental health services; (4) acute care for ill students; and (5) comprehensive physical exams required for sports participation/working papers. Based on 4,991 students enrolled in the three respective schools in 2007, 55.7% of students were female, 48.6% identified as African-American/Black, and 38.0% identified as White. In addition, 50.4% identified as Hispanic (12.6% as Black Hispanic and 37.8% as White Hispanic). Students ranged in age from 14-19 years old, with a mean age of 16.7. Enrollment in primary clinic healthcare ranges between 60-90% of the general student population within respective schools. Demographic characteristics of students enrolled in SBHCs are representative of demographic characteristics for the general school population within SBHC schools.

Initial Contact and Recruitment of Participants

Recruitment, consent, assent, and study procedures were approved by the Institutional Review Boards at Fordham University and St. Luke's-Roosevelt Hospital (see Appendix J). A flowchart detailing the steps toward achieving current sample following collection of contact sheets is provided in Figure 5.

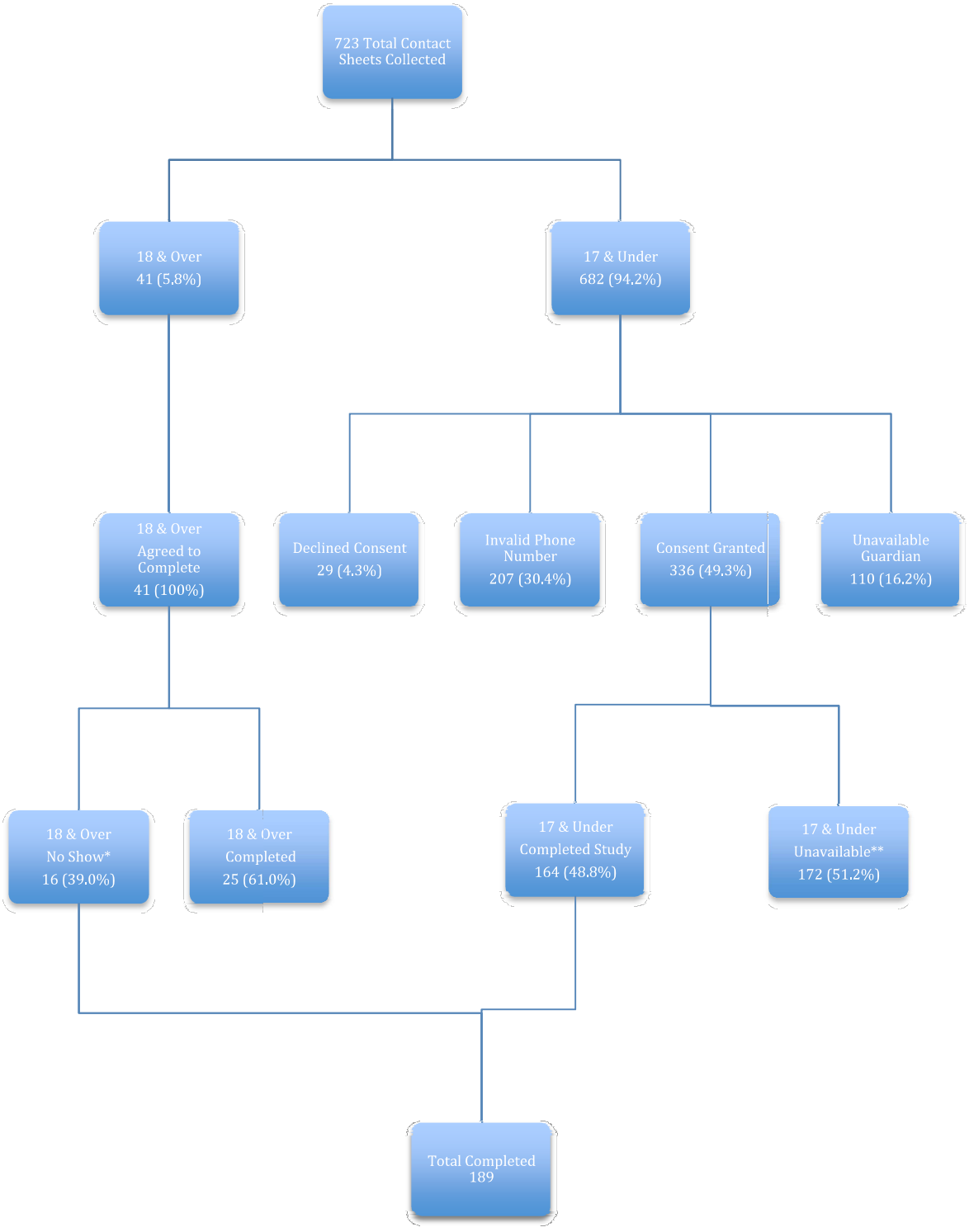

Figure 5. Data collection flow chart.
Note. *18 and older participants who scheduled an appointment and did not attend. **Youth who were unavailable by phone to schedule or scheduled an appointment and did not attend.

Dissemination of information about the study and recruitment occurred in the two SBHC waiting rooms. All research assistants engaged in recruitment activities. To maximize efforts, a minimum of one research assistant was present in SBHC waiting rooms for 4-5 hours a day for a minimum of 3 days a week. Students attending the SBHC were provided a flyer with information regarding the study and a contact sheet. The student had the option to provide his or her parent's telephone number on the contact sheet if he or she was interested in participating in the study. Youth were asked to provide their name, the name of his or her legal guardian, a primary and secondary phone number, and primary language of the legal guardian. Youth were informed that their parents would be called in the next 1-3 days after completion of the study contact sheet. Furthermore, youth were informed that scheduling of an appointment would occur telephonically following completion of parental consent. All information provided on contact sheets was logged into a participant tracking program and utilized in contacting parents to facilitate the parent consent process.

Parent Consent

Using contact information provided during initial recruitment, parental consent was attained verbally during telephonic follow-up. A standard protocol for obtaining telephonic consent was employed and implemented by graduate student research assistants. Research assistants called parents during a 3-5 hour block of time 4-5 days a week during late afternoons and evenings. If initial contact was not made, follow-up calls occurred up to a maximum of five attempts. Once contact with a legal guardian was attained, research assistants utilized a telephonic parental consent script that detailed the purpose of the study, potential benefits and risks, procedures for administration and data

collection, and incentives for participation. Given that the research team consisted of both English and Spanish speaking graduate students, a Spanish consent form was designed and used for telephonic consent with Spanish-speaking parents. Additionally, terms of confidentiality were explained and parents were made aware that individual results of data collection were not given to school officials and participants were able to terminate participation at anytime during data collection. Parent consents were audio-taped and archived. Parents who provided consent were mailed a written copy of the parental consent form for their personal records. If the parent/legal guardian refused to grant permission, no further calls or contacts with the parent or youth were made. When the parent/legal guardian provided parent consent, research assistants next spoke with potential participants telephonically to schedule an appointment for in-person youth assent and completion of study measures.

Rates and content of parental responses were logged into an electronic tracking program. A total of 723 contact sheets, 463 (64.0%) from girls and 260 (36.0%) from boys, were collected from students in the SBHCs (see Figure 5). Of these contact sheets, 41 (5.8%) were received from students over the age of 18, and thus the parents/guardians of these students were not contacted as consent was obtained directly from the students. Of the 682 remaining contact sheets, 207 (30.4%) yielded invalid or disconnected phone numbers, or resulted in no contact with parents/guardians. One hundred and ten (16.2%) of the contact sheets resulted in telephonic contact with parents/guardians but failure to discuss the project due to the parents/guardians being at work, driving, caring for children, or occupied in some other way at the time of the call. Twenty-nine (4.3%) of the contact sheets resulted in the researcher being able to explain the study but the

parent/guardian declining consent due to their own lack of interest or lack of interest on the part of their child. Finally, 336 (49.3%) of these 682 contact sheets collected from students under the age of 18 resulted in an affirmative telephonic parental consent, with 206 (61.3%) from girls and 130 (38.7%) from boys. All of the 336 students for whom parental consent was obtained were called up to five times as needed to schedule appointments at the SBHCs to complete the questionnaires.

Youth Assent

Once verbal parental consent was obtained, research assistants contacted youth telephonically to schedule an appointment to complete the assent process in person at the SBHC. Of the 336 participants who were granted consent, 164 (48.8%) presented at SBHCs and assented. The remaining 172 (51.2%) did not show for scheduled appointments or were unavailable telephonically to schedule appointments. Trained research assistants facilitated youth assent in private offices within SBHC clinics. Trained graduate research assistants supervised undergraduate research assistants during completion of youth assent and administration of study measures. Youth assent detailed the purpose of the study, terms of confidentiality, benefits and risks of participating in the study, and incentives provided for study participation. Youth were informed that participation was voluntary and termination of participation in the study was permissible at any time. Additionally, youth were informed that counseling resources were available through SBHCs if any aspect of the data collection process increased distress or raised questions/concerns about mental health issues. Youth were provided a verbal overview of assent from research assistants, instructed to read the assent in its entirety, and given the opportunity to ask questions about the study. After responding to any questions, both

the youth and research assistant signed the assent form for youth who agreed to participate in the current study. A copy of the assent form was provided to each participant and administration of study measures occurred directly after completion of the assent process.

Data Collection

A total of 377 students for whom parental consent was obtained or were above the age of 18 were called up to five times as needed to schedule appointments at the SBHCs to complete the study measures. Of these 377 students, 189 (50.1%) presented at the SBHCs as scheduled, gave assent (or consent as appropriate) to participate, and completed study measures. Unfortunately, 188 students (49.9%) were unavailable telephonically to schedule initial appointments or agreed to scheduled appointments but failed to attend despite multiple efforts to reschedule missed appointments. The 189 participants comprising the final sample reflected comparable demography of the SBHCs and the overall school body. Further, all participants who presented for their scheduled appointments assented (or consented as appropriate) to participate and completed all study measures.

Trained research assistants facilitated participants' completion of self-report measures and assisted students with questions regarding measures. All study measures included a study identification number to ensure anonymity of responses. Given the qualitative nature of the Possible Selves Questionnaire (PSQ), it was the first measure administered to all participants, with the research assistant supervising the data collection and reviewing instructions with participants to ensure adequate comprehension of the instructions for the PSQ measure. All other measures were counterbalanced and

administered in six different orders to minimize possible order effects. Upon completion of instructions for the PSQ, participants were directed to complete additional measures independently in the predetermined order. Trained research assistants remained in the room to answer question and ensure integrity of the data collection process. Participants completed assent forms and all study measures during a single administration session that constituted a 45-60 minute time block according to the regular school schedule. It should be noted that youth assent and administration of study measures occurred with no more than three participants at a time within private offices at SBHCs.

After completing measures, participants received a $5 gift card to a local restaurant and were entered into a raffle for movie tickets. Participants provided their names and best contact information on a raffle ticket after completing measures to facilitate participation in the raffle. This information was stored separately from data collection materials. Movie tickets were raffled monthly to one randomly selected participant who completed measures during the prior month. All written (i.e., parent consent and youth assent forms) and electronic documents containing identifiable information of participants (i.e., name, date of birth, address) were securely stored at St. Luke's-Roosevelt Hospital Center. All de-identified measures during data collection were securely stored at Fordham University during the active data collection phase and subsequently stored at St. Luke's-Roosevelt Hospital Center following the active data collection phase. Youth scheduled appointments and completion of study measures were logged into electronic tracking program. Youth were often scheduled for the following day during their respective lunch periods. Attempts to contact participants for initial appointment were made a maximum of five times. Participants who were scheduled, but

did not arrive at the appointment were documented by research assistants and contacted a maximum of five times to reschedule. To provide further incentive for participating when first scheduled, participants who completed during first scheduled appointment were permitted two raffle ticket entries. Participants who rescheduled were permitted one raffle ticket entry.

Operational Hypotheses

Reactive Aggression Model

The reactive aggression operational model is depicted in Figure 6. This is a "fully latent" recursive model. Utilizing the two-step rule (Bollen, 1989), the model was identified. Using principles of confirmatory factor analysis, a minimum of three indicators per latent variable were used as the basis for identifying latent constructs. This overidentified recursive model had 91 observations and 31 free parameters resulting in 60 degrees of freedom. MIMIC procedures were employed to control for gender effects (explained further in Chapter 3).

Hypothesis 1. After controlling for gender effects using the MIMC procedure, it was predicted that the reactive aggression model would approximate the data from the self-report surveys with model fit being sufficient to accept the specified associations among the latent constructs as indicated by a non-significant chi-square test, CFI $\geq$ .90, SRMR < .10, $\chi^2/df < 2$, and RMSEA < .05. Within the model, it was predicted that the latent constructs of hostile schemas (represented by four indicators from the Children's Automatic Thoughts Scale) and hostile attribution bias (HAB; represented by four indicators form the Hostile Attribution Bias Adapted Measure) would have a positive association with the latent construct of reactive aggression (represented by four indicators

from the reactive-overt subscale from the Peer Conflict Scale) as indicated by significant path coefficients. Furthermore, it was predicted that the latent construct of HAB would partially mediate the relationship between the latent constructs of hostile schemas and reactive aggression as evidenced by confidence intervals created via the percentile bootstrapping technique.

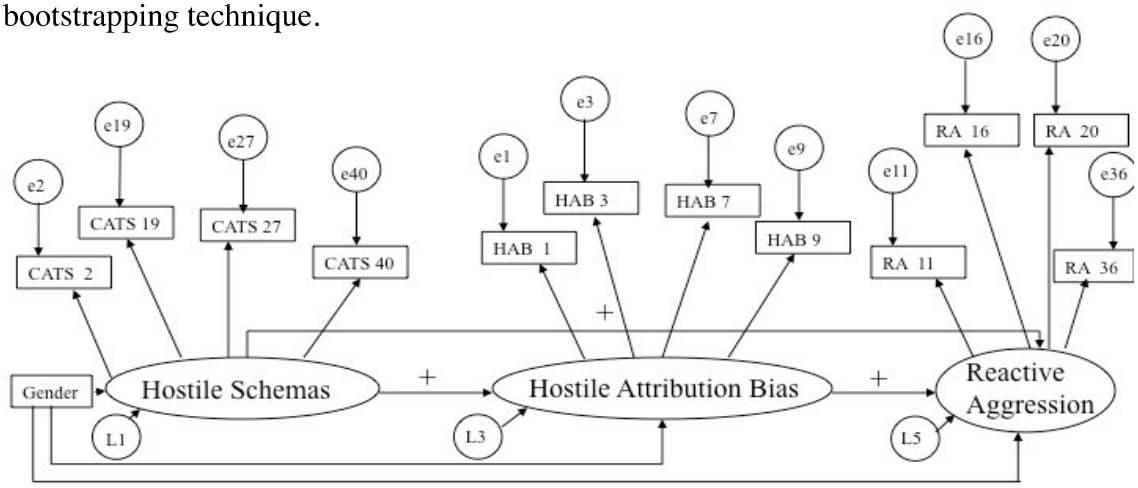

Figure 6. Reactive aggression operational model. CATS = Children's Automatic Thoughts Scale, HAB = Hostile Attribution Bias, RA= Reactive Aggression.

Academic Amotivation Model

The academic amotivation operational model is depicted in Figure 7. This is a hybrid recursive model. Utilizing the two-step rule (Bollen, 1989), the model was identified with 45 observations and 22 free parameters resulting in 23 degrees of freedom. Thus, this was an overidentified recursive model. MIMIC procedures were employed to control for gender effects.

Hypothesis 2. After controlling for gender effects with the MIMIC procedure, it was expected that the model would approximate the data from the self-report surveys and the model fit would be sufficient to accept the specified associations among academic constructs as indicated by a non-significant chi-square test, CFI $\geq$ .90, SRMR < .10, χ^2/df

< 2, and RMSEA < .05. Within the model, it was predicted that Academic Possible Selves (APS; represented by the Possible Selves Questionnaire composite of APS Balance and Plausibility) would have a negative association with academic amotivation (represented by four indicators from the Academic Motivation Scale) and academic learned helplessness (ALH; represented by three subscales from the Causal Attribution Scale) as indicated by significant path coefficients. It was further predicted that ALH would have a positive association with academic amotivation as evidenced by significant path coefficients. Finally, it was predicted that the latent construct of ALH would partially mediate the relationship between APS and academic amotivation as indicated by confidence intervals created via the percentile bootstrapping technique.

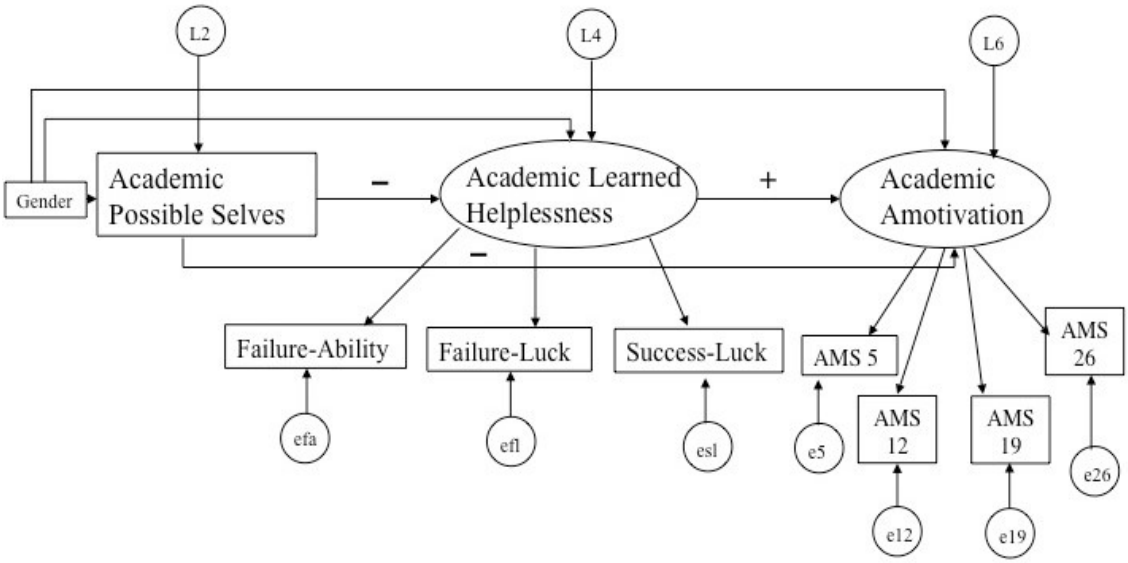

Figure 7. Academic amotivation operational model. AMS = Academic Motivation Scale.

Domain-Specific Integrated Model

The Domain-Specific Integrated Model combined the Reactive Aggression and Academic Amotivation models to form a single integrated model (Figure 8).

Specifically, this model examined domain-congruent cognitive processes on behavioral outcomes while investigating the covariance between cross-domain cognitive processes and behaviors. This model had 231 observations and 55 free parameters which resulted in 176 degrees of freedom and an overidentified recursive model. The MIMIC procedure was employed to control for gender effects.

Hypothesis 3. After controlling for the effects of gender, it was expected that the domain specific integrated model would approximate the data from the self-report surveys and the model fit would be sufficient to accept the specified associations among the latent constructs as indicated by a non-significant chi-square test, CFI $\geq$ .90, SRMR < .10, $\chi^2/df < 2$, and RMSEA < .05. It is expected that this model would replicate the relationships examined within independent Reactive Aggression and Academic Amotivation models while also accounting for covariance of cross-domain cognitive processes and behaviors. More specifically, it was expected that hypothesized path coefficients among constructs would remain significant after accounting for estimates of shared variance as represented by significant correlated error terms between the following constructs: Hostile Schemas/APS, HAB/ALH, and Reactive Aggression/Academic Amotivation.

Cross-Domain Integrated Model

A second model combining reactive aggression and academic amotivation models was estimated (Cross-Domain Integrated Model; see Figure 9). The Cross-Domain Integrated Model accounted for both the domain-congruent and cross-domain influence of attribution styles on behavioral outcomes while also accounting for covariances

between cross-domain cognitive processes and behaviors. Specifically, the Cross-Domain Integrated Model examined the unique variance contributed by the influence of attribution styles on cross-domain behavioral outcomes. Further, comparative model fit of the Cross-Domain Integrated model versus the Domain-Specific Integrated model was assessed. The Cross-Domain Integrated Model had 231 observations and 57 free parameters, which resulted in 174 degrees of freedom. Thus, this was an overidentified recursive model. MIMIC procedures were employed to control for gender effects.

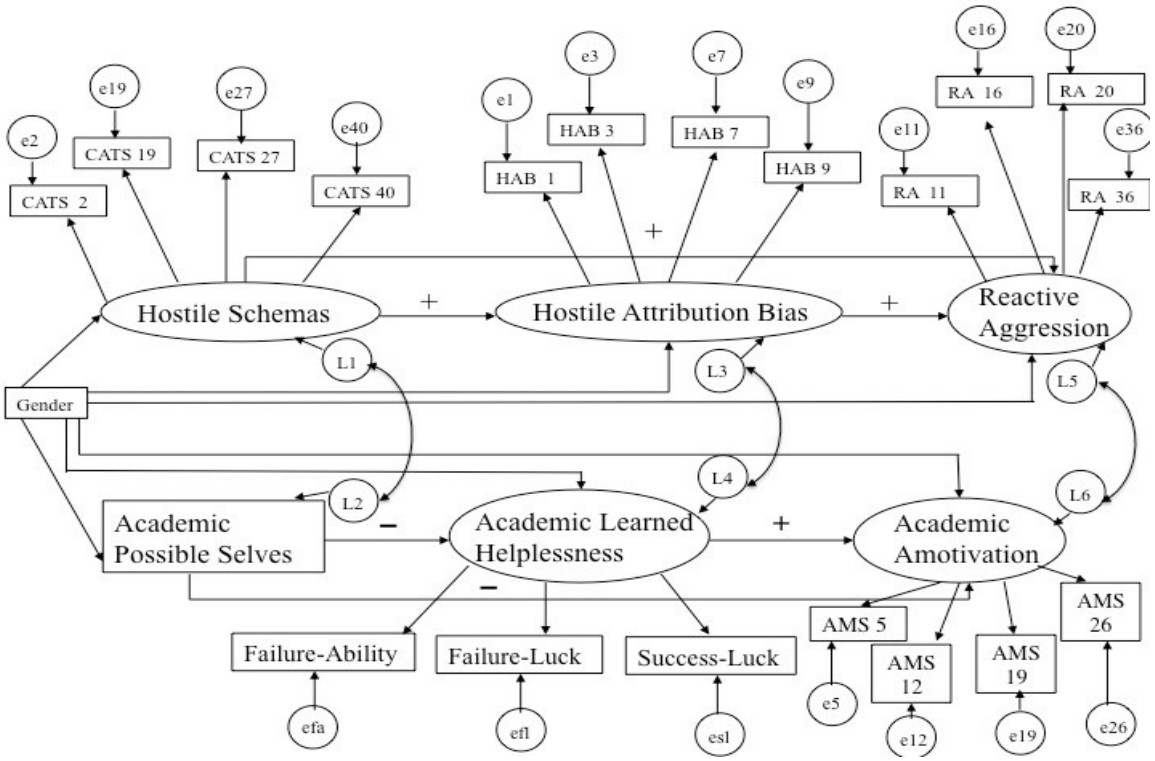

Figure 8. Domain-specific integrated operational model. CATS = Children's Automatic Thoughts Scale, HAB = Hostile Attribution Bias, RA= Reactive Aggression, AMS = Academic Motivation Scale.

Hypothesis 4. After controlling for effects of gender, it was expected that the model would approximate the data from the self-report surveys and the model fit would

be sufficient to accept the specified associations among the latent constructs as indicated by a non-significant chi-square test, CFI ≥ .90, SRMR < .10, χ^2/df < 2, and RMSEA < .05. It was further hypothesized that the Cross-Domain Integrated Model would replicate the relationships examined within the Domain-Specific Integrated Model with the addition of cross-domain influences of attribution styles on behavioral outcomes. Specifically, it was expected that HAB would be positively associated with academic amotivation and ALH would be positively associated with reactive aggression as evidenced by significant path coefficients.

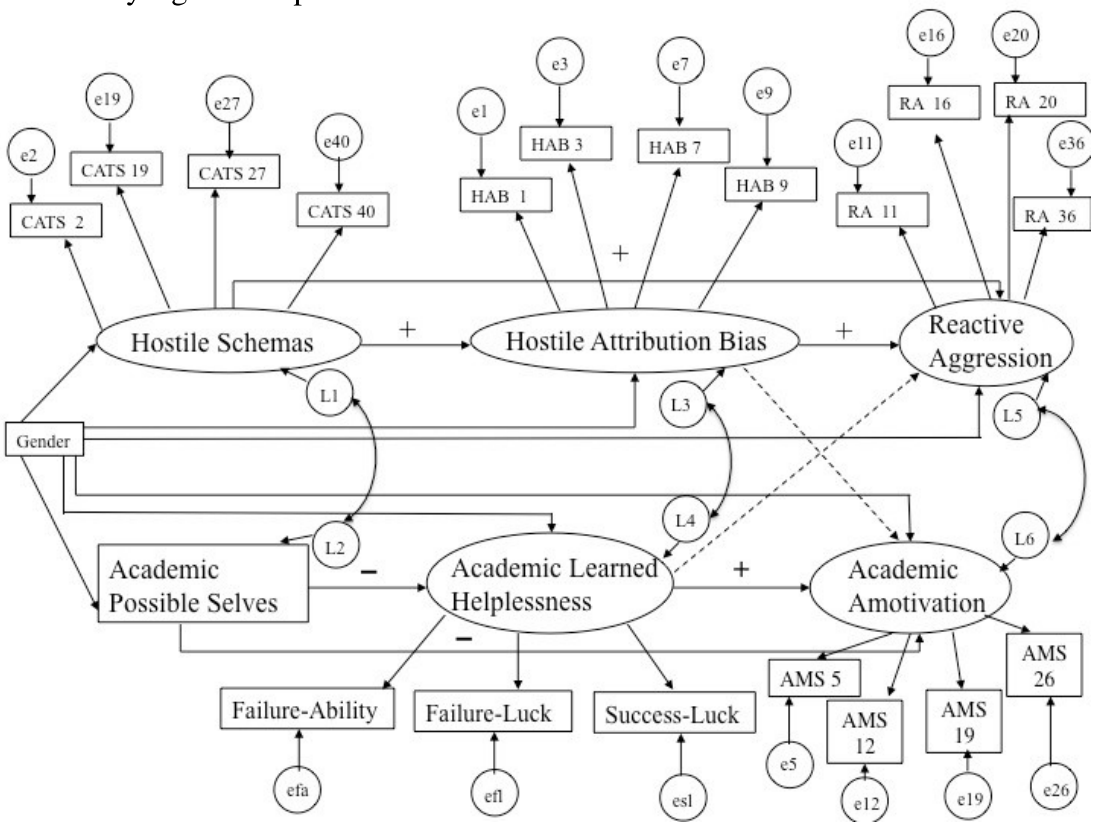

Figure 9. Cross-domain integrated operational model. CATS = Children's Automatic Thoughts Scale, HAB = Hostile Attribution Bias, RA= Reactive Aggression, AMS = Academic Motivation Scale.

Hypothesis 5. To assess comparative model fit between the Domain-Specific Integrated Model and the Cross-Domain Integrated Model, values for the Akaike

information criterion (AIC) were compared and a chi-square difference test was employed. It was predicted that the Cross-Domain Integrated Model would represent a better fit of self-report data than the Domain-Specific Model as evidenced by significantly different AIC values and a chi-square difference p-value < .05.

CHAPTER III: RESULTS

Results are presented in three sections. Preliminary analyses comprise the first section and detail the process of data screening including assessment and treatment of missing values for all study variables. Distribution and descriptive statistics were also calculated and examined for all study variables. The second section details the procedures, analyses, and results for all measurement models. More specifically, prior to testing study hypotheses, a series of confirmatory factor analytic models were conducted to identify indicators and ensure measurement invariance for each latent construct. Further detail regarding criteria for testing study hypotheses are discussed within this section. The final section details results for the main analyses. To test study hypotheses, structural equation modeling was employed. For hypotheses one and two, overall model fit, direct, and indirect effects were examined for reactive aggression and academic amotivation models. To test hypotheses three and four, overall model fit, direct, and indirect effects were examined for a domain-specific and cross-domain integrated models comprised of reactive aggression and academic amotivation models. To explore the relationship between congruent constructs between domains (i.e., hostile schemas/APS, HAB/ALH, and reactive aggression/academic amotivation), disturbance (error) correlations between congruent study constructs were examined. To control for gender within hypotheses 1-4, a multiple indicator multiple cause (MIMIC) structural equation model approach was utilized. To assess comparative model fit between the domain-specific and cross-domain integrated models for hypothesis five, Akaike information criterion (AIC) values were compared and results from the chi-square difference test were examined.

Preliminary Analyses

Descriptive statistics for study variables are presented in Table 2. Variation among scores was benchmarked by the range and standard deviation for study construct scores within the present study. For study variables within the aggression domain, participants generally reported low levels of hostile schemas and reactive aggression, with moderate variation among scores. Participants also reported moderate levels of hostile attribution bias (HAB), with moderate variation among scores. Within the academic domain, participants reported low levels of academic possible selves (APS) and academic amotivation, with low variation among scores. Participants reported moderate levels of academic learned helplessness (ALH), with moderate variation among scores. Results for skewness and kurtosis values of study variables are discussed in conjunction with data screening procedures below.

Reliability estimates for study constructs are presented in Table 2. Cronbach alphas were calculated for all study constructs with the exception of APS total score, APS Balance, and APS Plausibility. For constructs within the aggression domain, hostile schemas and reactive aggression displayed good internal consistency, while HAB displayed low internal consistency. Within the academic domain, ALH subscales and academic amotivation displayed good internal consistency. The ALH composite score displayed low internal consistency. This score was derived by summing the three subscale scores comprising ALH and dividing that number by three. To derive reliability estimates for APS, intraclass correlation coefficients (ICCs) were calculated. APS total score, balance, and plausibility resulted in excellent reliability.

Table 2
Total Sample Descriptive Statistics for Study Variables

	M (*SD*)	Range	Minimum	Maximum	Skewness	Kurtosis	Total Reliability	Boys Reliability	Girls Reliability
Hostile Schemas	12.65 (7.97)	35.00	0	35.00	.55	-.24	.83	.84	.80
Hostile Attribution Bias	13.31 (4.27)	21.00	2.00	23.00	-.23	-.15	.63	.55	.68
Reactive Aggression	5.83 (5.62)	29.00	0	29.00	1.54	2.54	.87	.87	.86
Academic Possible Selves	3.86 (2.03)	8.00	0	8.00	-.16	-.77	.98[a]	N/A	N/A
Academic Balance	.98 (.76)	4.00	0	4.00	.67	.61	.98[a]	N/A	N/A
Academic Plausibility	2.88 (1.38)	5.00	0	5.00	-.34	-.74	.97[a]	N/A	N/A
Failure-Ability	7.96 (3.11)	15.00	5.00	20.00	1.08	1.06	.83	.80	.85
Failure-Luck	7.52 (2.99)	15.00	5.00	20.00	1.50	2.58	.80	.71	.84
Success-Luck	8.41 (3.47)	15.00	5.00	20.00	1.05	.66	.83	.80	.84
Academic Learned Helplessness	23.89 (7.36)	44.00	15.00	59.00	1.17	2.11	.65	.59	.68
Academic Amotivation	7.02 (5.18)	24.00	4.00	28.00	1.95	3.07	.87	.81	.91

Note. Reliabilities for Academic Possible Selves, Academic Balance, and Academic Plausibility based on Intraclass Coefficients. All other reliabilities are Cronbach's alpha.

Descriptive statistics for all study variables by gender are presented in Table 3. Independent sample t-tests were conducted to compare boys and girls on each study variable. Analyses revealed that boys and girls did not differ on reported levels of hostile schemas, $t(187) = -1.05$, $p = .29$; HAB, $t(187) = -.15$, $p = .88$; reactive aggression, $t(187) = .88$, $p = .38$; APS, $t(187) = -.46$, $p = .87$; ALH, $t(187) = -.03$, $p = .98$; and academic amotivation, $t(187) = 1.38$, $p = .17$.

While the primary demographic variable of interest was gender, independent sample t-tests were also conducted to examine potential differences for study variables by current grade level, current grades, ethnicity, reception of free or reduced lunch, household composition, and primary guardian educational attainment. It should be noted participant responses to a question regarding primary caregivers occupation from the Barratt Simplified Measure of Social Status (BSMSS) was not utilized in the present study to assess socioeconomic status due to unreliable responses. More specifically, the BSMSS does not provide an exhaustive list of occupations or include unemployment as an option. Several participants stated they were not aware of their caregivers' occupations, their caregivers' occupations were not present on the BSMSS, or their caregiver was unemployed. Reception of free or reduced lunch provided an adequate proxy for SES.

Descriptive statistics for study variables by current grade level and current grades are presented in Table 3. To fulfill statistical requirements and maximize robustness of group comparisons each demographic variable was dichotomized either eliminating or consolidating low frequency categories and preserving high frequency categories.

