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**How do empathy, effortful control, and middle school students'
perceptions and feelings about school affect their aggression?**

**Examining moderation and mediation models of social-emotional
learning and behavior**

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perceptions and feelings about school affect their aggression?
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learning and behavior**

by

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**How do empathy, effortful control, and middle school students’
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The University of Texas at Austin, 2014

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According to the social and emotional learning (SEL) prevention framework, individual core competencies, the school environment, and students’ attachment or connectedness to the school play various roles in reducing their risky or problem behaviors, such as aggression. The current dissertation involved two studies testing various components of the SEL framework. Specific constructs of interest included individual competencies of social awareness (empathic concern and perspective taking) and self-management (effortful control), four mostly interpersonal aspects of school climate (perceived friction, cohesion, competition, and satisfaction with classes), school connectedness, and both overt and relational forms of aggression. Data were drawn from an existing prospective study of early adolescents, comprised of two waves with one year between each wave. Total participants were 500 10- to 14-year old students (54% female; 78% European American) who completed the first wave of a self-report survey in 6th and 7th grades. The first study examined the unique and interrelated effects of the individual competencies and perceptions of school climate on both subsequent forms of aggression across the one-year period. Study findings indicated that across gender, empathic concern was the only

competency to reduce both overt and relational aggression one year later. None of the school climate perceptions made a unique contribution to subsequent aggression, nor did they show protective functions. Rather, several instances of cumulative advantage were observed, whereby positive school climate perceptions only reduced aggression for students who already had high levels of empathic concern. Unexpectedly, high levels of perceived cohesion among students contributed to higher levels of overt aggression for boys already high in effortful control. The second study then sought to examine school connectedness as a mediator that could further explain how students' competencies and perceptions of school climate contribute to both forms of aggression. Although there were no mediation effects across gender, post-hoc analyses confirmed some hypotheses but raised questions regarding the direction and temporality of associations for others. Overall, the findings of both studies provide general support for some of the proposed relationships by the SEL framework and highlight the need for nuanced investigations when seeking to reduce different forms of aggression during middle school.

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CHAPTER ONE: BRIEF INTRODUCTION

Early adolescence, or the period from 10 to 14 years of age, is marked by an array of developmental changes and challenges. Along with biological, cognitive, and psychosocial changes, early adolescents face many challenges that come with transitioning from elementary school to middle school (Eccles et al., 1993; Midgley & Edelin, 1998). For instance, early adolescence is an especially important time for engaged learning, mutual decision-making, and close interpersonal relationships, especially with peers and non-parent adults (Eccles & Roeser, 2011; Roeser, Eccles, & Sameroff, 1998, 2000). Yet, many middle school students find academic work to lack stimulation and meaning, while classrooms tend to be large, compartmentalized, and impersonal (Eccles & Roeser, 2011). Further, middle schools tend to promote competition and social comparison among peers, at a time when early adolescents become increasingly self-conscious and in need of approval (Eccles et al., 1993; Roeser et al., 2000).

In the United States (U.S.), the mismatches between early adolescents' developmental needs and their school context are increasingly addressed through the promotion of social and emotional learning (SEL) (see Committee for Children, 2008; Durlak et al., 2011; Elias & Bruene, 2005; Hawkins, Smith, & Catalano, 2004; Greenberg et al., 2003). According to the Collaborative for Academic, Social, and Emotional Learning (CASEL), SEL refers to the processes through which children acquire and effectively apply the knowledge, attitudes, and skills necessary to accurately recognize and manage their emotions, thoughts, and behaviors, set and achieve positive goals, feel

and show empathy for others, establish and maintain positive relationships, and make responsible decisions (2008). In conjunction with creating a safe and supportive learning environment, such as in a school, SEL promotes five core developmental competencies, or intraindividual factors, including self-awareness (e.g., accurately assessing one's feelings), self-management (e.g., regulating one's impulses), social awareness (e.g., taking the perspective of and empathizing with others), relationship skills (e.g., seeking and offering help when needed), and responsible decision-making (e.g., making constructive and respectful choices).

Because of its efforts to cultivate core competencies and a positive learning environment among youth, SEL is known as an integrative prevention framework that ultimately seeks to produce caring, capable, responsible, and contributing citizens (CASEL, 2008; Greenberg et al., 2003; Zins, Weissberg, Wang, & Walberg, 2004). A plethora of evidence indicates that children who receive multi-year, integrated SEL programming develop a variety of positive assets (e.g., self-confidence, moral competence) and also experience significant reductions in their problem behaviors (e.g., bullying, school dropout) (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2002; Durlak et al., 2011; Hawkins, Kosterman, Catalano, Hill, & Abbott, 2008). To date, however, SEL programming has most readily been applied during the primary and elementary school years (CASEL, 2013), and thus there is limited evidence about the ways in which SEL could be applied effectively to middle school and beyond (Espelage, Low, Polanin, & Brown, 2013; Polan, Sieving, & McMorris, 2012). Further, almost all states have guidelines for incorporating SEL into early childhood education, while few school

districts within these states have secured funding to systematically implement SEL curriculum and instruction into the secondary years (Dusenbury, Zadrazil, Mart, & Weissberg, 2011). As of 2012, Illinois, Kansas, and Pennsylvania were the only three states to have adopted comprehensive, freestanding SEL standards with developmental benchmarks for K-12 instruction in social and emotional skills (Dusenbury, Weissberg, Goren, & Domitrovich, 2014).

According to CASEL's (2008) logic model depicting the mechanisms involved in evidence-based SEL programming (see Figure 1), individual competencies and a social learning environment are believed to directly and indirectly contribute to less risky or problem behavior (e.g., aggression), more positive developmental assets (e.g., prosocial behavior), and subsequent success in school and life (e.g., contribution to society). Specifically, both social-emotional competencies and a social learning environment affect behavior and positive assets, and since they are mutually reinforcing both competencies and the environment also interact to affect youth outcomes. Additionally, both social-emotional competencies and the learning environment can lead to students feeling greater attachment to their school, and this attachment or sense of connectedness to the school leads to fewer problem behaviors and more positive assets. Attachment to school and less problem behavior/more assets are also mutually reinforcing according to the logic model. Taken together, there are a myriad of possibilities for the ways in which social-emotional competencies and students' experiences with their learning environment influence their functioning.

Given the complexity of CASEL's (2008) logic model and the limited number of

systematic programs at the middle school level compared to the primary years (see Durlak et al., 2011; Hawkins et al., 2004), there is a need to first disentangle its proposed relationships among early adolescent students. Figure 2 illustrates some specific relationships that guide key questions for the current dissertation: What aspects of the perceived school learning environment interact with intraindividual social-emotional competencies, to aid in reducing problem behavior among early adolescents? Similarly, what aspects of the school environment and students' social-emotional competencies directly and indirectly contribute to less problem behavior? Does attachment to school mediate both intraindividual and school context effects on subsequent behavior? The current dissertation seeks to answer these questions with data from early adolescents who were not involved in SEL-based programming. The overall aim is to test relationships among specific constructs, in efforts to inform future research as well as evidence-based programming at the middle school level.

The specific constructs of interest include two types of competencies, students' perceptions of their school environment, their sense of attachment to the school, and two types of aggression (physical and relational) representing risky or problem behaviors. While both physical and relational forms of aggression are indicative of poor adjustment and delinquency, relational aggression (e.g., malicious gossiping) is an especially unique problem behavior in that it requires social interactions and the ability to effectively manipulate others' relationships (see Card, Stucky, Sawalani, & Little, 2008). Two competencies that might therefore show differential associations with both forms of aggression are empathy and effortful control, representing two of the five core SEL

competencies – social awareness and self-management – respectively. Not only is empathy a fundamental core competency that is increasingly taught to children and adolescents at schools (see Farrington & Ttofi, 2009), evidence increasingly demonstrates that its cognitive (e.g., perspective taking) and affective (e.g., empathic concern) components need to be distinguished and examined with other factors in efforts to better understand their links to aggression (Batanova & Loukas, 2011; Jolliffe & Farrington, 2006, 2011). With regard to effortful control, evidence also indicates that this ability to regulate and manage one’s behaviors aids in various types of functioning, including academic achievement and positive social interactions (Covington, 2000; Eisenberg et al., 2003). While research demonstrates that effortful control allows children to refrain from physically aggressive behaviors (Lengua, 2008; Loukas & Murphy, 2007), there is a lack of evidence to demonstrate its links to relational forms of aggression. Further, because relationships become increasingly salient over the course of middle school, students’ perceptions of the interpersonal aspects of their school climate were selected to represent much of the social learning environment. While it is recognized that a school climate encompasses a myriad of dimensions reflecting its overall character and quality of school life (see Thapa, Cohen, Higgins-D’Alessandro, & Guffey, 2012), four specific aspects of the school climate were examined in this dissertation: early adolescents’ perceptions of friction, cohesion, and competition among students, as well as their reported satisfaction with classes. Finally, early adolescents’ reported school connectedness, or feelings of safety and closeness with their school, was used as a proxy for measuring attachment to school (see Libbey, 2004).

To examine the constructs of interest, two separate studies were conducted using a limited prospective sample of middle school students who self-reported on a variety of measures. Study 1 investigated the unique and interacting effects of intraindividual competencies and school climate perceptions on both overt and relational aggression one year later. Specifically, the focus of Study 1 was to investigate whether certain aspects of students' perceived school climate (e.g., friction) modify or moderate the relationships between the intraindividual competencies and the two forms of aggression one year later in middle school (see Figure 3). Then, Study 2 examined whether the intraindividual competencies and school climate perceptions would indirectly contribute to subsequent forms of aggression via school connectedness. That is, Study 2 examined school connectedness as a mediator of both the intraindividual competencies and student perceived school climate effects on both subsequent forms of aggression (see Figure 4).

RESEARCH QUESTIONS AND HYPOTHESES

Study 1

Research Question 1: Do early adolescents' empathic concern and perspective taking differentially predict overt and relational aggression one year later in middle school, after accounting for effortful control and baseline levels of aggression?

Hypothesis 1a) Over and above perspective taking, effortful control, and baseline levels of aggression, higher levels of empathic concern will contribute to lower levels of overt and relational aggression one year later.

Hypothesis 1b) Over and above empathic concern, effortful control, and baseline levels of aggression, perspective taking will contribute to subsequent forms of aggression.

Due to conflicting research, I will explore the direction of relationships between perspective taking and both forms of aggression.

Research Question 2: Does early adolescents' effortful control differentially predict overt and relational aggression one year later in middle school, after accounting for empathic concern, perspective taking, and baseline levels of aggression?

Hypothesis 2a) Over and above empathic concern, perspective taking and baseline levels of aggression, higher levels of effortful control will predict lower levels of overt aggression one year later.

Due to no known research assessing early adolescents' effortful control and subsequent relational aggression, I will explore this relationship.

Research Question 3: Do early adolescents' school climate perceptions contribute to overt and relational aggression one year later in middle school, after accounting for the intraindividual competencies and baseline levels of aggression?

Hypothesis 3a) Over and above the intraindividual competencies and baseline levels of aggression, positive perceptions of the school climate (perceived cohesion among students and satisfaction with classes) will contribute to lower levels of overt and relational aggression one year later.

Hypothesis 3b) Over and above the intraindividual competencies and baseline levels of aggression, negative perceptions of the school climate (perceived friction and competition among students) will contribute to higher levels of overt and relational aggression one year later.

Research Question 4: After accounting for baseline levels of aggression, do early adolescents' school climate perceptions serve as moderators in the contributions of empathic concern, perspective taking, and effortful control to subsequent overt and relational aggression one year later in middle school?

Hypothesis 4a) Positive perceptions of the school climate (perceived cohesion among students and satisfaction with classes) will protect early adolescents low in empathic concern from subsequent overt/relational aggression. Conversely, negative perceptions of the school climate (perceived friction and competition among students) will exacerbate the negative contributions of early adolescents' low empathic concern to subsequent overt/relational aggression.

Because it is unknown how perspective taking will contribute to the subsequent forms of aggression, I will explore how the different aspects of the school climate might moderate the aforementioned relationships.

Hypothesis 4b) Positive perceptions of the school climate (perceived cohesion among students and satisfaction with classes) will protect early adolescents low in effortful control from subsequent overt aggression. Conversely, negative perceptions of the school climate (perceived friction and competition among

students) will exacerbate the negative contributions of early adolescents' low effortful control to subsequent overt aggression.

Because it is unknown how effortful control will contribute to subsequent relational aggression, I will explore how the different aspects of the school climate might moderate this relationship.

Research Question 5: After accounting for baseline levels of aggression, will gender moderate the ways in which early adolescents' school climate perceptions interact with their intraindividual competencies, in their contributions to subsequent overt and relational aggression one year later?

Study 2

Research Question 6: Do early adolescents' reports of school connectedness mediate the effects of their intraindividual competencies and school climate perceptions on subsequent overt and relational aggression one year later in middle school?

Hypothesis 6a: High levels of empathic concern, perspective taking, and effortful control will be associated positively with early adolescents' school connectedness, which in turn will contribute to declines in subsequent overt and relational aggression. School connectedness will demonstrate significant mediation effects for all aforementioned associations.

Hypothesis 6b: Positive perceptions of the school climate (perceived cohesion and satisfaction with classes) will be associated positively with early adolescents'

school connectedness, which in turn will contribute to declines in subsequent overt and relational aggression. Conversely, negative perceptions of the school climate (perceived friction and competition) will be associated negatively with early adolescents' school connectedness, which in turn will contribute to increases in subsequent overt and relational aggression. School connectedness will demonstrate significant mediation effects for all aforementioned associations.

Research Question 7: Will the mediational role of school connectedness (in the associations between the intraindividual competencies and school climate perceptions on subsequent forms of aggression) vary across gender?

CHAPTER TWO: LITERATURE REVIEW

Based on the SEL framework and the integrated logic model guiding the current dissertation (CASEL, 2008; see Figures 1 and 2), this chapter provides an overview of certain intraindividual competencies and students' perceptions of their school climate that could be applied to the reduction of overt and relationally aggressive behaviors during early adolescence. Beyond the mismatches that can result between students' needs and their middle school environment, this developmental period is particularly relevant to the study of aggression, since more relational, non-physical forms of aggression are said to peak during this time (Cairns, Cairns, Neckerman, Ferguson & Garipey, 1989; Salmivalli & Kaukiainen, 2004).

AGGRESSION

Overwhelming evidence indicates that youth aggression is linked to maladjustment (e.g., internalizing/externalizing problems, school dropout) and future problems (e.g., delinquency, criminal offending) in adulthood (see Card et al., 2008; Coie & Dodge, 1998; Ladd, 2005). Generally, aggression can be defined as "behavior that is aimed at harming or injuring another person" (Coie & Dodge, 1998, p.78). However, there are numerous ways of conceptualizing and measuring aggression, including hostile versus instrumental (Feshbach, 1964), direct versus indirect (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992), overt versus relational (Crick & Grotpeter, 1995), and physical versus

social (Galen & Underwood, 1997).

Research over the past few decades has provided compelling evidence for distinguishing between overt and relational aggression (Crick & Grotpeter, 1995; Crick, Grotpeter, & Bigbee, 2002; Prinstein, Boergers, & Vernberg, 2001; Smith, Rose, & Schwartz-Mette, 2009; Vaillancourt, Brendgen, Boivin, & Tremblay, 2003). Historically, though, much of the literature had focused on overt aggression, which comprises direct acts of aggression, including physical aggression and overt verbal attacks, such as taunting and yelling in order to harm or intimidate another (Coie & Dodge, 1998; Underwood, Galen, & Paquette, 2001). Studies have consistently shown that boys tend to use this form of aggression more than girls (Coie & Dodge, 1998; Card et al., 2008; Underwood et al., 2001). Thus, research on aggression has typically focused on samples of boys (e.g., Ballard, Rattley, Fleming, & Kidder-Ashley, 2004; Nagin & Tremblay, 2001).

Recognizing that girls may also act aggressively but in more indirect ways than boys, Crick and Grotpeter (1995) introduced the term relational aggression, which they described as “harming others through purposeful manipulation and damage of their peer relationships” (p.711). Relational aggression captures indirect and oftentimes covert behaviors, such as threatening to withdraw one’s friendship, purposefully excluding a peer from social activities, and spreading gossip about a peer (Crick & Grotpeter, 1995; Vaillancourt et al., 2003). Though social aggression has also been used to describe similar behaviors (Cairns et al., 1989), including negative nonverbal expressions (Galen & Underwood, 1997), the term relational aggression is employed in the current

dissertation due to its increasing use in the literature (see Merrell, Buchanan, & Tran, 2006; Young, Nelson, Hottle, Warburton, & Young, 2010). Similarly, though physical and direct aggression are used interchangeably to describe overt behaviors, overt aggression is employed in the current dissertation since it is commonly used to distinguish from relational aggression (e.g., Smith et al., 2009; Vaillancourt et al., 2003).

While boys typically have higher levels of overt aggression than girls at any age (Nagin & Tremblay, 2001; Prinstein et al., 2001), the evidence on gender differences in early adolescent relational aggression is mixed. While some studies find early adolescent girls to be more relationally aggressive than boys (Batanova & Loukas, 2011; Lagerspetz, Bjorkqvist, & Peltonen, 1988), others find boys to exhibit more relational aggression than girls (Peets & Kikas, 2006; Salmivalli & Kaukiainen, 2004), or report marginal to no gender differences (Coyne, Archer, & Eslea, 2006; Karriker-Jaffe, Foshee, Ennett, & Suchindran, 2008). Discrepancies across studies may partly be due to the method of assessing relational aggression. For instance, Batanova and Loukas (2011) used a self-report measure of relational aggression and found girls to be more relationally aggressive than boys, while Salmivalli and Kaukiainen (2004) used both self- and peer-reports and found indirect aggression to be higher in boys only when using the peer-nomination data. Interestingly, though, a cluster analysis with the self-report data found that only girls comprised a small, yet extreme group of indirect aggressors. Due to the conflicting findings, gender needs to be taken into consideration when examining overt and relational aggression.

To date, studies assessing both forms of aggression have largely focused on adjustment problems and peer relations. For instance, research demonstrates that overt and relational aggression are both linked to maladjustment, including somatic complaints, substance use, and delinquent behaviors (Crick, Ostrov, & Werner, 2006; Herrenkohl, Catalano, Hemphill, & Toumbourou, 2009). Moreover, studies show that physically and relationally aggressive adolescents are generally disliked by their peers but may also be perceived (either by themselves or their peers) to be popular and powerful (Cillessen & Borch, 2006; Juvonen, Wang, & Espinoza, 2012; Mayeux & Cillessen, 2008; Rubin, Bukowski, & Parker, 2006; Vaillancourt & Hymel, 2006). That is, aggression – whether it is overt or relational – can serve as a tool for gaining and maintaining social status (see Archer, 2001; Hawley, Little, & Rodkin, 2007; Rodkin, Ryan, Jamison, & Wilson, 2012). Evidence also indicates that aggression can be particularly effective during times of transition (e.g., starting middle school) when social hierarchies are formed (Cillessen & Mayeux, 2004; Juvonen & Galvan, 2008; Pellegrini & Long, 2002; Werner & Hill, 2010). For instance, Werner and Hill (2010) found that the transition to middle school was marked by increased approval of relational aggression, and students who were in peer groups highly supportive of relational aggression also became increasingly aggressive.