Table 3
Descriptive Statistics for Study Variables by Gender, Grade Level, and Current Grades

Study Variables	Boys *M*(*SD*)	Girls *M*(*SD*)	Upper Grade Level[a] *M*(*SD*)	Lower Grade Level[a] *M*(*SD*)	High Grades[b] *M*(*SD*)	Low Grades[b] *M*(*SD*)
Hostile Schemas	11.86 (7.55)	13.12 (8.20)	11.42 (7.59)	14.08 (8.20)	11.80 (7.53)	14.05 (8.45)
Hostile Attribution Bias	13.25 (4.18)	13.35 (4.34)	13.00 (4.35)	13.68 (4.16)	12.61 (4.34)	14.26 (4.02)
Reactive Aggression	6.26 (5.88)	5.55 (5.46)	4.51 (4.25)	7.38 (6.58)	5.19 (4.74)	6.79 (6.62)
Academic Possible Selves	3.77 (2.09)	3.92 (2.00)	3.59 (1.88)	4.18 (2.16)	3.84 (2.04)	3.97 (1.99)
Academic Balance	.97 (.84)	.99 (.76)	.84 (.71)	1.15 (.86)	.94 (.83)	1.06 (.74)
Academic Plausibility	2.80 (1.42)	2.93 (1.36)	2.75 (1.31)	3.05 (1.45)	2.91 (1.38)	2.91 (1.36)
Failure-Ability	7.97 (2.92)	7.95 (3.23)	7.59 (2.87)	8.39 (3.33)	7.38 (2.70)	8.86 (3.46)
Failure-Luck	7.62 (2.68)	7.47 (3.17)	7.15 (2.51)	7.97 (3.43)	7.28 (2.76)	7.88 (3.31)
Success-Luck	8.28 (3.11)	8.49 (3.68)	8.33 (3.47)	8.51 (3.49)	8.14 (3.56)	8.71 (3.35)
Academic Learned Helplessness	23.87 (6.45)	23.91 (7.88)	23.07 (6.15)	24.86 (8.50)	22.80 (6.73)	25.45 (8.04)
Academic Amotivation	7.69 (5.26)	6.61 (5.11)	6.12 (4.22)	8.29 (2.83)	5.81 (4.27)	8.76 (5.89)

Note. [a]Upper Grade Level = Grades 11 and 12, Lower Grade Level = Grades 10 and 9; [b]High Grades = "A" and "B", Low Grades = "C" and Below.

Ethnicity (Hispanic/African-American), reception of free or reduced lunch (received/not received), household composition (single adult in household/two or more adults in

household), and primary guardian educational attainment (less than HS diploma/HS diploma or greater) yielded non-significant independent sample t-tests on all study variables and were therefore not included in Table 3. For current grade level, 9th and 10th grade participants comprised a single group and 11th and 12th grade participants comprised the other group. Analyses revealed 9th and 10th grade participants reported significantly greater levels of hostile schemas $t(187) = 2.31, p = .02$, reactive aggression $t(187) = 3.49, p = .00$, APS $t(187) = 2.03, p = .04$, and academic amotivation $t(187) = 2.57, p = .01$, than 11th and 12th grade participants. For self-reported current grades, participants reporting current grades of "A" and "B" comprised a single group and participants reporting a "C" and below comprised the other group. Analyses revealed students with lower current grades reported higher levels of ALH $t(184) = -2.44, p = .02$, academic amotivation $t(184) = -3.77, p = .00$), and HAB $t(184) = -2.63, p = .01$.

To explore associations between all study variables, bivariate correlations were calculated (see Table 4). Overall, correlations ranged from small to medium in size (i.e., $r < .50$). For descriptive purposes, correlations ranging from .2 to .3 are considered small, .3 to .5 considered medium, and $\geq .5$ as large (Cohen, 1988). Associations between demographic and study variables were inspected in addition to preliminary analyses utilizing t-tests to assess whether the inclusion of additional covariates in structural models was necessary. Results indicated participant age and current grade level were negatively correlated with hostile schemas, HAB, reactive aggression, academic possible selves, and academic learned helplessness. Current grade level was also negatively associated with academic amotivation. For participant age, correlations ranged from -.10 to -.35. Current grade level correlations ranged from -.13 to -.25. Given the significance

Table 4
Correlations for Sample Demographics and Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Age	-													
2. Current Grades	-.07	-												
3. Current Grade Level	.78**	-.06	-											
4. Hostile Schemas	-.16*	.12	-.16*	(.83)										
5. Hostile Attribution Bias	-.19**	.11	-.17*	.22**	(.63)									
6. Reactive Aggression	-.20**	.19**	-.25**	.55**	.07	(.87)								
7. Academic Possible Selves	-.35**	.03	-.19**	.02	.13	.01	(.98)							
8. Academic Balance	-.32**	.09	-.20**	.02	.15*	.03	.87**	(.98)						
9. Academic Plausibility	-.33**	.00	-.17*	.01	.11	-.01	.96**	.70**	(.97)					
10. Failure-Ability	-.12	.31**	-.13	.21**	-.01	.29**	-.01	.05	-.04	(.83)				
11. Failure-Luck	-.10	.07	-.16*	.28**	.12	.30**	.03	.07	.00	.36**	(.80)			
12. Success-Luck	-.15*	.11	-.08	.26**	.11	.19**	.09	.14	.05	.24**	.56**	(.83)		
13. Academic Learned Helplessness	-.17*	.21**	-.16*	.32**	.09	.33**	.05	.12	.01	.68**	.82**	.80**	(.65)	
14. Academic Amotivation	-.10	.37**	-.18*	.25**	.04	.40**	-.09	-.02	-.12	.35**	.37**	.29**	.43**	(.87)

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

of these correlations and the interrelatedness of age and current grade level, current grade level was chosen as a control variable for supplemental analyses and used to designate a dichotomous covariate due to the even distribution of participants across grades. Furthermore, current grades were designated as a control variable within supplemental analyses based on results for preliminary analyses utilizing t-tests and associations observed within correlational analyses.

Relationships within the aggression and academic domains were examined. Correlations for variables included in the reactive aggression model ranged from .07 to .55, with positive directionality of all relationships. As expected, hostile schemas was significantly correlated with HAB (r = .22) and reactive aggression (r = .55). However, HAB was not significantly associated with reactive aggression. Similarly, within the academic amotivation model, correlations ranged from -.09 to .43, with significant positive associations emerging. Academic learned helplessness and academic amotivation were positively correlated (r = .43). However, academic possible selves was not correlated with either academic construct. Across domains, several significant associations were observed. Hostile schemas was positively correlated with academic learned helplessness (r = .32) and academic amotivation (r = .25). A positive association between academic learned helplessness and reactive aggression was also observed (r = .33). Reactive aggression was also positively correlated with academic amotivation (r = .40).

Data screening procedures consisted of assessing univariate outliers, normality and multicollinearity. Frequency distributions were examined to identify outliers. Cases with standardized scores in excess of 3.29 ($p < .001$, two-tailed) are considered potential

outliers (Tabachnick & Fidell, 2007). A small number of outliers were found in the current study. More specifically, for each variable, no more than two outliers were identified. Given that outliers did not exceed valid scale range and a few outliers are expected within a large sample, outliers were not removed.

To assess univariate normality for study variables, skewness and kurtosis values were examined. Skewness refers to the symmetry of the distribution for data values. Positive skew occurs when a majority of values are lower than the mean. Conversely, negative skew occurs when the majority of cases are above the mean. Kurtosis greater than zero indicates that the distribution has a higher peak while kurtosis less than zero indicates a flat distribution across the range of values represented in the variable. When a distribution is normal, skewness and kurtosis approximate or equal zero. While few definitive guidelines for assessing skewness and kurtosis exist, conservative estimates indicate skewness values exceeding an absolute value of 3.0 and kurtosis values exceeding an absolute value 8.0 are considered significantly skewed and/or kurtotic (DeCarlo, 1997, Tabachnick & Fidell, 2007). When values exceed these thresholds, transformation of data is explored to improve normality. As noted in Table 2, skewness and kurtosis values did not exceed these thresholds; therefore, no transformations of study variables were considered.

To screen for multicollinearity among study variables, bivariate correlations were examined. Multicollinearity occurs when bivariate correlations among variables are too high (i.e., exceed .90) which is then interpreted as redundant information among variables (Kline, 2005). Analysis of bivariate correlations indicated that all study variable intercorrelations were below .90 with the exception of academic plausibility and

academic possible selves. Given that academic possible selves score represents a composite of the academic plausibility and academic balance variables, it was expected that bivariate correlations between these scores would be very high. Similarly, academic learned helplessness is comprised of scores representing Success-Luck, Failure-Luck, and Failure-Ability subscales. As such, bivariate correlations between academic learned helplessness and subscale scores ranged between .68 and .82. Intercorrelations for all other study variables did not exceed .45 and did not approach criteria for multicollinearity.

An analysis of missing data was conducted for each demographic variable and study variable utilizing Missing Values Analysis within SPSS. A three-step approach was utilized to address missing data. First, Missing Values Analysis was employed to identify all missing values within the dataset. Second, missing data were assessed for each subscale utilized to operationalize latent constructs. Cases that exceeded 10% of item-level data missing per subscale were identified and assessed for an overall pattern of missing data. Finally, mean imputations were employed to account for missing values at the item level. Mean imputation procedures are explained in greater detail below.

For demographic variables, results indicated that missing values represented 3% of data for ethnicity, .05% of data for grades received in school and receipt of free or reduced school lunch, 7.4% of data for primary caregiver educational attainment, and .5% for number of adults in the household. No missing data was present for other demographic variables.

For study variables, analyses revealed that no missing values were present for 95% of cases within each variable. Results for the number of cases with missing values

exceeding the 10% threshold for each subscale variable are presented in Table 5. To illustrate, six cases exceeded the 10% rule on the Failure-Luck subscale, which represented 3.17% of total cases for that variable (one to three missing cases represented between .5% and 1.6% of total cases). Examination of all missing data suggested that no specific pattern was present within study variables that would require elimination of individual cases. Given the limited amount of missing data points and random nature of missing data, data imputation procedures were employed at the item level. Data imputation requires that missing data is missing at Random (MAR) or Missing Completely at Random (MCAR). A common method for imputation is mean substitution which involves replacing missing values with the overall sample average. While this method has the potential to distort the underlying distribution of data by decreasing variability of scores for the construct, the limited number of missing values replaced with mean scores indicates that use of this imputation method was unlikely to impact the overall distribution of study variables (Vriens & Melton, 2002).

Table 5
Number of Cases Exceeding 10% Missing Values Threshold by Measure

	Number of Cases
Hostile Schemas	1
Hostile Attribution Bias	0
Reactive Aggression	3
Failure-Ability	3
Failure-Luck	6
Success-Luck	1
Academic Amotivation	3

Assessing Fit of Measurement Models

Prior to testing hypotheses, latent constructs were assessed to ensure fulfillment of statistical requirements for SEM analyses. More specifically, a series of confirmatory

factor analyses (CFA) were conducted to identify each latent construct in the reactive aggression, academic amotivation, and combined models. Results for CFAs and criteria for evaluating model fit for CFAs and SEM models are discussed below.

Assessing Model Fit

Model fit refers to a CFA or SEM model's ability to reproduce the data, generally referring to the variance-covariance matrix (Kline, 2005). A model fits the data well when the variances and covariances observed within the sample closely align with the variances and covariances implied by the model (Kline, 2005). Several fit indices exist, with each possessing a unique set of strengths and weaknesses. The availability of multiple fit indices is a reflection of common limitations for assessing model fit and the variety of methods for assessing fit by any one specific indicator. As noted within the SEM literature, values for a single fit index assesses specific aspects of model fit such as parsimony or relative fit as compared to a baseline model, but fail to account for all factors that contribute to model fit (Tomarken & Waller, 2003). Furthermore, a favorable value for a particular fit index does not indicate whether the results are theoretically meaningful or the model has predictive power for specified relationships presented within the model. Additionally, respective fit indices are sensitive to different factors that contribute to model fit. Two different types of model fit statistics are referenced in the literature. Absolute fit statistics derive model fit in isolation by solely utilizing observed and covariance matrices, while relative fit statistics compare a specific model to an independent or baseline model that specifies all measured variables as uncorrelated. Additional fit indices emphasize model parsimony as an indicator of adequate model fit. For these reasons, a consensus for a single fit index that optimally assesses model fit does

not exist and models are generally assessed using several fit indices, which collectively are recommended to provide a comprehensive assessment of model fit. At minimum, Kline (2005) recommends SEM analysis include interpretation and report of the model chi-square, Steiger-Lind root mean square error approximation (*RMSEA*; Steiger, 1990), the Bentler comparative fit index (*CFI*; Bentler, 1990), and the standardized root mean square residual (*SRMR*). The present study reports and interprets each of the aforementioned fit indices, with each of these statistics explained in greater detail below.

The model chi-square statistic represents the most basic and commonly reported fit statistic (Kline, 2005). As an absolute fit statistic, chi-square does not use a comparison model to derive fit, but instead assesses the degree to which the hypothesized model deviates from a just-identified version of the model (i.e., perfect fit). The fit of an overidentified model becomes worse as the value of chi-square increases. A significant model chi-square indicates that the null hypothesis (i.e., the hypothesized model is a perfect fit in the population) should be rejected and a difference exists between model-implied covariances and observed covariances. However, limitations for the model chi-square often lead researchers to interpret results cautiously. Model chi-square is dependent on sample size and generally greater chi-square values are observed in larger samples. Furthermore, the model chi-square statistic is sensitive to the size of correlations, with more robust correlations generally leading to larger chi-square values. Finally, chi-square is impacted by the distribution of data and is higher for non-normal data. To counter chi-square's sensitivity to sample size, the normed chi-square (χ^2/df) occasionally supplements additional fit indices (Kline, 2005). Derived by dividing the chi-square value by the degrees of freedom, normed chi-square values closer to zero

reflect acceptable model fit. However, definitive standards for normed chi-square reflecting acceptable model fit do not exist and have ranged from cut-off values of 2.0, 3.0, and 5.0 (Bollen, 1989). Values below 2.0 were deemed acceptable within the current study. Despite these limitations, model chi-square forms the basis for several other fit indices, and thus, remains a necessary component of assessing fit.

The second absolute fit statistic utilized in the present study is the *SRMR*. This fit statistic is based on standardized covariance residuals (i.e., the difference between observed and predicted covariances), and provides insight into how closely the observed model approximates the hypothesized model. The fit of the model declines as the *SRMR* value increases, with values above .10 indicating poor model fit.

A separate set of fit indices rely on the noncentral chi-square distribution. In contrast to utilizing a central chi-square distribution that designates the null hypothesis as a perfect model fit, these fit indices do not require a true null hypothesis (i.e., perfect model fit). By assessing model fit by subtracting the degrees of freedom from the chi-square value, these fit indices adjust for sample size. Two such indices are the Comparative Fit Index (*CFI*; Bentler, 1990) and the Root Mean Square Error of Approximation (*RMSEA*). As a relative fit statistic that utilizes noncentral chi-square distribution, *CFI* assesses the relative improvement of fit for the hypothesized model as compared to a baseline model that assumes zero population covariances among observed variables. By comparing the chi-square for both models, values for *CFI* represent the degree to which the chi-square for the hypothesized model is an improvement from the baseline model chi-square. Higher values for *CFI* indicate a relative improved fit for the hypothesized model, with values above .90 representing adequate model fit. The *RMSEA*

is considered a parisomony-adjusted index, assessing for model complexity and favoring parsimonious models. *RMSEA* assesses the degree to which a model has poor fit by utilizing the noncentral chi-square distribution to measure model misspecification. *RMSEA* values less than .05 are considered close model fit; values between .05 and .08 indicate reasonable model fit; and values above .10 are considered poor model fit (see Kline, 2005).

Measurement Models

Prior to testing the main study hypotheses, confirmatory factor analysis (CFA) was conducted in AMOS 17.0 for each latent variable to ensure adequate measurement of the latent constructs. Given that latent variables represent theoretical conceptions of constructs, CFA is considered optimal for identifying manifest variables that represent the true variance of latent constructs (see Little, Lindenberger, & Nesselroade, 1999). A CFA model is considered identified when the number of free parameters is less than or equal to the number of observations and the latent variable has a scale (Kline, 2005). Consistent with standard construction of latent constructs, a minimum of three indicators was chosen to ensure constructs were at minimum just-identified (Kline, 2005). Standard requirements for assessing fit of latent constructs were employed as outlined above. Specifically, chi-square, normed chi-square, comparative fit index (*CFI*), for which values above .90 are deemed adequate, and the root mean squared error of approximation (*RMSEA*), for which values below .10 are deemed acceptable, were calculated.

A three-step process was employed to select latent variable indicators. First, an initial CFA (baseline model) was conducted for each latent variable utilizing all subscale items. For example, all ten items for the reactive overt aggression subscale of the Peer

Conflict Scale were modeled onto a single latent factor. Second, a minimum of three items for each latent construct was selected from baseline models to form a reduced model. Selection of indicators was based on three criteria: (1) significant factor loadings, (2) minimal residual variance, and (3) consistency of selected items with a priori theoretical assumptions. To elaborate, consistent with standard requirements for indicator selection, items selected as indicators possessed optimal indicator communality and specificity (see Little, Lindenberger, & Nesselroade, 1999). Indicator communality refers to the degree of variance a single indicator shares with the latent construct's true variance and is represented by CFA factor loadings. Indicator specificity refers to the degree of residual variance associated with a given indicator and represented by residual values. Collectively, indicator communality and specificity determine the total indicator reliability. Following model specification via selection of specific indicators, reduced models were re-analyzed and assessed for goodness-of-fit. Finally, multiple-group analyses were conducted to assess measurement invariance between genders for each latent variable.

Measurement model fit indices for baseline model CFAs are presented in Table 6. Fit indices for hostile schemas indicated the CFA model approached reasonable fit when all items from the Hostility subscale of the Children's Automatic Thoughts Scale were selected but failed to achieve the minimum accepted benchmarks for overall model fit. The CFA for HAB revealed an excellent fit when all items from the overt hostile attribution bias subscale were selected. Fit indices for reactive aggression indicated the CFA model approached reasonable fit when all items from the reactive overt aggression subscale of the Peer Conflict Scale were modeled onto a single latent factor. It should be

noted that three different subscales from the Causal Attribution Scale were utilized to form the ALH construct. As such, fit indices for each of the three subscales were assessed. The fit indices for the Failure-Ability and Success-Luck subscales indicated adequate model fit. Fit indices for the failure-luck subscale indicated excellent model fit. Fit indices for the academic amotivation subscale of the Academic Motivation Scale also indicated adequate fit. Despite inadequate overall model fit for hostile schemas and reactive aggression baseline models, acceptable factor loadings and residual values permitted selection of items for all reduced models.

Table 6
Baseline Model Confirmatory Factor Analysis

	Total Number of Items[a]	Factor Loading Range	χ^2	*df*	*p*	*CFI*	*RMSEA*
Hostile Schemas	10	.43 - .67	119.60	35	>.001	.84	.11
Hostile Attribution Bias	5	.36 - .82	2.11	5	.83	1.00	.00
Reactive Aggression	10	.34 - .81	136.49	35	>.001	.87	.12
Failure-Ability	5	.66 - .79	7.32	5	.20	.99	.05
Failure-Luck	5	.56 - .76	3.43	5	.64	1.00	.00
Success-Luck	5	.46 - .83	15.05	5	.01	.97	.10
Academic Amotivation	4	.72 - .92	12.73	2	.00	.97	.17

Note. [a]Total number of items from subscales following standard scoring procedure. *CFI* = Comparative Fit Index. *RMSEA* = Root Mean Square Error Approximation.

Measurement models were respecified using selected indicators based on the criteria noted above and used to form reduced models. Measurement model fit indices for these reduced models are presented in Table 7. Fit indices for hostile schemas improved to an excellent fit with four items from the Hostility subscale selected as indicators of the latent construct. All items had significant factor loadings ranging from .54 to .77. Model fit for HAB remained excellent when indicators were reduced to four items from the overt hostile attribution bias subscale (factor loadings ranging from .36 to .82). Similar results were obtained for reactive aggression with good model fit found using four items from the reactive overt aggression subscale with significant factor loadings ranging from .74 to .83. Given that items were not eliminated from the initial academic amotivation latent construct (e.g., all four items from the original amotivation subscale were retained), further measurement analyses for a reduced model were not necessary. It should be noted that all items designated as indicators for academic amotivation had significant factor loadings ranging from .69 to .92.

The ALH construct was comprised of three indicators representing the summative scores for each of the aforementioned subscales (Failure-Luck, Success-Luck, and Failure-Ability). Given the unique specification of the ALH construct (i.e., utilizing subscale scores as indicators versus item-level indicators), several steps were employed to ensure an optimal ALH latent construct. As a three indicator latent construct, ALH was just-identified which prohibited assessment of fit as a single factor CFA. As such, a second order CFA model was specified with latent constructs representing subscales modeled onto a higher order ALH latent construct. However, two obstacles were encountered with this process. First, a negative variance was observed for the failure-

luck latent construct. Further investigation revealed that failure-luck shared a high proportion of variance with the higher order ALH construct, and thus, represented redundancy as a latent indicator. Second, potentially inserting a higher order model into main analyses would have created an obstacle for specifying optimally parsimonious models while trying to remain consistent with prior theoretical support for modeling ALH. Adequate model fit for each subscale (see Table 6) and theoretical support for the composition of the ALH latent construct provided sufficient support for modeling ALH using sum scores as indicators in subsequent SEM models.

Table 7
Reduced Model Confirmatory Factor Analysis Results

	Reduced Number of Items[a]	Factor Loading Range	χ^2	*df*	*p*	*CFI*	*RMSEA*
Hostile Schemas	4	.54 - .77	2.50	2	.29	.99	.04
Hostile Attribution Bias	4	.36 - .82	2.09	2	.35	.99	.03
Reactive Aggression	4	.74 - .83	3.19	2	.20	.99	.06
Academic Amotivation	4	.69 - .92	12.73	2	.00	.97	.17

Note. [a]Number of items for final latent constructs included in analyses based on specified selection criteria. *CFI* = Comparative Fit Index. *RMSEA* = Root Mean Square Error Approximation.

Results for measurement invariance between genders are presented in Table 8. To ensure indicators for respective latent variables assessed the same construct between genders, multi-group analysis was conducted for each CFA model. Consistent with standard practice for assessing measurement invariance, multiple group analysis was employed constraining unstandardized factor loadings to be equal for boys and girls (Kline, 2005). Once constraints were imposed, the constrained and unconstrained

models were compared to assess whether model fit is appreciably worse for the constrained model. Chi-square difference tests were calculated at the .05 significance level to assess comparative fit of constrained and unconstrained models. When chi-square difference values did not exceed critical values, latent constructs were identified as invariant between genders. Results indicated that hostile schemas, HAB, reactive aggression, and academic amotivation latent constructs demonstrated measurement invariance for boys and girls. Given that indicators for ALH were modeled as observed variables (i.e., summative scores for subscales), results from preliminary t-tests analyses for each subscale were utilized to assess gender differences with no gender differences being detected. In summary, results from measurement models indicated baseline model fit was sufficient to guide respecification for reduced models by selection of specific indicators. Reduced models each displayed adequate model fit and significant factor loadings for indicators. Factorial invariance for gender was achieved for each reduced model. As such, each latent construct met requirements for inclusion in structural models.

Table 8
Measurement Invariance by Gender

	Critical Value	$\Delta\chi^2$	Δ *df*
Hostile Schemas	7.82	.847	3
Hostile Attribution Bias	7.82	3.01	3
Reactive Aggression	7.82	3.71	3
Academic Amotivation	7.82	3.80	3

Note. $\Delta\chi^2$ = Chi- Square difference values comparing baseline and reduced models. Δ *df* = difference in degrees of freedom between baseline and reduced models.

Main Analyses

For each model, a three-step approach was employed to examine study hypotheses. First, overall model fit was assessed utilizing χ^2, χ^2/df, *CFI*, *RMSEA*, and *SRMR* fit statistics. Second, direct effects were examined for each model variable using standardized path coefficients. This step permitted assessment of gender effects by examining direct effects of gender as a dummy-coded covariate on each of the model variables (MIMIC approach). Finally, indirect effects were examined using the percentile bootstrap method. Prior to presenting main analyses, criteria for assessing structural model gender effects, indirect effects, and cross-domain relationships are discussed.

Controlling for Gender

The Multiple Indicator Multiple Causes (MIMIC) approach for exploring group differences within structural equation models was employed to control for gender effects (Kline, 2005). More specifically, a MIMIC model approach was utilized to assess the extent to which reports for each study construct differed based on gender. A MIMIC model approach is a commonly utilized technique to examine the effect of measured covariates and to control for demographic characteristics within structural equation models (Aarons, 2004; Muthen, 1989). MIMIC models are particularly useful when controlling for demographic characteristics within small to moderate sample sizes as the approach utilizes the entire sample to assess group differences. To employ the MIMIC model approach, the covariate of interest (in this case gender) is designated as a dummy variable within the structural equation model. The dummy variable is a dichotomized representation of the covariate of interest with values set to "0" and "1." The dummy

variable is then specified in the model by regressing the variable on each construct in which population differences are to be explored. Path coefficients represent group differences for respective constructs.

To employ the MIMIC model approach for structural equation models examined in the current study, a dichotomized dummy variable for gender was inserted into each model and regressed on each model construct. By designating girls "0" and boys "1," path coefficients specified whether boys' reports for respective constructs significantly differed from girls. Furthermore, the effect size denoted by the path coefficients conveys the magnitude of difference between genders for respective constructs.

Examining Mediation in SEM Models

In addition to examining overall model fit of structural models within hypotheses 1-4, direct and indirect effects were tested. Direct effects were tested by examining significance of standardized path coefficients. To examine indirect effects, the percentile bootstrap method was employed. More specifically, confidence intervals were constructed to test hypotheses for indirect effects for structural models as recommended by MacKinnon, Lockwood, Hoffman, West, and Sheets (2002), MacKinnon, Lockwood and Williams (2004), and Shrout and Bolger (2002). Extensive simulation research indicates that the percentile bootstrapping method has greater statistical power while maintaining better control over Type I error rates than both the causal step approach (Baron and Kenny, 1986) and the Sobel Test (MacKinnon et al., 2002; Sobel, 1982). Prior to calculating confidence intervals using the bootstrapping method, the product of path coefficients comprising the indirect effect were calculated.

Using the bootstrapping procedure, empirical re-sampling of data subsets was generated to designate confidence intervals for indirect effects. More specifically, the bootstrap method uses replacements from the existing data set to construct a large number (in this case 2000) of empirical data sets that can accommodate non-normal sampling distributions, which is necessary given the product of path coefficient values have a non-normal distribution. The indirect effect is then calculated from each bootstrap sample using a 95% confidence interval (i.e., central 95% of the observed values for a data set). When the confidence interval does not contain 0, it is considered significant and provides evidence for a significant indirect effect (Mackinnon et al., 2002; Shrout & Bolger, 2002). Consistent with recommendations from Shrout and Bolger (2002), to comprehensively examine the strength of indirect effects, the proportionality of observed indirect effects were analyzed. The ratio of the indirect effect (a x b) over the total effect [(a x b) + c], is referred to as the proportion mediated (P_M), and is a method commonly employed to gain greater clarity regarding the strength of partial mediation. Higher values indicate a greater proportion of the total effect is attributed to the indirect effect. Collectively, the percentile bootstrapping method and analysis of proportionality for indirect effects provided comprehensive analyses of the significance and strength of indirect effects within models.

Examining Cross-Domain Associations

To assess associations between conceptually congruent constructs (i.e., schemas, attributions, & behavioral outcomes) within reactive aggression and academic amotivation domains, disturbance correlations were examined for hypotheses three and four. More specifically, error terms for each study construct were correlated with error

terms for the parallel cross-domain construct (e.g., HAB and ALH). As outlined by Kline (2005), disturbance correlations are employed to assess whether two endogenous variables share at least one common omitted cause. To assess whether a common unaccounted for variable contributed to conceptually congruent constructs within integrated models, disturbance correlations were specified for hostile schemas and APS, HAB and ALH, and reactive aggression and academic amotivation. Specific to these models, a significant disturbance correlation signals a common omitted cause and provides indirect support for interrelatedness of constructs and additional variance that is not accounted for by other paths in the model. In the combined models, disturbance correlations were used to assess whether an omitted common cause between cross-domain constructs existed.

Hypothesis 1: Reactive Aggression Model

After controlling for gender effects using the MIMC procedure, it was predicted that the reactive aggression model would approximate the data from the self-report surveys with model fit being sufficient to accept the specified associations among the latent constructs. In the model, it was predicted that hostile schemas and HAB would have a positive association with reactive aggression (Figure 10). Furthermore, it was predicted that HAB would partially mediate the relationship between hostile schemas and reactive aggression. It should be noted that measurement components have been omitted from structural models depicted below for ease of interpretation.

Model fit statistics indicated that the specified model demonstrated satisfactory fit approximating the data within the population, χ^2 (60) = 91.94, χ^2/df = 1.53, *CFI* = .95, *RMSEA* = .05, *SRMR* = .05. Results based on squared multiple correlations indicated

that the model explained 60% of the variance for reactive aggression. Path coefficients for the effect of gender on latent constructs were not significant indicating no evidence of gender differences on hostile schemas, HAB, and reactive aggression.

Consistent with expectations, results for direct effects revealed hostile schemas was a significant positive predictor of reactive aggression (*B* = .82, *S.E.* = .08), indicating higher levels of hostile schemas predicted higher reactive aggression. Contrary to expectations, HAB was a significant negative predictor of reactive aggression (*B* =-.22, *S.E.* = .08), indicating that HAB predicted lower reactive aggression. Hostile schemas was also a significant positive predictor of HAB (*B* = .30, *S.E.* = .09), indicating higher levels of hostile schemas predicted higher HAB.

The standardized coefficient between HAB and reactive aggression, while significant, was in the opposite direction of the standardized coefficient for the relationship between hostile schemas and HAB. Contrary to the hypothesis, no indirect effect of hostile schemas on reactive aggression through HAB was observed as indicated by the value of the indirect effect and the 95% confidence interval constructed via the bootstrapping technique (-.05; 95% C.I. = -0.15, 0.00). The product representing the indirect effect is negative, and opposite in sign from the direct effect of hostile schemas on HAB. This pattern is consistent with model results that Shrout and Bolger (2002) termed unexpected suppression effects. When the mediated and direct effects are of opposite sign, estimating the strength of mediation via proportion mediated ratio is not recommended as estimates of *P*m can exceed 1.00 or become negative. Given that the 95% CI around the indirect effect of -.05 includes 0, there is no statistical evidence

supporting partial mediation and as a logical extension of this non-significant result, no need to quantify the strength of the mediation effect via the *P*m ratio.

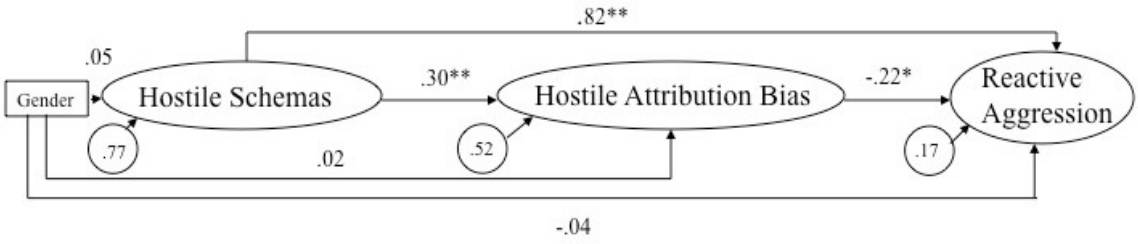

Figure 10. Reactive aggression structural model controlling for gender.
*p < .05; **p < .01

Supplemental Analyses. The reactive aggression model that included gender as a covariate found no evidence of gender effects. However, preliminary analyses indicated youth reports of hostile schemas, HAB, and reactive aggression differed by grade level. Further analysis of responses suggested that youth reports for identified constructs in the reactive aggression model decreased as current grade level increased. As such, current grade level was designated as a covariate and controlled in a post-hoc reactive aggression model (Figure 11). To fulfill statistical requirements for the MIMIC approach, current grade level was dichotomized, with grades 9 and 10 and grades 11 and 12 collapsed into single categories respectively. Grades 9 and 10 were denoted as "0" and grades 11 and 12 were denoted as "1." As noted earlier, current grade level was positively correlated with age and displayed a similar pattern of associations with study variables as age, but provided a more statistically sound control variable given the even distribution of participants across grades.