Despite similarities in both forms of aggression, two varying perspectives point to their uniquely different associations with social competence. While Crick and Dodge's (1994) social information processing (SIP) model has posited that individuals who act aggressively tend to do so because they misinterpret social cues in a hostile manner, a

select number of other researchers have suggested that sound social skills may actually facilitate aggressive behaviors (Bjorkqvist, Osterman, & Kaukiainen, 2000; Sutton, Smith, & Swettenham, 1999a). Although the SIP model acknowledges that acts of self-defense can serve as adaptive responses to threatening situations (Crick & Dodge, 1999), its general position is that aggression is a function of deficits or biases in one or more areas of socio-cognitive processing (e.g., encoding information). Sutton and colleagues (1999a) challenged this ‘social skills deficit’ perspective by arguing that some aggressors have advanced cognitive skills that they use to manipulate and control others, and in turn are socially competent because they reach their goals effectively.

Given that overt acts of aggression have also been deemed a strategy for social dominance (Cillessen & Mayeux, 2004; Hawley et al., 2007; Juvonen et al., 2012), it is unclear whether both overt and relational aggressors can demonstrate social competence. Rather, because of Sutton et al.’s (1999a) emphasis on manipulation, it has been implied that relational aggression shows especially unique positive associations with social functioning (see Archer, 2001). After all, relational aggression requires one to build and maintain social connections so as to manipulate others, as studies have shown that relationally aggressive individuals report intimate peer relationships and dense social networks (Crick & Grotpeter, 1996; Lagerspetz et al., 1988; Puckett, Aikins, & Cillessen, 2008; Xie, Swift, Cairns, & Cairns, 2002). Further, because successful manipulation necessitates the ability to read and decode social situations, relational aggression might require more social competence than does overt aggression (Archer & Coyne, 2005; Sutton et al., 1999a, 1999b).

Indeed, there is evidence that points to important differences between overt and relational aggression, particularly within peer relations. Rose and colleagues (2004) found that positive concurrent associations between overt aggression and perceived popularity became non-significant when relational aggression was taken into account, whereas the positive association between relational aggression and perceived popularity held even after controlling for overt aggression. Thus, the authors suggested that relationally aggressive acts, which are often more subtle and sophisticated than overt aggression, share an important and unique relation with perceived popularity. Moreover, a number of studies have shown that while direct aggression is consistently linked to externalizing problems and low prosocial behaviors, indirect aggression is more strongly related to internalizing problems and *high* prosocial behaviors (see Card et al., 2008 for a review). For instance, in a study solely assessing relational aggression, Puckett and colleagues (2008) found that relationally aggressive adolescents exhibited high social status when they reported high levels of self-efficacy, leadership, cooperation, and peer sociability. Similarly, another study of 8th graders found that relational aggression was highest among a cluster of popular and socially intelligent adolescents, as compared to two other clusters, popular moderate and un-popular, less socially intelligent (Peeters, Cillessen, & Scholte, 2009). Interestingly, levels of physical aggression did not differ significantly across the three clusters.

Based on the available evidence distinguishing overt and relational aggression, and Sutton et al.'s (1999a) critique of the 'social skills deficit model,' the SEL framework might not be as neatly applied to reducing aggression during early adolescence. That is,

early adolescence marks a period when socio-cognitive development progresses and individuals demonstrate varying needs, including the need for high social status, intimate friendships, and approval from others. Thus, it is possible that certain social/emotional competencies might actually facilitate aggressive behavior, especially relational aggression. This dissertation specifically examines whether components of empathy and effortful control differentially contribute to overt and relational aggression in middle school.

EMPATHY

While there have been many definitions of empathy over the years (see Bryant, 1982; Eisenberg, Shea, Carlo, & Knight, 1991; Feshbach, 1975; Hoffman, 1987, 2000, 2001; Hogan, 1969; Mehrabian & Epstein, 1972; Preston & de Waal, 2002), there appears to be a general consensus that empathy refers to the capacity to understand and share another's emotional state (see Cohen & Strayer, 1996; Davis, 1994). Thus, empathy is considered to be a complex, multidimensional phenomenon composed of cognitive and affective responses to others' circumstances. While cognitive empathy refers to the understanding of another's circumstance, affective empathy involves the vicarious responding to another's emotional state. Researchers often measure cognitive empathy with the constructs of perspective taking (i.e., the tendency to take the psychological point of view of another person; see Eisenberg, Zhou, & Koller, 2001) or theory of mind (i.e., the ability to attribute mental states to self and others; see Caravita et al., 2010). Researchers typically assess emotional empathy with measures of empathic concern (i.e.,

feeling sorrow or concern for another person in distress; see Batson, Eklund, Chermok, Hoyt, & Ortiz, 2007) or sympathy (i.e., an other-oriented response to another's emotion or condition; see Carlo, Mestre, Semper, Tur & Armenta, 2011).

In studies with adolescents, researchers in the social sciences have typically relied on self-report surveys to assess empathy (see Albiero, Matricardi, Speltri, & Toso, 2009 for a review). Historically, the most frequently used surveys included the Hogan Empathy Scale (Hogan, 1969) and the Questionnaire Measure of Emotional Empathy (QMEE; Mehrabian & Epstein, 1972), from which the Impulsiveness-Venturesomeness-Empathy Scale (Eysenck, Easting, & Pearson, 1984) and the Index of Empathy for Children and Adolescents (Bryant, 1982) were derived. While Hogan's (1969) scale was designed to measure cognitive empathy using a true/false design, the QMEE and its derivative scales measure emotional or affective empathy as a continuous variable. To assess both cognitive and emotional empathy as continuous variables, Davis (1980, 1983) introduced and validated the Interpersonal Reactivity Index (IRI) in a college sample. Since then, the IRI has been adapted and validated for use in different populations, including adolescents (e.g., Albiero et al., 2009; Hawk et al., 2012).

Using the IRI, a recent study assessed the development of both cognitive and emotional empathy from 13 to 18 years of age (Van der Graaff et al., 2013). Van der Graaff and colleagues conducted latent growth curve modeling and found significant gender differences in both levels and trends of perspective taking and empathic concern. Compared to boys, girls showed steeper increases in perspective taking and consistently higher levels of empathic concern. Specifically, girls' empathic concern remained stable

across the 6 years of assessments, whereas boys showed a decrease from early to mid-adolescence, with a rebound to the initial level thereafter. Although Van der Graaff et al.'s findings are consistent with previous cross-sectional and limited longitudinal research indicating that females self-report being more empathic than males (Batanova & Loukas, 2011; Mayberry & Espelage, 2007), it should be noted that the most robust evidence for gender differences in empathy is predominantly observed in studies employing self-report measures (see Michalska, Kinzler, & Decety, 2013).

Empathy and Aggression. Generally, research shows that empathy and aggression are inversely related (see Eisenberg, Eggum, & Giunta, 2010 for a review). In a landmark meta-analysis of 43 studies, Miller and Eisenberg (1988) found that empathy and aggressive behaviors showed negative correlation coefficients in the range of $-.06$ to $-.46$. The negative relationship was stronger for boys than girls and also strongest when empathy was assessed with surveys, which the authors attributed to the age of the participants. That is, surveys were usually given to adolescents and adults, who are better able to report on more complex empathy-related responding than children (Eisenberg & Miller, 1987). Nonetheless, there were definitional limitations in Miller and Eisenberg's meta-analysis. Empathy was operationally defined as purely affective, or characteristic of emotional responses evoked by the affective state or situation of another, while aggressive/externalizing behavior was defined broadly, to include self-report measures and peer and/or teacher ratings of predominantly physical aggression, as well as other negative behaviors such as lying, cheating, and stealing.

A more recent meta-analysis by Jolliffe and Farrington (2004) assessed 35 studies

measuring both cognitive and affective empathy as they related to official or reported criminal offenses committed by individuals such as adolescent delinquents receiving outpatient treatment (e.g., Chandler & Moran, 1990) and adolescent, male sex offenders (e.g., Lindsey, Carlozzi, & Eells, 2001). Though the authors found a negative relationship between both components of empathy and offending, they noted that cognitive empathy had a stronger negative relationship with offending than affective empathy. They also noted that the IRI produced weaker relationships between empathy and offending than other examined surveys, including the Hogan Empathy Scale (Hogan, 1969) and the Questionnaire Measure of Emotional Empathy (Mehrabian & Epstein, 1972). However, the authors attributed the weaker relationships to the samples typically presented with the IRI, being sex offenders who usually report high empathy. That is, because of the composition of the sample generally presented with the IRI, there was limited variability in the IRI empathy scores, which produced relatively weak relationships between both components of empathy and offending. Taken together, results from both meta-analyses call for more specific measures of empathy and aggressive behaviors, using longitudinal data with normative, early adolescent samples.

According to the literature, affective empathy shows a consistent negative relationship with youth aggression (see Lovett & Sheffield, 2007 for a review). In adolescence, several cross-sectional studies found that self-reported affective empathy is associated negatively with indirect aggression as well as more direct and frequent aggressive behaviors across gender (Endresen & Olweus, 2001; Espelage, Mebane, & Adams, 2004; Jolliffe & Farrington, 2006, 2011; Kaukiainen et al., 1999). In one recent

longitudinal study, De Kemp and colleagues (2007) found that both girls' and boys' higher levels of affective empathy contributed to declines in aggressive behavior six months later during early adolescence. Batanova and Loukas (2011) corroborated and extended previous findings by showing that, over and above social anxiety, elevated levels of empathic concern were predictive of decreases in both overt and relational aggression one year later, for both girls and boys.

While previous research generally supports the inhibitory role of affective empathy in both overt and relational aggression, the evidence is mixed with regard to the role of cognitive empathy. Consistent with the perspective that sound social skills may actually facilitate relational aggression in particular (see Bjorkqvist et al., 2000; Sutton et al., 1999a), the study by Batanova and Loukas (2011) found that elevated levels of perspective taking were predictive of increases in subsequent relational aggression, over and above social anxiety. Besides the possibility of a suppressor effect, the authors suggested that early adolescents who are capable of taking others' points of view might be motivated to use their advanced cognitive abilities for personal gain (Sutton et al., 1999b; Puckett et al., 2008). That is, cognitive empathy might very well facilitate covert aggressive strategies, given that they entail more thought and a lower likelihood of getting caught than physical aggression (Bjorkqvist et al., 2000; Xie et al., 2002).

In the literature on empathy and bullying, defined as repetitive aggressive acts involving a power imbalance (Olweus, 1993), a few cross-sectional studies have indeed found that adolescents who bully also demonstrate moral competence, or a good understanding of others' perspectives (Caravita et al., 2009, 2010; Gini, 2006; Gini,

Pozzoli, & Hauser, 2011; Sutton et al., 1999b). Conversely, bullies have also been found to score low on moral compassion, thereby suggesting that they might be cognitively attuned to others while being incapable or unwilling to show concerned feelings for others (Gini, 2006; Gini et al., 2011; Sutton et al., 1999a). Further, Caravita and colleagues (2009) found that adolescents' cognitive empathy was linked positively to bullying, and this was particularly true for girls when their peers nominated them as highly popular. Thus, the authors suggested that perspective taking skills could in fact be used for aggression, and especially so for girls aiming to maintain or enhance their social status (see Cillessen & Mayeux, 2004; Cillessen & Borch, 2006; Peeters et al., 2009). Unfortunately, however, the cited studies on empathy and bullying have primarily measured bullying as a composite variable encompassing general acts of aggression (e.g., "starts bullying"; "convinces other children to bully"). Thus, it is unclear whether cognitive empathy will contribute to both overt and relational forms of aggression, or perhaps facilitate relational aggression in particular.

In contrast to studies finding positive relationships between cognitive empathy and youth aggression, Jolliffe and Farrington (2006, 2011) found no significant association between cognitive empathy and either form of aggression across gender. In another cross-sectional study by Caravita and colleagues (2010), theory of mind was actually associated with early adolescents' prosocial behaviors (i.e., defending victims during bullying situations). Alternatively, some cross-sectional studies have shown that cognitive empathy is associated negatively with bullying (Espelage et al., 2004;

Kokkinos & Kipritsi, 2012). Similar to other studies on bullying, however, these studies' assessment of bullying tapped into very broad measures of aggression.

Overall, there is general agreement that empathy should be seen as a multidimensional construct, but while the affective component shows a consistently negative relationship with youth aggression, the findings are more mixed with regard to the cognitive component and type of aggression examined. Thus, there is a need for longitudinal studies to disentangle both components of empathy as they impact various forms of aggression, in this case, overt and relational aggression.

EFFORTFUL CONTROL

Another individual-level competency that may further inhibit aggressive behavior among middle school students is effortful control, one component of temperament (see Rothbart & Derryberry, 1981; Rothbart & Rueda, 2005). Temperament refers to individual-level differences in reactivity and self-regulation that are assumed to have a constitutional basis, or a relatively enduring biological makeup influenced over time by heredity, maturation, and experience (Rothbart & Bates, 2006). While reactivity refers to the excitability, responsiveness, or arousability of negative emotions that emerge during infancy, self-regulation refers to the neural and behavioral processes that modulate that reactivity, usually later into the infancy stage and beyond the toddler years (Rothbart, 1988; Rothbart, Ellis, & Posner, 2004). Therefore, effortful control is a major form of self-regulation, which is believed to reflect “individual differences in the ability to voluntarily sustain focus on a task, to voluntarily shift attention from one task to another,

to voluntarily initiate action, and to voluntarily inhibit action” (Ahadi & Rothbart, 1994, p.196). Comprised of three primary components – attention control, activation control, and inhibitory control – effortful control has also been defined as “the efficiency of executive attention, including the ability to inhibit a dominant response and/or to activate a subdominant response, to plan, and to detect errors” (Rothbart & Bates, 2006, p.129).

Because the additional ability to perform a subdominant response requires effort, effortful control can be distinguished from other constructs of self-regulation, such as delay of gratification and inhibition, which refer only to the suppression of a dominant response (Murray & Kochanska, 2002). Effortful control should also be distinguished from emotion regulation, which specifically refers to changes in “emotion dynamics,” or the processes by which individuals experience and express their emotions (Gross & Thompson, 2007). Being a complex dimension of temperament, effortful control has been found to reflect a highly coherent underlying structure that serves as a marker for a variety of developmental competencies, including behavioral, emotional, and cognitive, at every age (Kochanska, Murray, & Coy, 1997; Kochanska, Murray, & Harlan, 2000; Murray & Kochanska, 2002).

Although temperament arises from genetic endowment and therefore pertains to relatively stable dispositions, its expressions and environmental elicitors often change throughout one’s development (Rothbart & Rueda, 2005). With the contribution of parenting behaviors, for instance, the first two dimensions of temperament (extraversion and negative affectivity) manifest in the first year of life, and by 18 to 24 months of age, effortful control develops slowly through the learning of executive attention and self-

control (Kochanska et al., 2000). Effortful control can be measured using parent reports (e.g., Putnam, Gartstein, & Rothbart, 2006) or structured laboratory tasks (e.g., Kochanska et al., 2000), and by early adolescence, a self-report questionnaire is typically used (e.g., Putnam, Ellis, & Rothbart, 2001). Generally, effortful control shows steady improvement between early toddlerhood and preschool age (Kochanska et al., 2000), followed by continued improvement from mid-childhood to early adolescence (Lengua, 2006). For instance, Lengua examined growth in temperament when participants were initially 8-12 years old. Over the course of three years, she found decreases in fear and irritability and increases in effortful control. It is noteworthy that while effortful control predicted moderate decreases in maternal rejection, initial levels of parenting did not predict changes in effortful control. Lengua (2006) suggested that, unlike the critical role of parenting in the development of effortful control in younger children (Kochanska et al., 2000), parenting might be of decreasing relevance to children's effortful control as they get older.

Effortful Control and Aggression. While evidence supports concurrent and prospective associations between early adolescents' effortful control and overtly aggressive behaviors (Lengua, 2008; Loukas & Murphy, 2007; Oldenhinkel, Hartman, Ferdinand, Verhulst, & Ormel, 2007; Ormel et al., 2005; van der Voort, Linting, Juffer, Bakermans-Kranenburg, & van Ijzendoorn, 2013), no known research has assessed the contributions of effortful control to subsequent relational aggression. For instance, a two-wave study on middle school students, with one year between waves, found that low levels of effortful control elevated students' risk for subsequent conduct problems, which

involve externalizing behaviors similar to overt aggression (Loukas & Murphy, 2007). Similarly, a large prospective study of Dutch 10-11 year olds found that effortful control negatively predicted externalizing symptoms two to three years later, but the externalizing problems scale comprised only overt forms of aggression, including rule-breaking behaviors (Ormel et al., 2005).

Based on the extant literature in early adolescence, it is likely that effortful control would negatively predict overt aggression but it is unknown whether effortful control would be predictive of relational aggression, let alone in what direction. While it is likely that effortful control would help early adolescents manage and therefore mitigate their need to manipulate and control others, past research linking social competence (e.g., self-efficacy, leadership, cooperation) to relational aggression (Peeters et al., 2009; Puckett et al., 2008) points to the possibility that effortful control would also facilitate students' abilities to more effectively manipulate others. That is, early adolescents' ability to regulate their behaviors might actually equip them with an ability to effectively control social situations for purposes of damaging others' relationships.

Empathy, Effortful Control and Aggression: Brief Summary

No known studies have examined the additive effects of empathic concern, perspective taking, and effortful control to subsequent overt and relational aggression during early adolescence. Particularly because relational aggression may have uniquely different predictors from overt aggression, the literature points to specific relationships that need to be tested and explored. For instance, overwhelming evidence indicates that

the emotional component of empathy, empathic concern, will likely reduce both overt and relational aggression (Batanova & Loukas, 2011; De Kemp et al., 2007; Endresen & Olweus, 2001; Jolliffe & Farrington, 2006b, 2011; Lovett & Sheffield, 2007), while effortful control will likely reduce overt aggression (Lengua, 2008; Ormel et al., 2005; van der Voort et al., 2013). However, it remains unclear whether and in what direction perspective taking will contribute to both forms of aggression, or relational aggression in particular, and whether and in what direction effortful control will contribute to relational aggression as well.

SCHOOL CLIMATE AS A MODERATOR

Certainly, many students are likely to benefit from positive developmental competencies, such as perspective taking skills and effortful control. There may be variability in outcomes such as overt and relational aggression that is explained by the interaction between early adolescents' intraindividual differences and their contexts (Lerner & Castellino, 2002; Ladd, 2005). From a developmental contextual perspective, the additive effects of empathy and effortful control may not fully explain the development of aggression in early adolescents (Lerner & Castellino, 2002; Ladd, 2005). Rather, certain aspects of the school context likely moderate the associations between individual competencies and youth aggression, a perspective that is also supported by the SEL framework which promotes a safe learning environment and emphasizes its mutually reinforcing relationship with students' social and emotional competencies (see Figure 1).