Overall fit for the model was good and a slight improvement over the original hypothesized model, χ^2 (60) = 85.63, χ^2/df = 1.43, *CFI* = .96, *RMSEA* = .05, *SRMR* =

.06. Current grade level was a significant predictor of hostile schemas (B = -.26, $S.E.$ = .15), with higher current grade level predicting lower levels of hostile schemas. No other significant relationships between current grade level and model constructs were observed. Relationships among study variables remained consistent with findings for the original reactive aggression model. Hostile schemas remained a significant positive predictor of HAB and reactive aggression. HAB remained a significant negative predictor for reactive aggression. An indirect effect of hostile schemas on reactive aggression was not observed (-.05; 95% C.I. = -0.12, 0.00) providing no evidence of partial mediation.

Given results from preliminary analyses, a second supplemental model controlling for current grades was specified (Figure 12). To fulfill statistical requirements for the MIMIC approach, current grades were dichotomized, with grades "A" and "B" and grades "C" and below collapsed into single categories respectively. Grades "A" and "B" were denoted as "0" and grades "C" and below were denoted as "1". The model results indicated good overall fit, χ^2 (60) = 85.35, χ^2/df = 1.42, CFI = .96, $RMSEA$ = .05, $SRMR$ = .06. Current grades was a significant positive predictor of HAB, (B = .17, $S.E.$ = .14), indicating lower current grades was associated with higher levels of HAB. Hostile schemas remained a robust positive predictor of HAB (B = .27, $S.E.$ = .09) and reactive aggression (B = .81, $S.E.$ = .08). No indirect effects or other significant paths were observed within the model.

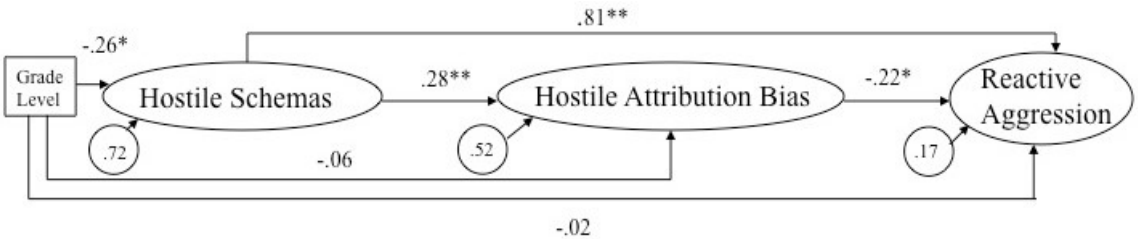

Figure 11. Reactive aggression structural model controlling for current grade level.
*p < .05; **p < .01

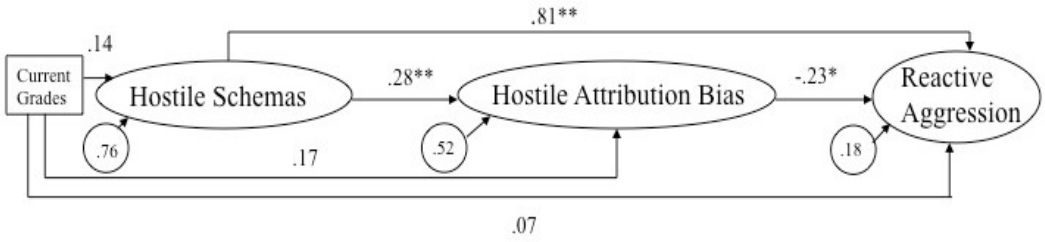

Figure 12. Reactive aggression structural model controlling for current grades.
*p < .05; **p < .01

Given the direct effect of HAB on reactive aggression was contrary to the hypothesis and inconsistent with past research, the reactive aggression model was deconstructed into two models to sequentially examine the relationship between HAB and reactive aggression. The first model examined the direct effect of HAB on reactive aggression independent of hostile schemas (Figure 13). Results indicated good overall model fit, χ^2 (19) = 19.42, χ^2/df = 1.02, *CFI* = .99, *RMSEA* = .01, *SRMR* = .04. However, the path coefficient for the direct effect of HAB on reactive aggression was not significant (*B* = .01, *S.E.* = .08). For the second model, the direct effect of hostile schemas on reactive aggression was eliminated to examine the effect of hostile schemas on HAB and the effect of HAB on reactive aggression (Figure 14). Results indicated poor overall fit, χ^2 (52) = 157.04, χ^2/df = 3.02, *CFI* = .85, *RMSEA* = .10, *SRMR* = .16. As compared to the hypothesized model, the direct effect of hostile schemas on HAB increased (*B* = .40, *S.E.* = .13), while the direct effect of HAB on reactive aggression approached significance in the hypothesized direction (*B* = .12, *S.E.* = .08). Collectively, these models indicate that the removal of the direct effect of hostile schemas on reactive

aggression revealed a relationship between HAB and reactive aggression trending toward significance in the hypothesized direction.

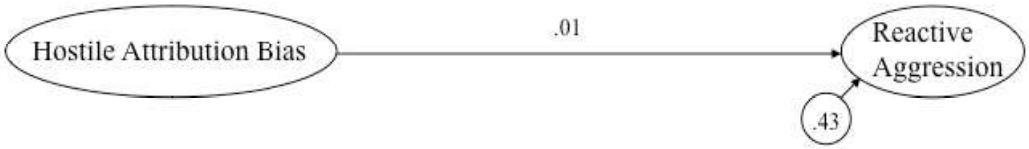

Figure 13. Hostile attribution bias predicting reactive aggression.
*p < .05; **p < .01

Figure 14. Hostile attribution bias predicting reactive aggression without direct effect of hostile schemas on reactive aggression.
*p < .05; **p < .01

In summary, partial support for Hypothesis 1 was observed. Consistent with the hypothesis, hostile schemas was a robust direct predictor of reactive aggression. Hostile schemas was also a significant predictor of HAB. Contrary to the hypothesis, HAB was negatively associated with reactive aggression within the hypothesized model and there was no evidence that HAB partially mediated the relationship between hostile schemas and reactive aggression. Finally, gender effects were not observed, but current grade level negatively associated with hostile schemas indicating lower levels of hostile schemas among youth in grades 11 and 12.

Hypothesis 2: Academic Amotivation Model

After controlling for gender effects with the MIMIC procedure, it was expected that the academic amotivation model would approximate the data from the self-report surveys and the model fit would be sufficient to accept the specified associations among academic constructs (Figure 15). It was predicted that Academic Possible Selves (APS)

would have a negative association with academic amotivation and academic learned helplessness (ALH) and that ALH would have a positive association with academic amotivation. Finally, it was predicted that ALH would partially mediate the relationship between APS and academic amotivation.

Model fit statistics indicated excellent model fit, χ^2 (23) = 28.97, χ^2/df = 1.26, *CFI* = .99, *RMSEA* = .04, *SRMR* = .04. Results based on squared multiple correlations indicated the model accounted for only 2% of the variance of academic amotivation. Path coefficients representing gender effects on model constructs were not significant, providing no evidence of gender difference on APS, ALH, or academic amotivation.

Despite significant model fit, no significant path coefficients were identified. Contrary to expectations, a significant direct effect was not observed for APS and academic amotivation (*B* = -.10, *S.E.* = .05). Additionally, a significant direct effect was not observed between ALH and academic amotivation (*B* = .04, *S.E.* = .08). Furthermore, no significant direct effect of APS on ALH was observed (*B* = -.09, *S.E.* = .04). Consistent with the absence of significant direct effects, results via the bootstrapping technique revealed there was no indirect effect of APS on academic amotivation (.00; 95% C.I. -.01, .01). As there was no evidence supporting partial mediation, the *P*m ratio was not calculated to quantify the strength of the indirect effect.

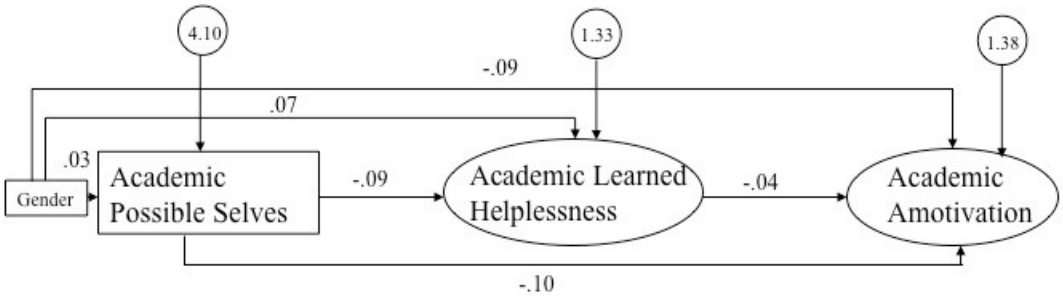

Figure 15. Academic amotivation structural model controlling for gender.
*p < .05; **p < .01

Supplemental Analyses. The academic amotivation model that included gender as a covariate found no evidence of gender effects. However, preliminary analyses revealed youth reports of APS, ALH, and academic amotivation differed by grade level. Further analyses of responses indicated youth reports for identified constructs within the academic amotivation model decreased as current grade level increased. As such, current grade level was designated as a covariate and controlled in a post-hoc academic amotivation model (Figure 16). Overall model fit was satisfactory, χ^2 (23) = 39.50, χ^2/df = 1.72, *CFI* = .97, *RMSEA* = .04, *SRMR* = .06. Current grade level was a negative predictor for APS (*B* = -.15, *S.E.* = .29) and academic amotivation (*B* = -.19, *S.E.* = .18) indicating that participants in higher grades reported fewer APSs and lower academic amotivation. Consistent with results from the model controlling for gender, no significant direct effects were identified. As there were no significant paths between APS and ALH, or ALH and academic amotivation, no evidence of an indirect effect of APS on academic amotivation mediated by ALH was observed.

Given results from preliminary analyses revealed responses by youth differed based on current grades, a second supplemental model controlling for current grades was specified (Figure 17). Results indicated good overall fit, χ^2 (23) = 43.12, χ^2/df = 1.87, *CFI* = .96, *RMSEA* = .04, *SRMR* = .07 (Figure 16). Current grades was a significant positive predictor of academic amotivation, (*B* = .26, *S.E.* = .18), with lower current grades associated with higher levels of academic amotivation. No indirect effects or other significant paths were observed within the model.

In summary, Hypothesis 2 was not supported. The academic amotivation model displayed excellent fit but only accounted for 2% of the variance for academic amotivation. Results did not support the presence of hypothesized direct or indirect relationships among model variables. Collectively these findings indicate excellent specification of model constructs, but an absence of expected relationships among the constructs in the present sample. Finally, gender effects were not observed, but current grade level was negatively associated with APS and academic amotivation indicating youth in grades 11 and 12 reported fewer APSs and lower academic amotivation.

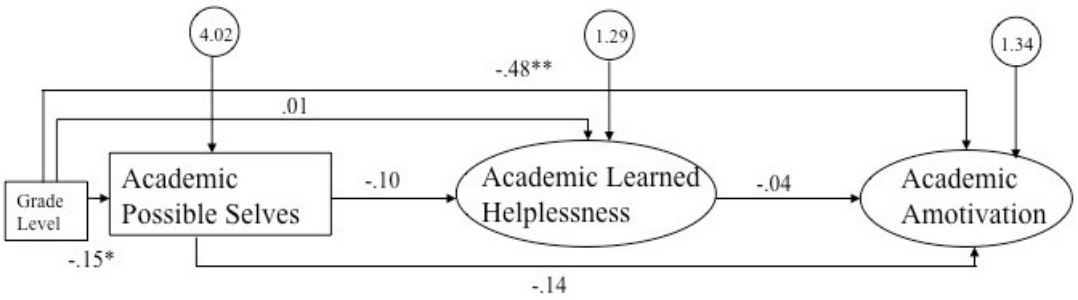

Figure 16. Academic amotivation structural model controlling for current grade level.
*p < .05; **p < .01

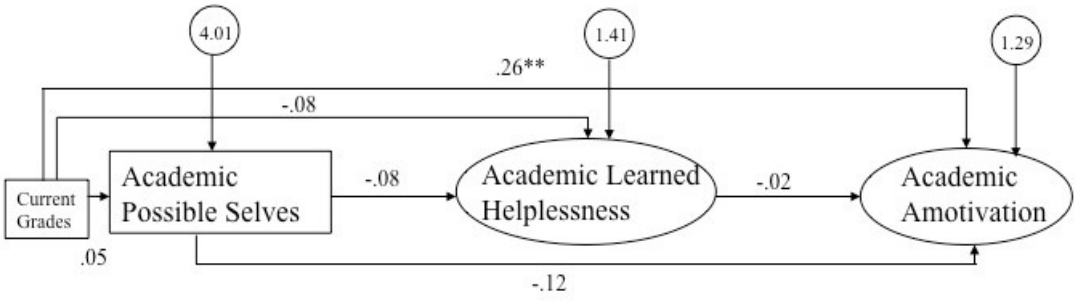

Figure 17. Academic amotivation structural model controlling for current grades.
*p < .05; **p < .01

Hypothesis 3: Domain-Specific Integrated Model

After controlling for the effects of gender, it was expected that the domain-specific integrated model would approximate the data from the self-report surveys and

the model fit would be sufficient to accept the specified associations among the latent constructs. It was expected that this model would replicate the relationships examined within independent reactive aggression and academic amotivation models while also accounting for covariance of cross-domain cognitive processes and behaviors. More specifically, the hypothesized path coefficients among constructs would remain significant after estimating the shared variance between Hostile Schemas/APS, HAB/ALH, and Reactive Aggression/Academic Amotivation.

To test this hypothesis, a structural model was fitted integrating reactive aggression and academic amotivation independent models into a single model (Figure 18). Model results indicated satisfactory model fit, χ^2 (176) = 238.87, χ^2/df = 1.36, *CFI* = .95, *RMSEA* = .04, *SRMR* = .08. Results based on squared multiple correlations indicated the model accounts for approximately 55% of variance for reactive aggression and 2% of variance for academic amotivation. Path coefficients for effect of gender on model variables were not significant, indicating no gender differences on hostile schemas, HAB, reactive aggression, APS, ALH, and academic amotivation.

Consistent with hypotheses 1 and 2, direct effects were examined. As expected, domain-specific relationships were consistent with results for reactive aggression and academic amotivation models. For the reactive aggression domain, hostile schemas was a significant positive predictor of HAB (*B* = .30, *S.E.* = .09) and reactive aggression (*B* = .78, *S.E.* = .08). Additionally, HAB was a significant negative predictor of reactive aggression (*B* = -.22, *S.E.* = .08). For the academic amotivation model, no significant direct effects were observed. Consistent with reactive aggression and academic amotivation independent models, no indirect effects were observed.

Consistent with expectations, the disturbance correlation for reactive aggression and academic amotivation was significant (r = .40). However, significant correlations for error terms between other study constructs were not observed.

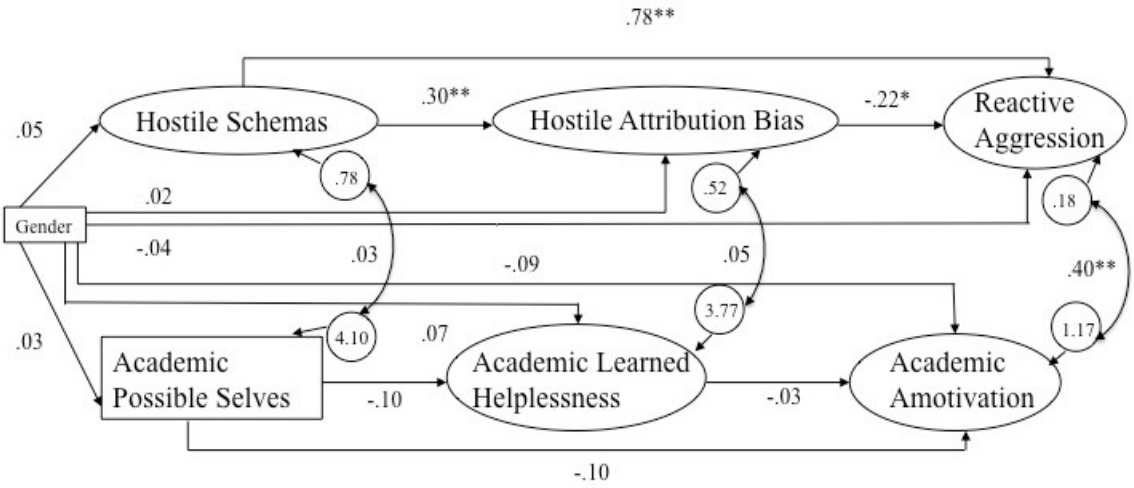

Figure 18. Domain-specific integrated structural model controlling for gender.
*p < .05; **p < .01

Supplemental Analyses. The domain-specific integrated model that included gender as a covariate found no evidence of gender effects. Given significant direct effects observed for current grade level and several study variables within reactive aggression and academic amotivation independent models, current grade level was designated and controlled in a post-hoc domain-specific integrated model (Figure 19). Results indicated good overall model fit, χ^2 (176) = 237.36, χ^2/df = 1.35, *CFI* = .95, *RMSEA* = .04, *SRMR* = .07. Consistent with findings for the reactive aggression and academic amotivation models, current grade level was negatively associated with hostile schemas (*B* = -.15, *S.E.* = .15), APS (*B* = -.26, *S.E.* = .29), and academic amotivation (*B* = -.20, *S.E.* = .17).

Direct effects were consistent with relationships observed within the hypothesized model. Hostile schemas remained a significant positive predictor for HAB (*B* = .28, *S.E.*

= .10) and reactive aggression (*B* = .77, *S.E.* = .08). HAB was a significant negative predictor of reactive aggression (*B* = -.22, *S.E.* = .08). No direct effects were observed among academic constructs. Additionally, no indirect effects were observed between study constructs. Finally, the disturbance correlation for reactive aggression and academic amotivation remained significant (*r* = .39), while disturbance correlations for other study variables were not significant.

Given significant direct effects observed for current grades within independent models, a second supplemental model controlling for current grades was specified (Figure 20). Results indicated good overall fit, χ^2 (176) = 241.89, χ^2/df = 1.37, *CFI* = .95, *RMSEA* = .05, *SRMR* = .07. Results were consistent with findings from independent reactive aggression and academic amotivation models. Current grades were a significant positive predictor of HAB (*B* = .17, *S.E.* = .14) and academic amotivation (*B* = .26, *S.E.* = .17), indicating lower grades were associated with higher levels of HAB and academic amotivation. Hostile schemas remained a positive predictor for HAB (*B* = .29, *S.E.* = .09) and reactive aggression (*B* = .78, *S.E.* = .08) and HAB remained a negative predictor for reactive aggression (*B* = -.23, *S.E.* = .08). A significant disturbance correlation was observed between reactive aggression and academic amotivation (*r* =.39).

In summary, results partially supported Hypothesis 3. Consistent with expectations, direct and indirect effects observed within independent reactive aggression and academic amotivation models were replicated within the domain-specific model. Additionally, a significant disturbance correlation between reactive aggression and academic amotivation was observed, indicating the omission of a common cause for both reactive aggression and academic amotivation within the model. Contrary to

expectations, no other significant disturbance correlations were observed. Finally, gender effects were not observed while grade level and current grades effects observed within reactive aggression and academic amotivation models were replicated.

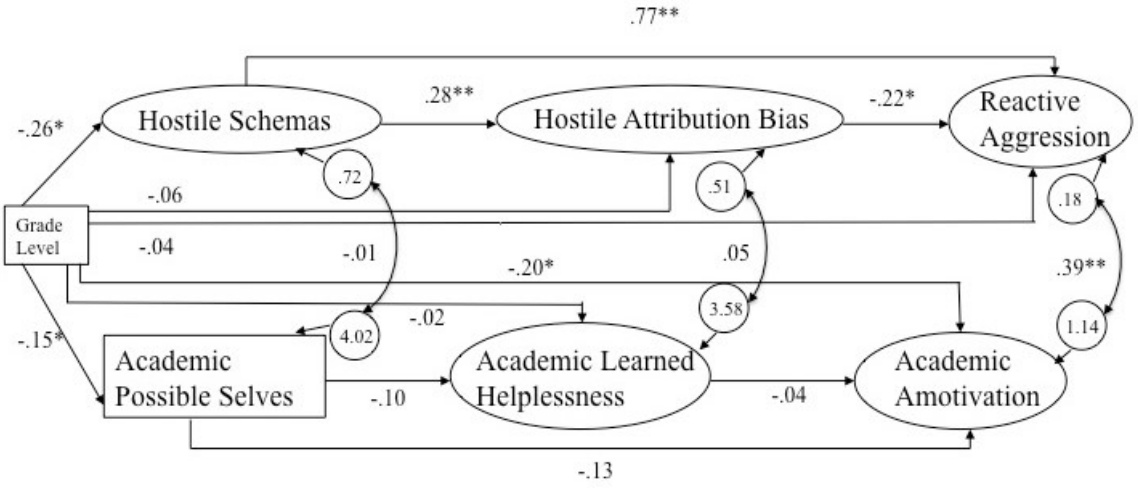

Figure 19. Domain-specific integrated structural model controlling for current grade level. *p < .05; **p < .01

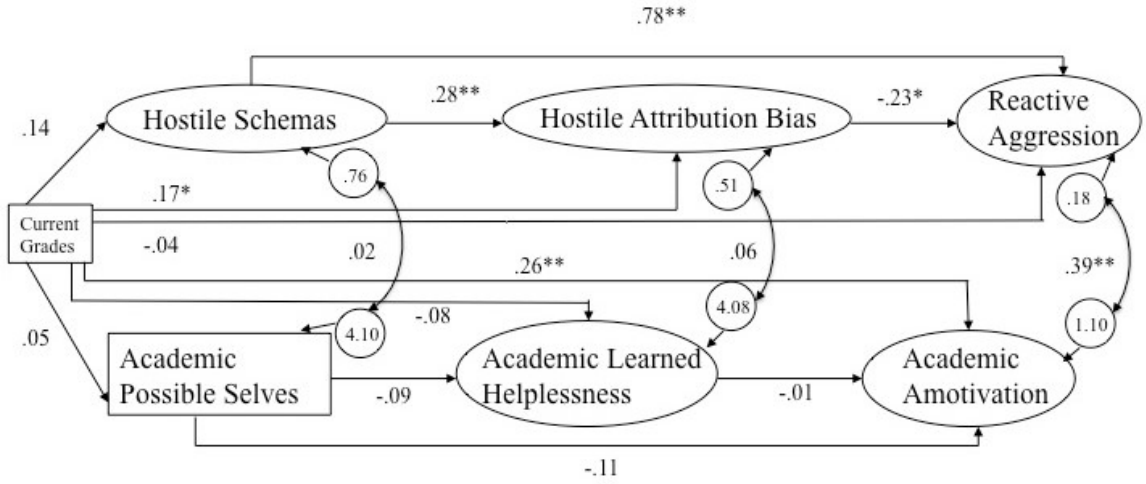

Figure 20. Domain-specific integrated structural model controlling for current grades. *p < .05; **p < .01

Hypothesis 4: Cross-Domain Integrated Model

After controlling for effects of gender, it was expected that the cross-domain integrated model would approximate the data from the self-report surveys and the model

fit would be sufficient to accept the specified associations among the latent constructs (Figure 21). It was expected that the cross-domain integrated model would replicate the relationships examined within the domain-specific integrated model with the addition of cross-domain influences of attribution styles on behavioral outcomes. Specifically, it was expected that HAB would be positively associated with academic amotivation and ALH would be positively associated with reactive aggression.

Model results indicated good overall model fit, χ^2 (174) = 237.53, χ^2/df = 1.37, *CFI* = .95, *RMSEA* = .04, *SRMR* = .07. Results based on squared multiple correlations indicated the model accounts for approximately 55% of variance for reactive aggression and 3% of variance for academic amotivation. Path coefficients estimating gender effects on model variables were not significant, providing no evidence of gender differences on hostile schemas, HAB, reactive aggression, APS, ALH, and academic amotivation.

Direct and indirect effects of all study variables were examined. As expected, domain-specific relationships were consistent with results for reactive aggression and academic amotivation independent models. For the reactive aggression domain, hostile schemas was a significant positive predictor for HAB (*B* = .31, *S.E.* = .09) and reactive aggression (*B* = .78, *S.E.* = .08). Additionally, HAB was a significant negative predictor for reactive aggression (*B* = -.20, *S.E.* = .08). For the academic amotivation domain, no significant direct effects were observed among academic constructs. Consistent with the reactive aggression and academic amotivation independent models, no indirect effects were observed. A significant disturbance correlation for reactive aggression and academic amotivation was also observed (*r* = .40) in the model. Significant correlations for error terms between other study constructs were not observed.

Contrary to expectations, path coefficients for the direct effect of HAB on academic amotivation (B = .10, $S.E.$ = .13) and the direct effect of ALH on reactive aggression (B = -.03, $S.E.$ = .02) were not significant, indicating no evidence of cross-domain relationships between attribution styles and reactive aggression or academic amotivation.

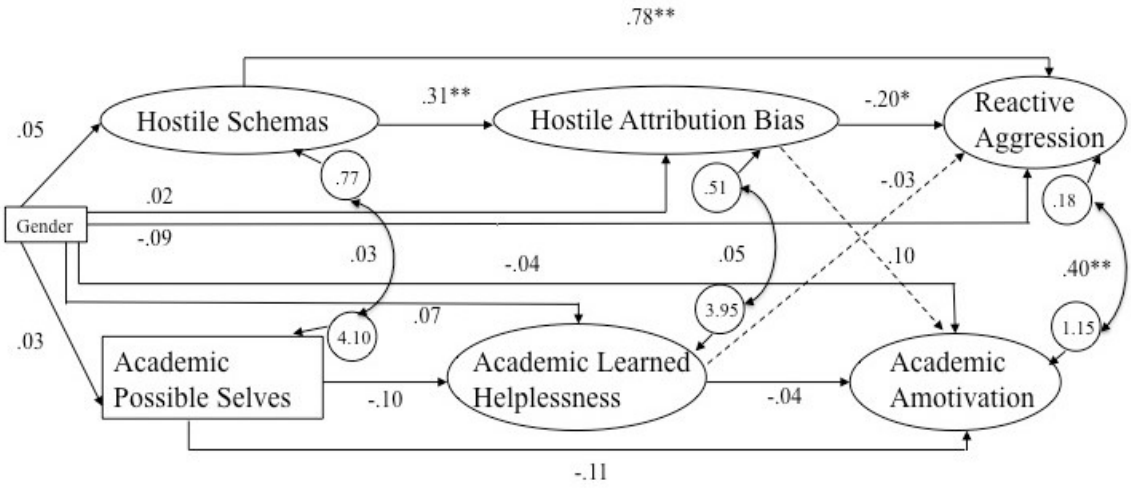

Figure 21. Cross-domain integrated structural model controlling for gender.
*p < .05; **p < .01

Supplemental Analyses. The cross-domain integrated model that included gender as a covariate found no evidence of gender effects. Given significant direct effects observed for current grade level and several study variables within reactive aggression and academic amotivation independent models, current grade level was designated and controlled in a post-hoc cross-domain integrated model (Figure 22). Results indicated good overall model fit, χ^2 (174) = 236.61, χ^2/df = 1.36, CFI = .95, $RMSEA$ = .04, $SRMR$ = .07. Consistent with findings within reactive aggression and academic amotivation independent models, current grade level was a significant negative predictor for hostile

schemas (B = -.15, $S.E.$ = .15), APS (B = -.26, $S.E.$ = .29), and academic amotivation (B = -.20, $S.E.$ = .17).

Direct effects were consistent with relationships observed within the hypothesized model. Hostile schemas was a significant positive predictor for HAB (B = .29, $S.E.$ = .10) and reactive aggression (B = .77, $S.E.$ = .08). Additionally, HAB was a significant negative predictor of reactive aggression (B = -.22, $S.E.$ = .08). No direct effects were observed among academic constructs. Similarly no evidence of indirect effects were detected. Attribution styles were not a significant predictor for cross-domain behavioral outcomes. Specifically, hostile attribution bias failed to predict academic amotivation and academic learned helplessness failed to predict reactive aggression.

Given significant direct effects observed for current grades and several study variables within reactive aggression and academic amotivation independent models, current grades was designated and controlled in a post-hoc cross-domain integrated model (Figure 23). Results indicated good overall fit, χ^2 (174) = 241.48, χ^2/df = 1.39, CFI = .95, $RMSEA$ = .05, $SRMR$ = .07. Results were consistent with findings from independent reactive aggression and academic amotivation models. Current grades were a significant positive predictor of HAB (B = .17, $S.E.$ = .14) and academic amotivation (B = .25, $S.E.$ = .18). Hostile schemas remained a positive predictor for HAB (B = .28, $S.E.$ = .09) and reactive aggression (B = .77, $S.E.$ = .08) and HAB remained a negative predictor for reactive aggression (B = -.22, $S.E.$ = .08). A significant disturbance correlation was observed between reactive aggression and academic amotivation (r =.39).

In summary, Hypothesis 4 was partially supported. As expected, the cross-domain integrated model displayed adequate fit and replicated direct effects observed

within independent models. Furthermore, a significant disturbance correlation was observed between reactive aggression and academic amotivation. Contrary to expectations, cross-domain attribution styles were not predictive of either reactive aggression or academic amotivation.

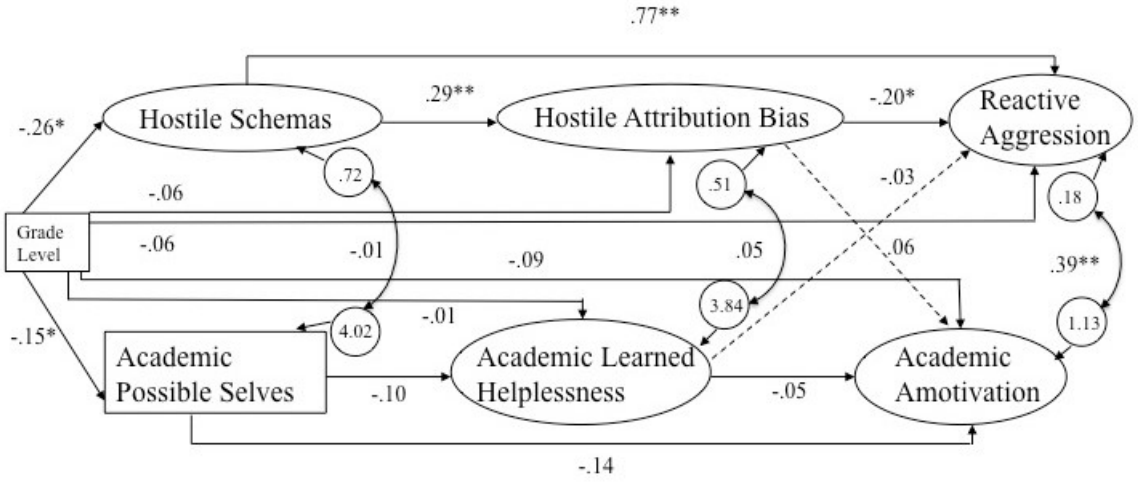

Figure 22. Cross-domain integrated structural model controlling for current grade level.
*p < .05; **p < .01

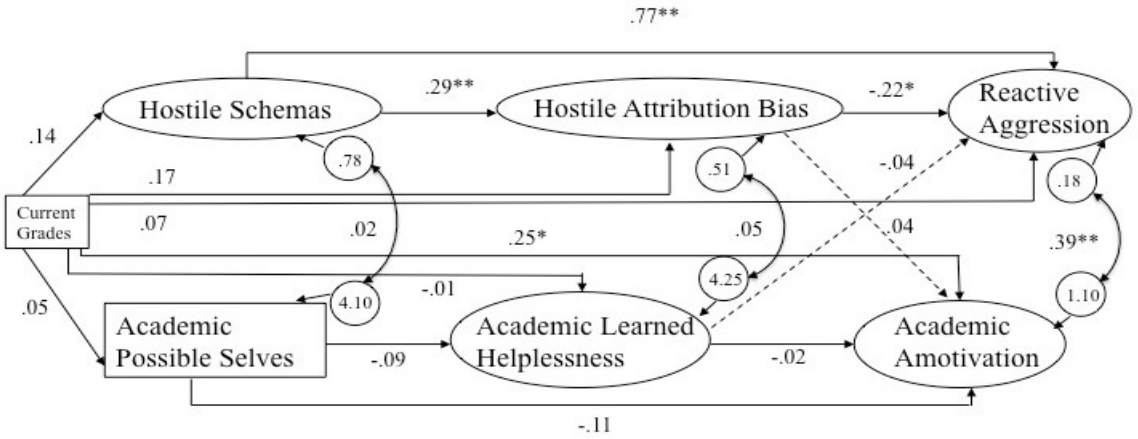

Figure 23. Cross-domain integrated structural model controlling for current grades.
*p < .05; **p < .01

Hypothesis 5: Comparison between Domain-Specific and Cross-Domain Models

It was predicted that the inclusion of the cross-domain paths in the cross-domain integrated model would represent a better fit than the domain-specific integrated model. To assess comparative model fit, Akaike information criterion (AIC) values for

respective models were compared. The AIC is a predictive fit index often utilized to select among competing nonhierarchical models estimated with the same data (Kline, 2005). Specifically, the model with the smallest AIC represents a relatively better fit than the competing model. Chi-square difference tests were also employed for hypothesized models and supplemental models (post-hoc models including current grade level as a covariate) to assess whether differences in model fit were significant.

Contrary to expectations, a significant difference between hypothesized models was not observed. AIC values for the two models were similar and provided no conclusive evidence that one model should be accepted as representing a superior fit over the other (domain-specific integrated model *AIC* = 348.87; cross-domain integrated model *AIC* = 351.53). Furthermore, a chi-square difference test revealed hypothesized models were not significantly different, $\Delta\chi^2$ (3, *N*=189) = 1.34, ns. For supplemental models controlling for current grade level, significant difference in model fit was also not observed. Comparable AIC values between the two post-hoc models that controlled for current grade level were observed (domain-specific integrated model AIC = 347.36; cross-domain integrated model AIC = 350.61). Furthermore, a chi-square difference test revealed that supplemental models were not significantly different, $\Delta\chi^2$ (3, N=189) = 1.34, ns.

In summary, mixed evidence was found for the current study hypotheses. A summary of results presented for hypotheses 1-5 are presented in Table 9.

Table 9
Summary of Results

Hypothesis	Results
1. After controlling for gender effects, it was expected that hostile schemas and hostile attribution bias would positively predict reactive aggression with the relationship between hostile schemas and reactive aggression being partially mediated by HAB.	Partial
2. After controlling for gender effects, it was expected that APS would negatively predict academic amotivation, with ALH partially mediating the relationship between APS and academic amotivation.	No
3. After controlling for gender effects, it was expected that cognitive antecedents would maintain consistent and expected associations with domain congruent outcomes as outlined in hypotheses one and two while accounting for the correlation between study constructs' error terms.	Partial
4. After controlling for gender effects, it was expected that cognitive antecedents would maintain consistent and expected associations with domain congruent outcomes and correlations between error terms as observed in hypothesis three. While accounting for the direct effects on domain congruent outcomes, there would be evidence supporting cross-domain influences of attribution styles on behavioral outcomes.	Partial
5. It was expected that the Cross-Domain Integrated model would be a significantly improved fit from the Domain-Specific Integrated model.	No

CHAPTER IV: DISCUSSION

The present study utilized a comprehensive theoretical approach and advanced statistical methodology to investigate whether shared cognitive antecedents lead to reactive aggression and academic amotivation among a mixed-gender sample of adolescents. Utilizing attribution theory as an overall theoretical framework, this study explored multiple cognitive pathways contributing to reactive aggression and academic amotivation among youth. To comprehensively examine pathways, the study aimed to (1) provide support for domain-specific relationships between cognitive antecedents and reactive aggression and academic amotivation behavioral outcomes, (2) test whether cross-domain relationships exist between cognitive antecedents and behavioral outcomes within reactive aggression and academic amotivation domains, and (3) assess whether reports of cognitive antecedents and behavioral outcomes differed by gender.

To achieve the first study aim and establish the presence of domain-congruent relationships between cognitive antecedents and behavioral outcomes, structural equation models were designed representing independent domains. For reactive aggression, the model tested whether perceptions of others as hostile were predictive of reactive aggression. For academic amotivation, the model investigated whether self-perceptions of one's academic ability were predictive of academic amotivation. To achieve the second study aim and examine whether both domain-congruent and cross-domain relationships exist between cognitive antecedents and behavioral outcomes, two integrated models incorporating both reactive aggression and academic amotivation were tested. The domain-specific integrated model tested whether domain-congruent relationships between cognitive antecedents and behavioral outcomes remained when

accounting for shared variance between cross-domain parallel processes (i.e., schemas, attributions, behaviors). The cross-domain integrated model examined whether cross-domain relationships between attribution styles and behavioral outcomes exists in addition to relationships established in the domain-congruent integrated model. To achieve the final study aim, gender was controlled within each of the models explored in study aims 1 and 2. The following sections discuss findings related to study aims 1-3. Furthermore, implications of results, limitations of the present study, and future directions for research are explored in detail below.

Domain-Specific Independent Models

Two main hypotheses examining domain-specific relationships for independent models were explored. The first hypothesis examined relationships between reactive aggression and cognitive antecedents representing hostile perceptions of others. The second hypothesis examined relationships between academic amotivation and cognitive antecedents representing self-perceptions of academic ability. Collectively, findings based on these hypotheses establish the foundation for exploring cross-domain relationships between attribution styles and behavioral outcomes. For each of these hypotheses, the following section summarizes findings and then compares and contrasts the current results with prior research.

Reactive Aggression Model

To establish the presence of domain-specific relationships between cognitive antecedents and reactive aggression, it was predicted that hostile schemas and hostile attribution bias (HAB) would positively predict reactive aggression after controlling for gender, with HAB mediating the relationship between hostile schemas and reactive

aggression. This hypothesis is consistent with prior research supporting the association between cognitive constructs representing hostility and reactive aggressive behaviors across diverse samples (Burks et al., 1999a; Polman et al., 2007). Results indicated partial support for the hypothesis. As expected hostile schemas was strongly associated with reactive aggression. However, HAB failed to mediate the relationship between hostile schemas and reactive aggression.

The reactive aggression model displayed excellent overall model fit indicating that all three of the latent constructs were reliably and validly specified via specific items from self-report measures administered to youth. Additionally, evidence of a direct effect of hostile schemas on reactive aggression is consistent with attribution theory and steps of the social information processing model supported by Dodge and colleagues (Dodge, 2006; Dodge & Crick, 1994; Dodge & Frame, 1982). Gender effects were not observed for reactive aggression model constructs. While prior research has provided mixed support for the presence of gender effects for reactive aggression and hostile cognitive constructs, the majority of research assessing gender differences have utilized pre-adolescent and child samples with an underrepresentation of girls (Crick et al., 2002; Hoglund & Leadbeater, 2007; Polman et al., 2007). The absence of gender effects within the present sample is consistent with developmental literature suggesting enactment of aggressive behavior reduces in frequency and stabilizes as boys and girls become older (Archer & Coyne, 2005; Karriker-Jaffe, Forshee, Ennet, & Suchindran, 2008). More specifically, research indicates upward peaks of reactive aggression until early adolescence followed by progressive declines and comparable levels of reactive aggressive behavior across gender (Dodge, Lochman, Harnish, Bates, & Petit, 1997;

Polman et al., 2007). This is consistent with findings for grade level effects within the present study indicating the presence of hostile schemas significantly declines for youth in 11th and 12th grade. Collectively, the strength of reactive aggression model fit, coupled with the absence of gender effects and presence of grade level effects, is consistent with previous research supporting the presence of reactive aggression and hostile cognitive antecedents across gender and extends research suggesting that gender differences for reactive aggression and cognitive antecedents are less prominent among older adolescent samples (Conner, Steingard, Anderson, & Melloni, 2003; Orobio de Castro et al., 2002).

Contrary to expectations, HAB negatively predicted reactive aggression and failed to mediate the relationship between hostile schemas and reactive aggression. This was an unexpected finding as previous research has generally supported HAB as a positive predictor of reactive aggression, with only a minority of studies indicating a null or negative relationship (Crick & Dodge, 1996; Dodge et al., 2003; Lansford et al., 2006; Orobio de Castro et al., 2002; Polman et al., 2007). To illustrate, a meta-analysis conducted by Orobio de Castro and colleagues (2002) examining the link between HAB and a general construct of aggression (not delineated by function or form) within 41 studies found a positive association within most studies, but considerable variability was observed as well. The studies collectively represented findings for 6, 071 participants, with 20 studies including boys and girls and eight studies including participants 12 and older. Results from 41 studies revealed effect sizes ranging from -.29 to .65 with a mean effect size of .17, with 37 studies reporting effect sizes in the positive direction, three studies reporting null findings, and one study reporting an effect size in the negative

direction. Results from the meta-analysis highlight that HAB findings from the current study are unique.

A possible interpretation of this finding is that HAB serves a protective function for enacting reactive aggressive behavior when accounting for hostile schemas among certain populations of youth. In other words, this finding suggests youth in the current sample who have a tendency to interpret ambiguous behaviors of others as hostile in specific situations are less likely to enact aggressive behavior after accounting for their broader beliefs regarding the world as a hostile place. This interpretation is also conceptually consistent with the unexpected suppression effect (see Shrout & Bolger, 2002). More specifically, Shrout and Bolger assert that suppression occurs when the indirect effect has the opposite sign of the direct effect. However, the failure of HAB to mediate the relationship between hostile schemas and reactive aggression prevented interpretation of HAB as a true suppression effect. Results presented by Lochman and Dodge (1994) represent the sole negative relationship between HAB and aggressive behavior identified in the Orobio de Castro et al. (2002) meta-analysis. Utilizing a sample of 296 pre-adolescent and adolescent boys to derive six distinct groups representing nonaggressive, moderately aggressive, and severely violent youth within both age brackets, Lochman and Dodge found a negative relationship between HAB and aggressive behavior among moderately aggressive adolescent boys. Lochman and Dodge and Orobio et al. postulated that rule-in criteria for defining moderately aggressive youth may have reflected less severe aggressive behavior than prior research, especially given the identification of a third category of severely violent youth designated within the study. Given that the sample in the present study represents community-based

adolescents exhibiting low to moderate levels of overt reactive aggression, it is possible that the present sample represents youth similar to the subset of youth Lochman and Dodge identified as moderately aggressive, in which HAB predicts lower levels of reactive aggression; however, it is noteworthy that this finding is only revealed when accounting for the predictive effect of hostile schemas as supplemental analyses indicated HAB failed to directly predict reactive aggression.

Therefore, it is also possible that findings for HAB reflect a diminished role for situational attributions of social behavior in predicting reactive aggression after accounting for broader cognitive schemas of the world as hostile. This explanation represents a more conservative and plausible interpretation of findings given prior research supporting the positive association between HAB and reactive aggression, combined with preliminary and supplemental analyses conducted in the current study. More specifically, preliminary analyses indicated HAB was not significantly correlated with reactive aggression, while supplemental analyses revealed HAB was a non-significant positive predictor of reactive aggression in a model that eliminated the direct path between hostile schemas and reactive aggression. As such, the remainder of this section examines HAB findings based on this overall interpretation.

To further explore the unexpected HAB findings, results are discussed in two parts. First, sample characteristics and methodological factors that may have contributed to results are examined and compared to prior research findings. Second, conceptual implications viewed within an attribution theoretical framework are discussed. Within the meta-analysis conducted by Orobio de Castro et al. (2002) studies can be divided based on sample characteristics, with the 10 studies identified as non-referred general samples

representing the most comparable group of studies to the present sample. Within these 10 studies, smaller effect sizes for the association between HAB and aggression were found for youth older than age 12 (r = .03) and mixed samples of boys and girls (r = .12). Within all 41 studies, larger effect sizes were observed for youth between ages 8 and 12 and samples identified as at risk for aggressive behavior. Findings from the meta-analysis support research indicating a peak in aggressive behavior during early adolescence and suggest an equivalent decline in the overall strength of the association between HAB and aggression among older adolescents (Fontaine & Dodge, 2010; Lansford et al., 2006; Orobio de Castro et al., 2002). This trend appears particularly salient for youth not identified as at-risk for aggressive behavior. Using a community sample of boys and girls ages 13-19, the present study represents a relatively understudied population and suggests that the relationship between HAB and reactive aggression may change as youth develop and this association can manifest differently among a sample not identified as at risk for aggressive behavior.

The limited number of studies exploring the impact of HAB on reactive aggression among a community-based adolescent sample, while simultaneously accounting for hostile schemas, further extends the uniqueness of the present study. Methodologically, the decision to explore these relationships utilizing latent constructs derived from well-established measures may have further contributed to unexpected findings for HAB (Crick & Dodge, 1994). Consistent with HAB literature, adapted vignettes representing social situations relevant to youth were utilized to operationalize HAB (Nyborg & Curry, 2003; Lansford et al., 2006). Orobio de Castro and colleagues (2002) noted internal consistencies ranging between .53 and .90 for studies within their

meta-analysis, with an average Cronbach alpha of .75. Prior research utilizing adapted vignettes generally displayed adequate internal consistency, but failed to eliminate measurement error related to gender or specific form of aggression targeted within vignettes (i.e., overt versus relational). To address these limitations, the present study specified a latent HAB construct by selecting four vignettes specifically targeting overt forms of aggression based on their fit as indicators. Additionally, gender invariance was assessed and confirmed. These steps resulted in excellent model fit for the HAB latent construct.

The model fit for HAB reflected its accuracy as a latent construct and supported findings indicating the diminished role of HAB on reactive aggression when accounting for the impact of hostile schemas in a community sample of older male and female adolescents. Few studies exploring the relationship between HAB and reactive aggression account for hostile schemas or examine hostile schemas and HAB simultaneously as was done in the present study (Dodge, 2006; Orobio de Castro et al., 2002; Polman, 2007). Prior research often operationalizes cognitive antecedents of HAB as the ability for an individual to recall social cues from an ambiguous social situation, whereas the present study operationalized hostile schemas as a series of automatic thoughts reflecting a deeply embedded belief of the world as hostile (Lochman & Dodge, 1994; Lansford et al., 2006). Additionally, deriving latent constructs that maximize measurement specification accuracy for hostile schemas and HAB has recently increased in frequency, but remains a relatively infrequent methodological approach (Dodge et al., 2002; Fontain, 2010). Collectively, these methodological enhancements, combined with the unique nature of this mixed gender sample of high school students, resulted in hostile

schemas accounting for the majority of variance in reactive aggression and a more minimal role of the impact of HAB. The current findings suggest that even when present, attributions of ambiguous social situations as reflecting hostile intent do not predict increased use of reactive aggression. Furthermore, the failure of HAB to mediate the relationship between hostile schemas and reactive aggression within the present study suggest accounting for hostile schemas may represent an underexplored cognitive process that more robustly predicts reactive aggression among adolescents than HAB and accounts for predictive strength often attributed to HAB.

To fully understand the impact of methodological procedures on HAB findings, it is necessary to further explore the conceptual framework that informed operationalization of reactive aggression model constructs. As illustrated above, within the present study, HAB was conceptualized as a situation-specific cognitive process that is informed by hostile schemas and a positive predictor of reactive aggression. This conceptualization is consistent with attribution theory and empirical support for the role of HAB in reactive aggression (Dodge, 2006; Polman et al., 2007). Social information processing (SIP) provides an explanatory model for steps in the attribution process by explaining relationships between cognitive antecedents and reactive aggression (Dodge, 1986; Dodge, 2004). Essentially, SIP represents a series of cognitive processes that inform behavioral enactment during social situations (Crick and Dodge, 1994). SIP initiates with the individual perceiving social cues and organizing information about the social stimulus based on prior experiences. Second, the individual makes attributions of causation and intent while assessing the relevance of the social stimulus to personal wellbeing. The successive third and fourth steps involve identifying situational goals and deciding

options. The current positive direct effect of hostile schemas on reactive aggression, and absence of a mediating effect of HAB, is optimally understood by applying the SIP framework to the unique demographic and sample characteristics of youth in the current study.

According to SIP, hostile schemas are informed by past experiences that reinforce beliefs that the world is hostile (Dodge, 2006). Youth frequently exposed to situations that support beliefs in a hostile world such as a violent neighborhood or abusive parents may be primed toward quicker access to cognitions that contribute to aggressive behavior than youth exposed to situations socializing them to interpret the actions of others as benign (i.e., parental modeling of benign attribution or supportive social networks). Support for the increased accessibility of hostile schemas for youth who frequently enact aggressive behavior is highlighted by research deconstructing social cognitive processes into "on-line" and "off-line" processes (Fontaine, 2006). On-line processes are considered volitional cognitive processes that involve consciously processing information, while off-line cognitive processes are automatically executed and operate at a subconscious level (Crick & Dodge, 1994). As an off-line cognitive process, hostile schemas provide a script for navigating socially frustrating situations without requiring additional cognitive effort. Furthermore, HAB represents an on-line cognitive process that requires volitional cognitive processing, and consistent with SIP, is informed by the off-line cognitive processing represented by hostile schemas.

The implications of on-line and off-line cognitive processing provide several possibilities for explaining findings for HAB within the present study. First, the predictive strength of hostile schemas for both HAB and reactive aggression reflects the

substantial role of accessible and global beliefs and may account for the absence of HAB as a mediator. This finding is also consistent with conceptualizations that identify hostile schemas as an off-line cognitive process that strengthens with experiences that support believing the world is hostile and HAB as an online cognitive process that is informed by hostile schemas (Huesmann & Guerra, 1997; Fontaine, 2006). Older adolescents likely have a greater range of experiences to draw upon than younger children. These cumulative experiences may strengthen youths' beliefs about the world being hostile and inform not only the specific interpretation of events as hostile (i.e., HAB vignette) but also directly influence the tendency to engage in reactive aggression.

Second, research utilizing SIP to explain the development of reactive aggression provides evidence that the impact of HAB may diminish among adolescents when accounting for other SIP processes (Fontaine et al., 2010; Fontaine, 2010). In a prospective study by Lansford et al. (2006) exploring the relationship between SIP and externalizing behaviors among a sample of boys and girls at four different time periods between kindergarten and 11th grade, results indicated youth reports of later SIP steps (i.e., identifying situational goals and evaluating options) were predictive of concurrent externalizing behavior in 11th grade, whereas both early and late SIP steps predicted youth self-reported externalizing behavior in 8th grade. Further research by Fontaine et al. (2010) has supported the mediating role of later SIP steps when investigating the relationship between HAB and aggression among adolescents. More specifically, response evaluation and decision making (RED) represents later SIP steps and is specifically implicated as a mediator reflecting the options an individual assesses following an attribution such as whether aggression will result in a negative consequence.

In this longitudinal study examining the mediating role of RED among 585 boys and girls during 10th, 11th, and 12th grades, results revealed that the direct effect of HAB on aggression was fully mediated by RED. Within the present study, RED was not measured, and the absence of this mediator may partially account for the unique negative association found between HAB and reactive aggression.

Researchers are placing greater attention on the development of social cognitive processes across adolescence with recent research suggesting that social cognitive processes increase in complexity and specificity as youth progress through adolescence (Fontaine, 2006; 2010). This increased complexity and specificity is partially attributed to the development of executive functioning skills (Fontaine et al., 2010). More relevant to findings for the present study, researchers also posit that cognitive processes are engaged in an ongoing process of interaction with other cognitive processes and an individual's social environment (Fontaine & Dodge, 2009). These dynamic processes may impact how one's cognitive process "behaves" in the presence of other cognitive processes or situational factors. By accounting for hostile schemas within the present study, the unexpected findings for HAB likely reflect the growing complexity of cognitive processes during adolescence and the greater role of global beliefs informing behavior as a result of increased executive functioning skills and cognitive capacity.

While empirical research examining the impact of HAB on the relationship between hostile schemas and reactive aggression is scarce, the diminished role of HAB within the reactive aggression model has significant implications for examining multiple pathways toward aggression and academic amotivation. First, the expected domain-specific relationship between HAB and reactive aggression was not established. Second,

the presence of hostile schemas indicates that broader cognitive beliefs are more important to understanding reactive aggression in older adolescents than situation-specific explanations. Collectively, these findings suggest that HAB may also have a diminished role in explaining academic amotivation.

Academic Amotivation Model

To establish the presence of domain-specific relationships between academic amotivation and related cognitive constructs, it was predicted that Academic Possible Selves (APS) would be a negative predictor of academic amotivation, with academic learned helplessness (ALH) partially mediating the relationship between APS and academic amotivation after controlling for gender. This hypothesis is rooted in research indicating youth who perceive themselves as incapable of excelling academically are less likely to engage in academic self-regulatory behaviors (Chan & Moore, 2006; Graham, 1997). Consistent with attribution theory, the academic amotivation model was designed to reflect the impact of ALH as an attribution style on the self-regulatory academic behavior of academic amotivation, while accounting for youths' schematic self-perceptions of academic ability as represented by APS. This hypothesis was not supported. Contrary to expectations, neither APS nor ALH predicted academic amotivation and ALH failed to mediate the relationship between APS and academic amotivation. Despite null findings, the academic amotivation model provides insight into how academic amotivation and related cognitive constructs operate within the present sample.

To comprehensively explain null findings and implications, results are discussed in two parts. First, methodological factors and sample characteristics are examined and

compared to prior research findings. Second, the conceptual implications for findings as understood within an attribution theoretical framework are discussed. From a methodological perspective, the academic amotivation model displayed excellent fit and supported accurate specification of academic constructs. As such, null findings reflect an accurate representation for relationships between academic constructs within the present sample with the statistical rigor employed to ensure both reliability and validity of the academic constructs supporting this interpretation. Using well-established measures for assessing academic constructs, ALH and academic amotivation displayed strong fit as independent latent constructs and APS displayed excellent inter-rater reliability as an observed construct.

Utilizing confirmatory factor analysis to model ALH and academic amotivation, optimal indicators for latent constructs were selected, factorial invariance by gender was confirmed, and subsequent model fit for final latent constructs indicated ALH and academic amotivation were represented in the sample as expected. Operationalization for ALH was guided by prior research supporting the validity of a first-order latent ALH construct consisting of indicators representing composite scores for failure-ability, failure-luck, and success-luck subscales (Chan & Moore, 2006). Excellent model fit for each subscale as independent latent constructs and a relatively small disturbance term for the final ALH latent construct within the academic amotivation model supported this decision. Similarly, academic amotivation displayed good model fit as an independent latent construct utilizing each of the four items comprising the academic amotivation subscale (Ratelle et al., 2007; Vallerand et al., 1997). It should be noted that all available items for ALH and academic amotivation were utilized to fulfill statistical requirements.

While this permitted minimal refinement of latent constructs, strong fit for both constructs indicate accurate measurement specification.

In order to maximize model parsimony, and to account for both APS Balance and Plausibility, a single APS composite construct representing the summed value for APS Balance and Plausibility scores was specified. Prior research indicates APS Balance and Plausibility represent the optimal indicators of one's academic possible self (Oyserman et al., 2004; Oyserman, Bybee, & Terry, 2002). While modeling an APS latent construct was preferred to reduce measurement error, latent constructs require a minimum of three indicators to be just-identified (Kline, 2005). Despite previous research utilizing APS Plausibility and Balance as distinct constructs, preliminary analyses indicated a significant positive correlation ($r = .70$) between APS Balance and Plausibility which informed the decision to combine these constructs into a composite APS observed variable. Standardized coding procedures were utilized to derive APS constructs comprising the APS observed variable (Balance and Plausibility). Intra-class coefficients exceeding .95 indicated strong inter-rater reliability in coding APS Balance, Plausibility, and the final APS composite construct. Collectively, model fit and reliability estimates for each academic construct represent a strength of the present study and support that null findings do not reflect measurement misspecification.

Sample characteristics may partially explain null findings. Gender effects were not observed for academic amotivation model constructs, while higher grade level was associated with lower APS and academic amotivation. The absence of direct or mediated effects coupled with the absence of gender effects within the present study may reflect a divergence of sample characteristics from previous research. Prior research has explored

academic amotivation model constructs primarily utilizing early adolescent youth outside of the United States or among adolescents who have been targeted for academic interventions (Chan & Moore, 2006; Legault et al. Maata et al., 2007; Ratelle et al.; 2004). The present study consisted of a community sample of older adolescents representing students not identified as at-risk for poor academic outcomes. Furthermore, the majority of the sample consisted of African-American and Hispanic high school students, a relatively understudied population (Graham, Bellmore, & Mize, 2005; Oyserman & Fryberg, 2006). Given the present sample was recruited from a school-based health clinic, it is also possible that participants represented students actively engaged in school and their personal wellbeing. As such, older ethnic minority adolescents fitting the profile of youth not at-risk for poor academic outcomes and actively engaged in their personal wellbeing may report comparable academic outcomes across gender and possess protective factors for academic amotivation that counter the influence of cognitive antecedents identified in the present study. The absence of direct and indirect effects for academic amotivation within the present study may indicate that cognitive antecedents represent distal predictors within the present sample and more proximal antecedents for academic amotivation should be explored.

To explore the possibility of alternative antecedents, an examination of the underlying theoretical framework for the academic amotivation model is warranted. From a conceptual perspective, research utilizing attribution theory has explored contributors to low academic motivation, but a comprehensive model informed by attribution theory to explain academic amotivation has yet to be explored (Graham, 2004). Existing research has supported that academic amotivation is linked to negative

academic outcomes such as school dropout and low academic achievement among adolescent samples (Long et al., 2007; Vallerand et al., 1997). As such, it provided an adequate representation for academic self-regulatory behavior with prior support for the reliability and validity of the construct as measured by the Academic Motivation Scale (Vallerand et al., 1992). In contrast, the academic amotivation model represented in the current study focused on cognitive antecedents to predict academic amotivation instead of simply associating academic amotivation with other academic outcomes.

To design a model consistent with attribution theory, APS and ALH constructs represented meaningful predictors for academic amotivation supported by prior research. To illustrate, prior research has supported the impact of APS and ALH on academic outcomes (Chan & Moore, 2006; Oyserman et al., 2006). Higher levels of APS Balance and Plausibility have been linked to higher grade point averages, positive affect toward school, and increased effort invested in school (Oyserman et al., 2004; Oyserman, Grant, & Ager, 1995). Increased levels of ALH have been associated with lower levels of academic achievement, higher levels of failure expectation and increased active and passive task avoidance (Chan & Moore, 2006; Maata et al., 2002). However, in prior studies both APS and ALH predicted correlates of academic amotivation representing more concrete behavioral outcomes such as academic performance. Items within the academic amotivation subscale reflected participants desire to attend school (i.e., I can't see why I go to school, and frankly I couldn't care less). It is possible that academic amotivation as conceptualized within the present study represents a decision about broader academic behavior rather than more specific and concrete academic behaviors that have been explored in prior studies. Therefore, it is possible that the lack of

specificity of the academic amotivation construct may partially account for the failure of APS and ALH as predictors.

While it was reasonable to expect hypothesized relationships based on prior research supporting the influence of APS and ALH on academic behaviors linked to academic amotivation, findings from the present study did not support these relationships. An overarching implication of null findings, given the excellent overall fit for the academic amotivation model, is that attribution theory may not provide the optimal framework for predicting academic amotivation when relying on parallel cognitive antecedent processes as represented in the reactive aggression model. Research exploring academic motivation among ethnic minorities provides the most extensive literature base for examining alternative predictors for academic amotivation among a similar sample to the present study.

Research has highlighted the importance of social support and the negative impact of discrimination on motivation to achieve academically among ethnic minority youth (Elias & Haynes, 2008; Long et al., 2007). For example, in a study exploring academic motivation among 320 Hispanic youth in grades 9 and 10, Alfaro and colleagues (2006) found maternal and teacher academic support predicted greater academic motivation for girls while paternal and teacher support predicted greater academic motivation for boys. In a comprehensive study exploring the relationship between sense of school belonging and academic motivation among 5,494 high school students representing African-American, Hispanic, Asian-American, and European-American ethnic backgrounds, Faircloth and Hamm (2005) highlighted the positive association between sense of belonging within school and greater motivation to achieve academically. More

specifically, their findings indicated that high school students' sense of belonging is derived from connection with teachers, involvement in school activities, and the degree to which prejudice is present. However, research has indicated that Hispanic and African-American students are at greater risk for experiencing or perceiving discrimination that can undermine their level of academic motivation (Dunham & Wilson, 2007; Perreira, Fuligni, & Potochnick, 2010).

Consistent with the influence of these broader variables, a grade level effect was observed within the present study, with higher grade level associated with lower APS scores and academic amotivation. It is possible youth in higher grade levels may display less academic amotivation as a result of receiving positive reinforcement for remaining motivated in school such as good grades, support from friends and family, or simply remaining productive and moving closer to their goals. Conversely, it is also possible that implicit messages of nonsupport such as discrimination may contribute to a decline in APS as youth progress through high school. Furthermore, lower grades were associated with increased academic amotivation and significant differences for study constructs were not observed between Hispanic and African-American youth. These findings suggest environmental factors may have equal importance for academic outcomes of multiple ethnic minority groups. Collectively, these explanations underscore the possible role of numerous environmental and interpersonal factors that can impact the development of academic amotivation and possibly act as more proximal predictors than the intrapersonal cognitive factors hypothesized to predict academic amotivation within the present study.

In summary, findings for the academic amotivation model have important implications for predicting both domain-specific and cross-domain effects on behavioral outcomes. First, APS failed to predict academic amotivation indicating that global beliefs reflecting academic self-perception are not predictive of academic amotivation in the present sample. Second, ALH was neither a mediator for the relationship between APS and academic amotivation or a predictor of academic amotivation. The absent role of ALH indicates that situation-specific explanations for academic outcomes do not provide a viable pathway for examining domain-specific relationships between academic cognitive antecedents and academic amotivation among high school students. Given the integral role attributions have within the present study, findings for the academic amotivation model limited the extent to which multiple pathways toward behavioral outcomes could be explored. Collectively, these findings indicate attribution theory as conceptualized within the academic amotivation model may not provide the optimal framework for predicting academic amotivation, but opens the possibility that cognitive processes related to interpersonal and environmental factors such as interpreting a teacher's behavior, perceived prejudice in school, or interpretation of parental monitoring may provide further understanding about the development of academic amotivation.

Integrated Model

To achieve the second aim of the study, two integrated models were tested to explore the extent to which cross-domain relationships between cognitive antecedents and behavioral outcomes exist. Each integrated model was comprised of nested reactive aggression and academic amotivation independent models. Furthermore, findings for integrated models replicated results from reactive aggression and academic amotivation

independent models. Hypotheses 3-5 utilized a step-wise approach to assess the presence of cross-domain relationships between parallel processes within reactive aggression and academic amotivation models and explored cross-domain influences of attribution styles on behavioral outcomes. Collectively, findings based on these hypotheses support results for reactive aggression and academic amotivation independent models and provide clarity regarding the extent to which cross-domain relationships exist between reactive aggression and academic amotivation model constructs. The remainder of the section summarizes findings from these hypotheses and compares results to prior research.

A three-step process was employed to identify the optimal representation of cross-domain relationships in the present sample. First, the domain-specific integrated model was specified to account for shared unmeasured variance between parallel cognitive and behavioral processes within reactive aggression and academic amotivation models. It was expected that the domain-specific integrated model would account for additional variance by establishing the presence of shared unmeasured variance between parallel processes across aggression and academic domains. Consistent with expectations, shared unmeasured variance was observed between reactive aggression and academic amotivation. However, shared unmeasured variance was not observed for cross-domain cognitive antecedents representing parallel processes.

To assess the added contribution of attribution styles as predictors for cross-domain behaviors, the cross-domain integrated model was specified. This second step replicated the relationships specified within the domain-specific integrated model while accounting for cross-domain relationships between attribution antecedents and behavioral outcomes. Furthermore, the cross-domain integrated model permitted testing the

hypothesis that attribution antecedents would significantly predict cross-domain behaviors given the co-occurrence of reactive aggression and academic amotivation. Contrary to expectations, HAB failed to predict academic amotivation and ALH failed to predict reactive aggression. Finally, integrated models were compared to assess whether either reflected optimal representation of domain-specific and cross-domain relationships within the present sample. Findings indicated comparable fit between integrated models reinforcing the conclusion that cognitive antecedents did not demonstrate cross-domain effects.

Both domain-specific and cross-domain integrated models replicated relationships observed within reactive aggression and academic amotivation independent models as expected. Hostile schemas remained a significant predictor for reactive aggression in both integrated models. No significant predictors were found for academic amotivation. Furthermore, integrated models displayed overall excellent model fit and reflected accurate measurement of individual constructs. As such, methodological implications identified for independent reactive aggression and academic amotivation models remain applicable to the integrated models. To comprehensively discuss findings for integrated models, implications are first examined for the domain-specific integrated model. Second, implications of cross-domain integrated model findings are explored and compared to prior research.

To rigorously test the relationships specified in Hypothesis 3 between parallel cognitive and behavioral processes within reactive aggression and academic amotivation domains, disturbance terms between parallel processes were correlated as outlined by Kline (2005). A disturbance correlation reflects the assumption that two endogenous

variables share at least one common omitted cause. This methodological approach permitted identification of two possibilities for significant correlations consistent with the omitted cause interpretation. Disturbance correlations can indicate the presence of one or more additional factors that contribute to this association and/or the presence of a common underlying factor that partially accounts for both constructs. The absence of significant disturbance correlations indicates no evidence of shared unmeasured variance between constructs. For the present study, significant disturbance correlations were observed between reactive aggression and academic amotivation, but were not observed between hostile schemas and APS or HAB and ALH.