Although school climate is difficult to define, consensus abounds that it is a multidimensional construct involving organizational, instructional, and interpersonal dimensions (Fraser, 1989; Libbey, 2004; Roeser et al., 2000; Thapa et al., 2012). Much of the literature on school climate uses terms interchangeably with constructs such as school bonding, school engagement, and school connectedness (see Anderman & Freeman, 2004 for a review). However, there is evidence indicating that school climate is, in fact, a distinct construct that captures various aspects or dimensions of the school environment (e.g., student-student relationships, order and discipline, quality instruction), compared to more affective aspects of students' school experiences, such as their sense of safety or belonging to the school in general (Resnick et al., 1997; Loukas, Suzuki, & Horton, 2006). For instance, Loukas and colleagues (2006) have demonstrated that students' positive feelings about the school are cultivated by a good quality school climate, thereby differentiating perceived connectedness to the school environment from students' perceptions of their school climate.

A plethora of studies indicate that a good quality school climate is inversely related to youth problem behaviors (Klein, Cornell, & Konold, 2012; Kuperminc, Leadbeater, Emmons, & Blatt, 1997; Kuperminc, Leadbeater, & Blatt, 2001; Loukas & Murphy, 2007) and increasingly research demonstrates specific links to overt as well as relational forms of aggression during early adolescence (Elsaesser, Gorman-Smith, & Henry, 2013; Henry, Farrell, Schoeny, Tolan, & Dymnicki, 2011; Waasdorp, Pas, O'Brennan, & Bradshaw, 2011). For instance, Kuperminc and colleagues (1997) found that a negatively perceived school climate (measured with composite indicators such as

fairness, order, and student interpersonal relationships) was linked to externalizing problems for both girls and boys. More recently, Henry and colleagues (2011) found that positive student-student relationships (measured as the degree to which students supported and helped one another in the school) were linked negatively to physical aggression, while Elsaesser and her colleagues (2013) found that the same was true for relational aggression.

In addition to its direct effects on aggression, the SEL framework and developmental contextual perspective point to the school climate as moderating or modifying the influences of empathy and effortful control on subsequent aggression (see Figure 3). By definition, a moderator variable may act as a vulnerability or exacerbating factor, elevating risk for negative outcomes, or as a protective factor, buffering or offsetting the impact of risk factors on adolescent outcomes (Luthar, Cichetti, & Becker, 2000). For instance, a perceived poor quality school climate is likely to exacerbate the negative effects of low empathic concern on both forms of aggression, while a perceived good quality school climate should protect early adolescents low in empathic concern from subsequent aggression.

Surprisingly, a limited number of studies have explicitly tested the protective functions of students' perceptions of the school climate on their aggressive behaviors (Brookmeyer, Fanti, & Henrich, 2006; Crosnoe, Erickson, & Dornbusch, 2002; Kuperminc et al., 2001; Loukas & Murphy, 2007). For instance, Crosnoe and colleagues (2002) found that adolescents' reported bonding with teachers and academic achievement offset the negative impact of deviant friends on girls', not boys', subsequent delinquency.

Across gender, Kuperminc et al. (2001) found that positive perceptions of the school climate (again, measured with composite indicators such as fairness, order, and student interpersonal relationships) buffered the negative effects of self-criticism on externalizing behaviors among middle school students. Taken together, however, no known studies have assessed the protective functions of various school climate perceptions on multiple forms of aggression. Given that gender differences have been identified in previous research, examining gender as a moderator of the aforementioned associations is also warranted.

In order to advance the application of SEL-based programming, it is important to identify which aspects of the school climate protect middle school youth from subsequent aggression. Thus, the current study seeks to examine the independent roles of four specific aspects of student perceived school climate. Specifically, perceived cohesion and friction among students reflect two aspects of the interpersonal dimension of school climate, and are examined because of the importance of peer relationships in early adolescence. Perceived competition among students is also examined, given the heightened levels of social comparison during this developmental period as well as the importance of social status and popularity. Finally, because many middle school students find academic work to lack stimulation and meaning, students' perceived satisfaction with classes is included to assess overall enjoyment of classes.

Empathy and School Climate. While there is overwhelming empirical evidence linking parenting to empathy in children and adolescents (e.g., Carlo et al., 2011; Farrant, Devine, Mayberry, & Fletcher, 2012; Michalik, Eisenberg, Spinrad, Ladd, Thompson, &

Valiente, 2007; Strayer & Roberts, 2004), few studies have examined relationships between other social contexts, like the school climate, and adolescents' empathy in particular. Rather, researchers have largely focused on the elementary school years to demonstrate the importance of a positive school climate in shaping students' general sense of empathy (see Battistich, Schaps, Watson, Solomon, & Lewis, 2000; Battistich, Schaps, & Wilson, 2004; Solomon, Battistich, Watson, Schaps, & Lewis, 2000). For instance, the Child Development Project has long aimed to help elementary schools become "caring communities of learners," the primary goals being to create environments with supportive interpersonal relationships, shared goals and values, and a commitment to learning (e.g., Battistich et al., 2004). Such environments have been found to significantly improve students' social attitudes (e.g., concern for others) and prosocial behaviors (e.g., supportive and friendly relations).

At the middle school level, researchers have mostly alluded to the importance of a positive school climate for building students' sense of empathy (see Orpinas & Horne, 2010). There is limited empirical evidence to demonstrate that supportive school environments carry important implications for adolescents' understanding and sense of compassion for others (Barr & Higgins-D'Alessandro, 2007, 2009; Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Flanagan, Cumsille, Gill, & Gallay, 2007; Wentzel & McNamara, 1999). In one of the few known studies to directly examine the relationships between aspects of the school climate and empathy, students' positive perceptions of their relationships with other peers and teachers were concurrently related to their self-reported emotional concern for others (Barr & Higgins-D'Allesandro, 2007). In addition,

students' positive perceptions of their school culture were linked positively to their self-reported perspective taking. By building positive relationships at school and internalizing positive norms permeated by the school climate, therefore, it is expected that students would also build their capacity for responding well to others, both emotionally and cognitively.

Based on the aforementioned evidence, students' school climate perceptions might very well moderate the effects of empathic concern on subsequent aggression. If students low in empathic concern perceive the quality of relationships in their school as high in friction or competition, it is likely that they will be at even higher risk for acting aggressively. That is, negative experiences in the school would likely enable and further motivate students with low levels of emotional empathy to aggress towards others. In contrast, if students perceive relationships as cohesive and classes as enjoyable, it is likely that such environments will protect them from the negative impact of low empathic concern on subsequent forms of aggression.

Study hypotheses for how school climate may moderate the perspective taking-aggression associations are not as clear-cut. Because of conflicting prior research on perspective taking and aggressive behaviors in early adolescents, it is unknown what moderating role school climate perceptions will play. For instance, because perspective taking may facilitate relational aggression, and such aggression can be successfully enacted within close relationships and networks (Crick & Grotpeter, 1996; Xie et al., 2002), perceived cohesion among students or satisfaction with classes may not be protective at all. On the other hand, because positive relationships among students have

been inversely related to relational aggression in middle school (Elsaesser et al., 2013), students might be more inclined to use their cognitive empathy skills in positive ways (see Caravita et al., 2010), thereby refraining from exhibiting subsequent aggression. Further, it is plausible that negative aspects of the school climate (e.g., perceived friction and competition among students) would only exacerbate the potentially positive contributions of perspective taking to subsequent aggression, especially relational aggression. That is, youth who do not perceive there to be positive connections among peers might use their perspective taking skills to hurt others, through physical aggression and most likely relational aggression due to its covert nature (see Rose et al., 2004; Xie et al., 2002).

Effortful Control and School Climate. Although effortful control has constitutional origins, the development of effortful control is part of the socialization process (Rothbart & Bates, 2006), and therefore, a good quality school climate is believed to play a role in the ways in which students control their behavioral impulses, stay on task, and remain attentive in different scenarios (Blum, McNeely, & Rinehart, 2002; Liew & McTigue, 2010). Yet, much of the literature has focused on the role of parenting in children's effortful control (e.g., Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005; Lengua, 2006), and most studies that have investigated the school's role have focused on the elementary school years. In addition to its positive findings related to children's empathy, for instance, the Child Development Project has also shown that students in warm and supportive schools are likely to exhibit qualities related to effortful control, such as having high task orientation toward learning (e.g., Battistich et al., 2004).

In the literature linking the middle school climate to adolescents' dispositions related to effortful control, the focus has largely been on outcomes such as achievement motivation and academic performance. For instance, Nelson and DeBacker (2008) found that adolescents who felt they were valued and respected by their classmates reported significantly higher achievement motivation than their non-valued or respected peers. In the SEL literature specifically, researchers have emphasized that schools produce more motivated and self-regulated students when peer and adult norms convey high expectations and social support for academic success (Greenberg & Rhoades, 2009; Zins et al., 2004). Moreover, the school environment has to be safe and organized in order to encourage and reinforce orderly, on-task behavior (Greenberg et al., 2003).

Despite the emphasis on school climate for improving students' conduct and self-regulatory skills, surprisingly few known studies have examined how various perceptions of the school climate moderate the associations between early adolescents' self-reported effortful control and their subsequent aggressive behaviors (see Loukas & Robinson, 2004; Loukas & Murphy, 2007). In their prospective study examining the associations between effortful control and conduct problems in middle school students, Loukas and Murphy (2007) found that early adolescents' perceived cohesion among students in the school offset the risk of poor effortful control contributing to their conduct problems one year later. Because cohesion assesses the perceived degree of closeness and friendliness among students, the authors explained that high cohesion is likely protective because it minimizes students' confrontations and therefore mitigates their acting out due to low levels of effortful control. Perceived satisfaction with classes was also found to offset the

risk of poor effortful control, but only for girls. The authors suggested that because girls are typically more satisfied with their classes than boys (Gentry, Gable, & Rizza, 2002), this aspect of the school climate might be more relevant to their outcomes. Interestingly, neither perceived friction nor competition among students moderated the relationship between effortful control and conduct problems.

Study 1 will seek to replicate Loukas and Murphy's (2007) findings but with overt and relational aggression as the outcome variables. Similar to their findings, high levels of perceived cohesion will likely protect youth low in effortful control from subsequent overt aggression. That is, cohesive relationships among students might help early adolescents with poor effortful control to minimize their confrontations and therefore to reduce their overtly aggressive acts against others. Also because of Loukas and Murphy's (2007) finding that girls' satisfaction with classes buffered their poor effortful control effects on their conduct problems, it is expected that this aspect of the school climate will play a stronger protective role for girls' than boys' overt aggression. It is still expected, however, that satisfaction with classes will play a protective function on boys' overt aggression, since both girls and boys have been found to show lower levels of physical aggression in more satisfying classroom environments (see Barth, Dunlap, Dane, Lochman, & Wells, 2004). Unfortunately, study hypotheses for the perceived school climate's protective functions on subsequent relational aggression are much less clear. For instance, because effortful control might facilitate relational aggression, and relationally aggressive individuals can be characterized as socially competent and densely connected (Peeters et al., 2010; Xie et al., 2002), students'

perceived cohesion or satisfaction with classes might not be protective at all.

Nonetheless, because positive student-student relationships have been linked to low levels of relational aggression (Elsaesser et al., 2013), students' positive school climate perceptions might very well offset the risks of effortful control on subsequent relational aggression.

Although Loukas and Murphy (2007) did not find perceived friction and competition among students to play significant moderating roles in the development of conduct problems, it is expected that these negative aspects of the school climate will exacerbate the negative effects of effortful control on both forms of aggression. Unlike conduct problems, which are self-focused, externalizing behaviors, both forms of aggression entail some level of dominance over another individual (Rodkin et al., 2012). Recall that aggression can also be particularly effective during times of transition (e.g., starting middle school) when social hierarchies are formed (Juvonen & Galvan, 2008). Thus, it is likely that perceived friction and competition among students would reinforce and therefore exacerbate students' poor effortful control as it contributes to both forms of aggression. If higher levels of effortful control actually contribute to relational aggression, it is also expected that perceived friction and competition among students would exacerbate the negative impact of effortful control on relational aggression.

SCHOOL CONNECTEDNESS AS A MEDIATOR

While students' perceptions of their school climate are believed to have multiplicative associations with empathic concern, perspective taking, and effortful

control, school connectedness may mediate, or further explain, their links to subsequent overt and relational aggression. Though definitions are elusive for school connectedness, the term is generally known to capture the affective aspects of students' school experiences and includes their sense of safety and belonging to the school (see Libbey, 2004; Resnick et al., 1997). Thus, school connectedness is often used as a proxy for 'attachment to school.' Recall that in CASEL's (2008) logic model (see Figure 1), attachment to school results from social-emotional skills, such as empathy and effortful control, as well as a positive school climate or learning environment. In turn, students' perceived attachment to the school reduces their risky or problem behavior, such as aggression.

CASEL's (2008) logic model is also consistent with the social development model (Catalano & Hawkins, 1996; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004), which asserts that the development of both prosocial and antisocial behaviors can be explained by students' commitment to a socializing unit (e.g., the school). Drawing from social control, social learning, and differential association theories, the social development model posits that children and adolescents learn patterns of behavior from their social environments. Within any social environment, individual skills and opportunities for involvement facilitate individuals' sense of attachment or bonding to that particular social unit. When the processes of socialization are consistent, students are able to form a bond that conforms to the norms, values, and behaviors of their socializing unit, thereby inhibiting their aggressive or otherwise non-acceptable behaviors. Indeed, there is ample evidence to demonstrate that youth with positive skills or competencies

and opportunities for involvement are able to form strong bonds with their social units. In turn, these strong bonds of attachment set youth on a positive developmental trajectory, resulting in more positive outcomes and fewer problem behaviors into adulthood (Catalano et al., 2002; Hawkins et al., 2008).

Both CASEL's (2008) logic model and the social development model (Catalano & Hawkins, 1996; Catalano et al., 2004) point to the importance of skills like empathy and effortful control for middle school students to be able to feel connected to their school environment. That is, when students are able to respond empathically to others as well as to manage their behavioral impulses, they may be more likely to feel closer to their school compared to students who might lack such competencies (see Barr & Higgins-D'Allesandro, 2007, 2009; Walls & Little, 2005). In turn, connected students should be inclined to behave in accord with the school's expectations, norms, and values, which are assumed to promote positive assets and therefore reduce risky behaviors like aggression (see Battistich et al., 2004; Solomon et al., 2000; Watson, 2003). Indeed, many studies have reported that school connectedness is linked to lower levels of youth problem behaviors (Brookmeyer et al., 2006; Dornbusch, Erickson, Laird, & Wong, 2001; Goldweber, Waasdorp, & Bradshaw, 2013; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Loukas et al., 2006; McNeely, Nonnemaker, & Blum 2002; Wilson, 2004).

Beyond the intraindividual competencies, there is ample evidence that a positive middle school climate contributes to students' sense of commitment or attachment to their school (Brand et al., 2003; Loukas et al., 2006; McNeely et al., 2002; Wilson,

2004), which in turn has been shown to improve student outcomes, predominantly related to their academic performance (Blum et al., 2002; Eccels & Midgley, 1989; Felner, Seitsinger, Brand, Burns, & Bolton, 2007; Osterman, 2000; Whitlock, 2006). According to data from the National Longitudinal Study of Adolescent Health, for instance, students feel greater attachment to school when they attend a school with well-managed classrooms where students get along with each other (Blum et al., 2002). In turn, increased student bonding results in higher attendance rates, lower drop out rates, and better grades (Felner et al., 2007; Wang & Holcombe, 2010).

To further the literature on school climate, bonding, and subsequent adjustment, Loukas et al. (2006) examined whether students' various perceptions of their school climate contributed to declines in their self-reported conduct problems via their sense of school connectedness. Indeed, Loukas and her colleagues found that school connectedness mediated the effects of student perceived cohesion, friction, and overall satisfaction with classes on their subsequent conduct problems. Specifically, students' perceived cohesion among students and satisfaction with classes were associated positively with school connectedness, whereas perceived friction among students showed a negative association. School connectedness contributed to lower levels of conduct problems, and path analyses indicated that school connectedness mediated the links between the aforementioned school climate perceptions and subsequent conduct problems in early adolescents. Interestingly, mediation findings did not differ for girls and boys.

Study 2 aims to extend Loukas et al.'s findings by examining school connectedness as a mediator of students' intraindividual competencies and school climate perceptions and their subsequent overt and relational aggression (see Figure 4). Given that students' commitment to their school is generally known to inhibit their aggression, it is expected that this will be true for relational aggression as well. Based on CASEL's (2008) logic model and the social development model (Catalano & Hawkins, 1996; Catalano et al., 2004), positive competencies and school climate perceptions should give students opportunities for committing to their schools and their (assumed) positive norms and values. In turn, both overt and relational forms of aggression should be reduced.

Although Loukas and colleagues (2006) did not report gender differences in their findings, Study 2 will also examine whether the mediating role of school connectedness varies for girls and boys. Recall that certain aspects of the school (e.g., perceived satisfaction with classes) might be more relevant for girls' than boys' outcomes (Crosnoe et al., 2002; Loukas & Murphy, 2007). Also, studies have consistently shown that girls are more attached to the school than boys during the middle school years (see Johnson, Crosnoe, & Thaden, 2006; Lam et al., 2011; Loukas, Cance, & Batanova, 2013). Thus, it will be interesting to investigate whether certain individual and school climate perceptions are more strongly linked to girls' than boys' school connectedness, which in turn might serve to explain the gender differences in aggression, especially relational aggression.

The Roles of School Climate and School Connectedness: Brief Summary

Guided by CASEL's (2008) logic model (see Figure 1), this dissertation will seek to examine the moderating and mediating roles of early adolescents' school climate perceptions and levels of school connectedness, respectively, in their overt and relational aggression (see Figure 2). Unlike school climate, which taps into specific interpersonal and other dimensions of the school environment, school connectedness refers to students' sense of belonging and attachment to the school in general (see Libbey, 2004; Wilson, 2004). Thus, perceptions of these two school constructs might differentially inform students' overt and relational aggression, when also taking intraindividual competencies into account. Examination of gender differences is also warranted.

Because the logic model points to a mutually reinforcing relationship between students' intraindividual competencies and their school environment, Study 1 will examine whether certain aspects of the student perceived school climate will moderate or modify the contributions of both components of empathy and effortful control to overt as well as relational aggression. To do this, direct effects of the school climate perceptions will be examined first, with the positive aspects (perceived cohesion and satisfaction) expected to inhibit while the negative aspects (perceived friction and competition) will likely contribute to both forms of aggression. However, because perspective taking and effortful control may show positive associations with relational aggression due to its unique associations with social functioning (e.g., dense social networks, intimate relationships), it is possible that the positive aspects of school climate will not show

protective functions at all. On the other hand, because low empathic concern is likely to contribute to both forms of aggression, and poor effortful control will likely contribute to overt aggression, the positive school climate perceptions are expected to show protective roles in the aforementioned associations. In contrast, the negative school climate perceptions will likely exacerbate students' low levels of empathic concern on both forms of aggression, and their poor effortful control on subsequent overt aggression.