The significant disturbance correlation between reactive aggression and academic amotivation reflects shared unmeasured variance indicating evidence that these are interrelated. This is consistent with research highlighting the co-occurrence of poor academic outcomes and aggressive behavior across samples (Jimerson & Ferguson, 2007). Prior research exploring the relationship between aggression and academic outcomes often indicates higher levels of aggression are linked to poorer academic outcomes such as declines in academic performance, lower academic self-esteem, and higher rates of school dropout (Lopez et al., 2006; Lounsbury et al., 2003). Despite general support for the interrelatedness of aggression and academic behaviors, studies have yet to explore the more specific association between reactive aggression and academic amotivation. The present study provides indirect support for this relationship and suggests shared unmeasured variance between reactive aggression and academic amotivation reflects the presence of a common underlying factor or at least one unique correlate for both behaviors. The latter explanation is viewed as more likely than a

common underlying factor. To illustrate, a possible explanation for this association is the presence of a third factor that is a known correlate and/or predictor to both behaviors such as impulsivity, cognitive limitations, or poor frustration-tolerance (Gresham, MacMillan, Bocian, Ward, & Forness, 1998; Kennett & Reed, 2009; Polman et al., 2007). Given that these traits represent characteristics internal to the individual, it is also plausible that enactment of both behaviors is more likely by individuals with an underlying temperament characterized by impulsivity and related traits. Additionally, individuals who are academically amotivated and display reactive aggression may have common external stressors that prevent modeling of alternative behaviors such as family dysfunction or minimal social supports. Ultimately it is beyond the scope and statistical methodology of the present study to definitively determine the cause for this association, but its presence indicates that an association exists.

Contrary to expectations, significant disturbance correlations were not observed for hostile schemas and APS or HAB and ALH indicating no evidence of shared unmeasured variance between these parallel processes. Prior research utilizing attribution theory identified cognitive schemas and attribution styles as primary predictors for academic and social behaviors (Dodge, 2006; Graham 1997, 2004). Given support for the interrelatedness of aggressive and academic behaviors, it was expected that both schemas and attribution styles from aggression and academic domains would have a common underlying factor partially accounting for variance between related constructs. However, the absence of significant disturbance correlations between cross-domain schemas and attributions suggests relative independence between cognitive

processes, and that despite conceptual similarities, there is no evidence to support common variance between parallel cross-domain cognitive processes

Theoretical and empirical research by Graham (1997, 2004) supporting an attribution framework for understanding cognitive predictors of aggression and low academic amotivation guided specification of the domain-specific integrated model relationships. More specifically, Graham (1997, 2004) asserted that the attribution style of perceived responsibility operated within both social and academic situations and may partially account for aggression and low academic motivation. To empirically explore the theoretical concept of perceived responsibility, Hudley, Graham, and Taylor (2007) designed a curriculum-based program to target aggressive behavior and low academic motivation among a sample of elementary school students. By targeting the attribution of perceived responsibility within both social and academic domains, their study tracked changes in behavior and found a decrease in aggressive and maladaptive academic behavior after completing the intervention. It should be noted that while Graham conceptualized perceived responsibility as a global attribution impacting both aggression and academic domains, Hudely, Graham and Taylor tailored the broader construct of perceived responsibility to be domain-specific within intervention studies. For instance, youth were trained to increase their level of perceived responsibility related to social situations during the initial portion of the intervention, and subsequently, focused solely on bolstering perceived responsibility as related to academic performance during the latter portion of the intervention.

Collectively, theoretical assertions and past empirical findings related to perceived responsibility point to two distinct possibilities for how attributions operate in

relation to aggression and academic behavior. First, it is possible that a single underlying attribution factor exists that partially accounts for attributions within both academic and aggression domains. The second possibility is that no broad, underlying attributional process exists and cognitive antecedents operate independently within respective domains. Findings for the domain-specific integrated model did not support the presence of a shared cause for attributions or schemas across aggression and academic amotivation models. These findings provided the foundation for exploring cross-domain relationships between attribution styles and behavioral outcomes by ensuring that additional variance accounted for within the cross-domain integrated model was attributable to cross-domain relationships between attributions and behaviors.

The absence of shared unmeasured variance did not preclude the possibility of supporting hypothesized cross-domain effects as articulated in Hypothesis 4. However, contrary to expectations HAB was not a significant predictor of academic amotivation and ALH did not significantly predict reactive aggression. These results are consistent with null findings observed in Hypotheses 1-2 for the relationships between attribution styles and behavioral outcomes within independent reactive aggression and academic amotivation models. The failure to observe cross-domain effects between attribution styles and behavioral outcomes reinforces findings from the independent model that attributions are more likely to be domain specific and do not predict multiple outcomes in a sample of high school students. These findings have significant methodological and conceptual implications for understanding the development of reactive aggression and academic amotivation.

In light of findings by Hudley et al. (2007) for perceived responsibility, the absence of cross-domain effects for attribution styles on reactive aggression and academic amotivation suggest that different methodological and sampling procedures employed within the present study may partially account for the limited role of attribution styles on behavioral outcomes. The present study utilized a cross-sectional design to examine these associations. Prior research highlighting the role of attributions within both social and academic domains explored the change in behavior over time in the context of implementing interventions with at-risk youth (Graham 2004; Hudley et al. 2007). It is possible that as a targeted intervention for youth experiencing academic and behavioral problems, attribution retraining provides an effective treatment with these results emerging based on accounting for change in the underlying attribution processes. However, when assessed within a cross-sectional methodology, attribution styles as conceptualized within the present study failed to predict academic and aggression outcomes. Furthermore, older adolescents comprised the sample for the present study compared to the younger samples studied by Graham (2004) and Hudley et al., (2007). As noted earlier, prior research has suggested attributional processes may increase in complexity and specificity as youth progress through adolescence (Fontaine, 2010). Consistent with this finding, it is possible that more complex and specific attribution styles emerge during adolescence and further reduce the likelihood of either an underlying global attributional process or a specific attribution bias that accounts for multiple behavioral outcomes.

These findings highlight two conceptual implications for understanding the development of reactive aggression and academic amotivation within an attribution

framework. First, findings indicate that using attribution theory as a framework for predicting reactive aggression and academic amotivation is best understood as a domain-specific process with limited overall utility of domain-specific attribution biases in predicting domain-specific behavioral outcomes. While the theoretical underpinnings for cognitive constructs within reactive aggression and academic amotivation domains are similar, how they function appears to be domain-specific among adolescents as evidenced by the absence of significant disturbance correlations between cross-domain cognitive processes and the failure of attributions styles to predict cross-domain behaviors. As such, identifying and targeting reactive aggression and academic amotivation among adolescents may necessitate domain-specific strategies to maximize effectiveness and move beyond a sole focus on attribution biases in order to change behavioral outputs.

Second, hypotheses for the present study identified attributions as the cognitive process through which cross-domain relationships develop, but global beliefs may provide a more viable pathway for understanding cross-domain relationships among adolescents. Findings supporting hostile schemas as a robust predictor of reactive aggression within the independent model and the increased role of global beliefs for predicting social and academic behavior during adolescence suggest that schemas within aggression and academic domains may have an impact on cross-domain behavioral outcomes. Further examination of the domain-specific and cross-domain role of global beliefs within aggression and academic domains may shed light on how to maximize efforts targeting domain-specific behaviors and whether it is advantageous to extend these effort to cross-domain behaviors.

Collectively, integrated models provided support for the interrelatedness of reactive aggression and academic amotivation. However, support for the co-occurrence of behavioral outcomes did not extend to cognitive antecedents. Furthermore, neither HAB nor ALH emerged as significant cross-domain predictors for reactive aggression and academic amotivation. These findings offer support for identifying domain-congruent predictors when studying reactive aggression and academic amotivation and suggest global beliefs may represent a viable pathway for understanding cross-domain relationships between cognitive processes and behavioral outcomes among adolescents.

Implications for Assessment and Intervention

Current findings on the relationships between cognitive antecedents and aggression and academic behaviors have several implications for assessment and intervention. As noted above, findings indicate relationships between cognitive antecedents and behavioral outcomes are optimally understood as domain-specific. This conceptualization informs both assessment processes and interventions. Given support for the domain-specificity of relationships within the present study, implications are discussed by domain.

For the reactive aggression domain, two findings emerged that have significant implications for assessment and intervention practices. First, hostile schemas were a robust predictor for reactive aggression. Second, HAB had minimal impact on reactive aggression as evidenced by its failure to account for a significant amount of reactive aggression variance. In terms of assessment, screening for hostile schemas could help identify adolescents who are at risk for reactive aggression and potentially provide a more accurate initial identification process for adolescents given the non-significant

findings for HAB. In addition, the robust finding for hostile schemas among a sample of community adolescents suggests that for youth within high-risk environments, where experiences may further enhance the development and rigidity of these beliefs, the effect of hostile schemas on both HAB and reactive aggression might be even stronger. Furthermore, findings indicate assessment of hostile schemas among adolescents may facilitate identification of a subgroup of adolescents at greater risk for hostile attributions and enacting reactive aggressive behavior. Systemically assessing for hostile schemas may enable mental health professionals and school personnel to proactively identify youth at risk for aggressive behavior and implement preventive services that counter hostile schemas and reduce reactive aggressive behavior.

The impact of hostile schemas on reactive aggression also has significant implications for interventions targeting reactive aggression. Specifically, the relationship between hostile schemas and reactive aggression indicates interventions aiming to modify hostile beliefs about the world may lead to reductions in both hostile attributions and more importantly reductions in reactive aggressive behavior by adolescents. Interventions utilizing cognitive-behavioral and mindfulness techniques possess the theoretical foundation for increasing awareness of beliefs and challenging maladaptive beliefs (Heppner et al., 2008; Smith, Lochman, & Daunic, 2005). Furthermore, identification of the type of beliefs that are contributing to aggressive behavior can become the focal point of interventions and potentially increase the efficacy and speed of treatment.

Given hostile schemas represent cognitive processes that operate at an automatic level and increase in complexity as youth progress through adolescence (Fontaine 2006; 2010), these intervention techniques are particularly salient for adolescents due to their

ability to help youth become more aware of beliefs or modify beliefs via experiences that counter hostile schemas. Furthermore, the absence of gender effects suggests that both assessment and interventions should operate similarly for both boys and girls. Additionally, reports for reactive aggression were highest for adolescents in 9th and 10th grades and is consistent with prior research suggesting that reactive aggression peaks in early adolescence (Dodge et al., 1997; Polman et al., 2007). As such, it can be expected that when reactive aggression is effectively assessed and targeted, interventions should be equally relevant for boys and girls, but allocation of resources for assessments and interventions should be targeted toward younger adolescents. Focusing on hostile schemas as a primary intervention target represents a shift from prior research that has focused on attribution styles (Graham, 2004; Lansford et al., 2006). Interventions targeting attribution styles and helping youth to develop more skills to address situations that trigger aggression have been moderately effective (Hudley, Graham, & Taylor, 2007). However, the effectiveness of these interventions may increase when incorporating strategies for increasing awareness of hostile schemas and expanding on strategies to challenge and modify these beliefs.

For the academic amotivation domain, direct and indirect effects on academic amotivation were not observed. The absence of specific effects suggests fixed beliefs about personal academic performance and interpreting academic failure as indicative of personal inability to achieve may have less of a contribution to academic amotivation than previously believed. A broader conclusion that may be drawn from these findings are that assessments and interventions targeting academic amotivation among ethnic minority adolescents in urban environments may have limited effectiveness if such

interventions focus solely on intrapersonal cognitive factors contributing to academic outcomes. Prior research indicates systemic factors such as supportive parents, teachers, and other adults potentially have a crucial role in helping youth of color remain engaged in school (Alfaro et al., 2006; Elias & Haynes, 2008; Long et al., 2007). While the academic beliefs and attributions identified within the present study did not predict academic amotivation, it is possible that cognitive processes related to systemic and interpersonal factors, such as beliefs about teacher's level of support or interpretation of parental monitoring, may provide a viable framework for understanding and promoting academic motivation.

In terms of assessment, a systemic approach to screening and ongoing assessment for academic amotivation suggests utilization of a comprehensive evaluation of the amount and type of support the targeted youth receives from others. To acquire this information, inclusion of individuals who are expected to provide support for the targeted youth (i.e., parents, teacher, etc.) in the evaluation process may provide greater clarity regarding barriers to academic engagement. Given that inclusion of others for assessment purposes is not always feasible, incorporation of assessment tools eliciting reports about the social supports during individual assessment can provide equally relevant information for identifying contributors to academic amotivation and informing interventions.

Consistent with a systemic framework for understanding academic amotivation, interventions targeting academic amotivation should promote engagement with individuals who the youth identifies as a potential support. While individual and group interventions are promising strategies for addressing academic disengagement,

researchers have highlighted the role of environment for shaping an individual's cognitive processes (Fontaine, 2006; Haynes et al., 2011). As such, systemic interventions that counter maladaptive beliefs by providing experiences that promote alternative beliefs may further enhance individual and group interventions aiming to promote academic engagement (Stormshak, Connell, & Dishion, 2009; Walton & Cohen, 2011). This is particularly important for adolescents, whose environments are largely shaped by home and school experiences. Within the present study, the absence of gender effects for academic constructs and the peaking of academic amotivation in 10th grade suggests assessments and interventions for academic amotivation would be equally relevant for boys and girls, but should be targeted toward youth early in their high school careers. Interventions engaging parents and teachers in developing home and school experiences that promote more flexible beliefs have great potential to effectively address academic disengagement.

Limitations and Future Directions

The present study represents a rigorous initial investigation of the cross-domain relationship of cognitive antecedents on reactive aggression and academic amotivation in a sample of high school students. Findings and implications for the current study should be interpreted in light of a number of limitations. To address study limitations, several future directions are identified for research exploring the development of reactive aggression and academic amotivation. These limitations and future directions are discussed below.

Several limitations pertained to sample characteristics. First, the final sample may not have been representative of the general student body within each high school and

potentially limits the generalizability as a community sample. Students were recruited from school-based health clinics and not from the general student population. While demographic characteristics for the present sample generally reflected the demographic composition of schools, it is possible that recruitment of youth who use health services impacted distribution of and association among study variables. More specifically, participants may represent a subset of youth within the general school population more likely to seek health-related services or information (i.e., girls, athletes, students seeking work license), and as such, respond differently to study measures than youth who do not seek health services. Particularly relevant to academic constructs, youth who seek health services and attended data collection appointments may represent youth more academically motivated. While these possibilities exist, recruitment procedures ensured a broad cross-section of students entering health-clinics received and completed contact sheets. Of the contact sheets received from students under 18 years old, parental consent was not obtained due to disconnected phone numbers or unavailability of parents for 50% of students who provided contact sheets. For participants in which parental consent was obtained or were 18 and older, 50% of students participated in the study. Despite limitations for health-clinic recruitment, a robust sample of participants who reflected demographic composition of the school and students enrolled in the health-clinic were garnered for the present study. However, the inability to engage parents for over 50% of the students initially contacted does have significant implications for considering the generalizability of findings and may represent further selection bias. Given support for the impact of environmental factors on study constructs (Fontaine, 2010; Dodge, 2006), inability to contact a substantial portion of parents could reflect higher-risk home

environments for these students that could lead to a generally lower risk sample and thus significantly different responses to study questionnaires and impact the distributions of and association among key study variables.

A second and related limitation is that the sample consisted of far fewer boys than girls. Several systemic factors potentially contributed to differential participation rates across gender. Girls may access health-related services provided by health clinics more frequently than boys as evidenced by females representing 58% of individuals enrolled as members of health clinics. Additionally, girls may be more likely to attend health clinic appointments with female friends, a frequently observed phenomenon during recruitment. Each of these factors likely contributed to disproportional contact with girls during recruitment, and subsequently, disproportional participation rates for boys and girls. As such, the absence of gender differences among study variables should be interpreted with caution. Despite this limitation, a robust female sample derived from a community-based school environment represents an underexplored population and advances research examining aggressive and academic behavioral outcomes among community based youth.

The final sample characteristics limitation involves the ethnic composition of the sample which consisted of high proportions of African-American and Hispanic youth. As such, these findings may not generalize to other ethnic populations such as Non-Hispanic white or Asian-American youth. However, findings provided insight into behavioral development among adolescent African-American and Hispanic youth and advances research exploring behavioral outcomes among underrepresented populations within prior literature (Alfaro et al., 2006; Hudlely et al., 2007)

There are several recommendations for future research seeking to address sample limitations within the present study. First, a recruitment process that targets the entire student body and not solely youth utilizing health clinics would provide greater insight into the generalizability of findings in the present study. Second, sole reliance on telephone numbers provided by students should be avoided. Coordinating recruitment efforts with school staff and administration to verify accuracy of telephone numbers and/or mailing address could increase accuracy of information provided by students as well as additional avenues for contacting parents. Third, representation from ethnicities not present within the current study and comparable participation from boys and girls within future studies will further enhance generalizability and exploration of differences for behavioral outcomes by ethnicity and gender. Finally, utilizing group-based administration techniques for study measures could maximize efficiency of data collection and garner a greater overall sample size.

Several other limitations are related to methodological procedures. First, the study involved a cross-sectional design which precludes exploring causal relationships among the variables. While current grade level provided a proxy for examining age effects, results from the current study should not be interpreted as a direct investigation of developmental changes associated with age, as the grade level variable served as a control rather than examining a change in the reported variable at different ages. A second and related methodological limitation of the study was the use of the multiple indicator multiple cause (MIMIC) approach versus cross-group equality constraints to account for current grade level and gender effects. The MIMIC approach permits controlling for demographic effects among study variables, but fails to specifically test

for differences on the strength of magnitude of hypothesized direct and indirect effects among the study variables. While the MIMIC approach is preferable for small to moderate size samples such as the present study, a larger sample size would lend itself to utilization of cross-group equality constraints to explore patterns of associations among the study variables specific to boys and girls.

To gain greater clarity about the impact of developmental factors on reactive aggression and academic amotivation, future research should employ longitudinal designs to assess the impact of various cognitive antecedents on behavioral outcomes over time. Given the minimal amount of variance accounted for by academic cognitive antecedents and the unaccounted shared variance between reactive aggression and academic amotivation, exploration of alternative antecedents for both reactive aggression and academic amotivation will provide further clarity regarding the development of both behavioral outcomes investigated in the current study. Possible antecedents may include emotional correlates of reactive aggression and academic amotivation or environmental factors such as parenting styles or teaching strategies (Faircloth & Hamm, 2005; Polman et al. 2007). As noted above, exploration of traits such as impulsivity or a temperament characterized by poor frustration-tolerance may provide additional insight into internal factors and predispositions that may contribute to behavioral outcomes (Gresham et al., 1998; Polman et al., 2007). Furthermore, examining environmental factors contributing to behaviors will provide greater insight into designing systemic interventions for addressing adolescent behavioral needs (Fontaine, 2010).

A final limitation pertains to the utilization of self-report questionnaires and single assessment methods to gather study data. All study questionnaires were self-report

and lacked validity scales to verify veracity of responses. Furthermore, convergent questionnaires or collateral information was not collected from parents, teachers, or additional informants. Given the absence of multiple informants and alternative self-report tools such as structured or semi-structured interviews, results should be interpreted in light of these limitations. Future research utilizing multiple informants can provide a greater breadth of data for behavioral outcomes and convergent information to verify veracity of participant reports.

Conclusion

The present study significantly contributes to research examining the development of aggressive and academic behaviors. The primary aim of the current study was to examine whether multiple pathways for explaining reactive aggression and academic amotivation exist. Findings indicated the development of aggressive and academic behaviors are best understood as emerging from domain-specific factors. Furthermore, results supported a domain-specific conceptualization for assessment and treatment of reactive aggression and academic amotivation. For reactive aggression, hostile schemas emerged as a robust predictor for reactive aggression and suggest comprehensive assessment and treatment targeting global beliefs that the world is hostile has tremendous potential to effectively reduce aggressive behavior among high school students. For academic amotivation, null findings highlight the importance of exploring alternative predictors outside the cognitive domain. A domain-specific conceptualization for academic amotivation, coupled with prior research supporting the predictive power of systemic and interpersonal factors for academic outcomes, suggests future research should explore alternative predictors representing domain-congruent systemic and

interpersonal factors such as relationships with parents and teachers. Despite interpreting cognitive antecedents as domain-specific, the current findings support the association of reactive aggression and academic amotivation. Given the deleterious impact of frequent aggressive behavior and poor academic outcomes on youths' successful completion of high school, it is imperative that future research builds on the current findings supporting domain-specific predictors of reactive aggression and academic amotivation. Ultimately, the current findings suggest that successful reductions in both domains will require targeting antecedents specific to both reactive aggression and academic amotivation.

References

Aarons, G. (2004). *Multiple indicator multiple cause modeling: Application to children's mental health research*. Paper presented at 16th annual conference for A System of Care for Children's Mental Health: Expanding the Research Base, Tampa, FL.

Acharya, N., & Joshi, S. (2011). Achievement motivation and parental support to adolescents. *Journal of the Indian Academy of Applied Psychology*, 37(1), 132-139.

Alfaro, E. C. Umaña-Taylor, A.J., & Bámaca, M.Y. (2006). Tthe influence of academic support on latino adolescents' academic motivation. *Family Relations, 55*, 279-291.

Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103,* 411-423.

Archer, J., & Coyne, S.M. (2005). An integrated review of indirect, relational, and social aggression. *Personality and Social Psychology Review*, *9*, 212-230.

Bailey, C.A., & Ostrov, J.M. (2008). Differentiating forms and functions of aggression in emerging adults: Associations with hostile attribution biases and normative beliefs. *Journal of Youth and Adolescence*, *37*, 713-722.

Bandura, A. (1983). Self-efficacy determinants of anticipated fears and calamities. *Journal of Personality and Social Psychology*, *45,* 464-469.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.

Barratt, W. (2006). *Barratt Simplified Measure of Social Status*. Unpublished manuscript.

Barry, C. T., Frick, P.J., Adler, K., & Grafeman, S. J. (2007). The predictive utility of narcissism among children and adolescents: Evidence for a distinction between adaptive and maladaptive narcissism. *Journal of Child and Family Studies*, *16*, 508-521.

Barry, C.T., Grafeman, S.J., Adler, K.K., & Pickard, J.D. (2007). The relations among narcissism, self-esteem, and delinquency in a sample of at-risk adolescents. *Journal of Adolescence, 30,* 933-942.

Bentler, P.M. (1990). Comparative fit indices in structural models. *Psychological Bulletin, 107,* 238-246.

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin, 106*, 59-73.

Bollen, K. A. (1989). *Structural equations with latent variables*. Oxford England: John Wiley & Sons.

Brook, J.S., & Newcomb, M.D. (1995). Childhood aggression and unconventionality: Impact on later academic achievement, drug use, and workforce involvement. *Journal of Genetic Psychology, 156*, 393-410.

Burks, V.S., Dodge, K.A., Price, J.M., & Laird, R.D. (1999a). Internal representational models of peers: Implications for the development of problematic behavior. *Developmental Psychology*, *35*, 802-810.

Burks,V.S., Laird, R.D., Dodge, K.A., Pettit, G.S., & Bates, J.E. (1999b). Knowledge structures, social information processing, and children's aggressive behavior. *Social Development*, *8*, 220-236.

Camodeca, M., Goossens, F.A., Meerum-Terwogt, M., & Schuengel, C. (2002). Bullying and victimization among school-age children: Stability and links to proactive and reactive aggression. *Social Development*, *11*, 332-345.

Caprara, G.W., Barbaranelli, C., Pastorelli, C., Bandura, A., & Zimbardo, P.G. (2000). Prosocial foundations of children's academic achievement. *Psychological Science*, *11*, 302-306.

Card, N.A., & Little, T.D. (2006). Proactive and reactive aggression in childhood and adolescence: A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioral Development*, *30,* 466-480.

Chalfant, A.M., Rapee, R., & Carroll, L. (2007). Treating anxiety disorders in children with high functioning autism spectrum disorders: A controlled trial. *Journal of Autism and Developmental Disorders*, *37*, 1842-1857.

Chan, L.K.S. (1994). Relationship of motivation, strategic learning, and reading achievement in Grades 5, 7, and 9. *Journal of Experimental Education*, *62*, 319-339.

Chan, L.K.S., & Moore, P. J. (2006). Development of attributional beliefs and strategic knowledge in years 5-9: A longitudinal analysis. *Educational Psychology*, *26*,161-185.

Cillessen, A.H.N., & Mayeux, L. (2007). Expectations and perceptions at school transitions: The role of peer status and aggression. *Journal of School Psychology*, *45*, 567-586.

Cokely, K.O. Bernard, N., Cunningham, D., & Motoike, J. (2001). A psychometric investigation of the Academic Motivation Scale using a United States sample. *Measurement and Evaluation in Counseling and Development*, *34*, 109-119.

Conduct Problems Prevention Research Group (1999). *Adolescent stories*. Retrieved from http://www.fasttrackproject.org/.

Connor, D.F., Steingard, R.J., Anderson, J.J., & Melloni, R. H. (2003). Gender differences in reactive and proactive aggression. *Child Psychiatry and Human Development, 33*, 279-294.

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

Crick, N.R., & Dodge, K.A. (1996). Social information-processing mechanisms on reactive and proactive aggression. *Child Development*, *67*, 993-1002.

Crick, N.R., & Grotpeter, J.K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*, 710-722.

Crick, N.R., Grotpeter, J.K., & Bigbee, M.A. (2002). Relationally and physically aggressive children's intent attributions and feelings of distress for relational and instrumental peer provocations. *Child Development*, *73,* 1134-1142.

Crick, N.R., & Zahn-Waxler, C. (2003). The development of psychopathology in females and males: Current progress and future challenges. *Development and Psychopathology*, *15*, 719-742.

DeCarlo, L. T. (1997). On the meaning and use of kurtosis. *Psychological Methods*, *2*, 292-307.

Deci, E.L. (1975). *Intrinsic motivation*. New York: Plenum Press.

Deci, E.L., & Ryan, R.M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, *19*, 109-134.

Deci, E.L., & Ryan, R.M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology*, *53*, 1024-1037.

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

Dodge, K.A. (2004). The Nature-Nurture Debate and Public Policy. *Merrill-Palmer Quarterly*, *50,* 418-427.

Dodge, K.A. (2006). Translational science in action: Hostile attributional style and the development of aggressive behavior problems. *Development and Psychopathology*, *18*, 791-814.

Dodge, K.A., & Frame, C.L. (1982). Social cognitive biases and deficits in aggressive boys. *Child Development*, *53*, 620-635.

Dodge, K.A., Laird, R., Lochman, J.E., & Zelli, A. (2002). Multidimensional latent-construct analysis of children's social information processing patterns: Correlations with aggressive behavior problems. *Psychological Assessment*, *14*, 60-73.

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

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, 37-51.

Duchesne, S., & Larose, S. (2007). Adolescent parental attachment and academic motivation and performance in early adolescence. *Journal of Applied Social Psychology*, 37(7), 1501-1521.

Dudgeon, P. (2003). NIESEM: A computer program for calculating noncentral interval estimates (and power analysis) for structural equation modeling (Version: October 2003) [Computer Software]. University of Melborne, Australia.

Dunham, R., & Wilson, G. (2007). Race, within-family social capital, and school dropout: An analysis of Whites, Blacks, Hispanics, and Asians. *Sociological Spectrum, 27,* 207-221.

Eccles, J. S., Wong, C. A., & Peck, S. C. (2006). Ethnicity as a social context for the development of African-American adolescents. *Journal of School Psychology*, 44(5), 407-426.

Elias, M.J., & Haynes, N.M. (2008). Social competence, social support, and academic achievement in minority, low-income, urban elementary school children. *School Psychology Quarterly, 23*, 474-495.

Fairbarin, H.M., Moore, P.J., & Chan, L.K.S. (1994, December). *Assessing approaches to learning, attributional beliefs and strategic learning in specific subject domains: Scale development*. Paper presented at the Australian Association for Research in Education Annual Conference, Newcastle, New South Wales.

Fairchild, A.J., Horst, S.J., Finney, S.J., & Barron, K.E. (2005). Evaluating existing and new validity evidence for the Academic Motivation Scale. *Contemporary Educational Psychology*, *30*, 331-358.

Faircloth, B. S., Hamm, J.V. (2005). Sense of belonging among high school students representing 4 ethnic groups. *Journal of Youth and Adolescence, 34*, 293-309.

Fite, P.J., Stauffacher, K., Ostrov, J.M., & Colder, C.R. (2008). Replication and extension of Little et al.'s (2003) forms and functions of aggression measure. *International Journal of Behavioral Development, 32,* 238-242.

Fontaine, R. (2006). Applying systems principles to models of social information processing and aggressive behavior in youth. *Aggression and Violent Behavior*, *11*, 64-76.

Fontaine, R. (2010). New developments in developmental research on social information processing and antisocial behavior. *Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology*, 38(5), 569-573.

Fontaine, R., & Dodge, K. A. (2009). Social information processing and aggressive behavior: A transactional perspective. In A. Sameroff, A. Sameroff (Eds.), *The transactional model of development: How children and contexts shape each other* (pp. 117-135). Washington, DC US: American Psychological Association.

Fontaine, R., Tanha, M., Yang, C., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2010). Does response evaluation and decision (RED) mediate the relation between hostile attributional style and antisocial behavior in adolescence?. *Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology*, 38(5), 615-626.

Fortier, M. S., Vallerand, R. J., & Guay, F. (1995). Academic motivation and school performance: Toward a structural model. *Contemporary Educational Psychology, 20*, 257-274.

French, D. C., & Conrad, J. (2001). School dropout as predicted by peer rejection and antisocial behavior. *Journal of Research on Adolescence, 11,* 25-244.

Graham, S. (1997). Using attribution theory to understand social and academic motivation in African-American youth. *Educational Psychologist*, *32*, 21-34.

Graham, S. (2004). The role of perceived responsibility in nurturing morality. In: T. A. Thorkildsen, & H. J. Walberg (Eds.), *Nurturing morality* (pp. 19-36). New York, NY: Kluwer Academic/Plenum Publishers.

Graham, S., Bellmore, A.D., & Mize, J. (2006). Peer Victimization, Aggression, and Their Co-Occurrence in Middle School: Pathways to Adjustment Problems. *Journal of Abnormal Child Psychology, 34,* 363-378.

Gresham, F. M., MacMillan, D. L., Bocian, K. M., Ward, S. L., & Forness, S. R. (1998). Comorbidity of hyperactivity-impulsivity-inattention and conduct problems: Risk factors in social, affective, and academic domains. *Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology*, 26(5), 393-406.

Grouzet, F.M.E., Otis, N., & Pelletier, L.G. (2006). Longitudinal cross-gender factorial invariance of the Academic Motivation Scale. *Structural Equation Modeling, 13,* 73-98.

Haff, D., Wright, F., Hugh, H., & Shinn, L.K. (2006). Acceptance patterns of retaliatory aggression among adjudicated youth by race and sex. *Psychological Reports, 99,* 335-342.

Hagtvet, K. A., & Benson, J. (1997). The motive to avoid failure and test anxiety responses: Empirical support for integration of two research traditions. *Anxiety, Stress & Coping: An International Journal*, *10*, 35-57.

Hartman, R., & Stage, S.A. (2000). The relationship between social information processing and in-school suspension for students with behavioral disorders. *Behavioral Disorders, 25,* 183-195.

Haynes-Stewart, T.L., Clifton, R.A., Daniels, L.M., & Perry, R.P., Chipperfield, J.G., & Ruthig, J.C. (2011). Attributional retraining: Reducing the likelihood of failure. *Social Psychology of Education, 14*, 75-92.

Heider, F. (1958). *The psychology of interpersonal relations*. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Henington, C., Hughes, J.N., Cavell, T.A., & Thompson, B. (1998). The role of relational aggression in identifying aggressive boys and girls. *Journal of School Psychology, 36,* 457-477.

Henry, C. S., Merten, M. J., Plunkett, S. W., & Sands, T. (2008). Neighborhood, parenting, and adolescent factors and academic achievement in Latino adolescents from immigrant families. *Family Relations*, 57(5), 579-590.

Heppner, W.L., Kernis, M.H., Lakey, C.E., Campbell, W.K., Goldman, B.M., Davis, P. J., & Cascio, E.V. (2008). Mindfulness as a means of reducing aggressive behavior: Dispositional and situational evidence. *Aggressive Behavior, 34*, 486-496.

Hoglund, W.L., & Leadbeater, B.J. (2007). Managing threat: Do social-cognitive processes mediate the link between peer victimization and adjustment problems in early adolescence? *Journal of Research on Adolescence, 17,* 525-540.

Hubbard, J.A., Dodge, K.A., Cillessen, A.H.N., Coie, J.D., & Schwartz, D. (2001). The dyadic nature of social information processing in boys' reactive and proactive aggression. *Journal of Personality and Social Psychology, 80,* 268-280.

Hudley, C., Britsch, B., Wakefield, W.D., Smith, T., Demorat, M., & Cho, S.J. (1998). An attribution retraining program to reduce aggression in elementary school students. *Psychology in the Schools, 35,* 271-282.

Hudley, C., Graham, S., & Taylor, A. (2007). Reducing aggressive behavior and increasing motivation in school: The evolution of an intervention to strengthen school adjustment. *Educational Psychologist, 42,* 251-260.

Huesmann, L. R., & Guerra, N.G. (1997). Children's normative beliefs about aggression and aggressive behavior. *Journal of Personality and Social Psychology, 72*, 408-419.