CASEL's (2008) logic model also points to the mediating mechanism of school connectedness in explaining students' intraindividual competencies and the school learning environment as they contribute to fewer problem behaviors, like aggression. Thus, Study 2 will examine school connectedness as a mediator of the aforementioned associations. Also guiding this study is the social development model (Catalano & Hawkins, 1996; Catalano et al., 2004), which asserts that commitment to a socializing unit like the school has the power to affect behavior. Thus, it is assumed that both forms of aggression will be reduced when the intraindividual competencies and school climate perceptions are linked positively to school connectedness, which in turn has been linked consistently to lower aggressive behaviors – overt as well as relational.

CHAPTER THREE: METHOD

PARTICIPANTS

Data for this dissertation were drawn from an existing prospective study on early adolescents (e.g., see Batanova & Loukas, 2012; Loukas & Murphy, 2007). Total participants were 500 10- to 14-year old students attending three middle schools in a suburban school district in central Texas and involved in two study waves (see Table 1). At Wave 1, adolescents were in the 6th and 7th grades (m age = 11.69; sd = .76) and Wave 2 occurred one year later when students were in the 7th and 8th grades (m age = 12.75; sd = .72). Fifty-four percent of the students were female; 78% were European-American, 15% were Latino, 3.5% were African-American and 2.4% reported another ethnicity.

PROCEDURE

At Wave 1, active parent consent was obtained from 76% (N=884) of all 6th and 7th grade students attending three middle schools in one school district. Because the study was not originally intended to include multiple waves, active parent consent was re-obtained when the decision was made to conduct another wave of data collection. Although all three schools allowed students to participate at Wave 2, the principal for one school did not allow recruitment of the 8th grade students because of their tight standardized testing schedule for the year. Thus, 130 students who participated at Wave 1 were not eligible to participate at Wave 2. Of those students participating at Wave 1 and who were eligible to participate at Wave 2, 71% received parental consent to participate

at Wave 2. Of the 71%, eight students refused participation and 30 students were absent on the day of the survey and one make-up day. In total, 66% of the eligible students ($n=500$) participated at Wave 2.

A questionnaire consisting of 161 items at Wave 1 and 160 items at Wave 2 was group-administered to participating students in one 40-minute homeroom class. A member of the research team read each question aloud to students to maintain compliance and to control for varying levels of reading comprehension. None of the participating schools were involved in SEL-based programming, and thus, students' self-reports represent their perceptions without any intervention or prevention program. For the current dissertation, a total of 64 items were used (see Appendix A).

MEASURES

Empathic Concern. The 7-item empathic concern subscale from Davis's (1980) self-report Interpersonal Reactivity Index (IRI) was assessed at Wave 1. Since the IRI was initially measured with college students, all of the empathic concern items were slightly modified for middle school students so they could report how they would emotionally react to others (e.g., "You often feel sorry for people who don't have the things you have"). All items were scored on a scale ranging from 0 ('Not at all like you') to 4 ('Very much like you'), whereby higher scores reflect higher levels of empathic concern. Davis (1980) has shown that test-retest and internal consistency reliabilities for the empathic concern subscale are substantial. In the current sample, the internal

consistency reliabilities for girls' and boys' empathic concern was .83 and .87, respectively.

Perspective Taking. The 7-item perspective taking subscale was also assessed at Wave 1 and drawn from the Interpersonal Reactivity Index (Davis, 1980). The perspective taking items were similarly modified, so that middle school students could report their tendency to adopt the psychological point of view of others (e.g., “You sometimes try to understand your friends better by imagining how they think about things”). All items were scored on a scale ranging from 0 (‘Not at all like you’) to 4 (‘Very much like you’) and were averaged so that higher scores reflect higher perspective taking. Davis (1980) has also shown that the test-retest and internal consistency reliabilities for this subscale are substantial. In the current sample, the internal consistency reliabilities were .81 for girls and .84 for boys.

Effortful Control. The short form of the Early Adolescent Temperament Questionnaire-Revised (EATQ-R; see Ellis & Rothbart, unpublished data; Putnam, Ellis, & Rothbart, 2001) was used to assess effortful control at Wave 1. Factor analyses conducted by Putnam et al. (2001) have shown that inhibitory control (five items), attentional control (six items), and activation control (five items) encompass the effortful control scale for early adolescents. Inhibitory control measures the ability to inhibit a response (e.g., “When someone tells me to stop doing something, it’s easy for me to stop”); attentional control measures the ability to focus and shift attention (e.g., “It is easy for me to really concentrate on homework problems”), and activation control assesses the ability to perform an action when there is a strong tendency to avoid it (e.g., “If I have a

hard assignment to do, I get started right away”). Items within each subscale were scored on a scale from 1 (‘Almost always true’) to 5 (‘Almost always untrue’) and were reverse coded and averaged so that higher scores reflect higher levels of effortful control. Putnam and colleagues (2001) have shown that each subscale has good internal consistency reliability. In the current sample, girls’ and boys’ internal consistency reliabilities for the entire effortful control scale were .80 and .77, respectively.

School Climate. Student reports of school climate were measured at Wave 1 with four 5-item subscales of the short form of My Class Inventory (MCI; Fraser, 1982). The MCI assesses student perceptions of friction (e.g., “Students in my grade are always fighting with each other” and “Some of the students in my grade are mean”), cohesion (e.g., “All students in my grade are close friends” and “All students in my grade like one another”), competition (e.g., “Some students in my grade always try to do better than the others” and “A few students in my grade want to be first all the time”), and overall satisfaction with classes (e.g., “Students in my grade seem to like their classes” and “How true is it that my classes are fun”). Item responses to each question were recoded from the original True/False format to a 5-point scale ranging from 1 (‘Not at all true’) to 5 (‘Very true’). Items were averaged so that higher scores for each subscale reflect more student-perceived friction, cohesion, competition, and satisfaction with classes. The MCI has been used to assess the climate of individual elementary and middle school classrooms. In the current sample, the internal consistency reliabilities for girls’ friction, cohesion, competition, and overall satisfaction with classes were .72, .68, .71, and .53, respectively. For boys’ data, the reliabilities were .65, .73, .64, and .60, respectively.

School connectedness. Five items from National Longitudinal Study of Adolescent Health (see Anderman, 2002; McNeely, Nonnemaker, & Blum, 2002) were used to assess school connectedness at Wave 1. Students responded to items such as “I feel close to people at this school” and “I feel like I am part of this school.” The five items were scored on a five-point scale ranging from 1 (‘Strongly agree’) to 5 (‘Strongly disagree’), and were reverse coded and averaged so that higher scores reflect higher levels of school connectedness. Prior studies have shown substantial test-retest and internal consistency reliabilities for this scale, and in the current sample the internal consistency reliabilities for girls and boys were .72 and .77, respectively.

Overt Aggression. Overt aggression was assessed at both waves using an adapted version of Crick’s (1996) 3-item peer nomination measure of overt aggression. The three items assessing direct acts of physical and verbal aggression (hitting, calling names, and starting fights) were adapted for self-report purposes, so as to ask adolescents about the frequency in which they engage in each of the behaviors. Items were scored on a scale ranging from 1 (‘Not at all’) to 5 (‘All the time’) and were averaged so that higher scores reflect more overt aggression. Prior studies have shown substantial reliabilities for this scale, and at Wave 1 of the current sample, girls and boys showed internal consistency reliabilities of .79 and .75, respectively. At Wave 2, the internal consistency reliability for girls dropped to .71 and increased for boys to .82.

Relational Aggression. Relational aggression was also assessed at both waves, with a 6-item scale containing four adapted items from Crick and Grotpeter’s (1995) peer-nominated measure of relational aggression. The scale was adapted for the present

study by modifying the wording of the four items so that middle school students could self-report how likely they were to engage in each of the behaviors (e.g., “When you’re mad at someone, how often do you ignore them or stop talking to them?”). Two additional items were added to assess the frequency of negative facial expressions (making mean faces and rolling eyes at peers), given existing evidence that such expressions are important features of girls’ aggressive behaviors (Galen & Underwood, 1997; Paquette & Underwood, 1999). The six self-reported items were scored on a scale ranging from 1 (‘Not at all’) to 5 (‘All the time’) and were averaged so that higher scores reflect more relational aggression. Previous studies have also demonstrated substantial reliabilities for these items, and at Wave 1 of the current sample, girls and boys showed internal consistency reliabilities of .71 and .74, respectively. At Wave 2, the internal consistency reliability for girls increased to .80 and decreased for boys to .68.

CHAPTER FOUR: STUDY 1

Empathy and effortful control effects on early adolescents' aggression: What moderating roles do school climate perceptions play?

Increasingly, researchers and practitioners in the United States (U.S.) agree that social and emotional learning (SEL) is a promising prevention framework for reducing risky behaviors and fostering protective mechanisms to aid in youth positive adjustment (Durlak et al., 2011; Zins, Weissberg, Wang, & Walberg, 2004). One assumption of this approach is that positive competencies (e.g., empathy) and a positive school environment (e.g., cohesion among students) can have unique and interrelated effects on reducing risky or problem behavior, such as aggression. While the SEL framework is readily applied to elementary school students (Dusenbury, Zadrazil, Mart, & Weissberg, 2011), evidence is needed to demonstrate how it can be effectively applied to older students who typically experience heightened capacities for moral and social functioning (see Boxer, Goldstein, Musher-Eizenman, Dubow, & Heretick, 2005). Early adolescence is an especially challenging developmental period, since students' needs for engaged learning, building close relationships, and developing a sense of self are typically at odds with middle school environments that can be highly impersonal and encouraging of social comparisons (Eccles & Roeser, 2011). The current study thus uses the SEL framework as a heuristic for investigating relevant individual competencies and perceptions of the school climate in early adolescents' aggression. Specifically, this study assesses the unique and interrelated effects of empathy, effortful control, and mostly interpersonal school climate variables on middle school students' subsequent overt and relationally

aggressive behaviors one year later (see Figure 3).

Whereas overt aggression refers to physical and direct acts of aggression, such as taunting and yelling in order to harm or intimidate another (Underwood, Galen, & Paquette, 2001), relational aggression captures more indirect and oftentimes covert behaviors to purposefully manipulate and damage relationships, such as threatening to withdraw one's friendship and spreading gossip about a peer (Crick & Grotpeter, 1995). According to Crick and Dodge's (1994) social information processing (SIP) model, individuals who act aggressively – whether it be overt or relational aggression – tend to do so because they misinterpret social cues in a hostile manner. In response, Sutton, Smith, and Swettenham (1999a) argued that some aggressors possess advanced cognitive skills that they use to manipulate and control others, and thus are socially competent because they reach their goals (see Arsenio & Lemerise, 2001 for a review). Indeed, research has found that aggression tends to be used for establishing or maintaining social status (i.e., popularity), particularly in times of transition like entry to middle school (Cillessen & Mayeux, 2004; Werner & Hill, 2010). Because of Sutton et al.'s (1999a) emphasis on manipulation, researchers have increasingly investigated relational aggression, and limited findings indicate that relationally aggressive adolescents are likely to exhibit high social status when they also exhibit self-efficacy, social intelligence, and leadership qualities (Peeters, Cillessen, & Scholte, 2009; Puckett, Aikins, & Cillessen, 2008). Beyond these social competence indicators, however, it is unknown how more personal competencies like taking the perspectives of others or being able to self-regulate one's behavior can simultaneously impact students' aggressive behaviors,

particularly their relational aggression.

Individual Competencies and Aggression

In the empathy literature, distinctions have been made between the cognitive (e.g., perspective taking) and affective (e.g., empathic concern) components of empathy so as to assess their differential links to both forms of aggression. Whereas affective empathy involves the vicarious responding to another's emotional state and is consistently linked to less overt and relational aggression (Batanova & Loukas, 2011; de Kemp, Overbeek, De Wied, Engels, & Scholte, 2007; Jolliffe & Farrington, 2006, 2011), cognitive empathy refers to the understanding of another's circumstance and shows varied relations to youth aggression. Consistent with the perspective that sound socio-cognitive skills may facilitate acts of aggression (Sutton et al., 1999a), some studies have found that adolescents who bully exhibit a good understanding of others' perspectives (Caravita, Di Blasio, & Salmivalli, 2009; Gini, Pozzoli, & Hauser, 2011; Sutton et al., 1999b). Still, other studies have found that cognitive empathy is inversely related to bullying (Espelage, Mebane, & Adams, 2004; Kokkinos & Kipritsi, 2012). Because bullying tends to be measured with general acts of aggression (e.g., "starts bullying"), however, there is a need for examining whether perspective taking can uniquely contribute to various forms of aggression, and relational aggression in particular. Indeed, a study by Batanova and Loukas (2011) found that early adolescents' perspective taking contributed to elevated levels of relational, not overt, aggression, but this relationship was true only after accounting for fear of negative evaluation, a form of social anxiety that might otherwise interfere with someone's ability to use their socio-cognitive skills for manipulating

others. Thus, there is also a need to account for other individual competencies that might otherwise interfere with students' capacity to use their perspective taking skills for relational aggression.

An individual-level competency that may have an additive effect on early adolescents' aggression is effortful control, a major form of self-regulation (see Rothbart & Derryberry, 1981; Rothbart & Rueda, 2005). Effortful control reflects "individual differences in the ability to voluntarily sustain focus on a task, to voluntarily shift attention from one task to another, to voluntarily initiate action, and to voluntarily inhibit action" (Ahadi & Rothbart, 1994, p.196). Evidence supports concurrent and prospective associations between early adolescents' effortful control and externalizing problem behaviors (Lengua, 2008; Loukas & Murphy, 2007; van der Voort, Linting, Juffer, Bakermans-Kranenburg, & van Ijzendoorn, 2013) that are similar to those for overt aggression. Nonetheless, it remains unknown whether and in what direction effortful control would be predictive of relational aggression. On one hand, it is likely that effortful control would help early adolescents manage and therefore mitigate their need to manipulate and control others. On the other hand, past research linking social competence (e.g., self-efficacy, cooperation) to relational aggression (see Peeters et al., 2009; Puckett et al., 2008) points to the possibility that early adolescents' ability to regulate their behaviors might actually equip them with an ability to effectively control social situations for purposes of damaging others' relationships.

Perceived School Climate and Aggression

Certainly, many students are likely to benefit from positive developmental

competencies, such as perspective taking skills and effortful control. Based on the SEL framework, students' school learning environment interacts with their personal competencies so as to impact their behavior, a perspective that is also consistent with the developmental contextual framework (see Lerner & Castellino, 2002). From these perspectives, it can be hypothesized that various aspects of the school environment will serve to moderate or modify the individual competencies-aggression associations. One way to assess the school environment is through students' individual perceptions of their school climate, a multidimensional construct that includes organizational, instructional, and interpersonal aspects of the environment (Libbey, 2004; Roeser, Eccles, & Sameroff, 2000; Thapa, Cohen, Higgins-D'Alessandro, & Guffey, 2012). In the current study, four specific aspects of students' perceived school climate were examined. Cohesion and friction between students were examined to reflect two aspects of the interpersonal dimension of school climate, given the importance of peer relationships during early adolescence. Perceived competition among students was also examined, given the heightened levels of social comparison during this developmental period as well as the importance of social status and popularity (Mayeux & Cillessen, 2008; Vaillancourt & Hymel, 2006). Finally, because many middle school students find academic work to lack stimulation and meaning (Eccles & Roeser, 2011), students' perceived satisfaction with classes was included to assess their overall enjoyment of classes.

There is surprisingly little research explicitly testing the moderating functions of the school climate on early adolescents' aggressive behaviors, particularly in explaining their relational aggression. The limited available research examines aspects of the school

climate as they might serve to protect youth from more overt problem behaviors, namely conduct problems and delinquency (Crosnoe, Erickson, & Dornbusch, 2002; Loukas & Murphy, 2007). In the context of aggressive behaviors, one would expect that positive perceptions of the school climate (e.g., cohesion among students) also protect youth with certain risks (e.g., poor effortful control). However, because the current study questions whether certain competencies like perspective taking and effortful control might actually contribute to aggression, and relational aggression in particular, the moderating role of perceived school climate becomes more complex.

There are three competing hypotheses as to how perceptions of the school climate may moderate the associations between early adolescents' competencies and their subsequent levels of aggression. Based on limited previous research (Crosnoe et al., 2002; Loukas & Murphy, 2007), the most likely hypothesis is that students' perceptions of a good quality school climate (i.e., high levels of perceived cohesion and satisfaction; low levels of friction and competition) will protect or buffer them from the negative impact of low affective empathy and potentially high perspective taking and effortful control on subsequent aggression. In addition to their unique associations with social competencies, however, relationally aggressive youth have been found to report dense social networks and intimate peer relationships (Crick & Grotpeter, 1996; Xie, Swift, Cairns, & Cairns, 2002). Thus, a second hypothesis is that a good quality school climate might actually enable students to use their positive perspective taking and effortful control competencies for maintaining their relationships through relational aggression. Lastly, however, it is also possible that a good quality school climate would only mitigate

subsequent levels of aggression for youth who already have positive competencies, or what could also be referred to as a cumulative advantage or “multiplier” effect (Ceci & Papierno, 2005). Although this cumulative effect is largely discussed in the context of universal interventions that further widen the gap between advantaged and disadvantaged youth, it can also be applied to the notion that certain aspects of the school climate may be especially relevant for some students over others.

In summary, the current study used the SEL framework as a heuristic for investigating much needed relationships between middle school students’ individual competencies and varied perceptions of their school climate as they influence their subsequent forms of aggression. It was hypothesized that empathic concern would uniquely reduce both overt and relational aggression and that effortful control would reduce overt aggression. Given the mixed evidence on perspective taking and aggression, and there being no known research examining effortful control and relational aggression, the study explored these aforementioned relationships. Further, four aspects of students’ perceived school climate (cohesion, friction, competition, and satisfaction) were examined as moderators of the relationships between students’ individual competencies and their subsequent aggression. Although it was hypothesized that a good quality school climate would protect youth from aggression, it was also hypothesized that such a climate could enable the use of perspective taking and effortful control for effectively hurting others (see Peeters et al., 2009; Sutton et al., 1999b). A third hypothesis raised the possibility that perceptions of a good quality school climate may only protect certain youth over others, or youth who may already be equipped with positive competencies like

the capacity for emotional empathy (see Ceci & Papierno, 2005). Because research has found gender differences when assessing school climate effects on aggression (Elsaesser, Gorman-Smith, & Henry, 2013; Henry, Farrell, Schoeny, Tolan, & Dymnicki, 2011), gender was also examined as a moderator in the current study.

Method

Participants

Participants were 479 10- to 14- year old students attending all three middle schools in a suburban school district in central Texas. Participating students were involved in two waves of survey assessment: at Wave 1, students were in the 6th and 7th grades (m age = 11.70; sd = .76), and Wave 2 occurred one year later when students were in the 7th and 8th grades (m age = 12.76; sd = .71). Fifty-three percent of these students were female; 76.3% were European-American, 16.1% were Latino, 3.4% were African-American and 4.2% reported another ethnicity. Data from an additional 21 students missing the majority of items from at least one of the scales relevant to the present study were eliminated from the final sample.