James, M., & Seager, J.A. (2006). Impulsivity and Schemas for a Hostile World: Postdictors of Violent Behaviour. *International Journal of Offender Therapy and Comparative Criminology, 50,* 47-56.

Jimerson, S.R., & Ferguson, P. (2007). A longitudinal study of grade retention: Academic and behavioral outcomes of retained students through adolescence. *School Psychology Quarterly, 22,* 314-339.

Katsiyannis, A., Ryan, J.B., Zhang, D., & Spann, A. (2008). Juvenile delinquency and recidivism: The impact of academic achievement. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 24,* 177-196.

Kelley, H.H. (1971). Moral evaluation. *American Psychologist, 26,* 293-300.

Kennett, D. J., & Reed, M. J. (2009). Factors influencing academic success and retention following a 1st-year post-secondary success course. *Educational Research and Evaluation*, 15(2), 153-166.

Kimonis, E.R., Frick, P.J., Munoz, L.C., & Aucoin, K.J. (2007). Can a laboratory measure of emotional processing enhance the statistical prediction of aggression and delinquency in detained adolescents with callous-unemotional traits. *Journal of Abnormal Child Psychology, 35,* 773-785.

Kline, R.B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.

Ladd, G.W., & Burgess, K.B. (1999). Charting the relationship trajectories of aggressive, withdrawn, and aggressive/withdrawn children during early grade school. *Child Development, 70,* 910-929.

Lansford, J.E., Malone, P.S., Dodge, K.A., Crozier, J.C., Pettit, G.S. & Bates, J.E. (2006). A 12-Year Prospective Study of Patterns of Social Information Processing Problems and Externalizing Behaviors. *Journal of Abnormal Child Psychology, 34*, 715-724.

Lansford, J.E., Malone, P.S., Stevens, K.I., Dodge, K.A., Bates, J.E., & Pettit, G.S. (2006). Developmental trajectories of externalizing and internalizing behaviors: Factors underlying resilience in physically abused children. *Development and Psychopathology, 18,* 35-55.

Legault, L., Green-Demers, I., & Pelletier, L. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support. *Journal of Educational Psychology, 98,* 567-582.

Lento-Zwolinski, J. (2007). College students' self-report of psychosocial factors in reactive forms of relational and physical aggression. *Journal of Social and Personal Relationships, 24,* 407-421.

Leondari, A., Syngollitou, E., & Kiosseoglou, G. (1998). Academic achievement, motivation and future selves. *Educational Studies, 24,* 153-163.

Little, T.D., Brauner, J., Jones, S.M., Nock, M.K., & Hawley, P.H. (2003). Rethinking aggression: A typological examination of the functions of aggression. *Merrill-Palmer Quarterly, 49,* 343-369.

Little, T.D., Jones, S.M., Henrich, C.C., & Hawley, P.H. (2003). Disentangling the 'whys' from the 'whats' of aggressive behaviour. *International Journal of Behavioral Development, 27,* 122-133.

Little, T. D., Lindenberger, U., & Nesselroade, J. R. (1999). On selecting indicators for multivariate measurement and modeling with latent variables: When 'good' indicators are bad and 'bad' indicators are good. *Psychological Methods*, *4*, 192-211.

Lochman, J.E., & Wayland, K.K. (1994). Aggression, social acceptance, and race as predictors of negative adolescent outcomes. *Journal of the American Academy of Child & Adolescent Psychiatry, 33,* 1026-1035.

Long, J.F., Monoi, S., Harper, B., Knoblauch, D., & Murphy, P.K. (2007). Academic motivation and achievement among urban adolescents. *Urban Education, 42,* 196-222.

López, E. E., Olaizola, J.H., Ferrer, B.M., & Ochoa, G.M. (2006). Aggressive and nonaggressive rejected students: An analysis of their differences. *Psychology in the Schools, 43,* 387-400.

Lounsbury, J.W., Sundstrom, E., Loveland, J.M., & Gibson, L.W. (2003). Intelligence, 'Big Five' personality traits, and work drive as predictors of course grade. *Personality and Individual Differences, 35*, 1231-1239.

Loveland, J. M, Lounsbury, J. W.,Welsh, D., & Buboltz, W.C. (2007). The validity of physical aggression in predicting adolescent academic performance. *British Journal of Educational Psychology, 77,* 167-176.

Maata, S., Nurmi, J.E., & Stattin, H. (2007). Achievement orientations, school adjustment, and well-being: A longitudinal study. *Journal of Research on Adolescence, 17,* 789-812.

Maata, S., Stattin, H., & Nurmi, J. (2002). Achievement strategies at school: types and correlates. *Journal of Adolescence, 25,* 31-46.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*, 130–149.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39(1), 99-128.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7(1), 83-104.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35,* 63-78.

Marsee, M.A., Barry, C.T., Frick, P.J., Kimonis, E.R., Munoz, L.C., & Aucoin, K. J. (2007, February). *Assessing aggression in at-risk youth using the Peer Conflict Scale: Confirmatory factor analysis and evaluation of factorial invariance across gender*. Paper presented at the meeting of the Southeastern Psychological Association, New Orleans, LA.

Marsee, M.A., & Frick, P.J. (2007). Exploring the cognitive and emotional correlates to proactive and reactive aggression in a sample of detained girls. *Journal of Abnormal Child Psychology, 35,* 969-981.

Marsee, M.A., Kimonis, E.R., & Frick, P.J. (2004). *Peer Conflict Scale*. Unpublished rating scale, University of New Orleans.

Marsee, M.A., Weems, C.F., & Taylor, L.K. (2008). Exploring the association between aggression and anxiety in youth: A look at aggressive subtypes, gender, and social cognition. *Journal of Child and Family Studies, 17,* 154-168.

Masten, A.S., Coatsworth, J.D., Neemann, J., Gest, S.D., Tellegen, A. & Garmezy, N. (1995). The structure and coherence of competence from childhood through adolescence. *Child Development, 66,* 1635-1659.

Mayberry, M.L., & Espelage, D. L. (2007). Associations among empathy, social competence, & reactive/proactive aggression subtypes. *Journal of Youth and Adolescence, 36,* 787-798.

Micco, J. A., & Ehrenreich, J. T. (2009). Validity and specificity of the children's automatic thoughts scale in clinically anxious and non-clinical children. *Cognitive Therapy and Research*, *33*, 532-536.

Miles, S.B., & Stipek, D. (2006). Contemporaneous and longitudinal associations between social behavior and literacy achievement in a sample of low-income elementary school children. *Child Development, 77,* 103-117.

Moore, P.J., Mok, M.M.C., Chan, L.K.S., & Lai, P.O. (2006) The development of an indicator system for the affective and social schooling outcomes for primary and secondary students in Hong Kong.. *Educational Psychology, 26,* 273-301.

Muñoz, L.C., Frick, P.J., Kimonis, E.R., & Aucoin, K.J. (2008). Verbal ability and delinquency: Testing the moderating role of psychopathic traits. *Journal of Child Psychology and Psychiatry, 49,* 414-421.

Muris, P. (2006). Maladaptive schemas in non-clinical adolescents: Relations to perceived parental rearing behaviours, big five personality factors and psychopathological symptoms. *Clinical Psychology & Psychotherapy, 13,* 405-413.

Muthén, B. O. (1989). Latent variable modeling in heterogeneous populations. *Psychometrika*, *54*, 557–585.

Nyborg, V.M., & Curry, J.F. (2003). The impact of perceived racism: Psychological symptoms among African-American boys. *Journal of Clinical Child and Adolescent Psychology, 32,* 258-266.

Orobio de Castro, B., Veerman, J.W., Koops, W. Bosch, J.D., & Monshouwer, H.J. (2002). Hostile attribution of intent and aggressive behavior: A meta-analysis. *Child Development, 73,* 916-934.

Oyserman, D., Bybee, D., & Terry, K. (2003). Gendered Racial Identity and Involvement with School. *Self and Identity, 2,* 307-324.

Oyserman, D., Bybee, D., Terry, K., & Hart-Johnson, T. (2004). Possible selves as roadmaps. *Journal of Research in Personality, 38,* 130-149.

Oyserman, D., Bybee, D., & Terry, K. (2006). Possible Selves and Academic Outcomes: How and When Possible Selves Impel Action. *Journal of Personality and Social Psychology, 91,* 188-204.

Oyserman, D., & Fryberg, S. (2006). The Possible Selves of Diverse Adolescents: Content and Function Across Gender, Race and National Origin. In C. Dunkel, & J.H. Kerpelman (Eds.), *Possible selves: Theory, research and applications*. (pp. 17-39). NY, US: Nova Science Publishers.

Oyserman, D., Gant, L., & Ager, J. (1995). A socially contextualized model of African-American identity: School persistence and possible selves. *Journal of Personality and Social Psychology, 69,* 1216-1232.

Oyserman, D., & Markus, H.R. (1990a). Possible selves in balance: Implications for delinquency. *Journal of Social Issues, 46,* 141-157.

Oyserman, D., & Markus, H.R. (1990b). Possible selves and delinquency. *Journal of Personality and Social Psychology, 59,* 112-125.

Oyserman, D., & Saltz, E. (1993). Competence, delinquency, and attempts to attain possible selves. *Journal of Personality and Social Psychology, 65,* 360-374.

Oyserman, D., Terry, K., & Bybee, D. (2002). A possible selves intervention to enhance school involvement. *Journal of Adolescence, 24,* 313-326.

Packard, B.W.L., & Conway, P.F. (2006). Methodological Choice and Its Consequences for Possible Selves Research. *Identity, 6,* 251-271.

Perreira, K.M., Fuligni, A., & Potochnick, S. (2010). Fitting in: The roles of social acceptance and discrimination in shaping the academic motivations of Latino youth in the U.S. Southeast. *Journal of Social Issues*, *66*, 131-153.

Pintrich, P.R. (2003). Motivation and classroom learning. In W.M. Reynolds, & E. Gloria (Eds). *Handbook of psychology: Educational psychology* (pp. 103-122.), Hoboken, NJ: John Wiley & Sons Inc.

Polman, H., Orobio de Castro, B., Koops, W., van Boxtel, H. W., & Merk, W.W. (2007). A meta-analysis of the distinction between reactive and proactive aggression in children and adolescents. *Journal of Abnormal Child Psychology*, *35,* 522-535.

Putallaz, M., Grimes, C.L., Foster, K.J., Kupersmidt, J.B., Coie, J. D., & Dearing, K. (2007). Overt and relational aggression and victimization: Multiple perspectives within the school setting. *Journal of School Psychology, 45,* 523-547.

Quilliams, L., & Beran, T. (2009). Children at risk for academic failure: A model of individual and family factors. *Exceptionality Education International*, 19(2-3), 63-76.

Ratelle, C.F., Guay, F., Larose, S., & Senécal, C. (2004). Family Correlates of Trajectories of Academic Motivation During a School Transition: A Semiparametric Group-Based Approach. *Journal of Educational Psychology, 96,* 743-754.

Ratelle, C.F., Guay, F., Vallerand, R.J., Larose, S., & Senécal, C. (2007). Autonomous, controlled, and amotivated types of academic motivation: A person-oriented analysis. *Journal of Educational Psychology, 99,* 734-746.

Risi, S., Gerhardstein, R., & Kistner, J. (2008). Children's classroom peer relationships and subsequent educational outcomes. *Journal of Clinical Child and Adolescent Psychology, 32,* 351-361.

Robertson, J.S. (2000). Is attribution training a worthwhile classroom intervention for K-12 students with learning difficulties? *Educational Psychology Review, 12,* 111-136.

Rooney, R., Roberts, C., Kane, R., Pike, L., Winsor, A., White, J., & Brown, A. (2006). The prevention of depression in 8- to 9-Year-old children: A pilot study. *Australian Journal of Guidance & Counseling, 16,* 76-90.

Scheel, M.J., & Gonzalez, J. (2007). An investigation of a model of academic motivation for school counseling. *Professional School Counseling, 11,* 49-56.

Schniering, C. A., & Lyneham, H. J. (2007). The Children's Automatic Thoughts Scale in a clinical sample: Psychometric properties and clinical utility. *Behaviour Research and Therapy*, *45*, 1931-1940.

Schniering, C. A., & Rapee, R. M. (2002). Development and validation of a measure of children's automatic thoughts: The Children's Automatic Thoughts Scale. *Behaviour Research and Therapy, 40,* 1091-1109.

Schniering, C.A., & Rapee, R.M. (2004a). The structure of negative self-statements in children and adolescents: A confirmatory factor-analytic approach. *Journal of Abnormal Child Psychology, 32,* 95-109.

Schniering, C.A., & Rapee, R.M.(2004b). The relationship between automatic thoughts and negative emotions in children and adolescents: a test of the cognitive content-specificity hypothesis. *Journal of Abnormal Psychology, 113,* 464-470.

Schwartz, D., Gorman, A.H., Nakamoto, J., & McKay, T. (2006). Popularity, social acceptance, and aggression in adolescent peer groups: Links with academic performance and school attendance. *Developmental Psychology, 42,* 1116-1127.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*, 422-445

Smith, S. W., Lochman, J. E., & Daunic, A. P. (2005). Managing aggression using cognitive-behavioral interventions: State of practice and future decisions. *Behavioral Disorders*, *30*, 227-240.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290–312). Washington, DC: American Sociological Association Psychological Association.

Spence, J.T., & Helmreich, R.L. (1983). Achievement-related motives and behaviors. In J.T. Spence (Ed.). *Achievement and achievement motives: Psychological and sociological approaches*. San Francisco, CA: Freeman.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, *25*, 173-180.

Stormshak, E. A., Connell, A., & Dishion, T. J. (2009). An adaptive approach to family-centered intervention in schools: Linking intervention engagement to academic outcomes in middle and high school. *Prevention Science*, *10*, 221-235.

Sutherland, K.S., Singh, N.N., Conroy, M., & Stichter, J.P. (2004). Learned helplessness and students with emotional or behavioral disorders: Deprivation in the classroom. *Behavioral Disorders, 29,* 169-181.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics (5th ed.)*. Boston, MA: Allyn & Bacon/Pearson Education.

Taylor, L.D., Davis-Kean, P., & Malanchuk, O. (2007). Self-esteem, academic self-concept, and aggression at school. *Aggressive Behavior, 33,* 130-136.

Tomarken, A.J., & Waller, N.G. (2003). Potential problems with "Well Fitting" models. *Journal of Abnormal Psychology, 112,* 578 – 598.

Tremblay, P.F. & Belchevski, M. (2004). Did the instigator intend to provoke? A key moderator in the relation between trait aggression and aggressive behavior. *Aggressive Behavior, 30,* 409-424.

Vaillancourt, T., Brendgen, M., Boivin, M., & Tremblay, R.E. (2003). A longitudinal confirmatory factor analysis of indirect and physical aggression: Evidence of two factors over time? *Child Development, 74,* 1628-1638.

Vallerand, R.J., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality, 60,* 599-620.

Vallerand, R.J., Blais, M.R., Briere, N.M., & Pelletier, L.G. (1989). Construction et validation de l'Echelle de Motivation en Education (EME). *Revue cannadienne des sciences du comportement, 21,* 323-349.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72,* 1161-1176.

Véronneau, M.H., Vitaro, F., Pedersen, S. & Tremblay, R. E. (2008). Do peers contribute to the likelihood of secondary school graduation among disadvantaged boys? *Journal of Educational Psychology, 100*, 429-442.

Vitaro, F., Brendgen, M., & Wanner, B. (2005). Patterns of affiliation with delinquent friends during late childhood and early adolescence: Correlates and consequences. *Social Development, 14,* 82-108.

Walters, G.D. (2007). Measuring reactive and proactive criminal thinking with the PICTS: Correlations with outcome expectancies and hostile attribution biases. *Journal of Interpersonal Violence, 22*, 371-388.

Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, *331*, 1447-1451.

Weiner, B. (1986). Attribution, emotion, and action. In R. M. Sorrentino, & E.T. Higgins (Eds), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 281-312). New York, NY: Guilford Press.

Weiner, B. (1992). *Human motivation: Metaphors, theories, and research*. Thousand Oaks, CA: Sage Publications, Inc.

Winstok, Z. (2009). From self-control capabilities and the need to control others to proactive and reactive aggression among adolescents. *Journal of Adolescence, 32*, 455-466.

Woodworth, M., & Waschbusch, D. (2007). Emotional processing in children with conduct problems and callous/unemotional traits. *Health and Development, 34,* 234-244.

Xie, H., Farmer, T.W., & Cairns, B. D. (2003). Different forms of aggression among inner-city African-American children: Gender, configurations and school social networks. *Journal of School Psychology, 41,* 355-375.

Yeung, R.S., & Leadbeater, B.J. (2007). Does hostile attributional bias for relational provocations mediate the short-term association between relational victimization

and aggression in preadolescence? *Journal of Youth and Adolescence*, *36*, 973-983.

Young, A., Johnson, G., Hawthorne, M., & Pugh, J. (2011). Cultural predictors of academic motivation and achievement: A self-deterministic approach. *College Student Journal*, 45(1), 151-163.

Yu, J.J., & Gamble, W.C. (2008). Familial correlates of overt and relational aggression between young adolescent siblings. *Journal of Youth Adolescence, 37,* 655-673.

Zimmer-Gembeck, M.J., Geiger,T.C., & Crick, N. R. (2005) Relational and physical aggression, prosocial behavior, and peer relations: gender moderation and bidirectional associations. *Journal of Early Adolescence, 25,* 421-452.

APPENDIX A

DEMOGRAPHICS QUESTIONNAIRE

Demographics Questionnaire

Please answer the following questions according to what best describes you.

What is your gender?			
☐	Male	☐	Female

How old are you?			
☐	13	☐	17
☐	14	☐	18
☐	15	☐	19
☐	16		

What is the highest grade that you have **completed**?
☐ 8th
☐ 9th
☐ 10th
☐ 11th

Check the box that best describes your current grades:
☐ A
☐ B
☐ C
☐ D
☐ F

Do you receive free lunch at school?			
☐	Yes	☐	No

Check the box that best describes your ethnic background:
☐ Black/African-American
☐ Hispanic/Mexican-American/Chicano/Latino/Cuban
☐ Non-Hispanic White/Caucasian
☐ Asian (Japanese, Chinese, Indian, Korean, etc)
☐ Other (please specify_____)

BSMSS

How many adults live with you? _____

Check the box that best describes the guardian (adult) that lives with you and is responsible for you:			
☐	Birth Mother	☐	Step-bother
☐	Birth Father	☐	Step-sister
☐	Grandmother	☐	Aunt
☐	Grandfather	☐	Uncle
☐	Step-mother	☐	Male Cousin
☐	Step-father	☐	Female Cousin
☐	Brother	☐	Other Adult Relative
☐	Sister	☐	Other Child Relative
☐	Half-brother	☐	Other Adult Non-Relative
☐	Half-sister	☐	Other Child Non-relative

If there is another guardian (adult) that lives with you and is responsible for you, then choose the box that best describes this person:			
☐	Birth Mother	☐	Step-bother
☐	Birth Father	☐	Step-sister
☐	Grandmother	☐	Aunt
☐	Grandfather	☐	Uncle
☐	Step-mother	☐	Male Cousin
☐	Step-father	☐	Female Cousin
☐	Brother	☐	Other Adult Relative
☐	Sister	☐	Other Child Relative
☐	Half-brother	☐	Other Adult Non-Relative
☐	Half-sister	☐	Other Child Non-relative

Check the appropriate box for the level of school completed by your guardian(s) (the person you identified above). If you are in a home with only one guardian, check the box from guardian one only:		
Level of School Completed:	**Guardian 1**	**Guardian 2**
Less than 7th grade	☐	☐
Junior high / Middle school (9th grade)	☐	☐
Partial high school (10th or 11th grade)	☐	☐
High school graduate	☐	☐
Partial college (at least one year)	☐	☐
College education	☐	☐
Graduate degree	☐	☐

Check the appropriate box that best describes your guardian(s) job. If you are in a home with only one guardian, check the box from guardian one only:		
Job	**Guardian 1**	**Guardian 2**
Garbage collector, short-order cook, cab driver, shoe sales, assembly line workers, masons, baggage porter.	☐	☐
Painter, skilled construction trade, sales clerk, truck driver, cook, sales counter or general office clerk.	☐	☐
Automobile mechanic, typist, locksmith, farmer, carpenter, receptionist, construction laborer, hairdresser.	☐	☐
Machinist, musician, bookkeeper, secretary, insurance sales, cabinetmaker, personnel specialist, welder.	☐	☐
Supervisor, librarian, aircraft mechanic, artist or artisan, electrician, administrator, military enlisted personnel, buyer.	☐	☐
Nurse, skilled technician, medical technician, counselor, manager, police and fire personnel, financial manager, physical, occupational, speech therapist.	☐	☐
Mechanical, nuclear, and electrical engineer, educational administrator, veterinarian, military officer, elementary, high school and special education teacher.	☐	☐
Physician, attorney, professor, chemical or aerospace engineer, judge, CEO, senior manager, public official, psychologist, pharmacist, accountant.	☐	☐

APPENDIX B

CHILDREN'S AUTOMATIC THOUGHT SCALE

CATS

Listed below are some thoughts that children and adolescents have said pop into their heads. Please read each thought carefully and decide how often, if at all, each thought popped into your head over the past week. Please mark your answer by circling the right number (0-4) for each thought.

Say to yourself "Over the past week I thought..."	**Not at All**	**Sometimes**	**Fairly Often**	**Often**	**All the Time**
1. Kids will think I'm stupid	0	1	2	3	4
2. I have the right to take revenge on people if they deserve it	0	1	2	3	4
3. I can't do anything right	0	1	2	3	4
4. I'm going to have an accident	0	1	2	3	4
5. Other kids are stupid	0	1	2	3	4
6. I'm worried that I'm going to get teased	0	1	2	3	4
7. I'm going crazy	0	1	2	3	4
8. Kids are going to laugh at me	0	1	2	3	4
9. I'm going to die	0	1	2	3	4
10. Most people are against me	0	1	2	3	4
11. I am worthless	0	1	2	3	4
12. My Mom or Dad are going to get hurt	0	1	2	3	4
13. Nothing ever works out for me anymore	0	1	2	3	4
14. I'm going to look silly	0	1	2	3	4
15. I won't let anyone get away with picking on me	0	1	2	3	4
16. I'm scared of losing control	0	1	2	3	4
17. It's my fault that things have gone wrong	0	1	2	3	4

Say to yourself "Over the past week I thought..."	Not at All	Sometimes	Fairly Often	Often	All the Time
18. People are thinking bad things about me	0	1	2	3	4
19. If someone hurts me, I have the right to hurt them back	0	1	2	3	4
20. I'm going to get hurt	0	1	2	3	4
21. I'm afraid of what other kids will think of me	0	1	2	3	4
22. Some people deserve what they get	0	1	2	3	4
23. I've made such a mess of my life	0	1	2	3	4
24. Something awful is going to happen	0	1	2	3	4
25. I look like an idiot	0	1	2	3	4
26. I'll never be as good as other people are	0	1	2	3	4
27. I always get blamed for things that are not my fault	0	1	2	3	4
28. I am a failure	0	1	2	3	4
29. Other kids are making fun of me	0	1	2	3	4
30. Life is not worth living	0	1	2	3	4
31. Everyone is staring at me	0	1	2	3	4
32. I'm afraid I will make a fool of myself	0	1	2	3	4
33. I'm scared that somebody might die	0	1	2	3	4
34. I will never overcome my problems	0	1	2	3	4
35. People always try to get me into trouble	0	1	2	3	4
36. There is something very wrong with me	0	1	2	3	4
37. Some people are bad	0	1	2	3	4

Say to yourself "Over the past week I thought..."	Not at All	Sometimes	Fairly Often	Often	All the Time
38. I hate myself	0	1	2	3	4
39. Something will happen to someone I care about	0	1	2	3	4
40. Bad people deserve to get punished	0	1	2	3	4

APPENDIX C

HOSTILE ATTRIBUTION MEASURE

DIRECTIONS: You will be reading several stories. Pretend that the things that are happening in each story are happening to you. Then answer the questions after each story. Put an "X" in the box to indicate your answer.

iPod Story

Imagine that you brought your new iPod to school today. You saved up your money to buy the iPod and you want to show it to the other kids at school. You let another kid use it for a few minutes while you go get a drink of water. When you get back you realize that the kid has broken your brand new iPod.

1. Why did the kid break your iPod?

- ☐ The iPod wasn't made well.
- ☐ It was an accident.
- ☐ The kid was mad at me.
- ☐ The kid was jealous of me.

2. In this story, how likely was it that the kid was trying to be mean?

- ☐ Not at all likely
- ☐ Unlikely
- ☐ Unsure
- ☐ Likely
- ☐ Very Likely

3. How upset or mad would you be if the things in this story really happened to you?

- ☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

Courtyard Story

Imagine that you are looking for your friend in the courtyard. You can't wait to find your friend because you have an important secret to share. By the time you find your friend, your friend is talking with someone else— a kid that you don't like very much.

4. Why did your friend sit with someone else instead of you?

☐ My friend was mad at me.

☐ My friend didn't know that I wanted to play with them.

☐ My friend wanted to get back at me for something.

☐ My friend didn't see me on the playground.

5. In this story, how likely was it that your friend was trying to be mean?

☐ Not at all likely

☐ Unlikely

☐ Unsure

☐ Likely

☐ Very Likely

6. How upset or mad would you be if the things in this story really happened to you?

☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

Milk Story

Imagine that you are sitting at the lunch table at school, eating lunch. You look up and see another kid coming over to your table with a carton of milk. You turn around to eat your lunch, and the next thing that happens is that the kid spills the milk all over your back. The milk gets your shirt all wet.

7. Why did the kid get milk all over your back?

☐ The kid slipped on something.

☐ The kid just does stupid things like that to me.

☐ The kid wanted to make fun of me.

☐ The kid wasn't looking where he/she was going.

8. In this story, how likely was it that the kid was trying to be mean?

☐ Not at all likely

☐ Unlikely

☐ Unsure

☐ Likely

☐ Very Likely

9. How upset or mad would you be if the things in this story really happened to

you?

☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

Hallway Story

Imagine that you are standing in the hallway one morning at school. As you are standing there, two kids from your class walk by. As they walk by you, the two kids look at you, whisper something to each other and then they laugh.

10. Why did the two kids laugh when they walked by you?

☐ The kids were making fun of me.

☐ The kids were laughing at a joke one of them told.

☐ The kids were just having fun.

☐ The kids were trying to make me mad.

11. In this story, how likely was it that the two kids were trying to be mean?

☐ Not at all likely

☐ Unlikely

☐ Unsure

☐ Likely

☐ Very Likely

12. How upset or mad would you be if the things in this story really happened to you?

- ☐ Not upset or mad at all
- ☐ A little upset or mad
- ☐ Very upset or mad

Shoes Story

Imagine that you are walking to school and you're wearing your new sneakers. You really like your new shoes and this is the first day you have worn them. Suddenly, another kid bumps you from behind. You stumble and fall into a mud puddle and your new shoes get muddy.

13. Why did the kid bump you from behind?

- ☐ The kid was being mean.
- ☐ The kid was fooling around and pushed too hard by accident.
- ☐ The kid was running down the street and didn't see me.
- ☐ The kid was trying to push me down.

14. In this story, how likely was it that the kid was trying to be mean?

- ☐ Not at all likely
- ☐ Unlikely
- ☐ Unsure
- ☐ Likely
- ☐ Very Likely

15. How upset or mad would you be if the things in this story really happened to you?

- ☐ Not upset or mad at all
- ☐ A little upset or mad
- ☐ Very upset or mad

Party Story

Imagine that you are in the bathroom one day after recess. While you are in there, two other kids from your class come in and start talking to each other. You hear one of the kids invite the other one to a birthday party. The kid says that there are going to be a lot of people at the party. You have not been invited to this party.

16. Why hasn't the kid invited you to the birthday party?

- ☐ The kid doesn't want me to come to the party.
- ☐ The kid hasn't had a chance to invite me yet.
- ☐ The kid is trying to get back at me for something.
- ☐ The kid was planning to invite me later.

17. In this story, how likely was it that the kid was trying to be mean?

- ☐ Not at all likely
- ☐ Unlikely
- ☐ Unsure

☐ Likely

☐ Very Likely

18. How upset or mad would you be if the things in this story really happened to you?

☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

Paint Story

Imagine that you have just finished an art project for school. You've worked on it a long time and you're really proud of it. Another kid comes over to look at your project. The kid is holding a jar of paint. You turn away for a minute and when you look back the kid has spilled paint on your art project. You worked on the project for a long time and now it's ruined.

19. Why did the kid spill paint on your project?

☐ The kid is mean.

☐ The kid bumped into the paint by accident.

☐ The kid is kind of clumsy.

☐ The kid wanted to ruin my project.

20. In this story, how likely was it that the kid was trying to be mean?

☐ Not at all likely

☐ Unlikely

☐ Unsure

☐ Likely

☐ Very Likely

21. How upset or mad would you be if the things in this story really happened to you?

☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

Lunch Story

Imagine that you are at lunch one day and looking for a place to sit. You see some kids you know at a table across the room. The kids are laughing and talking to each other and they look like they are having a good time. You walk over to their table. As soon as you sit down, the kids stop talking and no one says anything to you.

22. Why did the kids stop talking when you sat down?

☐ They were waiting for me to say something first.

☐ They didn't want to talk to me.

☐ They were saying mean things about me before I got there.

☐ They were finished talking.

23. In this story, how likely was it that the kids were trying to be mean?

- ☐ Not at all likely
- ☐ Unlikely
- ☐ Unsure
- ☐ Likely
- ☐ Very Likely

24. How upset or mad would you be if the things in this story really happened to you?

- ☐ Not upset or mad at all
- ☐ A little upset or mad
- ☐ Very upset or mad

Race Story

Imagine that you are on the playground. You and some other kids are having a race. Another kid is standing on the side, bouncing a basketball. The next thing you realize is that the kid has bounced the ball and it rolls under your feet, making you fall. You scrape your knee and someone else wins the race.

25. Why did the kid bounce the ball under your feet?

- ☐ The kid wanted to get back at me for something.
- ☐ The kid didn't see me coming.

☐ The ball accidentally got away from the kid.

☐ The kid wanted me to lose the race.

26. In this story, how likely was it that the kid was trying to be mean?

☐ Not at all likely

☐ Unlikely

☐ Unsure

☐ Likely

☐ Very Likely

27. How upset or mad would you be if the things in this story really happened to you?

☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

Walk Story

Imagine that you are taking a walk in your neighborhood one day. After you walk a block or two, you see two kids that you know from school. You walk over to the kids and say "hi." The two kids act as if you are not there--- they don't say anything to you. Then they say something to each other that you can't hear and they walk the other way.

28. Why didn't the two kids say hello to you?

☐ They didn't see me standing there.

☐ They didn't hear me say hi first.

☐ They were mad at me about something.

☐ They don't like me.

29. In this story, how likely was it that the kids were trying to be mean?

☐ Not at all likely

☐ Unlikely

☐ Unsure

☐ Likely

☐ Very Likely

30. How upset or mad would you be if the things in this story really happened to you?

☐ Not upset or mad at all

☐ A little upset or mad

☐ Very upset or mad

APPENDIX D

POSSIBLE SELVES QUESTIONNAIRE

Possible Selves Questionnaire

Who will you be next year? Each of us has some image or picture of what we will be like and what we want to avoid being like in the future. Think about next year -- **imagine what you'll be like, and what you'll be doing next year.**

Step 1: In the lines below, write what you expect you will be like and what you expect to be doing next year. These are your expected goals.

Step 2: In the space next to each expected goal, circle **NO** if you are not currently working on that goal or doing something about that expectation and circle **YES** if you are currently doing something to get to that expectation or goal.

Step 3: For each expected goal that you circled **YES**, write what you are currently doing this year to attain that goal.

Use P1 for the first expectation or goal, P2 for the second expectation or goal and so on.

Step 1	**Step 2**		**Step 3**
Next year, I expect to be	**Am I doing something to be that way?**		**If yes, What I am doing now to be that way next year?**
P1.	**NO**	**YES**	1.
P2.	**NO**	**YES**	2.
P3.	**NO**	**YES**	3.
P4.	**NO**	**YES**	4.

In addition to expectations and expected goals, we all have images or pictures of what we don't want to be like; what we don't want to do or want to avoid being. First, think a minute about ways you would <u>not</u> like to be next year -- *things you are concerned about or want to avoid being like*.

Step 1: Write those concerns or selves to-be-avoided in the lines below.

Step 2: In the space next to each concern or to-be-avoided self, circle **NO** if you are not currently working on avoiding that concern or to-be-avoided self and circle **YES** if you are currently doing something <u>so this will not happen</u> next year.

Step 3: For each concern or to-be-avoided self that you marked **YES**, use the space at the end of each line to write <u>what you are doing this year to reduce the chances that this will describe you next year</u>. Use the first space for the first concern, the second space for the second concern and so on.