Procedure

At Wave 1, active parental consent was obtained from 76% ($N = 884$) of all 6th and 7th grade students attending three schools. Of the students participating at Wave 1 and who were eligible to participate at Wave 2, 71% received parental permission to participate at Wave 2. However, eight students refused participation and 30 students were absent on both the day of the survey and the one make-up day; consequently, 66% of the eligible students ($n = 500$) participated at Wave 2. A questionnaire consisting of 161

items at Wave 1 and 160 items at Wave 2 was group-administered to participating students in one 40-minute homeroom class. A member of the research team read each question aloud to students to maintain compliance and to control for varying levels of reading comprehension.

Measures

Empathic Concern. The 7-item empathic concern subscale from Davis' (1980) self-report Interpersonal Reactivity Index (IRI) was assessed at Wave 1. Since the IRI was initially created for college students, all of the empathic concern items were slightly modified for middle school students so they could report how they would emotionally react to others (e.g., "You often feel sorry for people who don't have the things you have"). All items were scored on a scale ranging from 0 ('Not at all like you') to 4 ('Very much like you'), whereby higher scores reflect higher levels of empathic concern. Davis (1980) has shown that test-retest and internal consistency reliabilities for the empathic concern subscale are substantial. In the current sample, the internal consistency reliabilities for girls' and boys' empathic concern was .83 and .85, respectively.

Perspective Taking. The 7-item perspective taking subscale was also assessed at Wave 1 and drawn from the IRI (Davis, 1980). The perspective taking items were similarly modified, so that middle school students could report their tendency to adopt the psychological point of view of others (e.g., "You sometimes try to understand your friends better by imagining how they think about things"). All items were scored on a scale ranging from 0 ('Not at all like you') to 4 ('Very much like you') and were averaged so that higher scores reflect higher perspective taking. Davis (1980) has also

shown that the test-retest and internal consistency reliabilities for this subscale are substantial. In the current sample, the internal consistency reliabilities were .81 for girls and .83 for boys.

Effortful control. The short form of the Early Adolescent Temperament Questionnaire-Revised (EATQ-R; see Ellis & Rothbart, unpublished data; Putnam, Ellis, & Rothbart, 2001) was used to assess effortful control at Wave 1. Factor analyses (see Putnam et al., 2001) have shown that inhibitory control (five items), attentional control (six items), and activation control (five items) encompass the effortful control scale for early adolescents. Inhibitory control measures the ability to inhibit a response (e.g., “When someone tells me to stop doing something, it’s easy for me to stop”); attentional control measures the ability to focus and shift attention (e.g., “It is easy for me to really concentrate on homework problems”), and activation control assesses the ability to perform an action when there is a strong tendency to avoid it (e.g., “If I have a hard assignment to do, I get started right away”). Items within each subscale were scored on a scale from 1 (‘Almost always true’) to 5 (‘Almost always untrue’), and some items were reverse coded to reflect higher effortful control. All items were then averaged to reflect a higher level of effortful control. Putnam and colleagues (2001) have shown that each subscale has good internal consistency reliability. In the current sample, girls’ and boys’ internal consistency reliabilities for the entire effortful control scale were .80 and .76, respectively.

School Climate Variables. Student reports of school climate were measured at Wave 1 with four 5-item subscales of the short form of My Class Inventory (MCI; Fraser,

1982). The MCI assesses student perceptions of friction (e.g., “Students in my grade are always fighting with each other” and “Some of the students in my grade are mean”), cohesion (e.g., “All students in my grade are close friends” and “All students in my grade like one another”), competition (e.g., “Some students in my grade always try to do better than the others” and “A few students in my grade want to be first all the time”), and overall satisfaction with classes (e.g., “Students in my grade seem to like their classes” and “How true is it that my grade classes are fun”). For item responses, the original True/False format was changed to a 5-point scale ranging from 1 (‘Not at all true’) to 5 (‘Very true’). Some items were reverse coded to reflect higher levels of each subscale. Items were then averaged so that higher scores for each subscale reflect more student-perceived friction, cohesion, competition, and satisfaction with classes. In the current sample, the internal consistency reliabilities for girls’ friction, cohesion, competition, and overall satisfaction with classes were .72, .68, .71, and .53, respectively. For boys’ data, the reliabilities were .64, .73, .65, and .59, respectively.

Overt Aggression. Overt aggression was assessed at both waves using an adapted version of Crick’s (1996) 3-item peer nomination measure of overt aggression. The three items assessing direct acts of physical and verbal aggression (hitting, calling names, and starting fights) were adapted for self-report purposes, so as to ask adolescents about the frequency in which they engage in each of the behaviors. Items were scored on a scale ranging from 1 (‘Not at all’) to 5 (‘All the time’) and were averaged so that higher scores reflect more overt aggression. Prior studies have shown substantial reliabilities for this scale, and at Wave 1 of the current sample, girls’ and boys’ data showed internal

consistency reliabilities of .79 and .75, respectively. At Wave 2, the internal consistency reliability for girls' data dropped to .72 and increased for boys' to .83.

Relational Aggression. Relational aggression was also assessed at both waves, with a 6-item scale containing four adapted items from Crick and Grotpeter's (1995) peer-nominated measure of relational aggression. The scale was adapted for the present study by modifying the wording of the four items so that middle school students could self-report how likely they were to engage in each of the behaviors (e.g., "When you're mad at someone, how often do you ignore them or stop talking to them?"). Two additional items were added to assess the frequency of negative facial expressions (making mean faces and rolling eyes at peers), given existing evidence that such expressions are important features of girls' aggressive behaviors (Galen & Underwood, 1997; Paquette & Underwood, 1999). The six self-reported items were scored on a scale ranging from 1 ('Not at all') to 5 ('All the time') and were averaged so that higher scores reflect more relational aggression. Previous studies have also demonstrated substantial reliabilities for these items, and at Wave 1 of the current sample, girls' and boys' data had internal consistency reliabilities of .72 and .74, respectively. At Wave 2, the internal consistency reliability for girls' data increased to .80 and decreased for boys' to .68.

Attrition Analyses

Attrition analyses were conducted to determine if students who participated at both waves of the study differed from their peers who participated only at Wave 1. Results indicated that in comparison to students who participated at both waves of the study, students who did not participate at Wave 2 reported lower levels of Wave 1

empathic concern [$t(879) = -2.47, p < .05$], effortful control [$t(879) = -3.79, p < .001$], and perceived cohesion among students [$t(881) = -2.05, p < .05$]. Students who did not participate at Wave 2 also reported higher levels of Wave 1 relational aggression [$t(879) = 2.43, p < .05$]. There were no differences between the two groups on perspective taking, perceived friction and competition among students, perceived satisfaction with classes, and Wave 1 overt aggression.

Results

Zero-order Correlations

Prior to examining the hypotheses, zero-order correlations were examined between all independent variables and the aggression variables (see Table 2). Results for overt aggression indicated that across gender, Wave 1 empathic concern was correlated negatively with overt aggression at both waves. For boys, Wave 1 perspective taking was also correlated negatively with overt aggression at both waves, whereas girls' perspective taking was only linked negatively to their Wave 2 overt aggression. Effortful control was associated negatively with overt aggression at both waves for girls, and only Wave 1 overt aggression for boys. In contrast, both girls' and boys' perceived levels of friction were correlated positively with overt aggression at both waves, and their perceived levels of competition were correlated positively with Wave 1 overt aggression, only. Perceived levels of cohesion were not associated with either girls' or boys' overt aggression, and only boys' perceived levels of satisfaction were correlated negatively with their Wave 1 overt aggression.

Results for relational aggression indicated that empathic concern was related negatively to relational aggression at both waves for boys, and only Wave 2 relational aggression for girls. In contrast, perspective taking was correlated negatively with both waves of relational aggression across gender. Similar to the results for overt aggression, effortful control was correlated negatively with both waves of relational aggression for girls, and only Wave 1 relational aggression for boys. Additionally, perceived levels of friction were also correlated negatively with both waves of relational aggression across gender. Unlike the data for overt aggression, girls' perceived competition at school was not linked to either wave of relational aggression, whereas boys' levels of competition were linked positively to both waves. Boys' levels of cohesion and satisfaction were also linked negatively to their Wave 1 relational aggression. Finally, girls' perceived levels of satisfaction (not cohesion) were linked negatively to both waves of relational aggression.

Regression Analyses

A series of 5-step hierarchical regression analyses were conducted in order to determine the unique and interacting effects of the individual positive competencies and perceived school climate variables to each of the subsequent forms of aggression one year later. Separate models were examined for the Wave 2 overt and relational aggression outcome variables. To avoid problems with multicollinearity that may arise when examining interacting effects, all variables (with the exception of the outcomes) were centered by subtracting the overall mean value from each individual mean (Aiken & West, 1991). The centered variables were entered into all equations and used to create

interaction terms, which comprised of the product term between each independent and moderator variable(s).

In Step 1, gender, year in school, and baseline levels of each aggression outcome were entered as covariates. Year or grade level in school was entered due to evidence indicating that students' perceptions of their school climate become less positive throughout the middle school years (Wang & Dishion, 2012; Way, Reddy, & Rhodes, 2007). Also, because the variance associated with baseline levels of aggression was partialled out of their corresponding Wave 2 outcomes, models can be interpreted as predicting residualized change in the aggression outcomes over a one-year period of time. In step 2, both components of empathy as well as effortful control were entered simultaneously, so as to assess their unique contributions to each of the subsequent forms of aggression. Then, each of the four school climate variables was entered simultaneously in step 3, and all 12 two-way interactions between each individual competency and each school climate variable (e.g., empathic concern x cohesion; perspective taking x cohesion; effortful control x cohesion) were entered simultaneously in step 4. Finally, a total of 12 three-way interactions were entered in step 5, to test if the two-way interactions varied for girls and boys. Specifically, three-way interactions between gender, each individual competency variable, and each school climate variable (e.g., gender x empathic concern x cohesion) were entered into step 5.

Two-way interactions were assessed in the presence of all main effects and three-way interactions in the presence of all lower level two-way interactions and main effects (see Aiken & West, 1991). Similar to analyses conducted in previous research (e.g.,

Crosnoe et al., 2002; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995), all possible two-way and three-way interactions were included simultaneously rather than individually in order to protect against overestimation of the direct effects of the predictors. Inspection of collinearity diagnostics indicated that there were no significant collinearity problems between the predictor variables from step 1 through step 5. A variance inflation factor (VIF) of 10 or more is typically indicative of multicollinearity (Stevens, 2002), and the VIFs for both overt and relational aggression models ranged between 1.00 and 6.70.

Predicting Overt Aggression

Results for the overt aggression outcome variable indicated that boys were more likely to report Wave 2 overt aggression than girls, and both baseline levels of aggression were positively predictive of change in overt aggression over the one-year period (see Table 3). Of the individual variables, only empathic concern was inversely predictive of residualized change in overt aggression ($\beta = -.16, p < .01$); thus, subsequent levels of overt aggression decreased due to higher initial levels of emotional empathy, after accounting for students' perspective taking and effortful control. Despite a significant zero-order correlation between perspective taking and Wave 2 overt aggression for both girls and boys, the cognitive component of empathy was not uniquely predictive of this outcome when empathic concern and effortful control were included in the model. Over and above the covariates and individual variables, none of the student perceived school climate variables were significantly associated with subsequent overt aggression. The

final main effects model (see step 3) accounted for 29% of the variance in Wave 2 overt aggression [$F(11, 478) = 17.08, p < .001$].

Examination of the two-way interactions indicated that only the interaction between empathic concern and perceived competition was significant (see Table 3). Collectively, the two-way interactions explained 4% of the variance in overt aggression [$F(23, 478) = 9.68, p < .01$]. To determine the unique contribution of the significant Empathic Concern x Competition interaction, a separate model was conducted that included only that interaction. Similar to other non-experimental studies (see Chaplin, 1991; Jessor et al., 1995), a small but significant portion of the variance in Wave 2 overt aggression [R^2 change = .02, $F(12, 478) = 17.09, p < .001$] was explained by this two-way interaction.

Using the methods outlined by Aiken and West (1991), the two-way interaction was probed by examining the associations between empathic concern and the overt aggression outcome at high (1 standard deviation above the mean) and low (1 standard deviation below the mean) levels of perceived competition. As depicted in Figure 5, probing the two-way interaction showed that among early adolescents reporting low levels of perceived competition, empathic concern was inversely predictive of residualized change in overt aggression ($\beta = -.30, p < .01$). When early adolescents reported high levels of perceived competition, however, empathic concern was not associated with residualized change in overt aggression ($\beta = .02, p > .05$). This finding is indicative of a cumulative advantage effect, whereby low levels of perceived competition were beneficial in mitigating subsequent overt aggression for early adolescents already

high in empathic concern.

When examining the three-way interactions, a total of four three-way interactions were significant: empathic concern x friction x gender, perspective taking x friction x gender, empathic concern x cohesion x gender, and temperament x cohesion x gender (see Table 3). Although all three-way interactions accounted for a significant portion of the variance (5%) in overt aggression [$F(42, 478) = 6.47, p < .001$], only two of the four significant interactions added significantly unique variance to Wave 2 overt aggression. That is, each of the interactions was entered individually, and two of them were each found to add 1% variance to subsequent overt aggression: Empathic Concern x Cohesion x Gender [R^2 change = .01, $F(15, 478) = 12.85, p < .001$] and Effortful Control x Cohesion x Gender [R^2 change = .01, $F(15, 478) = 13.42, p < .001$].

Only the two three-way interactions that accounted for unique variance in the overt aggression outcome were probed. According to the methods outlined by Aiken and West (1991), gender differences were examined first. The Empathic Concern x Cohesion interaction was significant for girls ($\beta = -.29, p < .05$) but not for boys ($\beta = .13, p > .05$), whereas the Effortful Control x Cohesion interaction was significant for boys ($\beta = .19, p < .01$) and not for girls ($\beta = -.06, p > .05$). Probing the significant Empathic Concern x Cohesion interaction for girls (see Figure 6) showed that among girls reporting high levels of cohesion, empathic concern was inversely predictive of residualized change in Wave 2 overt aggression ($\beta = -.48, p < .001$). At low levels of cohesion, empathic concern was not associated with overt aggression ($\beta = -.01, p > .05$). Similar to the findings for the two-way interaction between empathic concern and competition, these

findings are supportive of cumulative advantage, whereby overt aggression declined only for girls with high levels of empathic concern who perceived their school environment to be high in cohesion. Regarding the significant Effortful control x Cohesion interaction for boys (see Figure 7), probing showed that effortful control was positively predictive of subsequent overt aggression when boys self-reported *high* levels of perceived cohesion in their school ($\beta = .31, p < .001$). At low levels of perceived cohesion, there was no significant association between effortful control and boys' Wave 2 overt aggression ($\beta = -.05, p > .05$). Thus, high levels of cohesion actually exacerbated the effect of effortful control on subsequent overt aggression in boys.

Predicting Relational Aggression

Results for the relational aggression outcome variable indicated that girls were more likely to report Wave 2 relational aggression than boys, and both baseline levels of aggression were positively predictive of subsequent relational aggression (see Table 4). Similar to the overt aggression model, only empathic concern was inversely predictive of residualized change in relational aggression ($\beta = -.16, p < .01$) over and above perspective taking and effortful control. Even after accounting for the cognitive component of empathy as well as effortful control, higher levels of empathic concern contributed to decreased relational aggression at Wave 2. Also similar to the overt aggression model, none of the perceived school climate variables were significantly associated with subsequent relational aggression. The final main effects models (see step 3) accounted for 24% of the variance in Wave 2 relational aggression [$F(11, 478) = 13.45, p < .001$].

Examination of the two-way interactions indicated there were two significant interactions involving perceived satisfaction with classes: empathic concern x satisfaction and perspective taking x satisfaction. However, only a small portion of the variance in Wave 2 relational aggression [R^2 change = .02, $F(23, 478) = 7.10$, $p < .001$] was explained by all two-way interactions in the model, and when each of the two significant two-way interactions were entered individually, only the Empathic Concern x Satisfaction interaction was *marginally* significant [R^2 change = .01, $F(12, 478) = 12.70$, $p < .001$]. The 1% change in variance due to this interaction was significant at a p-value of .06, and thus, the association was probed but interpreted with caution.

As depicted in Figure 8, probing the two-way interaction showed that among early adolescents reporting high levels of perceived satisfaction, empathic concern was inversely predictive of residualized change in relational aggression ($\beta = -.35$, $p < .001$). When early adolescents reported low levels of perceived satisfaction, however, empathic concern was not associated with residualized change in relational aggression ($\beta = -.03$, $p > .05$). The findings support a cumulative advantage effect, whereby early adolescents with high empathic concern benefited from high satisfaction and refrained from subsequent relational aggression.

Finally, examination of the three-way interactions showed that only one three-way interaction was significant: empathic concern x cohesion x gender (see Table 4). However, when the interaction was entered individually to determine its unique contribution to Wave 2 relational aggression, the change in variance was not significant. That is, although the inclusion of all three-way interactions contributed to a 3% change in

the explained variance of Wave 2 relational aggression [$F(23, 478) = 7.10, p < .001$], the significant three-way interaction did not add any significant unique variance. Thus, the interaction was not probed.

Discussion

According to the SEL framework, individual competencies along with a positive learning environment help to prevent or reduce students' negative behaviors, such as aggression (Durlak et al., 2011; Dusenbury, et al., 2011). During the middle school years, however, students face unique challenges that might make it difficult to effectively reduce aggression, especially more covert, relational forms that can be used by socially competent youth for purposes of manipulating and damaging others' relationships (Peeters et al., 2009; Sutton et al., 1999a, b). As such, the current study examined the unique and interrelated effects of two components of empathy, effortful control, and four perceived, mostly interpersonal school climate variables (friction, cohesion, competition, satisfaction) on overt as well as relationally aggressive behaviors across a one-year period in middle school. Study findings indicated that across gender, empathic concern was the only competency to reduce both forms of aggression, after accounting for both perspective taking and effortful control. None of the school climate perceptions made a unique contribution to subsequent aggression, nor did they show protective functions. Rather, several instances of cumulative advantage were observed, whereby positive school climate perceptions only reduced aggression for students who already had high levels of empathic concern. Unexpectedly, boys with high levels of effortful control were more overtly aggressive when they reported high levels of cohesion between students.

In partial support of the first hypothesis and consistent with previous research linking aggression to empathy and moral reasoning (Batanova & Loukas, 2011; Gini et al., 2011), empathic concern was the only personal competency that *uniquely* reduced early adolescents' overt and relational forms of aggression one year later. This finding is important because it demonstrates that the capacity to feel concern for others inhibits aggression not only after controlling for perspective taking but also effortful control, a major form of behavioral self-regulation. In previous research that controlled for the cognitive component of empathy but did not consider other factors relevant to regulation, empathic concern only inhibited girls' overt aggression (Batanova & Loukas, 2012; Jolliffe & Farrington, 2006). Yet, in one of Jolliffe and Farrington's (2011) studies that also considered students' problems with regulation, as measured by impulsivity, the affective component of empathy inhibited both girls' and boys' bullying (Jolliffe & Farrington, 2011).