Use P5 for the first concern, P6 for the second concern and so on.

Step 1	**Step 2**		**Step 3**
Next year, I want to avoid	**Am I doing something to avoid this?**		**If yes, What I am doing now to avoid being that way next year?**
P5.	**NO**	**YES**	1.
P6.	**NO**	**YES**	2.
P7.	**NO**	**YES**	3.
P8.	**NO**	**YES**	4.

APPENDIX E

APS SCORING GUIDELINES

Handbook for Coding Academic Possible Selves

The purpose of this handbook is to provide a step by step guide for coding academic possible selves and associated constructs (i.e., balance and plausibility). This procedure includes the following steps:

Step 1: Give a category type label to each expected and feared possible self.

Step 2: Identifying whether an expected possible self is negatively coded.

Step 3: Give a specifier label to each expected and feared possible self.

Step 4: Based on the category type and specifier, give each expected and feared possible self a codetype.

Step 5: Identify all expected and feared possible selves that represent academic possible selves

Step 6: Identify all plausible strategies for each expected and feared self

Step 7: Identify all plausible strategies that represent **academic possible selves** plausible strategies and identify whether at least one academic possible self strategy is detailed/concrete

Step 8: Calculate three match types of balance.

Step 9: Calculate plausible self score.

Step 10: Calculate total Academic Possible Selves Score

Step 1

Give a category type label to each expected and feared possible self

Each **expected** possible self is written in step one on the first page of the questionnaire (P1-P4), while each **feared** possible self is written on step one on the second page of the questionnaire (P5-P8). The following labels are used to code the categories for each expected or feared possible self:

There are six main categories of Next Year **Expected** Possible Selves (**P1-P4**):

1. **Achievement**- relates to school and school interactions with teachers, achievement-related activities
2. **Interpersonal Relationships**- involves family, friends, relationships, and social interactions except with teachers

3. **Personality Traits-** relates to personality characteristics, self-descriptions of traits
4. **Physical/Health-Related-** relates to physical health, weight, height
5. **Material/Lifestyles-** relates to material possessions and living situation, including moving

There are six main categories of Next Year **Feared** Possible Selves **(P5-P8)**.

1. **Achievement-** relates to school and school interactions with teachers, achievement-related activities
2. **Interpersonal Relationships-** involves family, friends, relationships, and social interactions except with teachers
3. **Personality Traits-** relates to personality characteristics, self-descriptions of traits
4. **Physical/Health-Related-** relates to physical health, weight, height
5. **Material/Lifestyles-** relates to material possessions and living situation, including moving
6. **Non-normative/Risky Behaviors-** includes negative and illegal behaviors such as smoking, drinking, involved in fights, gangs, etc.

Considerations for Coding Category

- CONSIDER AGE OF RESPONDENT -- When coding for possible selves, one must first consider the age of the respondent. The same response e.g., "getting my license" may be either a codable or noncodable response depending on the respondent's age (that is NEXT YEAR is this possible?). For example, when an eighth grader expects to be a doctor that response is not coded. In a very few instances, age may also determine which category the possible self is placed. For example, when a twelve-year old respondent reports that next year he/she would like to avoid smoking, this feared possible self is categorized as non-normative. For an older person (16 and above), this same feared self would be coded in the health category.

- CONSIDER CONTEXT OF RESPONSE- When a possible self is ambiguous because too little has been written, read through the strategy provided for that possible self to see if it provides clues for the content intended.

- AMBIGUOUS POSSIBLE SELVES-If a possible self is ambiguous (e.g., "a better person," "stay out of trouble" "talking" (either more or less) "a loser" "a little punk" "being excluded") and the strategy clarifies that the possible self then code as possible self. **If strategy doesn't clearly clarify the possible self then neither self nor strategy counts.** For example if a strategy is related to school (for example, to be a better person by "not conversating in school and focus on school work"), then code as an achievement category type.

- MULTIPLE POSSIBLE SELVES THAT MIGHT BE REDUNDANT: Most of the time, each possible self is counted, example A gives an example of an exception for possible selves.

Example A	Possible Selves	Strategies
Next year I expect to be	a) in the ninth grade	
	b) in high school	
	c) at Cass	
Next year I want to avoid	d) the 8th grade	
	e) being at Murray Wright	

Since being in high school cannot be anywhere but 9th grade, 'in the ninth grade' and 'in high school' count only as one possible self. However, since 'being in high school' could be some other place other than Cass, 'expecting to be at Cass' counts as a second possible self. The feared self of wanting to avoid 8th grade counts because it is an additional focus-avoiding failure. Being at Murray Wright also counts because it is a specific school to be avoided. In this case, with no strategies, the child would be rated as having 4 possible selves.

AFTER DECIDING WHICH CATEGORY TYPE, WRITE THE APPROPRIATE CODE IN THE CATEGORY TYPE BOX ASSOCIATED WITH THE EXPECTED OR FEARED SELF BEING CODED.

Step 2

Identifying whether an expected possible self is negatively coded

When coding expected selves it is important to specify whether it is a negative response. Expected possible selves responses that are worded negative or suggest an expected negative outcome should be specified as negative. For example, students may respond "next year, I expect to still be involved in fights (negative-delinquent), or I expect to have few friends (negative-interpersonal relationships). However, these statements are sometimes worded in a negative form. For example, a student may respond "next year, I expect to be not fighting (negative-delinquent), or not to be getting picked on (negative-interpersonal relationships). For coding purposes, place a 0 in the box if it is not negative and 1 in the box if it is negative.

IF AN EXPECTED SELF'S WORDING MEETS THE CRITERIA LISTED ABOVE, THEN PLACE A "1" IN THE BOX IMMEDIATELY TO THE RIGHT OF THE CATEGORY LABEL, IF IT DOES NOT THEN PLACE A "0."

Step 3

Give a specifier label to each expected and feared possible self.

A specifier label is a more specific description of the category label. Each category type (with the exception of the Non-normative category) has specific specifiers that can represent both expected and feared selves. The Non-normative category type only has feared selves specifiers. Specifiers for each category type are listed below.

Achievement

Expected selves

Job- working for extra money, finding summer job, working, help mom save for school, babysitting, having a job, part-time job

Activities in school- cheer team, basketball team at school, playing instrument, school band, extra-curricular activities, playing sports, on a team, a better basketball player, getting a driver's license

School- doing good in school, trying to do good in school, smart, getting good grades, going to the next grade, keep my grades up, not tardy or absent from school, more helpful in classroom, honor roll, good conduct, going to better/new school, in high school, a good typist, do my work, in ninth grade. Specific classes, including music, band or choir count. The only classes which do not count are physical education, art or dance (**These activities should be coded as activities in school**).

Teachers- good relationship with teachers, getting along with teachers, respectful to teachers, listening to my teachers

Activities Not in School- basketball in neighborhood, guitar, deer hunting, reading a lot of books, boxing, (Note: Generally, if there is any doubt about activities put in school activities except for things not offered in school)

Feared Selves

Job-losing my job, without work

Activities in school- not on team, not making cheerleading

School- dropout, flunking out of my classes, having bad grades, dumb, having bad schoolwork, not paying attention, falling behind in class, in trouble in school, fighting in school, suspended, skipping, in same grade

Teachers- known as bad kid by teachers, still getting trouble with teachers, back talking to teachers

Activities Not in School-I don't want to be home all the time

Interpersonal Relationships

Expected selves

General- shy, silly, nice, respectful, better listener, funnier

Family- obedient, getting along with parents/relatives, helping around house, better person towards mother, see relatives, doing things with family, closer to family, being a good/ better son/daughter

Peers- having a steady boyfriend, getting along better with people, having lots of friends/same friends, making new friends, having lots of friends, hang with friends more, trying to be accepted at new school, being a better friend

Feared selves

General- as shy as I am, avoid being a recluse, mean person, rude, stuck up, mistrusted, stingy,

Family- having anything happen to our family, not listening to parents, being smart with parents, mean to sibling/relative, getting into arguments with parent/relative, without someone to turn to

Peers- enemies with other people, being a follower, being disliked by friends, not making friends, lying to people, boring, very talkative, breaking up with girl/boyfriend, bully, troublemaker, bad to my friends, without friends because of rumors, used just for my car-for rides

Personality Traits

Expected selves

Independence or Maturity- more mature, more responsible, more grown-up, helping her without complaining, A little more organized, Able to concentrate

Attitude- more serious person, being more open-minded, positive thoughts, positive attitude, to be a good person

Feared selves

Independence or Maturity- lazy, irresponsible, not trusted

Attitude- a bad attitude, silly, greedy, weak mentally, emotional mess, caring about nothing

Physical

Expected selves

General Body Descriptive-Hair looking different, as short as I am this year, taller, growing a few inches, Handsome, good-looking,

Physical Health- older, 15 years old

Feared Selves

General Body Descriptive- Getting my haircut, wearing dark lipstick like a devil worshipper, Short, I want to grow,

Physical Health- Sick a lot, so sick I can't attend school, On medication again, Slower physically, weaker than I am, overweight

Material/ Lifestyle

Expected selves

Lifestyle-Still living at home with my mom, moving to Canada, living somewhere, going places I have never been,

Material-own a car, living in better new house

Feared Selves

Lifestyle- Moving from this house

Material- In the situation of money, not money confused

Non-Normative

Feared Selves

Non-normative- getting pregnant, cigarettes, being killed, hanging out with wrong people, troublemaker, having sex

Delinquent- shooting people, with gang members, getting involved in drugs, In a gang, gang banger, alcohol use, a druggie, drug dealer, jail

AFTER DECIDING WHICH SPECIFIER, WRITE THE APPROPRIATE CODE IN THE SPECIFIER TYPE BOX ASSOCIATED WITH THE EXPECTED OR FEARED SELF BEING CODED.

Step 4

Based on the category type and specifier, give each expected and feared possible self a codetype

The codetype involves combining the category type and specifier type to create one code. A hyphen is used to combine the two codes written in category type and specifier type. For instance, if an individual's expected self was coded as Achievement (A) for category type and School (S) for specifier type, their codetype would be "A-S." **Every expected and feared self must have a codetype unless it is not possible to code the information provided.**

For data entry purposes, the codetype column is divided into two boxes for each expected and feared self. In the first box, you should place the codetype as describe above. In the second box, you should place the number associated with the codetype. This number will be entered into SPSS to identify the codetype for each possible self. The number is based on the specifier that is attached to codetype. Beside each specifier in the legend at the top of the coding sheet is a number in parenthesis. This number should be written into the second box.

COMBINE THE CATEGORY TYPE CODE AND SPECIFIER TYPE CODE WITH THE USE OF A HYPHEN AND WRITE THIS COMBINATION IN THE FIRST BOX ASSOCATIED WITH THE EXPECTED OR FEARED SELF BEING CODED BENEATH THE CODETYPE COLUMN. WRITE THE ASSOCIATED NUMBER FOR THE SPECIFIER TYPE IN THE SECOND BOX BENEATH THE CODETYPE COLUMN.

Step 5

Identify all expected and feared possible selves that represent academic possible selves

Codetypes that consist of a category type code for "achievement" and a specifier type code for "school" **or** "teacher" are considered academic possible selves. Thus, codetypes "A-S" and "A-T" are considered academic possible selves.

FOR EVERY EXPECTED OR FEARED POSSIBLE SELF THAT HAS A CODETYPE OF "A-S" OR "A-T" PLACE A CHECK MARK IN THE BOX LABELED "APS?" THAT IS ASSOCIATED WITH THE EXPECTED OR FEARED SELF BEING CODED.

Step 6

Identify all plausible strategies for each expected and feared self

The strategies that a youth uses to accomplish their expected selves or feared selves are listed in step 3 of the possible selves questionnaire. A strategy is considered **plausible** if it meets the following criteria:

1. It is related to the expected self or feared self category type. For instance, an expected self coded as interpersonal for category type can not have a strategy that focuses on physical health.

2. It adds to the expected or feared self. In other words, it can not be a rewording of the expected or feared self.

Considerations for coding strategies:

- Several strategies can be a part of one expected or feared self. For example, if a expected self is coded physical health for category type and the associated strategies are exercise and eat healthy, then this would be considered two plausible strategies.

Examples of Strategies:

Achievement

Working hard on assignments
Doing all my schoolwork
Paying more attention

Interpersonal Relationships

Doing what others tell me to do
Working with parents
Asking for help

Personality Traits

Controlling my attitude/actions
Trying new things
Disciplining myself

Physical

Lifting weights
Exercising
Eating healthy foods

Material/ Lifestyle

Working to save my money
Talking with parents about moving

Non-normative

Avoid being around negative/criminal people/activities
Walk away from negative pressure situations

Example A	**Possible selves**	**Strategies**
Next year I expect to be	a) in Renaissance	turn in application
Next year I want to avoid grades	b) getting into any other school than Renaissance	getting good
	c) getting lower than a 3.0	keeping good study habits
	d) getting C's and B's	keeping A's

This child has 4 possible selves and 3 strategies because the strategy of "keeping A's and B's" is a restatement of avoiding C's rather than a strategy. Getting lower than a 3.0 and getting C's both count because there is a way to stay at 3.0 and above that includes C's (just balanced by A's) so these are slightly different avoided selves.

Example B	**Possible selves**	**Strategies**
Next year I expect to be	a) in 9th grader	work hard as an 8th grader
Next year I want to avoid	b) in Murray Wright	plan on getting out of Spain
	c) the 8th grade	work hard
	d) dropping out	staying in school
	e) typing class	taking one now

All of the academic possible selves are counted. All strategies are counted even if a strategy (e.g., working hard) appears more than once. The only time strategies are not double counted is when the possible selves themselves are redundant or exact opposites (e.g., a 9th grader, in the 8th grade). The only other strategies that are not counted are when the words do not form a strategy but explain or add detail as to why a possible self is important (such as next year, I expect to be a 9th grader student with a strategy 'because I can learn more').

WRITE THE NUMBER OF STRATEGIES THAT MEET THE ABOVE CRITERIA IN THE BOX LABELED "# OF PLAUSIBLE STRATEGIES" FOR EACH EXPECTED AND FEARED SELVES WITH ASSOCIATED STRATEGIES.

Step 7

*Identify all plausible strategies that represent **academic possible selves** plausible strategies and identify whether at least one academic possible self strategy is detailed/concrete*

Identify **ALL** strategies that are associated with codetype **"**A-S" or "A-T" (they will have a check in the column labeled "APS?") **AND** meet at least one of the following criteria:

1. Are Achievement Focused Strategies for Academic Possible Selves: Working hard on assignments, coming to school on time, Doing all my schoolwork, asking teachers for help, paying more attention, studying, trying real hard

2. Are Interpersonal Relationships: Doing what others tell me to do, avoiding the bad students, Working with parents , Avoid being around negative/criminal people/activities, Walk away from negative pressure situations, Asking for help

Count the number of plausible strategies which meet the above criteria for expected selves and feared selves, respectively.

Secondly identify whether at least one strategy is detailed/concrete. A strategy is considered specific concrete if specific action is implied. For example [APS (APS strategies)]:
I expect to succeed in school (doing homework and coming to class on time). I am concerned that I may fail the eighth grade (always take my books home). Once **one** detailed/concrete strategy is identified, place an "X" by the number of academic possible selves. **To ensure that a strategy is detailed/concrete ask yourself "Do I need to ask a follow-up question to better understand how this goal will be implemented?"** If the answer is "**yes**," then it is **NOT** detailed and concrete strategy. If the answer is "**no**," then it is a detailed and concrete strategy.

WRITE THE NUMBER OF ACADEMIC POSSIBLE SELVES STRATEGIES IN THE GRAY BOX UNDERNEATH BOTH EXPECTED SELVES AND FEARED SELVES. THEN PLACE AN "X" BY THE NUMBER IF ONE OF THE STRATEGIES ARE DETAILED/CONCRETE.

Step 8

Calculate three match types of balance

Balance means having both a positive and a negative aspect of a future goal, that means having both an expectation (next year expected) and a matching concern (next year feared) that fit together or create a more coherent whole. If the student writes an expected self and a feared self that corresponds then they have balance. The three match types are as follows:

Match Type 1: This is when the same category type found in the expected selves box is found anywhere in the feared selves boxes for category type. For instance, if P1 category type is labeled PH and P7 category type is labeled PH then this is considered balance. It

is noted by putting the category type which is matched in box 1,2,3, or 4 of the match type 1 column. For our example, we would place PH in box 1 under match type 1.

Additional Examples

Achievement/School —Next year I expect to be a great student and next year I want to avoid being a dropout/failing in school.

Interpersonal- Next year I expect to have new friends/ I want to avoid having no friends.

Personality traits- Next year I expect to be more responsible/ I want to avoid being lazy and irresponsible

Physical- Next year I expect to be eating better foods/ I want to avoid eating a lot of junk food.

Match Type 2: This is when the same codetype found in the expected selves box is found anywhere in the feared selves boxes for codetype. For instance, if P2 codetype is labeled ML-L and P6 codetype is labeled ML-L then this is considered balance. It is noted by putting the codetype which is matched in box 1,2,3, or 4 of the match type 2 column. For our example, we would place ML-L in box 1 under match type 2.

Match Type 3: This matchtype is for academic possible selves balance. Count each match type 2 that include the code "A-S" or "A-T." For instance, if "A-S" was in the second box of match type 2 (column 2) and "A-T" was in the fourth box of match type 2 then place a score of two in match type 3.

WRITE THE CODE FOR CATEGORY TYPES IN MATCH TYPE 1 THAT ARE BALANCED, THE CODE FOR CODETYPES IN MATCH TYPE 2 THAT ARE BALANCED, AND THE NUMBER OF ACADEMIC POSSIBLE SELVES BALANCE IN CODETYPE 3.

Step 9

Calculate plausible self score

Plausibility is meant as a general assessment of the usefulness of the achievement related visions and strategies the student describes as a 'road map to achieving in school' or plan of action. We coined the term 'plausibility' to convey the idea that possible selves differ in the extent that a youth could plausibly use these visions and strategies as a way to guide behavior toward the achievement goal (e.g., doing well in school). 0 scores are reserved for youth with no strategies and only a single, vague academic possible self (or no academic possible selves at all). 5 scores are reserved for youth with multiple academic possible selves and strategies whose strategies focus on both the academic aspects (e.g., doing homework) and also the social interpersonal aspects (e.g., asking the

teacher for help, dealing with friends who don't focus on school) of attaining the academic goal (and avoiding failure in the academic goal). Counts include both expected and feared possible selves in the academic/school related domain and their connected strategies. Possible selves that are related to job achievement and school activities are not counted for plausibility. Each point on the scale is operationalized by a count of the possible selves and strategies (and their detail or concreteness, with behavioral implications). If you have a doubt about whether a possible self actually adds an additional piece of information or is completely redundant with a previous possible self, ask. **Calculating plausibility involves the three following steps:**

1. **Calculate all academic possible selves-**All expected and feared selves with codetypes "A-T" or "A-S" are considered academic possible selves. **These are noted by each expected or feared self that has a check in the "APS?" column.** Add the number of check marks which were placed in boxes for step five.

2. **Calculate all academic possible selves plausible strategies-**Add the numbers in the grey boxes for expected selves and feared selves.

3. **Use the APS plausibility rubric to calculate the plausibility score.** Below is the scoring rubric that uses the number of academic possible selves and academic possible selves strategies to calculate score. ***Note, strategy counts within the scoring rubric have a asterisk next to the number. The asterisk is equivalent to an "X" being placed by the academic possible selves plausible strategies in the grey box of expected selves and feared selves. Thus, only code using a score count with an asterisk if an "X" has been placed by the number in the grey box for expected selves OR feared selves.**

Plausibility Score	Count Academic Expected or Feared Possible Selves (APS)	Count Strategies attached to these APS	plausibility as follows Codes noted with * mean code at this level only if at least one of the possible selves and/or strategies that are provided are detailed/concrete, that is if specific action is implied and possible selves are not redundant, otherwise code at the next lower level of plausibility. Ex: APS (APS strategies): I expect to succeed in school (doing homework and coming to class on time). I am concerned that I may fail the eighth grade (always take my books home)
0	0		EITHER 0 academic possible selves (APS) OR 1 APS that is vague or general AND 0 APS strategy
	1	0	
1`	1	1	EITHER 1 APS and 1 APS strategy OR 2 APS but no APS strategies
	2	0	
	1	2* or more	

2	2	1- 2	EITHER 1 APS and 2 or more APS strategies* OR 2 APS and 1- 2 APS strategies OR 3 APS and 0*-1 APS strategies OR 4 or more APS and 0 APS strategies
	3	0*-1	
	4 or more	0	
3	2	3* or more	EITHER 2 APS and 3 or more APS strategies* OR 3 APS and 2-3 APS strategies OR 4 or more APS and 1*-2 APS strategies
	3	2-3	
	4 or more	1*-2	
4	3	4 or more	EITHER 3 APS and 4 or more APS OR 4 APS and 2*-4 APS strategies
	4 or more	2*, 3-4	
5	4 or more	4-5+	4 or more APS AND 4 or more strategies AND at least one strategy for an academic self is focused on interpersonal aspects of school context. (Ex: listen to the teacher (or not talk back), avoid peers who skip, not listening to negative talk)

CALCULATE THE TOTAL ACADEMIC POSSIBLE SELVES AND THE TOTAL ACADEMIC POSSIBLE SELVES STRATEGIES. USE THESE NUMBERS TO DERIVE THE PLAUSIBLITY SCORE USING THE SCORING RUBRIC.

Step 10

Calculate total Academic Possible Selves Score

The Academic Possible Selves Score consists of the summation of the APS Balance Score and the APS Plausibility Score. To derive this score add the number in Match Type 3 with the Plausibility Score.

TO DERIVE THE ACADEMIC POSSIBLE SELVES SCORE, SUM MATCH TYPE THREE WITH THE PLAUSIBILITY SCORE. PUT THIS NUMBER IN TOTAL APS SCORE.

YOUR DONE…CONGRATULATIONS!!!

APPENDIX F

APS CODING SHEET

APS Coding Sheet

Category Type	Specifier Codes
Achievement (A):	**J-**Job(1)**; A-**Activities in School(2); **S-**School(3); **T-**Teachers(4); **AS-**Activities Not in School(5)
Interpersonal Relationships (IR):	**G-**General Characteristics(6); **F-**Family(7); **P-**Peers(8)
Personality Traits(PT):	**I-**Independence Maturity(9); **AT-**Attitude(10)
Physical (PH):	**GB-**General Body(11); **PH-**Physical Health(12)

Material/Lifestyle (ML): **L-**Lifestyle(13); **M-**Material(14)
Non-Normative (NN): **NN-**Non-normative(15); **D-**Delinquent(16)
No Code: (0)

Expected Selves							
	Category Type: A, IR, PT, PH, ML	N?	Specifier Type: (see codes below)	Codetype: (For example: A-J)		APS? (Codetype = A-S or A-T)	# of **Plausible** Strategies for this PS	# Of Distinct **Academic** PS Strategies (Must Be Connected to Codetype "A-S" or "A-T." Place "X" beside number if at least **one** strategy is detailed/concrete
P1								
P2								
P3								
P4								

Feared Selves							
	Category Type: A, IR, PT, PH, ML, NN	Specifier Type: (see codes below)	Codetype: (For example: A-J)		APS? (Codetype = A-S or A-T)	# of **Plausible** Strategies for this PS	# Of Distinct **Academic** PS Strategies (Must Be Connected to Codetype "A-S" or "A-T." Place "X" beside number if at least **one** strategy is detailed/concrete
P5							
P6							
P7							
P8							

Balance			
	Match Type 1 (Fill in matched category type)	***Match Type 2*** (Fill in Codetype: Category+Specifier)	***Match Type 3*** Academic Possible Selves (Total # of Match Types with Codetype "A-S" or "A-T")
1			
2			
3			
4			
# Total Matches			

Plausibility		
Total APSs Count Bordered Boxes (Total Expected Selves and Feared Selves with Codetype "A-S" or "A-T")	Total APS Strategies (Add Grey Boxes)	Plausibility Score (Refer to Scoring Rubric)

Total APS Score (Add Match Type 3 and Plausibility Score)

APPENDIX G

CAUSAL ATTRIBUTION SCALE

ID #:_____

CAS

This is not a test. There is no right or wrong answers. A number of different situations are described that may have happened to you at school. For each one, there is a list of four possible reasons why the situation could have happened to you. You are asked to show how much each reason would be true for you.

First, look at the example below that has already been filled in

1 = Rarely True 2 = Sometimes True 3 = Often True 4 = Almost Always True

1. Suppose you won a race at the school sports competition. It would probably be because				
a. you are just lucky	1	2	3	4
b. you are a good runner	1	2	3	4
c. you tried very hard to run fast	1	2	3	4
d. you used a good tactic to help you run fast	1	2	3	4

The person who answered this, circled **1** for the first reason because it was not true for him. He circled **3** for the second reason because he was a good runner and often won races. He circled **4** for the third reason because he almost always tried really hard to win races. He circled **2** for the last reason because he had been coached in how to run, which he felt helped him somewhat.

Now look at this second example.

2. Suppose you painted a picture at school and everyone said it was no good. It was likely to be because				
a. you are a bad painter	1	2	3	4
b. you didn't know any useful painting tricks	1	2	3	4
c. you didn't really try	1	2	3	4
d. it got messed up just by chance	1	2	3	4

The person who answered this, circled **4** for the first reason because she believed it is almost always true that she is a bad painter when she paints. She circled **2** for the second reason because she feels that sometimes she doesn't know useful painting tricks. She circled **3** for the third reason because she often did not try hard to make good paintings. She circled **1** for the last reason because the painting never gets messed up by chance.

1 = Rarely True **2 = Sometimes True**
3 = Often True **4 = Almost Always True**

1. Suppose your class was given a very difficult worksheet to do and you got most of the answers right. This was likely because				
a. you were lucky that day	1	2	3	4
b. you had useful methods for working out the answers	1	2	3	4
c. you usually do well at schoolwork	1	2	3	4
d. you tried very hard to work out the answers	1	2	3	4
2. If you got a low grade, it was likely because				
a. you aren't very good at schoolwork	1	2	3	4
b. you were lazy and didn't try	1	2	3	4
c. you didn't have useful study methods	1	2	3	4
d. you were very unlucky	1	2	3	4
3. When you got high grades on an assignment, it was probably because				
a. you are always good at schoolwork	1	2	3	4
b. you were just lucky	1	2	3	4
c. you had useful ways for doing assignments	1	2	3	4
d. you spent a lot of time working on the assignment	1	2	3	4
4. If you were tested at the end of a lesson on what had just been taught and you knew most of the answers, it would probably be because				

a. you were lucky	1	2	3	4
b. you had useful ways for remembering what is taught in class	1	2	3	4
c. you tried very hard during the lesson	1	2	3	4
d. you find most lessons easy	1	2	3	4
5. When you did well on the exam at school, it was probably because				
a. you are usually good at schoolwork	1	2	3	4
b. you were pretty lucky	1	2	3	4
c. you had useful study methods	1	2	3	4
d. you studied hard for the exam	1	2	3	4
6. Suppose you handed in your assignment and your teacher said it was not good enough. It was likely because				
a. you aren't good at schoolwork	1	2	3	4
b. you didn't have useful techniques for doing assignments	1	2	3	4
c. you were having some bad luck at the time	1	2	3	4
d. you didn't do much work on the assignment	1	2	3	4
7. Suppose that you were tested on a topic you had been taught the day before and you got most of the answers wrong. It was likely because				
a. you didn't have effective study skills	1	2	3	4
b. you weren't lucky that day	1	2	3	4
c. you didn't pay attention during the lesson	1	2	3	4
d. you aren't good at schoolwork	1	2	3	4
8. When you got a poor grade on an exam, it was probably because				
a. you didn't have any useful study skills	1	2	3	4

b. you aren't good at schoolwork	1	2	3	4
c. you had bad luck with the questions	1	2	3	4
d. you didn't give enough effort to study	1	2	3	4
9. Suppose you were given an award for your schoolwork, it was likely because				
a. you are good at schoolwork	1	2	3	4
b. you had useful study methods	1	2	3	4
c. you worked hard that term	1	2	3	4
d. you were very lucky that term	1	2	3	4
10. When you received a bad school report, it was probably because				
a. you didn't have any useful methods for studying	1	2	3	4
b. you didn't try very hard	1	2	3	4
c. you were having a lot of bad luck at the time	1	2	3	4
d. you aren't very good at schoolwork	1	2	3	4

APPENDIX H

ACADEMIC MOTIVATION SCALE

AMS

Read each statement below, then indicate to what extent each item corresponds to reasons why you go to school.

WHY DO YOU GO TO SCHOOL?	Does not correspond at all	Corresponds a little		Corresponds moderately	Corresponds a lot		Corresponds exactly
1. Because I need at least a high-school degree in order to find a high-paying job later on.	1	2	3	4	5	6	7
2. Because I experience pleasure and satisfaction while learning new things.	1	2	3	4	5	6	7
3. Because I think that a high-school education will help me better prepare for the career I have chosen.	1	2	3	4	5	6	7
4. Because I really like going to school.	1	2	3	4	5	6	7
5. Honestly, I don't know; I really feel that I am wasting my time in school.	1	2	3	4	5	6	7
6. For the pleasure I experience while surpassing myself in my studies.	1	2	3	4	5	6	7
7. To prove to myself that I am capable of completing my high-school degree.	1	2	3	4	5	6	7
8. In order to obtain a more prestigious job later on.	1	2	3	4	5	6	7
9. For the pleasure I experience when I discover new things never seen before.	1	2	3	4	5	6	7
10. Because eventually it will enable me to enter the job market in	1	2	3	4	5	6	7

a field that I like.							
11. Because for me, school is fun.	1	2	3	4	5	6	7
12. I once had good reasons for going to school; however, now I wonder whether I should continue.	1	2	3	4	5	6	7
13. For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.	1	2	3	4	5	6	7
14. Because of the fact that when I succeed in school I feel important.	1	2	3	4	5	6	7
15. Because I want to have "the good life" later on.	1	2	3	4	5	6	7
16. For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	1	2	3	4	5	6	7
17. Because this will help me make a better choice regarding my career orientation.	1	2	3	4	5	6	7
18. For the pleasure that I experience when I am taken by discussions with interesting teachers.	1	2	3	4	5	6	7
19. I can't see why I go to school and frankly, I couldn't care less.	1	2	3	4	5	6	7
20. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.	1	2	3	4	5	6	7
21. To show myself that I am an intelligent person.	1	2	3	4	5	6	7

22. In order to have a better salary later on.	1	2	3	4	5	6	7
23. Because my studies allow me to continue to learn about many things that interest me.	1	2	3	4	5	6	7
24. Because I believe that my high school education will improve my competence as a worker.	1	2	3	4	5	6	7
25. For the "high" feeling that I experience while reading about various interesting subjects.	1	2	3	4	5	6	7
26. I don't know; I can't understand what I am doing in school.	1	2	3	4	5	6	7
27. Because high school allows me to experience a personal satisfaction in my quest for excellence in my studies.	1	2	3	4	5	6	7
28. Because I want to show myself that I can succeed in my studies.	1	2	3	4	5	6	7

APPENDIX I:

INSTITUTIONAL REVIEW BOARD PROTOCOL

HIGH SCHOOL STUDENTS OVERCOMING ROADBLOCKS TO SCHOOL SUCCESS

PROTOCOL

Investigators: Michelle Acosta, Ph.D., Department of Psychiatry, St. Luke's-Roosevelt Hospital Center

Isaiah B. Pickens, M.A., Department of Psychiatry, Beth Israel Medical Center

Keith Cruise, Ph.D., M.L.S., Department of Psychology, Fordham University

1. Specific Aims:

The current project seeks to explore factors impacting the development of aggression and lower academic motivation among high school students. More specifically, we seek to accomplish the following aims:

1. To explore the relationships between high school students' thoughts, beliefs, decision-making processes and behaviors which contribute to two different, but related outcomes (academic motivation and aggression).

2. To explore the extent to which thoughts, beliefs, and decision-making processes in one domain (i.e., academic motivation) are related to and predict outcomes in the other domain (i.e., aggression).

3. To explore gender differences within and across each domain.

2. Significance:

Lower academic motivation (e.g., academic amotivation) and aggressive responses to frustrating situations (e.g., reactive aggression) consistently are identified as maladaptive behaviors contributing to negative outcomes within achievement and social domains (Graham, 2004). The ability to maintain motivation to achieve in school and refrain from the use of aggressive behavior has implications for youths' achievement of academic and social goals (Taylor, Davis-Kean, Camp, Malanchuk, 2007). Academic amotivation is associated with school dropout and lower grade point averages (Vallerand, Fortier, & Guay, 1997), while reactive aggression is linked to poor frustration tolerance and peer rejection (Card & Little, 2006). Academic amotivation and reactive aggression create obstacles to youths' successfully navigating the school environment and overcoming these obstacles requires a thorough understanding of the thought process underlying these constructs (Taylor et al., 2007).