Interestingly, the study by Jolliffe and Farrington (2011) also found impulsivity to be concurrently associated with bullying across gender, whereas the current study did not find low levels of effortful control to predict either form of aggression one year later. Unlike Jolliffe and Farrington's research, however, the present study was prospective in nature and therefore assessed residualized changes in both forms of aggression after accounting for their baseline levels one year earlier. Still, ample research has found that poor effortful control has concurrent as well as prospective associations with externalizing problem behaviors (Lengua, 2008; Loukas & Murphy, 2007; van der Voort et al., 2013), thereby warranting more research specific to the field of aggression. That is,

more longitudinal evidence is needed to examine how empathy in conjunction with other factors relevant to regulation impact both overt as well as relational forms of aggression.

Beyond the personal competencies, it was surprising that none of the perceived school climate variables made unique contributions to students' subsequent aggression. A plethora of studies indicate that a good quality school climate is inversely related to youth problem behaviors (e.g., Kuperminc et al., 2001; Loukas & Murphy, 2007) and recent evidence points to specific links to overt as well as relational forms of aggression during early adolescence (Elsaesser et al., 2013; Henry et al., 2011; Waasdorp, Pas, O'Brennan, & Bradshaw, 2011). For instance, Elsaesser and her colleagues (2013) found that students' positive perceptions of the interpersonal dimension of school climate (measured as the degree to which students supported and helped one another) contributed to a decline in relational aggression, and this was true over and above their individual beliefs about aggression and efficacy for non-violence. In the current study, perhaps students' perceptions of their school climate could not account for significant variance in explaining aggression after accounting for their individual competencies. Although the main effect models for overt and relational aggression accounted for 29% and 24% variance, respectively, the perceived school climate variables did not even contribute 1% change in variance for either aggression. Moreover, as research increasingly distinguishes between school climate and connectedness effects on student outcomes (Loukas, Suzuki, & Horton, 2006; Schochet & Smith, 2014), it is possible that certain aspects of the school climate indirectly contribute to students' aggression via their school connectedness, or sense of safety and belonging to the school. Because struggles for social status are

embedded within aggressive behaviors (Mayeux & Cillessen, 2008; Vaillancourt & Hymel, 2006), students' perceptions of the school climate like cohesion or friction among students might be insufficient to reduce their aggression. Rather, if such perceptions contribute to students' sense of connectedness or attachment to the school, perhaps it is this sense of belonging that serves as a more proximal predictor of aggression.

Despite the lack of direct effects from students' school climate perceptions to their aggressive behaviors, study findings were indicative of a cumulative advantage or multiplier effect in explaining students' relational aggression. That is, only for students with high levels of empathic concern did relational aggression decline as a function of their satisfaction with classes. Perhaps satisfaction by itself is insufficient to protect youth from relational aggression, which entails some level of sophistication that might very well be tolerated or even endorsed in well-managed classrooms (Yoon, Barton, & Taiariol, 2004). Rather, only youth who show concern for others might be well equipped to benefit from satisfaction with classes and refrain from any pressures or motives to damage others' relationships.

Contrary to the finding that satisfaction with classes had a moderating role, none of the other school climate perceptions explained students' subsequent relational aggression. Given that relationally aggressive youth can have intimate relationships or dense social networks (Crick & Grotpeter, 1996; Xie et al., 2002), there are probably more nuanced interpersonal and school climate factors that would protect such youth. For instance, Werner and Hill (2010) found that middle school students who were in peer groups highly supportive of relational aggression became more relationally aggressive

over the course of their middle school years. Beyond peer influences, other studies have also examined the roles of teachers, whose normative views for how students should act can perpetuate students' relational aggression (Blain-Arcaro, Smith, Cunningham, Vaillancourt, & Rimas, 2012; Moore, Shoulberg, & Murray-Close, 2012). Thus, the school climate might protect youth from relational aggression if it actively promotes positive peer norms or teacher practices that encourage acceptance of all students. Inevitably, however, principals, other school personnel, and school policies are also responsible for the perpetuation of norms that comprise the school climate (Cohen, 2014). Future research could therefore examine how various school members and organizational structures interact to impact students' relational aggression.

Regarding students' overt aggression, additional cumulative advantage effects involving empathic concern and two interpersonal perceptions of the school climate were observed. For both girls and boys with elevated levels of empathic concern, overt aggression declined as a function of low competition among students. Similarly but only for girls with elevated levels of empathic concern, overt aggression declined as a function of perceived cohesion among students. Taken together, these findings underscore the importance of positive perceptions of the interpersonal dimension of the school climate, but only for students reporting high levels of empathic concern, the affective form of empathy consistently known to inhibit overt forms of aggression (de Kemp et al., 2007; Jolliffe & Farrington, 2006, 2011). While such findings certainly warrant replication, their implications may prove beneficial for the ways in which researchers and practitioners seek to apply the SEL framework to reducing aggressive behaviors.

Consistent with research findings indicating that certain educational interventions can widen the gap between advantaged and disadvantaged youth outcomes (e.g., in vocabulary growth) (see Ceci & Papierno, 2005), the current findings highlight the possibility of widening the gap between youth who already have the necessary capacities to refrain from aggression and those who might be especially at risk due to lacking the necessary capacities, such as emotional empathy.

Recent debates about prevention and intervention programs aiming to reduce bullying and aggression in schools can serve to illuminate the implications of cumulative advantage effects (Smith, Salmivalli, & Cowie, 2012; Ttofi & Farrington, 2011). For instance, in their analysis of school-based intervention programs, Ttofi and Farrington (2011) found that ‘work with peers’ does not reduce aggression and therefore concluded that schools should not promote working with peers. In response, Smith and his colleagues (2012) argued that a concept like ‘work with peers’ is multifaceted, and thus, effective programs need to go beyond basic outcome investigations of whether a program works or not but rather need to question ‘what works, for whom, and under what circumstances.’ In a recent study conducting such an evaluation, the researchers found that their anti-bullying program was only effective in reducing bullying for students with medium or low levels of popularity, but not for the highly popular bullies (Garandeu, Lee, & Salmivalli, 2013). Thus, they suggested that one approach to effective programming is to promote a school culture that minimizes the importance of status hierarchies and encourages more equal relationships among peers, especially by giving youth a myriad of options for building relationships *outside* of existing peer groups and

friendship networks. Although it was not the scope of the current study to examine students' perceptions of cohesion and competition between specific groups or networks of students, what is known is that their positive perceptions of students in their grade were only effective in reducing overt aggression for youth high in empathic concern. Thus, programs are also likely to be more effective if schools strive to cultivate students' capacity for emotional empathy (see Horner & Wallace, 2013).

Finally, there was one especially surprising finding in the current study where overt aggression actually increased, but only among boys with elevated levels of effortful control who perceived their school climate to be cohesive among students. This finding is in contrast to research indicating that both effortful control and positive relationships between students are linked to lower levels of externalizing problem behaviors, including physical aggression (Henry et al., 2011; Lengua, 2008; Loukas & Murphy, 2007; van der Voort, et al., 2013). Given evidence that aggression tends to be used for establishing or maintaining social status (Cillessen & Mayeux, 2004; Vaillancourt & Hymel, 2006), it is possible that behaviorally regulated boys reporting cohesive peer relationships may engage in overtly aggressive acts for purposes of asserting their social status. Moreover, evidence indicates that youth who are well regulated and instrumental in their social relationships can exhibit *proactive* aggression, or aggression that is unprovoked and used for deliberate dominance over others (see Arsenio, Adams, & Gold, 2009; Vitaro, Brendgen, & Barker, 2006). Because the current study items for overt aggression (hitting, pushing, shoving others; yelling and calling others names; *starting* fights) may reflect instances that are unprovoked, it might also be possible that boys exhibiting this form of

aggression were actually proactive. Future research should replicate and extend such findings, paying attention to specific elements of peer relationships (e.g., friendships versus general classmates) (see Pellegrini & Long, 2002) as well as other aspects of the school climate (e.g., perceived teacher unfairness) as they might contribute to overt and potentially proactive aggression (see Lenzi et al., 2013). Further, it was puzzling why seemingly competent boys were only found to increase in their overt aggression and not relational aggression, given research suggesting that relationally aggressive youth are socially competent and connected (Sutton et al., 1999a). Thus, future research should also examine whether other competencies and aspects of the school climate differentially predict relational and overt aggression among middle school students.

While the current study extends the literature in applying the SEL framework to youth aggression, there are some limitations that warrant discussion. First, the design of the study involves early adolescents' self-reports and thus the nature of the study increases the possibility that any obtained associations are inflated due to shared method variance. It is especially important that information from other informants (e.g., teachers, other school personnel) are included with respect to the school climate variables, given that the school environment constitutes multiple school members who could provide additional insights into students' behaviors (e.g., helping others) as well as the school culture in general (e.g., prosocial norms). Second, the school climate variables were assessed at the individual-level and produced relatively low internal consistency reliabilities, whereas studies increasingly measure school climate by aggregating all students' scores to represent the entire school (e.g., see Henry et al., 2011). This school-

level approach to assessing school climate is consistent with anti-bullying and aggression programs that increasingly emphasize the importance of changing the whole-school landscape, not just individual-level behaviors. Still, the focus of the study was to determine how students' own views of themselves and perceptions of their school affect their aggression, and thus, the study remains an important extension of the literature. Because the current study only had data from three schools and therefore could not adopt a school-level approach, future research could sample many schools to assess a variety of school climate dimensions (e.g., awareness and responsiveness to aggression) at the school-level. Third, the study was limited by two waves of data, which did not allow for the examination of trajectories of relational and overt aggression across time. An extended longitudinal study could address how changes in students' competencies and perceptions of their school climate can contribute to changes in their aggression across time. Finally, the study sample comprised of predominantly white, European-American students with no attention to sexual orientation, and thus, study findings are not generalizable to broader populations. The education literature increasingly emphasizes the broken social integration of students from certain minority and immigrant groups, as well as those who identify as lesbian, gay, bisexual, or are otherwise questioning their sexual orientation (Crosnoe, Cavannagh, & Elder, 2003; Crosnoe & Turley, 2011; Birkett, Espelage, & Koenig, 2009). Thus, it is vital that future research and programs alike pay attention to student outcomes as they are context-specific.

Conclusions

Despite the limitations, the current study highlights some unexpected and surprising ways in which positive student competencies and school climate perceptions can reduce but also heighten aggression in middle school. Empathic concern was not only the single most robust competency that reduced both forms of aggression, but this emotional component of empathy also interacted with several positive perceptions of the school climate to reduce students' aggression. Consistent with recent research underscoring that anti-bullying and aggression programs are likely to benefit some students over others (Garandeu, Lee, & Salmivalli, 2013; Smith, Salmivalli, & Cowie, 2012), these cumulative advantage effects further highlight that any efforts to improve the school climate also require efforts to identify and effectively respond to youth with limited emotional empathy (see Horner & Wallace, 2013). It was unexpected that none of the examined school climate variables protected youth from subsequent aggression, but given the multidimensional nature of school climate, future research can extend the current study findings by assessing a variety of school climate dimensions (e.g., student-teacher relationships, norms and values). Perhaps the most intriguing finding of the study was that seemingly competent boys, who reported high levels of effortful control as well as perceived cohesion among students, were actually more overtly aggressive one year later. Though consistent with the notion that aggression tends to be used for asserting social status and can be used by instrumental and socially competent youth to dominate others (Vaillancourt & Hymel, 2006; Vitaro et al., 2006), the finding is rather alarming and brings into question the various attributes and meanings we ascribe to 'social competence' (see Arsenio & Lemerise, 2001). While SEL is certainly critical to

developing socially competent youth, ethical education and especially the cultivation of moral values are worth examining when promoting positive youth development (see Cohen, 2006; Lapsley & Narvaez, 2006).

CHAPTER FIVE: STUDY 2

Does school connectedness mediate individual and perceived school climate effects on early adolescents' overt and relational aggression?

According to the social and emotional learning (SEL) prevention framework, students' positive individual competencies and school environment can indirectly reduce their negative behaviors via an attachment to school (CASEL, 2008). This approach is generally consistent with the social development model (SDM; Catalano & Hawkins, 1996; Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004), which asserts that bonding or attachment to a socializing unit, such as the school, is a necessary mechanism for explaining the prevention or inhibition of antisocial behaviors. To date, however, there is no known research that comprehensively tests the role of school attachment as one mechanism that may explain early adolescents' negative behaviors involving both overt as well as relational aggression. Since school attachment is often referred to as school connectedness, or the degree to which students feel safe and part of their school (see Libbey, 2004; Resnick et al., 1997), the current study examined whether early adolescents' school connectedness would explain their aggressive behaviors. Specifically, school connectedness was examined as a concurrent mediator of several individual competencies (empathic concern, perspective taking, and effortful control) and students' perceptions of their school climate (friction, cohesion, competition, and satisfaction) to explain both overt and relational forms of aggression one year later in middle school (see Figure 9).

Unlike overt aggression which constitutes physical and direct acts (e.g., yelling, fighting) meant to harm or intimidate another (Underwood, Galen, & Paquette, 2001; cite), relational aggression captures more indirect and oftentimes covert behaviors meant to purposefully manipulate and damage relationships, such as threatening to withdraw one's friendship and spreading gossip about a peer (Crick & Grotpeter, 1995). There is evidence to indicate that both overt and relational forms of aggression are linked to maladjustment (e.g., substance use, delinquency) during adolescence and into adulthood (Crick, Ostrov, & Werner, 2006; Herrenkohl, Catalano, Hemphill, & Toumbourou, 2009). Regarding gender differences, there is ample evidence to demonstrate that boys typically have higher levels of overt aggression than girls at any age (e.g., Card, Stucky, Sawalani, & Little, 2008; Prinstein, Boergers, & Vernberg, 2001), whereas the evidence is largely mixed with respect to relational aggression during early adolescence (e.g., Batanova & Loukas, 2011; Coyne, Archer, & Eslea, 2006; Peets & Kikas, 2006).

Based on both the SEL framework and the SDM (Catalano & Hawkins, 1996; Catalano et al., 2004), youth require competencies and opportunities for involvement within their learning environment to be able to connect and bond to their school. In turn, this connection to the school should prevent or reduce aggressive behaviors. Indeed, there is evidence from the Seattle Social Development Project (SSDP) to indicate that elementary-aged youth equipped with socio-cognitive skills (e.g., problem-solving) and opportunities for involvement (e.g., classroom cooperative learning) are more likely than their counterparts to feel connected to their school and to show fewer problem behaviors, including physical aggression (Hawkins, Kosterman, Catalano, Hill, & Abbott, 2008).

Increasingly, studies focusing on the middle school context also indicate that early adolescents with high levels of school connectedness show fewer problem behaviors, including physical forms of aggression (Brookmeyer, Fanti, & Henrich, 2006; Dornbusch, Erickson, Laird, & Wong, 2001; Loukas, Suzuki, & Horton, 2006). It remains unknown, however, whether school connectedness directly contributes to fewer relationally aggressive behaviors, let alone whether middle school students' individual competencies and perceptions of their middle school climate reduce both forms of aggression via their levels of school connectedness.

Two types of competencies that might lead to school connectedness and in turn reduce aggression are empathy and effortful control. According to the SEL framework, youth need to acquire five core competencies (self-awareness, self-management, social awareness, relationships skills, responsible decision-making), and both empathy and effortful control fall into two of them - social awareness and self-management, respectively. Specifically, social awareness requires empathy, and increasingly, there is consensus among researchers that empathy is a multidimensional construct involving the ability to understand and share another's circumstance (Eisenberg, Eggum, & Giunta, 2010; Davis, 1994). Self-management, or the ability to control impulses and show discipline and goal-setting skills, can be assessed (in part) by effortful control, given that this construct refers to a major form of self-regulation allowing one to sustain or initiate focus on a task as well as to voluntarily inhibit certain behaviors (Ahadi & Rothbart, 1994; Rothbart & Rueda, 2005). Research indicates that both competencies are fundamental for fostering positive social relationships and reducing aggression

(Eisenberg et al., 2010; Lengua, 2008). However, the early adolescent literature points to varying relationships between the two competencies and different forms of aggression that warrant further investigation. For instance, whereas empathic concern, or the emotional component of empathy, is consistently linked to less overt and relational forms of aggression (Batanova & Loukas, 2011; Jolliffe & Farrington, 2011), the evidence is mixed regarding perspective taking, or the cognitive component of empathy, as some studies suggest it might facilitate aggression in certain instances (e.g., to gain popularity; see Caravita, Di Blasio, & Salmivalli, 2009). Similarly, whereas effortful control is linked to fewer youth problem behaviors (Lengua, 2008; Loukas & Murphy, 2007), preliminary evidence points to the possibility that this form of regulation might also facilitate aggression in certain instances (e.g., to assert dominance; see Study 1).

Perhaps perspective taking and effortful control can indirectly reduce aggression through school connectedness, or when students feel a sense of bonding to their school. That is, some students might use capacities for seeing others' perspectives and managing their impulses in ways that would facilitate their connections to others at school (Barr & Higgins-D'Allesandro, 2009; Walls & Little, 2005). Empathic concern might also inhibit aggression via students' school connectedness, for having the capacity to sympathize with others is an important tool to connect and engage with others, such as peers and teachers at school (Eisenberg, Fabes, Murphy, Karbon, Smith, & Maszk, 1996; Whitlock, 2006). To date, however, most research investigating the roles of individual factors in students' school connectedness has largely focused on adjustment problems and student motivation or achievement (Johnson, Crosnoe, & Thaden, 2006; Loukas, Ripperger-

Suhler, & Horton, 2009; Shochet, Dadds, Ham, & Montague, 2006). Thus, the current study sought to investigate whether two types of positive competencies – empathy and effortful control – could be linked to students’ school connectedness, which in turn would act as the mechanism that reduces both overt and relational forms of aggression. It was hypothesized that students who are able to respond empathically to others as well as to manage their behavioral impulses would feel more connected to their school (Barr & Higgins-D’Allesandro, 2009; Eisenberg et al., 1996). These students would in turn show fewer aggressive behaviors one year later (Brookmeyer et al., 2006; Hawkins et al., 2008).

Beyond the competencies of empathy and effortful control, evidence indicates that a positive middle school climate is linked to students’ sense of commitment to their school (Loukas et al., 2006; McNeely, Nonnemaker, & Blum, 2002; Shochet & Smith, 2014; Wilson, 2004), but there is little prospective research assessing whether school connectedness mediates various school climate effects on subsequent aggression. In one of the few known studies, Loukas and her colleagues (2006) found that school connectedness mediated various school climate effects (perceived cohesion and friction, overall satisfaction with classes) on subsequent conduct problems one year later. Specifically, early adolescents’ perceived cohesion among students and satisfaction with classes were associated positively with school connectedness, whereas perceived friction among students showed a negative association. In turn, school connectedness contributed to lower levels of conduct problems, and path analyses indicated that school

connectedness did in fact mediate the school climate effects on students' conduct problems.

Guided by the SEL (CASEL, 2008) and SDM (Catalano & Hawkins, 1996; Catalano et al., 2004) frameworks, the current study sought to extend Loukas et al.'s (2006) findings by examining school connectedness as a mediator of students' positive competencies and school climate perceptions and their subsequent overt and relational aggression. Based on prior research, it was expected that students' competencies and perceptions of the school climate would be linked to school connectedness, and in turn, that school connectedness would reduce both overt and relational aggression. Because research typically finds that girls have more positive perceptions of their school climate (e.g., Loukas & Robinson, 2004) and that they feel more connected during the middle school years (e.g., Johnson et al., 2006), gender was examined as a moderator in the hypothesized model (see Figure 9).

Method

Participants

Participants were 499 10- to 14- year old students attending all three middle schools in a suburban school district in central Texas. Participating students were involved in two waves of assessment with one year between each wave. At Wave 1 (Fall, 2001), students were in the 6th and 7th grades (m age = 11.69; sd = .76), and Wave 2 occurred one year later when students were in the 7th and 8th grades (m age = 12.75; sd = .72). Fifty-three percent of these students were female; 75.6% were European-American, 16.3% were Latino, 3.2% were African-American and 4.6% reported another ethnicity.

Data from one additional student missing virtually all information relevant to the present study was eliminated from the final sample.

Procedure

At Wave 1, active parental consent was obtained from 76% ($N = 884$) of all 6th and 7th grade students attending three schools. Of the students participating at Wave 1 and who were eligible to participate at Wave 2, 71% received parental permission to participate at Wave 2. However, eight students refused participation and 30 students were absent on both the day of the survey and the one make-up day; consequently, 66% of the eligible students ($n = 500$) participated at Wave 2. A questionnaire consisting of 161 items at Wave 1 and 160 items at Wave 2 was group-administered to participating students in one 40-minute homeroom class. A member of the research team read each question aloud to students to maintain compliance and to control for varying levels of reading comprehension.

Measures

Empathic Concern. The 7-item empathic concern subscale from Davis's (1980) self-report Interpersonal Reactivity Index (IRI) was assessed at Wave 1. Since the IRI was initially measured with college students, all of the empathic concern items were slightly modified for middle school students so they could report how they would emotionally react to others (e.g., "You often feel sorry for people who don't have the things you have"). All items were scored on a scale ranging from 0 ('Not at all like you') to 4 ('Very much like you'), whereby higher scores reflect higher levels of empathic concern. Davis (1980) has shown that test-retest and internal consistency reliabilities for

the empathic concern subscale are substantial. In the current sample, the internal consistency reliabilities for girls' and boys' empathic concern was .83 and .87, respectively.

Perspective Taking. The 7-item perspective taking subscale was also assessed at Wave 1 and drawn from the Interpersonal Reactivity Index (Davis, 1980). The perspective taking items were similarly modified, so that middle school students could report their tendency to adopt the psychological point of view of others (e.g., "You sometimes try to understand your friends better by imagining how they think about things"). All items were scored on a scale ranging from 0 ('Not at all like you') to 4 ('Very much like you') and were averaged so that higher scores reflect higher perspective taking. Davis (1980) has also shown that the test-retest and internal consistency reliabilities for this subscale are substantial. In the current sample, the internal consistency reliabilities were .81 for girls and .84 for boys.

Effortful control. The short form of the Early Adolescent Temperament Questionnaire-Revised (EATQ-R; see Ellis & Rothbart, unpublished data; Putnam, Ellis, & Rothbart, 2001) was used to assess effortful control at Wave 1. Putnam et al.'s (2001) factor analyses have shown that inhibitory control (five items), attentional control (six items), and activation control (five items) encompass the effortful control scale for early adolescents. Inhibitory control measures the ability to inhibit a response (e.g., "When someone tells me to stop doing something, it's easy for me to stop"); attentional control measures the ability to focus and shift attention (e.g., "It is easy for me to really concentrate on homework problems"), and activation control assesses the ability to

perform an action when there is a strong tendency to avoid it (e.g., “If I have a hard assignment to do, I get started right away”). Items within each subscale were scored on a scale from 1 (‘Almost always true’) to 5 (‘Almost always untrue’) and were reverse coded and averaged so that higher scores reflect higher levels of effortful control. Putnam and colleagues (2001) have shown that each subscale has good internal consistency reliability. In the current sample, girls’ and boys’ internal consistency reliabilities for the entire effortful control scale were .80 and .77, respectively.

School Climate Variables. Student reports of school climate were measured at Wave 1 with four 5-item subscales of the short form of My Class Inventory (MCI; Fraser, 1982). The MCI assesses student perceptions of friction (e.g., “Students in my grade are always fighting with each other” and “Some of the students in my grade are mean”), cohesion (e.g., “All students in my grade are close friends” and “All students in my grade like one another”), competition (e.g., “Some students in my grade always try to do better than the others” and “A few students in my grade want to be first all the time”), and overall satisfaction with classes (e.g., “Students in my grade seem to like their classes” and “How true is it that my grade classes are fun”). Item responses to each question were recoded from the original True/False format to a 5-point scale ranging from 1 (‘Not at all true’) to 5 (‘Very true’). Items were averaged so that higher scores for each subscale reflect more student-perceived friction, cohesion, competition, and satisfaction with classes. In the current sample, the internal consistency reliabilities for girls’ friction, cohesion, competition, and overall satisfaction with classes were .72, .68, .71, and .53, respectively. For boys’ data, the reliabilities were .65, .73, .64, and .60, respectively.

School connectedness. Five items from National Longitudinal Study of Adolescent Health (see Anderman, 2002; McNeely et al., 2002) were used to assess school connectedness at Wave 1. Students responded to items such as, “I feel close to people at this school” and “I feel like I am part of this school.” The five items were scored on a five-point scale ranging from 1 (‘Strongly agree’) to 5 (‘Strongly disagree’), and were reverse coded and averaged so that higher scores reflect higher levels of school connectedness. Prior studies have shown substantial test-retest and internal consistency reliabilities for this scale, and in the current sample the internal consistency reliabilities for girls and boys were .72 and .77, respectively.

Overt Aggression. Overt aggression was assessed at both waves using an adapted version of Crick’s (1996) 3-item peer nomination measure of overt aggression. The three items assessing direct acts of physical and verbal aggression (hitting, calling names, and starting fights) were adapted for self-report purposes, so as to ask adolescents about the frequency in which they engage in each of the behaviors. Items were scored on a scale ranging from 1 (‘Not at all’) to 5 (‘All the time’) and were averaged so that higher scores reflect more overt aggression. Prior studies have shown substantial reliabilities for this scale, and at Wave 1 of the current sample, girls and boys showed internal consistency reliabilities of .79 and .75, respectively. At Wave 2, the internal consistency reliability for girls dropped to .71 and increased for boys to .82.

Relational Aggression. Relational aggression was also assessed at both waves, with a 6-item scale containing four adapted items from Crick and Grotpeter’s (1995) peer-nominated measure of relational aggression. The scale was adapted for the present

study by modifying the wording of the four items so that middle school students could self-report how likely they were to engage in each of the behaviors (e.g., “When you’re mad at someone, how often do you ignore them or stop talking to them”). Two additional items were added to assess the frequency of negative facial expressions (making mean faces and rolling eyes at peers), given existing evidence that such expressions are important features of girls’ aggressive behaviors (Galen & Underwood, 1997; Paquette & Underwood, 1999). The six self-reported items were scored on a scale ranging from 1 (‘Not at all’) to 5 (‘All the time’) and were averaged so that higher scores reflect more relational aggression. Previous studies have also demonstrated substantial reliabilities for these items, and at Wave 1 of the current sample, girls and boys showed internal consistency reliabilities of .71 and .74, respectively. At Wave 2, the internal consistency reliability for girls increased to .80 and decreased for boys to .68.

Attrition Analyses

Analyses were conducted to determine if students who participated at both waves of the study differed from their peers who participated only at Wave 1. Results indicated that in comparison to students who participated at both waves of the study, students who did not participate at Wave 2 reported lower levels of Wave 1 effortful control [$t(879) = -3.78, p < .001$], as well as lower levels of perceived cohesion among students [$t(881) = -2.05, p < .05$] and school connectedness [$t(881) = -2.59, p < .05$]. Students who did not participate at Wave 2 also reported higher levels of Wave 1 relational aggression [$t(879) = 2.10, p < .05$]. There were no differences between the two groups on any of the other study variables.

Data Analysis

To test the hypothesized mediation model presented in Figure 9, a series of path analyses were conducted. Two-group models were assessed so as to investigate whether any of the paths varied across gender. Analyses were conducted with the MPlus 6.12 program (Muthen & Muthen, 1998-2011) using the Full Information Maximum Likelihood estimation procedure, which accommodates missing data. Of the 499 middle school students who participated in the study, approximately 20 students were missing the majority of items from at least one of the scales under investigation.

When building the model, all the Wave 1 exogenous variables were freely correlated, as well as the Wave 2 aggression outcome variables. Indirect paths from the Wave 1 competencies and school climate perceptions to both Wave 2 outcome variables were assessed via Wave 1 school connectedness. Stability paths from the Wave 1 overt and relational aggression variables to their respective Wave 2 outcomes were included to partial out the variance associated with the baseline measures and to provide a stringent test of the Wave 1 influences. Partialling out the variance associated with the baseline measures resulted in the examination of change among the variables across the one-year period from Wave 1 to Wave 2.

Model fit was evaluated using one robust absolute fit index (the Root Mean Square Error of Approximation; RMSEA) and one robust incremental fit index (the Comparative Fit Index; CFI). An absolute fit index assesses how well a model reproduces the sample data without comparison to a reference model whereas an incremental fit index compares the target model to a more restricted baseline model (Hu & Bentler,

1999). According to criteria outlined by Hu and Bentler (1999), a good fitting model has an RMSEA smaller than 0.05 and a CFI greater than or equal to 0.95. Modification indices greater than 10 were examined for purposes of model respecification and to improve model fit. In combination with theory, Lagrange Multiplier (LM) tests allowed for examination of paths whose addition to the model would result in the biggest improvement in the overall chi-square value.

Finally, to test for mediation or indirect effects, 10,000 bootstrapped samples were estimated to obtain the 95% confidence intervals (CIs). According to MacKinnon, Lockwood, and Williams (2004), estimates with CIs that do not contain zero in the interval are statistically significant and provide evidence for mediation.

Results

Table 5 presents the zero-order correlations for all study variables for girls and boys separately. Results for both girls and boys indicated that school connectedness was correlated positively with both components of empathy, effortful control, and the positive school climate variables (perceived cohesion and satisfaction). School connectedness was linked negatively with girls' and boys' perceived friction among students as well as the Wave 1 aggression variables. School connectedness was also associated negatively with boys' overt aggression at Wave 2. There was no relationship between school connectedness and Wave 2 relational aggression for girls.

Regarding intercorrelations between the exogenous overt aggression variable and all other exogenous variables, Wave 1 empathic concern and effortful control were associated negatively with overt aggression for boys and girls. For boys only, Wave 1

perspective taking and perceived cohesion as well as satisfaction were also correlated negatively with overt aggression. Across gender, perceived friction and competition were correlated positively with overt aggression. Finally, examination of the cross-time stability for overt aggression indicated that the magnitude of the correlations was large ($r=0.49$) for girls and medium ($r=0.40$) for boys.

Regarding intercorrelations between the exogenous relational aggression variable and all other exogenous variables, all Wave 1 individual competencies (empathic concern, perspective taking, effortful control) were correlated negatively with relational aggression across gender. For boys only, perceived cohesion was also linked negatively to relational aggression, and for both boys and girls, perceived satisfaction was linked negatively to relational aggression. Similar to the overt aggression finding, perceived friction was also correlated positively with relational aggression across gender. Unlike the data for overt aggression, however, girls' perceived competition at school was not linked to their relational aggression, whereas boys' perceived competition was linked positively to their relational aggression. Finally, examination of the cross-time stability for relational aggression indicated that the magnitude of the correlations was relatively large ($r=0.53$) for girls and medium ($r=0.39$) for boys.

Prior to testing study hypotheses, two-group path analyses were conducted so as to investigate whether any of the paths in Figure 9 varied across grade level. This model was tested due to evidence indicating that school connectedness declines across the middle school years and because relationships among the variables may change as a result (Loukas, Cance, & Batanova, 2013; Wang & Dishion, 2011). Gender was included

in the model as a covariate, such that all exogenous variables were covaried with gender. The fit of an unconstrained model, in which all paths were allowed to vary across the two groups, was compared to the fit of a constrained model in which all paths were held invariant, or not allowed to vary across the two groups. The unconstrained model represented a poor fit to the data [$\chi^2(36, 499) = 110.61, p < .001$; CFI = .89; RMSEA = 0.09] and the constrained model also represented a poor fit [$\chi^2(52, 499) = 130.98, p < 0.001$; CFI = 0.89; RMSEA = 0.08]. Comparison of the fit of the two models indicated that constraining the paths to be invariant across the two groups did not result in a deterioration of model fit [$\Delta\chi^2(14) = 20.37, p = \text{n.s.}$]. Thus, the hypothesized model was not moderated by grade level, and all subsequent analyses excluded grade.

Two-group path analyses were conducted to investigate the fit of the hypothesized model and determine if any of the paths varied across gender. The unconstrained model represented a good fit to the data [$\chi^2(36, 499) = 59.33, p < 0.01$; CFI = 0.96; RMSEA = 0.05] and the constrained model represented an adequate fit [$\chi^2(47, 499) = 90.52, p < 0.001$; CFI = 0.93; RMSEA = 0.06]. Comparison of the fit of the two models indicated that constraining the paths to be invariant across the two groups resulted in a significant deterioration of model fit [$\Delta\chi^2(11) = 31.19, p < 0.001$]. At least one path therefore varied across the two groups of gender.

To identify the source of variance for girls' and boys' data, a series of tests was conducted in which the fit of a completely unconstrained model was compared to the fit of a series of models in which only one path was constrained or held invariant. Each of the eleven hypothesized paths was constrained to be equal across the two groups so that

separate multi-group models were examined for each path. Chi-square difference tests comparing the fit of the unconstrained model to each of the 11 other models in which only one path was constrained showed that three paths significantly differed across the two groups: Wave 1 perceived friction to Wave 1 school connectedness [$\Delta\chi^2(1) = 5.16$, $p < 0.05$], Wave 1 school connectedness to Wave 2 overt aggression [$\Delta\chi^2(1) = 3.99$, $p < 0.05$], and Wave 1 relational aggression to Wave 2 relational aggression [$\Delta\chi^2(1) = 11.09$, $p < 0.001$].

A final multi-group model, in which the other eight equivalent paths were held invariant across gender, was then examined (see Figure 10 for the final model). The three non-equivalent paths were allowed to vary across the two groups as were the inter-correlations between variables. The final model represented a good fit to the data [$\chi^2(44, 499) = 68.45$, $p < 0.01$; CFI = 0.96; RMSEA = 0.05]. For girls, the final model accounted for 36% of the variance in Wave 1 school connectedness, as well as 20% of the variance in Wave 2 overt aggression and 24% of the variance in Wave 2 relational aggression. For boys, the final model accounted for 43% of the variance in Wave 1 school connectedness, 17% of the variance in Wave 2 overt aggression and 14% of the variance in Wave 2 relational aggression. Examination of this final multi-group model also indicated that of the thirty-seven possible covariances among the exogenous variables, 24 covariances were significant for girls and 30 covariances were significant for boys (see Table 6). In general, all of the boys' covariances overlapped with those for girls with one exception. Also, covariances among the Wave 2 aggression outcome variables were positive and significant across both groups.

Results regarding the hypothesized paths indicated that for girls, neither perspective taking nor the negative school climate exogenous variables (perceived friction and competition) were linked to school connectedness. Rather, the exogenous variables of empathic concern, effortful control, perceived cohesion among students and satisfaction with classes were associated positively with school connectedness. However, there were no significant paths from Wave 1 school connectedness to either aggression outcome at Wave 2, thus ruling out the possibility of mediation effects for girls. Similarly, empathic concern, effortful control, perceived cohesion among students and satisfaction with classes were associated positively with boy's school connectedness. In addition, perceived friction among students was associated negatively with boys' school connectedness. In turn, boys' school connectedness predicted a decline in subsequent overt aggression across the one year time period.

Although school connectedness appeared to play a mediating role in explaining boys' overt aggression, the bootstrapped models produced non-significant indirect effects for the following paths: Wave 1 empathic concern to Wave 2 overt aggression (indirect effect, $B = -0.03$, $p > 0.05$, $CI = -0.061, 0.001$); Wave 1 effortful control to Wave 2 overt aggression (indirect effect, $B = -0.04$, $p > 0.05$, $CI = -0.09, 0.002$); Wave 1 perceived cohesion to Wave 2 overt aggression (indirect effect, $B = -0.03$, $p > 0.05$, $CI = -0.057, 0.001$); Wave 1 perceived satisfaction to Wave 2 overt aggression (indirect effect, $B = -0.04$, $p > 0.05$, $CI = -0.083, 0.002$); and Wave 1 perceived friction to Wave 2 overt aggression (indirect effect, $B = 0.04$, $p > 0.05$, $CI = -0.002, 0.076$). In summary, all indirect effects contained a zero between the 95% confidence intervals, and thus, final

results indicate that school connectedness did not mediate any of the individual competencies or perceived school climate variables for boys.

Post-Hoc Analyses

Given that the hypothesized model was tested with two waves of data and that the exogenous (empathy, effortful control, school climate) and mediator (school connectedness) variables were assessed concurrently, additional analyses were conducted to determine their prospective associations. Specifically, Cole and Maxwell's (2003) "half-longitudinal design" was employed to examine whether any of the Wave 1 empathy, effortful control, and school climate variables contributed to the school connectedness mediator variable at Wave 2, controlling for Wave 1 school connectedness and gender. According to the model [$\chi^2(1, 499) = 3.56, p > 0.05$; CFI = 0.99; RMSEA = 0.07], neither component of empathy nor positive school climate variables (perceived cohesion and satisfaction) contributed to change in school connectedness over the one year period. However, effortful control ($B = 0.22, p < .001$), perceived friction ($B = -0.10, p < .05$), and perceived competition ($B = 0.09, p < .05$) did contribute to residualized change in the school connectedness outcome.

Although three of the exogenous variables were found to predict subsequent school connectedness, additional analyses were conducted to examine whether school connectedness temporally preceded the individual competencies and school climate factors. That is, further analyses were conducted to justify that school connectedness could be hypothesized as a mediator variable, rather than an exogenous variable predicting Wave 2 individual and school climate variables (while controlling for their

corresponding stability paths from Wave 1). Because perceived satisfaction was not included in the Wave 2 survey, results are reported only for the negative school climate variables (perceived friction and competition) and perceived cohesion. According to the model [$\chi^2(42, 499) = 137.17, p < 0.001$; CFI = 0.94; RMSEA = 0.07], Wave 1 school connectedness contributed to change in all three individual competencies assessed at Wave 2: empathic concern ($B = 0.15, p < 0.01$), perspective taking ($B = 0.16, p < 0.001$), and effortful control ($B = 0.10, p < 0.01$). Unlike the previous half-longitudinal design where the negative perceived school climate variables at Wave 1 predicted school connectedness at Wave 2, school connectedness at Wave 1 did not contribute to residualized change in perceived friction or competition at Wave 2, after controlling for their stability paths. However, Wave 1 school connectedness contributed to residualized change in perceived cohesion at Wave 2 ($B = 0.10, p < 0.05$).