Recent research has demonstrated that one's beliefs about school performance and aggression impact the development and maintenance of academic amotivation and reactive aggression (Dodge, 2006; Graham, 1997). These beliefs are informed by

previous experiences and provide the framework for how youths process information. In addition to beliefs, how youths generate explanations for others behaviors in different situations help determine the likelihood of specific responses within those situations. For example, beliefs that the world is hostile and the tendency to over-identify others behavior as hostile have been linked to reactive aggression (Burks, Dodge, Price, & Laird, 1999; Crick & Dodge, 1996). In addition, youths who have fewer beliefs that they will succeed academically, demonstrate fewer behaviors indicative of academic motivation, such as completing homework (Oyserman, Bybee, & Terry, 2006). Intervention studies suggest that youth who possess more flexible thoughts and greater ability to interpret specific situations as non-hostile or not reflective of academic personal failure are more likely to engage in adaptive behaviors in these areas (Hudley, Graham, & Taylor, 2007).

Explanations for academic failure directly predict academic amotivation but may also influence and predict levels of reactive aggression. There is a well-established association between academic and aggression outcomes (Jimerson & Ferguson, 2007; Miles & Stipek, 2006). Specifically, youths who exhibit greater aggressive behavior often have poorer academic outcomes. In addition, research by Maata, Nurmi, and Stattin (2007) found a positive association between academic amotivation and disruptive behaviors. While there is evidence linking aggression and academic motivation, no study has simultaneously measured the impact of beliefs related to academic amotivation on reactive aggression, and vice versa.

Recent findings suggest that relationships between these constructs may manifest differently within boys and girls. For example, research generally supports boys exhibiting greater levels of aggression and less academic motivation than girls (Crick & Grotpeter, 1995; Vallerand et al., 1997). As such, it is necessary to explore the extent to which boys and girls differ on these behaviors and whether the beliefs that predict aggression and academic amotivation differ by gender. In addition, the association between aggression and poor academic performance becomes more pronounced during adolescence compared to earlier childhood, (Lounsbury, Sundstrom, Loveland & Gibson, 2003; Ve'ronneau, Vitaro, Pederson, and Tremblay, 2008). Therefore, it is possible that obtaining a thorough understanding of gender differences requires testing for gender-specific effects of older adolescents.

Collectively, these findings underscore the need for further exploration of the relationship between beliefs and academic amotivation and reactive aggression. Gender differences among older adolescents for the development of academic amotivation and reactive aggression remains understudied, despite support for gender differences among younger samples (Maata et al. 2007). The present study seeks to simultaneously assess multiple models that have been developed to explain academic amotivation and reactive aggression among high school students. Findings from this study will specifically address the predictive utility of cognitive antecedents (thoughts/beliefs and situation-specific decision-making) within and across the academic motivation and aggression domains. Enhanced understanding of these effects will inform development of specific

interventions used to change maladaptive academic and social outcomes in high school students.

3. Research Method/Design:

The current study is a quasi-experimental research design. De-identified information will be collected from eligible high school student participants receiving services through the School Based Health Clinics (SBHC) at three high schools: A. Philip Randolph, Louis D. Brandeis, and Martin Luther King, Jr. High Schools. All students receiving services through the SBHCs will be considered eligible for participation in the study. After completion of the recruitment process and informed consent and assent procedures (see below), participants will be scheduled for a session where they will be administered a series of self-report assessment measures. Students will be asked to participate in a single session lasting between 50-75 minutes. Data collection will occur on-site at local clinics, or at other Child Family Institute (SLRHC) facilities or at Fordham University. Location will be assigned to participants based upon participant request and proximity to school. Participants will complete administered measures in small groups consisting of no more than 10 participants with each data collection session being supervised by a minimum of two research team members. More specifically, written youth assent and general instructions for completing measures will be individually administered by a research assistant at the beginning of the data collection. Each youth will then be seated at a desk/table within the classroom where he/she will be able to complete the self-report questionnaires at their own pace. Data collection appointment times will be staggered in 15 minute intervals in order to allow for this individualized youth assent, reading level, and general instruction process. The following self-report measures will be administered (see Study Questionnaires):

1. Possible Selves Questionnaire (PSQ; Oyserman & Saltz, 1993). The PSQ is a 4 item, open-ended self-report questionnaire used to assess youth perceptions of possible future selves. Youths are asked to report possible selves to be obtained by next year (expected possible self), future self-selves to be avoided by next year (feared possible self), and strategies to accomplish these goals. The PSQ has demonstrated adequate inter-rater reliability for adolescent samples (Oyserman et al., 2006). The PSQ will be utilized to operationalize the construct of *academic possible selves*. Estimated time to complete the PSQ is 15 minutes.
2. Demographic Information: Participants will complete a demographic questionnaire requesting information pertaining to gender, grade level in school, race, age, participation in free or reduced lunch school program, and estimated overall grade point average from the previous academic year. Additionally, participants will be asked to complete the Barratt Simplified Measure of Social Status (BSMSS; Barratt, 2006). The BSMSS uses the highest education level earned by each parent/guardian and current occupation of each parent/guardian in order to derive a score representing social economic status (SES). Scores range from 8 to 66, with higher scores indicating greater SES. Estimated time to complete all demographic information is five minutes.

3. Children's Automatic Thoughts Scale (CATS; Schniering & Rapee, 2002). The CATS is a self-report measure consisting of 40 items designed to measure a range of negative self-statements in children and adolescents. The CATS has four subscales (Physical Threat, Social Threat, Personal Failure, and Hostile Intent) which have demonstrated adequate levels of reliability and validity among normal child and adolescent samples (Schneiring & Rapee, 2004). The subscale of Hostile Intent will be utilized to operationalize the construct of *hostile schemas* within the present study. Participants are asked how often negative thoughts arise using a 5-point Likert-type scale ranging from "not at all" (0) to "all the time" (4). Estimated time to complete the CATS is eight minutes.
4. Why Do Kids Do Things (Crick, Grotpeter, & Bigbee, 2002). This measure utilizes ten hypothetical vignettes delineated into two categories: relational forms of provocation (i.e. peers whispering and looking at participant) and overt forms of provocation (i.e. books knocked on the floor as peer runs by desk). Participants are asked to rate the degree to which the provocateur in the vignette had hostile intent on a five-point Likert type scale ranging from "not likely" to "very likely". This is an adapted measure which has consistently demonstrated adequate reliability and validity (Crick & Dodge, 1996; Crick, Grotpeter, & Bigbee, 2002; Nyborg & Curry, 2003). This measure will be utilized to operationalize the construct of *hostile attribution bias*. Estimated time to complete this measure is 15 minutes.
5. Abbreviated Dysregulation Inventory (ADI; Mezzich, Tarter, Giancola, & Kirisci, 2001). The ADI is a 30-item self-report measure designed to asses 3 aspects of adolescent dysregulation (emotional/affective, behavioral, and cognitive). Participants rate their level of agreement on a four point Likert-type scale ranging from "0" (never true) to "3" (always true) to each statement with the scale resulting in three separate scores reflecting levels of emotional, behavioral, and cognitive dysregulation. Estimated time to complete the ADI is 15 minutes.
6. Causal Attribution Scale (CAS; Chan, 1994). The CAS is a 10-item self-report measure designed to assess individual attributions for a variety of academic outcomes. Participants are asked to rate the degree to which academic outcomes are attributable to effort, strategy use, ability, and luck by rating each attribute on a four point Likert-type scale ranging from "1" (rarely true) to "4" (almost always true). The CAS has demonstrated adequate reliability and validity (Chan & Moore, 2006). The CAS will be utilized to operationalize the construct of *academic learned helplessness*. Estimated time to complete this measure is eight minutes.
7. Academic Motivation Scale (AMS; Vallerand, Blais, Briere, & Pelletier, 1992). The AMS is a 28-item self-report measure that assesses seven dimensions of academic motivation. Participants are asked to rate reasons for attending school on a seven-point scale ranging from "1" (Does not correspond at all) to "7" (Corresponds exactly). The four items which represent each dimension of academic motivation comprise independent subscales. For the purpose of this study, the Academic Amotivation subscale (AMOT) will be utilized to operationalize the construct of *academic amotivation*. The AMS has demonstrated

adequate reliability and validity (Ratelle, Guay, Larose, and Sencal, 2004). Estimated time to complete this measure is eight minutes.

8. Peer Conflict Scale (PCS: Kimonis, Marsee, & Frick, 2004). The PCS is a 40 item self-report instrument developed for use with adolescents at-risk for physical aggression. The scale assesses both instrumental and reactive levels of physical aggression by youth reporting their level of agreement with each statement. The PCS has demonstrated acceptable levels of reliability and validity in prior studies with both normal samples and juvenile offenders (Barry, Grafeman, Adler, & Pickard, 2007). Estimated time to complete the PCS is 8 minutes.

Specific Notes on Administration of Measures

Note 1: Self-report instruments #3-8 will be counterbalanced to minimize order effects. Due to the open-ended design of the Academic Possible Selves measure, it will be administered first for all participants in an attempt to provide optimal guidance during administration of this measure.

Note 2: As noted below, all study measures will be collected anonymously; therefore, packets of all data collection materials will be pre-stamped with a consecutively ordered research participation number placed in the designated place for participant "Name" on all data collection forms so as to provide direct reinforcement to all participating youth that their names do not need to be placed on any study materials. All other identifying fields will be blacked out on each instrument. Youth also will be instructed not to write their name or any other identifying information on the forms.

Note 3: To orient students with the measures, research staff will read out loud a general instruction set (see below) at the beginning of the data collection process. Upon completion of oral directions, participants will be permitted to complete each subsequent measure at his/her own pace. Research staff will be available to answer any questions participating youth have regarding measure instructions or wording of specific questions on an individual basis.

The proposed plan and timetable for data collection and analysis are as follows:

- *Recruitment:* Study recruitment of approximately 300 male and female students will occur between January 2009 and June 2010.
- *Data Collection*: Data collection will begin during January 2009 upon recruitment and will continue through June 2010.
    - *Code and Analyze Data:* The investigators will utilize structural equation modeling to analyze and interpret data. This is an advanced statistical technique that requires large sample sizes to achieve adequate statistical power. . Structural equations modeling consists of testing the "fit" of proposed relationships between variables by running simultaneous multiple regression analyses and determining how well the data fit the proposed model. Structural equation modeling provides the optimal analytic technique to explore direct and

indirect effects between variables explored within the present study. For this specific study, four different models will be explored to examine the relationships between variables. As outlined by Kline (2005), a range of 5-10 participants per free parameter is suggested as an estimate for adequate sample size to test models. Based on the most complex model requiring estimation of 46 free parameters, a minimum sample size of 230 participants is required. However, as this is the minimum required for model specification, we estimate needing to achieve a sample of 300 to ensure model convergence. In other words, the rationale for recruiting 300 participants for the study is to ensure statistical requirements are achieved to adequately assess all models.

4. Human Subjects

A. Description: Participants will be students receiving services through the SBHCs operated by the Child and Family Institute at St. Luke's-Roosevelt Hospital Center. The clinics are located at A. Philip Randolph, Louis D. Brandeis, and Martin Luther King, Jr. High Schools. Participants' ages may range from 13-19 years old. No students receiving services through the SBHCs will be excluded from recruitment or potential participation in the study. At the time point of recruitment, if research assistants conducting the recruitment procedure have concerns that a youth would not be able to complete participation due to developmental disability or mental retardation, such youth will not be recruited for possible participation.

B. Research Material: Research materials consist solely of the self-report measures outlined above. All research materials will be completed anonymously by participants.

C. Recruitment Plan: The following recruitment plan has been developed to incorporate recruitment procedures that will minimize disruptions to the SBHCs and incorporate procedures to obtain and document parent/guardian permission and youth assent. Specifically, we are requesting specific modifications to the traditional informed consent and youth assent procedures to accommodate the school-based setting and SBHC environment, as the proposed research project involves no more than minimal risk to potential participants. These modifications will still maintain appropriate standards for documentation of parent/guardian informed consent and youth assent. These modifications are needed because recruitment will occur at the SBHCs and parents will not be directly accessible for purposes of obtaining parent permission. The investigators have utilized a similar multi-level approach for informed consent in other studies with adolescent populations, with the modified procedures being approved by multiple Institutional Review Boards. The following step-by-step process will be used to recruit students, obtain parent permission, obtain youth assent, and schedule data collection times.

Step #1: Informing Youth About the Proposed Study: Students who present to the SBHCs will be approached regarding possible recruitment by a member of the research team. This process will consist of students in the SBHC being presented with an informational flyer explaining the purpose of the study, procedures, and incentives, highlighting the need for parental consent if the participant is under the age of 18 (see Informational Flyer). Specifically, students will be provided a copy of the flyer and asked if they would like to hear some information about the study. Students who express an interest in participating will be given information about the study and asked to complete a contact sheet (see Contact Sheet) by a member of the research team. The Contact Sheet consists of parent/guardian name (if student is under age 18) or student name (if student is 18-19 years old), primary and alternate telephone numbers, and primary language. Upon completion of Contact Sheet, students will be asked to keep the flyer and if under age 18, share the information with their parent/guardian. Students under 18 also will be given a letter notifying parents/guardians that a member of the research team will be calling within a day (see Letter to Guardian). Upon receiving parental consent, students under 18 will have the option to telephonically complete the Youth Summary and Scheduling Form (see attached). This form provides a brief summary of the study procedures, as well as options for scheduling the youth's appointment. For students aged 18-19 who have the time, research staff may immediately administer the Youth Summary and Scheduling Form during initial recruitment. However, students aged 18-19 who are not able to complete the Youth Summary and Scheduling Form during initial recruitment will have the opportunity to complete the form telephonically. Youth Assent (for those under 18) and Youth Consent (for those aged 18-19) will be obtained face-to-face at the scheduled appointment.

Step #2: For Students Under Age 18 - Obtaining Parental Permission: Based on the contact information provided the student, his/her parent or guardian will be contacted via telephone by a member of the research team to complete telephonic consent (see Telephonic Parental Consent form). This modified consent format has been used in previous studies in which the research posed no more than minimal risk to participants (per Section 46.408c of the Code of Federal Regulations). The rationale for proposing a modified parent consent policy is as follows: (1) written parental permission is not a reasonable requirement due to the practical limitations that parents do not routinely attend appointments at the SBHCs where their children are receiving services and being recruited for the study;(2) it is possible that parent/guardians who would take the time to read, sign, and return parental consent forms via mail may systematically differ from parents who do not. This could translate into obtaining a sample of youth who are systematically different from the sample as a whole, serve as a significant source of selection bias, and potentially eliminate a proportion of the sample that are most needed for the current study; and (3) a modified telephone consent procedure will allow for direct interaction between the researchers and parent/guardian allowing the parent/guardian to ask any questions about the project directly while receiving all information included in a typical written consent form. This requested alteration in the parental consent process will not adversely affect the rights or welfare of the participants, as a written Parental Consent form will be sent to the parents after completing the telephonic consent (see Written Parental Consent).

Research staff will contact parent/legal guardians based on the information provided by the youth on the Contact Form. Research staff will verbally review all information contained in the Parental Consent form by reading the Telephonic Parent/Guardian Consent form. The Telephonic Parent/Guardian Consent form was developed to include in a narrative format all of the information contained in the written Parental Consent form. A maximum of five attempts will be made to contact parents/guardians by phone. At the end of the Telephonic Parent/Guardian Consent form, but prior to asking questions about permission, each parent/guardian will be asked for their permission to make an audio recording of the remainder of the phone conversation. This recording will serve as documentation of the parent/guardian's response regarding permission for their child to participate. The recording will be accomplished using a recording device attached to the phone. All parents/guardians will be assured that the tapes containing voice recordings will be kept secure. At this time, parent/guardians will be given the option to complete an in-person parental consent as an alternative to the telephonic parental consent. Parent/guardians electing in-person consent will be scheduled for an in-person consent process at one of the data collection locations. Parent/guardians who decline permission for the audio recording and in-person consent or decline consent for their child to participate will be documented by frequency and date in order to track the number of aggregate refusals.

For parents/guardians who provide this modified phone consent, a copy of the written Parental Consent form will be mailed to parent/legal guardian at a mailing address provided by the parent during this process. This procedure will assure that each parent has a personal copy of the parental consent materials and contact information for the Principal Investigator for follow-up and to facilitate parent/guardian's withdrawing permission if they choose to do so. It should be noted that the written consent form being mailed to parents is solely for informational purposes. Parents will not be required to return a signed copy of the written consent form once telephonic consent has been audio recorded. The written Parental Consent forms will document the time and date of telephonic consent on the parental signature line and the researcher who conducted the telephonic consent will sign and date the portion designated for the researcher.

Step #3: For Students Under Age 18 - Youth Assent - Upon completion of the parental consent process, research staff will request to speak to the youth via telephone in order to complete the Youth Summary and Scheduling Form. For youth who are immediately available this will be completed at the time of the parent consent telephone call. If the youth is not available, follow-up contact will be made with the youth via contact information provided by the parent.

If the youth agree to participate in the study, he/she will be provided with specific times and location for data collection and asked to commit to a specific time. Based on information provided by the youth in terms of follow-up contact mechanisms (cell phone, text message, email), an appointment reminder will be given to each youth approximately 24 hours prior to the appointment time. The Youth Assent process will occur at the beginning of their face-to-face appointment with the research staff. Data collection

appointments for each youth will be staggered by a minimum of 15 minutes so that the researcher may review the assent form with each youth individually. A copy of the Youth Assent form will be read aloud to the youth, with the youth following along on his/her own copy. After reviewing the assent form, the researcher will ask the youth to briefly explain what the study involves, including risks and benefits. Researchers will answer any questions that the youth has before asking the youth to sign the form indicating assent. If s/he declines assent, the form will remain unsigned and the youth will not participate. Youth will be provided a copy of the signed Youth Assent form.

Master schedules of data collection appointments will be maintained by the researchers in a password protected electronic file in order to track completion of appointments. At least two follow-up phone calls will be made to youth who fail to attend the initial data collection appointment.

Step #3: For Students Aged 18 and 19 – Youth Consent – For students who are adults (ages 18-19), Parental Consent procedures are not required and will not be followed. Instead, youth will be contacted via telephone in order to complete the Youth Summary and Scheduling Form. For youth who are immediately available this will be completed at the time of the parent consent telephone call.

If the youth agree to participate in the study, he/she will be provided with specific times and location for data collection and asked to commit to a specific time. Based on information provided by the youth in terms of follow-up contact mechanisms (cell phone, text message, email), an appointment reminder will be given to each youth approximately 24 hours prior to the appointment time. The Youth Consent process will occur at the beginning of their face-to-face appointment with the research staff. Data collection appointments for each youth will be staggered by a minimum of 15 minutes so that the researcher may review the assent form with each youth individually. A copy of the Youth Consent form will be read aloud to the youth, with the youth following along on his/her own copy. After reviewing the consent form, the researcher will ask the youth to briefly explain what the study involves, including risks and benefits. Researchers will answer any questions that the youth has before asking the youth to sign the form indicating consent. If s/he declines consent, the form will remain unsigned and the youth will not participate. Youth will be provided with a copy of the signed Youth Consent form.

Master schedules of data collection appointments will be maintained by the researchers in a password protected electronic file in order to track completion of appointments. At least two follow-up phone calls will be made to youth who fail to attend the initial data collection appointment.

Step #4: Data Collection Procedure. Youth will be provided with appointment times that are staggered in 15 minute intervals. Upon arrival at the data collection site, all youth will undergo the Youth Assent or Youth Consent process detailed above. After providing assent/consent, individual packets will be distributed. After this process, the following

instructions will be read out loud to the participant by the research team member who administered the consent/assent form:

> *"Thank you for agreeing to be in this research study. As a reminder, the purpose of this study is to get a better understanding of potential roadblocks to school success. This packet has paper-pencil forms for you to complete. Please read the directions at the top of each form. Most adolescents fill out these forms on their own. However, if you have any concerns about the forms, or questions about the directions or any of the items on the form, please ask one of us and we will help to answer your question.*
>
> *The questions on these forms will ask you about a range of things that include positive and negative thoughts, beliefs and behaviors. Some of the questions may be hard for you to answer or may make you feel a little uncomfortable. If this happens here are some things that you can do. You can quit filling out the forms or skip any questions that may be hard for you to answer. We also want you to know that it is common for teens who feel uncomfortable to want to talk with an adult they can trust. If this is something you would like to do, please tell one of us and we will help connect you to clinic staff at your school who are available to help with these kinds of situations.*
>
> *Are there any questions before you go into the next room and begin?"*

Participants will then be seated at a desk/table in a classroom and instructed to open the packet and complete the data collection forms. At the end of the session, participants will be instructed to put all forms back into the packet and reseal the packet. All packets will be handed back to the research team members supervising the data collection session once all measures have been completed.

To decrease the risk of possible discomfort or distress, youth will be informed that they can take a break at any time, or stop answering questions altogether if they wish to do so. Furthermore, participants will be debriefed regarding purpose of research following individual completion of measures.

After packet completion, each youth will be offered a $5 gift certificate as compensation for involvement in the study. Additionally, each student name will be entered into a raffle for two movie ticket vouchers (retail approximately $25 per two tickets). As an incentive to attend the data collection session, participants who keep the first scheduled appointment will have his/her name entered twice into the raffle. A participant who is re-scheduled and subsequently completes the data collection will be entered once. Raffle entries will be generated from student name and signatures on the youth assent/consent forms with one name randomly selected the first day of each calendar month over the course of the study. All participants who completed the study during the previous calendar month will be eligible for the monthly drawing.

HIPAA Authorization Waiver Request

We are requesting that HIPAA authorization to be waived for the current project. We believe the waiver is appropriate as follows. First, the data collection procedures do not involve the collection of Individually Identifiable Health Information. Second, we believe the research protocol involves only minimal risk. As described below, the only foreseeable risk to participants is a possible breach of confidentiality and numerous protections have been built into the project that renders the probability of such a breach low. There is no foreseeable physical or psychological harm that could result from participation in the proposed study. Third, as no collection of Individually Identifiable Health Information will be a part of the data collection, the requested waiver will not alter or adversely impact the rights and welfare of participants or require that additional information be provided to participants.

D. Potential Risks:

Confidentiality: While confidentiality will be carefully guarded, there is a very slight chance that privacy may be violated inadvertently. It is acknowledged that the group administration format creates the possibility that participants may encounter peers from school. During the assent process, participants will be made aware that if group administration occurs with a peer whom the participant is uncomfortable then the participant has the option to terminate participation or reschedule. However, administration procedures permit participants ample space to complete questionnaires without compromising the confidentiality of responses. In addition, the fact that the data being collected is de-identified (anonymous) further decreases the likelihood that confidentiality of participant responses is compromised. Additionally, the following risk reduction procedures have been developed.

E. Risk Reduction:

Confidentiality: Anonymity will be strictly enforced by using research identification numbers rather than names on all data collection forms, and this will be explained in detail in the consent and assent forms. All data collected from the project will be stored in a locked filing cabinet or in computer files with no identifying information. Parental Consent, Youth Assent, and Youth Consent forms and documentation (i.e., audio tapes and written signatures) will be stored separately, again in locked files maintained by the investigators that will be secured from unauthorized access. Participants will be informed that the information they provide will only be used in such a way so that no one could know that the information was about them. Data collected during this study will be analyzed in aggregate and used for scientific publications and presentations and only in ways that protect the anonymity of the respondents. No staff at the SBHC providing recruitment access will have knowledge of whether or not a particular student completed the study. Additionally, no SBHC staff will have access to any of the data collection materials or consent/assent forms.

Given that all data will be collected in an anonymous manner, the researchers will not maintain a list of participant names linked with research identification numbers. The

research identification numbers that are pre-stamped on all data collection forms will be used for data entry purpose only. There will be no way to link participants name to specific research identification forms. Neither SBHC staff nor school staff will have access to the data collection materials. Parent consent scripts, audio recordings, and youth consent and assent forms will be kept by the Principal Investigator for secure storage consistent with IRB Policies and Procedures. There will be no way of linking individual parent/guardian consent, youth assent, or youth consent forms to specific research numbers effectively protecting the anonymity of data collected.

F. Risk/Benefit:

As the current project proposes to analyze only de-identified data that will be collected solely for research purposes, risks are considered minimal. All of the procedures involve administration of self-report measures that have been used in past research with adolescents with no documented evidence of harmful effects reported in the professional literature. None of the measures include invasive or emotionally charged questions but evaluate thoughts, beliefs, and actions that are within the scope of what adolescents typically experience on a day to day basis.

However, youth who participate in the study may experience some discomfort when answering personal questions. To decrease the risk of possible discomfort or distress, youth will be informed that they can take a break at any time, or stop answering questions altogether if they wish to do so. Further, youth will be informed that they can discuss their discomfort with the researchers at any time. As youth were initially recruited via the SBHCs, youth will be reminded that their decision about participating will not affect their involvement in SBHC services in any way.

At any time during the data collection, the researchers will respond to any verbal requests of the youth regarding distress or requests for follow-up care as follows. Given that each student will have access to health services through the SBHC, students will be referred to the SBHC as a follow-up referral source. No specific information gathered as part of the data collection protocol would be reported SBHC staff due to the proposed anonymity of the data collection procedures. However, any verbal disclosures to the researchers that would assist in determining that the youth is in crisis (i.e., the youth's verbal response or observable behavior in response to the data collector's query) could be used to facilitate a referral to the SBHC. In all circumstances, this would be discussed with the youth prior to assisting the youth in making contact with the appropriate SBHC staff.

There are no direct benefits to individual youths from participating in this study. All data will be collected maintaining the anonymity of the youth participants. Data from individual participants will be aggregated and analyzed as a group; therefore, results for individual participants will not be obtained and could not be provided back to individual participants. However, participation in this study may help others in the future as results of the knowledge gained from the data collection. More specifically, the results from this research will significantly improve the knowledge regarding the processes that contribute to academic and social functioning and help improve school-based intervention efforts

that seek to reduce aggression and increase academic motivation. Thus, the results of this work have the potential to directly influence the development of further assessment and treatment models for youth who are experiencing these problems.

5. Radiation Exposure: N/A

6. Literature Cited:

Barry, C.T., Grafeman, S.J., Adler, K.K., & Pickard, J.D. (2007). The relations among narcissism, self-esteem, and delinquency in a sample of at-risk adolescents. *Journal of Adolescence, 30,* 933-942.

Burks, V.S., Dodge, K.A., Price, J.M., & Laird, R.D. (1999). Internal representational models of peers: Implications for the development of problematic behavior. *Developmental Psychology*, *35*, 802-810.

Card, N.A., & Little, T.D. (2006). Proactive and reactive aggression in childhood and adolescence: A meta-analysis of differential relations with psychosocial adjustment. *International Journal of Behavioral Development*, *30,* 466-480.

Chan, L.K.S. (1994). Relationship of motivation, strategic learning, and reading achievement in Grades 5, 7, and 9. *Journal of Experimental Education*, *62*, 319-339.

Chan, L.K.S., & Moore, Phillip J. (2006) Development of attributional beliefs and strategic knowledge in years 5-9: A longitudinal analysis. *Educational Psychology*, *26*,161-185.

Crick, N.R., Grotpeter, J.K., & Bigbee, M.A. (2002). Relationally and physically aggressive children's intent attributions and feelings of distress for relational and instrumental peer provocations. *Child Development*, *73,* 1134-1142.

Crick, N.R., & Dodge, K.A. (1996). Social information-processing mechanisms on reactive and proactive aggression. *Child Development*, *67*, 993-1002.

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

Crick, N.R., & Grotpeter, J.K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*, 710-722.

Dodge, K.A. (2006). Translational science in action: Hostile attributional style and the development of aggressive behavior problems. *Development and Psychopathology*, *18*, 791-814.

Graham, S. (1997). Using attribution theory to understand social and academic motivation in African American youth. *Educational Psychologist*, 32, 21-34.

Graham, S. (2004). The Role of Perceived Responsibility in Nurturing Morality. In: Thorkildsen, T. A. & Walberg, H. J. (Eds), *Nurturing morality* (pp. 19-36). New York, NY: Kluwer Academic/Plenum Publishers.

Hudley, C. & Graham, S., & Taylor, A. (2007). Reducing aggressive behavior and increasing motivation in school: The evolution of an intervention to strengthen school adjustment.. *Educational Psychologist, 42,* 251-260.

Kline, R.B. *Principles and practice of structural equation modeling* (2nd ed.). New York, NY: Guilford Press.

Lounsbury, J.W., Sundstrom, E., Loveland, J.M., & Gibson, L.W. (2003). Intelligence, 'Big Five' personality traits, and work drive as predictors of course grade. *Personality and Individual Differences, 35*, 1231-1239.

Määttä, S., Nurmi, J.E., & Stattin, H. (2007). Achievement orientations, school adjustment, and well-being: A longitudinal study. *Journal of Research on Adolescence, 17,* 789-812.

Marsee, M.A., Kimonis, E.R., & Frick, P.J. (2004). *Peer Conflict Scale*. Unpublished rating scale, University of New Orleans.

Miles, S.B. & Stipek, D. (2006). Contemporaneous and Longitudinal Associations Between Social Behavior and Literacy Achievement in a Sample of Low-Income Elementary School Children. *Child Development, 77,* 103-117.

Oyserman, D., Bybee, D., & Terry, K. (2006). Possible Selves and Academic Outcomes: How and When Possible Selves Impel Action. *Journal of Personality and Social Psychology, 91,* 188-204.

Ratelle, C.F., Guay, F., Larose, S., & Senécal, C. (2004). Family Correlates of Trajectories of Academic Motivation During a School Transition: A Semiparametric Group-Based Approach. *Journal of Educational Psychology, 96,* 743-754.

Schniering, C. A., & Rapee, R. M. (2002). Development and validation of a measure of children's automatic thoughts: The Children's Automatic Thoughts Scale. *Behaviour Research and Therapy, 40,* 1091-1109.

Schniering, C.A., & Rapee, R.M. (2004). The structure of negative self-statements in children and adolescents: A confirmatory factor-analytic approach. *Journal of Abnormal Child Psychology, 32,* 95-109.

Taylor, L.D., Davis-Kean, P., & Malanchuk, O. (2007). Self-esteem, academic self-concept, and aggression at school. *Aggressive Behavior, 33,* 130-136.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72,* 1161-1176.

Véronneau, M.H., Vitaro, F., Pedersen, S. & Tremblay, R. E.; (2008). Do peers contribute to the likelihood of secondary school graduation among disadvantaged boys? *Journal of Educational Psychology*, 100, 429-442.

Isaiah Bruce Pickens

B. A., George Washington University

M. A., Fordham University

An investigation of pathways to academic amotivation and reactive aggression among high school students: Domain specificity or multifinality?

Dissertation directed by Keith R. Cruise, Ph.D., M.L.S.

Prior research has established that youth who endorse maladaptive cognitive patterns reflecting rigid beliefs and interpretations of self and others are at increased risk for enacting reactive aggression and academic amotivation. Furthermore, attribution theory represents a unifying framework for identifying cognitive antecedents to these behaviors, while empirical research supports the interrelatedness of aggression and poor academic outcomes among youth. Based on these findings, the present study investigated the predictive validity of domain-congruent and cross-domain cognitive antecedents for reactive aggression and academic amotivation using data obtained from a community sample of 189 adolescents. For the reactive aggression domain, hostile schemas and hostile attribution bias represented beliefs and situation-specific attributions contributing to the enactment of reactive aggression. For the academic amotivation domain, academic possible selves and academic learned helplessness represented beliefs and situation-specific attributions contributing to the enactment of academic amotivation. Of primary interest was the incremental validity of multiple cognitive antecedents in predicting cross-domain effects after accounting for domain specific predictors. Using structural

equation modeling, four models were tested to explore domain-congruent and cross-domain relationships between cognitive antecedents and behavioral outcomes. Two independent models specifying domain-congruent cognitive antecedents for reactive aggression and academic amotivation were tested. Two additional models accounting for domain-congruent and cross-domain relationships by combining independent reactive aggression and academic amotivation models were tested. Results indicated that hostile schemas was a robust positive predictor for reactive aggression, while hostile attribution bias failed to mediate this association. Domain-specific cognitive antecedents were not predictive of academic amotivation. Cross-domain relationships between cognitive antecedents and behavioral outcomes were not supported Implications for assessment and interventions include increasing screening for hostile schemas, utilizing domain-specific strategies for targeting reactive aggression and academic amotivation, and focusing greater resources on targeting global beliefs that contribute to maladaptive behavioral outcomes.

VITA

Isaiah Bruce Pickens, son of David and Wanda Pickens, was born on November 1st, 1984 in Washington D.C. He attended School Without Senior High School, and was graduated in June 2001.

He entered George Washington University in September 2001 and received the degree of Bachelor of Arts, cum laude, in May 2005.

In September 2005 he was accepted as a graduate student in the Graduate School of Arts and Sciences of Fordham University, where he majored in Clinical Psychology under the mentorship of Professor Keith R. Cruise. In February 2009, he was awarded the Diversity in Psychology and Law Research Award from the American Psychology and Law Society to support completion of the dissertation research project.