Overall, the post-hoc analyses indicate some discrepancies with the hypothesized model but they also provide some support for the temporal precedence of school climate to school connectedness. Of the individual competencies, only effortful control led to subsequent school connectedness, and neither of the positive perceived school climate variables contributed to connectedness one year later. Instead, when school connectedness was assessed as the exogenous variable, it predicted all three competencies and perceived cohesion at Wave 2. Most importantly, however, the post-hoc analyses provide support for the temporal precedence of perceived friction and competition to subsequent school connectedness. Although students' positive perceptions of their school climate did not predict school connectedness one year later, students' negative

perceptions of friction and competition differentially predicted their school connectedness one year later.

Discussion

Guided by two prevention frameworks – SEL(CASEL, 2008) and the SDM (Catalano & Hawkins, 1996; Catalano et al., 2004) – the current study tested school connectedness as a mechanism that could explain how students’ competencies and perceptions of their middle school climate contribute to subsequent forms of aggression. Results for girls indicated that while empathic concern, effortful control, perceived cohesion among students and overall satisfaction with classes were linked to school connectedness, there were no mediation effects between school connectedness and both subsequent forms of aggression one year later. For boys, results indicated that the same competencies and school climate perceptions, along with perceived friction among students, were associated with school connectedness, and in turn, boys’ sense of connectedness predicted a decline in their subsequent overt aggression. Although it appeared that school connectedness played a mediating role for the boy’s model, bootstrapped indirect effects models failed to confirm mediation effects. Post-hoc analyses confirmed some hypotheses but raised questions regarding the direction and temporality of associations for others. Conflicting findings warrant future research as well as more critical considerations for preventive interventions that seek to promote school connectedness and reduce both forms of aggression.

In partial support of the first hypothesis, findings corroborated limited extant research suggesting that empathic concern and effortful control are important for both

girls and boys to feel connected to others at school (Barr & Higgins-D'Allesandro, 2009; Walls & Little, 2005). Post-hoc analyses provided support only for the prospective relationship between effortful control and subsequent school connectedness. This finding corroborates recent research indicating that self-regulatory skills lead to positive youth development, including 'connection' to social contexts, such as the school environment (Schmid, Phelps, & Lerner, 2011). Although there was no prospective relationship between empathic concern and subsequent school connectedness, future research could investigate instances in which emotional empathy might contribute to school connectedness. For instance, it is possible that a student has empathic concern but still needs social self-efficacy skills to be able to share their feelings and experiences with others (Di Gunta, Eisenberg, Kupfer, Steca, Tramontano, & Caprara, 2010). Alternatively, a student might be well equipped with empathic concern and the efficacy needed for connecting with others but feel at odds with others' negative influences or school norms that do not espouse emotionally salient social connections (Malin, Reilly, Quinn, & Moran, 2013; Whitlock, 2006). In a recent qualitative study exploring young people's sense of purpose, Malin and her colleagues (2013) found that early adolescents were especially interested in being empathic and caring for others, yet some of them shifted away from this purpose of empathy to become more involved in "hedonistic" activities with peers (undefined by the authors). In another mixed-method study by Whitlock (2006), students emphasized the importance of feeling valued and respected at school but felt disengaged because of their school's excessive pressure to conform to school standards for success. Based on the aforementioned studies, it is recommended

that future studies investigate various explanations as to why students who exhibit feelings of concern for others might be unable to translate those feelings into social bonds or connections at school.

Beyond the individual competencies, the current study findings indicated that students' varying perceptions of their school climate played differential roles in their sense of school connectedness. Most interesting was that boys' perceptions of friction were linked negatively to their school connectedness, and post-hoc analyses indicated this was true for both boys and girls when school connectedness was measured one year later. Thus, students who have early perceptions of friction among students in middle school are likely to feel less connected to the school later on, a finding that corroborates recent cross-sectional research indicating that students who perceive their school climate to be high on bullying report fewer connections to their school (Mehta, Cornell, Fan, & Gregory, 2013). Further, it is interesting that the original analyses found no associations between perceived competition and school connectedness but the post-hoc analyses found competition to be *positively* predictive of students' school connectedness one year later. On one hand, it is possible that perceptions of competition (e.g., thinking that students want to do as well as others) motivate students to try harder at school. By trying harder, students become more connected with the school or certain teachers and friends who encourage effort and success (Nelson & DeBacker, 2008). On the other hand, it is important to ask, to what or whom are students connecting? Though the school connectedness measure tapped into general items for safety, teacher fairness, and closeness with others, it is unknown what meanings and values students ascribed to these

attributes (see Whitlock, 2006). It is possible, for instance, that students who perceive there to be competition between students are connecting to specific peers and teachers who espouse competition for purposes of ‘getting ahead.’ Overall, more research is needed to disentangle the mechanisms involved in cultivating students’ various experiences of school connectedness.

Interestingly, students’ positive perceptions of their school climate (cohesion and satisfaction) were concurrently associated with their school connectedness, but this finding did not hold in post-hoc analyses examining their prospective associations to school connectedness one year later. While this finding corroborates research indicating that a positive school climate is an important correlate of student bonding to the school (Loukas et al., 2006; Shochet & Smith, 2014), it also highlights that students with early perceptions of cohesion and classroom satisfaction are not necessarily bound to feel connected to their middle school later on. One possible explanation is that because the influence of peers and peer norms becomes increasingly salient over the course of middle school (Wang & Dishion, 2011; Werner & Hill, 2010), students’ initially positive perceptions of the school climate can easily and quickly change. For instance, Wang and Dishion (2011) found that while various dimensions of school climate (academic support, behavior management, teacher and peer social support) declined throughout middle school, deviant peer affiliation increased. Thus, early perceptions of cohesion and satisfaction may not have contributed to school connectedness one year later because the nature of students’ affiliations with peers changed in that time. Future studies could therefore extend existing research delineating youth trajectories of school connectedness

and their associations with internalizing/externalizing problems (Li & Lerner, 2011; Simons-Morton & Chen, 2009) to further assess trajectories and associations between school connectedness and other contextual factors relevant to youth development.

Although final bootstrapped models did not find school connectedness to mediate the effects of the individual competencies or school climate perceptions on both subsequent forms of aggression, it is still noteworthy that boys' school connectedness predicted a decline in their subsequent overt aggression. This finding corroborates previous research indicating that boys' connections to school are linked to fewer problem behaviors with peers (Schochet et al., 2006), but it also highlights the need for research to investigate instances in which school connectedness could reduce girls' overt aggression as well as early adolescents' relational aggression (see Batanova & Loukas, 2013).

According to the SDM (Catalano & Hawkins, 1996; Catalano et al., 2004), bonding to a social unit is a necessary mechanism explaining how skills and opportunities for involvement lead to less antisocial behavior, but others' behaviors, norms and beliefs also represent a necessary mechanism explaining how that social bonding results in behavior. Specifically, Catalano and his colleagues (2004) stated that "the behavior of the individual will be prosocial or antisocial depending on the predominant behaviors, norms, and values held by those individuals or institutions to which/whom the individual is bonded" (p. 252). An examination of students' bonding or connectedness to school is therefore incomplete without an examination of others' behaviors, norms, and values in the school and precisely which ones students bond or connect with.

Finally, it is noteworthy that the post-hoc analyses pointed to the importance of school connectedness in predicting students' individual competencies and perceptions of a cohesive school climate. Recall that effortful control was the only competency to directly predict school connectedness one year later. Yet, when school connectedness was also tested as an exogenous variable, it predicted all three competencies, including both cognitive and emotional components of empathy (see Batanova & Loukas, 2012). Moreover, prior results for school climate effects on school connectedness did not find perceived cohesion to predict connectedness one year later; instead, feelings of connectedness predicted subsequent perceptions of cohesion among students. Collectively, these findings emphasize the importance of promoting positive connections early on within the middle school unit (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Lerner, 2005). While it is important that schools cultivate core competencies and a positive learning environment for students, the post-hoc analyses suggest that early efforts to engage and connect students with the environment are also important. Particularly during the transition to middle school, specific preventive efforts encouraging students to connect and bond with others are needed (e.g., structured activities during advisory period).

Although the current study findings provide some insights for promoting school connectedness and reducing aggression, there are several limitations that warrant consideration. First, the self-report nature of the design increases the possibility that some of the responses are inflated due to shared method variance. It is particularly important that more comprehensive and distinct measures be used to assess school climate and

school connectedness (see Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Flanagan, Cumsille, Gill, & Gallay, 2007; Whitlock, 2006). For instance, Flanagan and her colleagues (2007) emphasized the importance of a ‘teacher’s democratic ethos’ when assessing the school climate, and Whitlock (2006) argued for school connectedness to be conceptualized as a psychological state of belonging in which students perceive how they but also others are differentially treated and respected by others at school. While the current study illuminates how school connectedness is linked to certain school climate perceptions in middle school, future research could introduce new ways of assessing these aforementioned variables. Second, the mediation models are limited by two waves of data, even though post-hoc analyses were conducted to lend support for conceptualizing both individual and school climate factors as antecedents to school connectedness. At minimum, three waves of data are necessary to disentangle the temporal associations between the individual and school climate variables, students’ sense of school connectedness, and both forms of aggression. Third, attrition analyses indicated that students who did not participate at Wave 2 were more likely than students who did participate in both study waves to report less school connectedness, along with less effortful control and perceived cohesion among students. Students who only participated at Wave 1 also reported more relational aggression than the current sample of students. Retention of these students may have produced stronger associations between variables and thereby strengthened the final mediation models. Finally, the majority of the study sample consisted of adolescents from white, European-American families, with no consideration for sexual orientation or socio-economic status. Thus, study findings

may not generalize to different populations of students (see Crosnoe & Turley, 2011; Birkett, Espelage, & Koenig, 2009).

Overall, both SEL and SDM prevention frameworks were useful in testing students' school connectedness as a mediator of their individual and perceived school climate effects on subsequent forms of aggression. Despite the lack of mediation findings across gender, other findings of the current study serve to illuminate various concurrent and prospective relationships that warrant the examination of trajectories as well as specific processes between the aforementioned variables. For instance, empathic concern was linked concurrently but not prospectively to school connectedness, yet there is evidence to indicate that early adolescents place importance on both empathy and connections with others that are simply trumped by pressures to fit in and succeed in school (Malin et al., 2012; Whitlock, 2006). Future work could therefore investigate what processes are necessary for students' emotional empathy to contribute to their sense of school connectedness. Similarly, because students' perceived cohesion and satisfaction were only linked concurrently whereas perceived friction and competition were linked prospectively but differentially to their school connectedness, future studies could investigate specific processes involved in the relationships between school climate and school connectedness. Unfortunately, feeling connected to one's school does not guarantee fewer aggressive behaviors, as evidenced by the finding that school connectedness only reduced overt aggression and for boys only. Thus, future work also needs to consider what socialization processes, and especially gender socialization processes, are at play when investigating ways in which school connectedness can reduce

aggression and relational aggression in particular. In order for prevention and intervention efforts to be successful, it is especially important to know what behaviors, norms, and values students connect with and why (see Catalano et al., 2004).

CHAPTER SIX: OVERALL DISCUSSION AND IMPLICATIONS

While the findings of this dissertation provide general support for some of the proposed *relationships* in the SEL logic model (see Figures 1 and 2), they also highlight the need for nuanced applications of the model when seeking to reduce different forms of aggression during middle school. Below, each of the research questions and hypotheses are summarized, and implications from both studies are briefly discussed in hopes that they be used in future research and programs for youth.

Study 1

Research Question 1: Do early adolescents' empathic concern and perspective taking differentially predict overt and relational aggression one year later in middle school, after accounting for effortful control and baseline levels of aggression?

Hypothesis 1a was supported – Elevated levels of empathic concern contributed to lower levels of overt and relational aggression one year later, over and above perspective taking, effortful control, and baseline levels of aggression.

Hypothesis 1b was not supported – Perspective taking did not uniquely predict either form of aggression, over and above empathic concern, effortful control, and baseline levels of aggression.

Research Question 2: Does early adolescents' effortful control differentially predict overt and relational aggression one year later in middle school, after accounting for empathic concern, perspective taking, and baseline levels of aggression?

Hypothesis 2a was not supported – Effortful control did not uniquely predict overt aggression one year later, over and above empathic concern, perspective taking, and baseline levels of aggression.

Further, there was no predictive relationship between effortful control and subsequent relational aggression.

Research Question 3: Do early adolescents' school climate perceptions contribute to overt and relational aggression one year later in middle school, after accounting for the intraindividual competencies and baseline levels of aggression?

Hypothesis 3a was not supported – Positive perceptions of the school climate (perceived cohesion among students and satisfaction with classes) did not contribute to lower levels of overt and relational aggression one year later, over and above the intraindividual competencies and baseline levels of aggression.

Hypothesis 3b was not supported – Negative perceptions of the school climate (perceived friction and competition among students) did not contribute to higher levels of overt and relational aggression one year later, over and above the intraindividual competencies and baseline levels of aggression.

Research Question 4: After accounting for baseline levels of aggression, do early adolescents' school climate perceptions serve as moderators in the contributions of empathic concern, perspective taking, and effortful control to subsequent overt and relational aggression one year later in middle school?

Hypothesis 4a was not supported – Positive perceptions of the school climate (perceived cohesion among students and satisfaction with classes) did not protect early adolescents low in empathic concern from subsequent overt/relational aggression. Conversely, negative perceptions of the school climate (perceived friction and competition among students) did not exacerbate the negative contributions of low empathic concern to subsequent overt/relational aggression.

Further, there were no relationships between the perceived school climate variables and early adolescents' perspective taking.

Hypothesis 4b was not supported – Positive perceptions of the school climate (perceived cohesion among students and satisfaction with classes) did not protect early adolescents low in effortful control from subsequent overt aggression. Conversely, negative perceptions of the school climate (perceived friction and competition among students) did not exacerbate the negative contributions of low effortful control to subsequent overt aggression.

Further, there were no relationships between the perceived school climate variables and early adolescents' effortful control.

Contrary to these hypotheses, several multiple advantage or multiplier effects were observed between a couple of the perceived school climate variables and early adolescents' elevated levels of empathic concern.

Low levels of perceived competition among students contributed to lower levels of overt aggression for early adolescents already high in empathic concern.

High levels of perceived satisfaction with classes contributed to lower levels of relational aggression for early adolescents already high in empathic concern.

Research Question 5: After accounting for baseline levels of aggression, will gender moderate the ways in which early adolescents' school climate perceptions interact with their intraindividual competencies, in their contributions to subsequent overt and relational aggression one year later?

Yes, gender moderated a couple of interactions between early adolescents' school climate perceptions and their intraindividual competencies – High levels of perceived cohesion among students contributed to lower levels of overt aggression for girls already high in empathic concern. High levels of perceived cohesion among students contributed to higher levels of overt aggression for boys already high in effortful control.

Study 2

Research Question 6: Does early adolescents' reports of school connectedness mediate the effects of their intraindividual competencies and school climate perceptions on subsequent overt and relational aggression one year later in middle school?

Hypothesis 6a was partially supported – Students' empathic concern and effortful control were associated positively with students' school connectedness, but there were no mediation effects of school connectedness between these competencies and both forms of aggression one year later.

Hypothesis 6b was partially supported – Positive perceptions of the school climate (perceived cohesion and satisfaction with classes) were associated positively with students' school connectedness, whereas the negative perceptions of the school climate (perceived friction and competition) showed no significant associations with students' school connectedness. There were no mediation effects of school connectedness between any of the perceived school climate variables and both forms of aggression one year later.

Given that the intraindividual competencies and perceived school climate variables were assessed at the same time (Wave 1) as the mediator school connectedness variable, post-hoc analyses were conducted with school connectedness assessed one year later (Wave 2). These analyses examined whether the Wave 1 intraindividual competencies and perceived school climate variables contributed to Wave 2 school connectedness, controlling for school connectedness at Wave 1.

High levels of empathic concern no longer contributed to students' school connectedness one year later, whereas effortful control was still linked positively and prospectively to school connectedness.

Positive perceptions of the school climate no longer predicted school connectedness. Conversely, high levels of perceived friction contributed to lower levels of school connectedness, whereas high levels of perceived competition contributed to higher levels of school connectedness.

Post-hoc analyses were also conducted to assess school connectedness as the exogenous variable (Wave 1) and the intraindividual competencies and perceived school climate variables as the mediator variables one year later (Wave 2). These analyses examined whether Wave 1 school connectedness contributed to the Wave 2 intraindividual competencies and perceived school climate variables, controlling for their respective baseline levels at Wave 1.

High levels of school connectedness contributed to higher levels of all three intraindividual competencies (empathic concern, perspective taking, effortful control).

Of the school climate variables, there was a prospective relationship between school connectedness and perceived cohesion, only. High levels of school connectedness contributed to higher levels of perceived cohesion one year later.

Research Question 7: Will the mediational role of school connectedness (in the associations between the intraindividual competencies and school climate perceptions on subsequent forms of aggression) vary across gender?

Yes, several paths in the final model were found to vary across gender –

Perceived friction among students was associated negatively with school connectedness for boys only. In turn, high levels of school connectedness contributed to lower levels of overt aggression for boys only. However, bootstrapped indirect effects models failed to confirm mediation effects.

Although stability paths for relational aggression were significant across gender, the path for girls was stronger than the path for boys.

These findings are based on a sample of primarily white students attending three middle schools in a suburban school district. There are both advantages and disadvantages to this sample, which is why future studies could replicate the current findings with different samples. Advantages include a predominantly homogeneous sample of students who were followed across one year in middle school, and for whom aspects of the SEL framework may and may not apply. On the other hand, disadvantages include a lack of diversity and what is likely a low-risk sample, particularly given the low levels of aggression. Findings should therefore be replicated with more diverse samples, not just in ethnicity and sexual orientation but also in socioeconomic status and neighborhood characteristics. Despite the sample limitations, the findings from this dissertation are both timely and relevant in illuminating how various individual

competencies, school climate perceptions, and students' attachment or connectedness to school could contribute to their subsequent forms of aggression. Both studies are among the few known longitudinal investigations across the middle school years that explicitly tested constructs and relationships proposed in the SEL logic model (see Figure 1).

Although some of the hypotheses did not hold, the integrated logic model guiding the current dissertation (see Figure 2) illustrates a number of relationships worth examining for practical and theoretical implications.

Findings from the first study highlight the importance of cultivating emotional empathy among early adolescents, and to also recognize that even positive perceptions of the school climate might not reduce aggression unless students have the emotional capacity to feel sympathy and concern for others. While concepts like caring and emotion literacy are already integrated into SEL programs (e.g., Kusche & Greenberg, 2001), there is substantially more focus on building perspective taking skills than there are efforts to cultivate emotional empathy in students. One approach could be to make teachers and other school personnel well aware of their emotion socializing processes, such as their reactions to students' emotions or how they can nurture those emotions (see Horner & Wallace, 2013). To date, such processes are not explicitly discussed in SEL reports or guidelines for implementation, especially those specific to the prevention of aggressive behaviors (e.g., Ragozzino & O'Brien, 2009). Thus, researchers and practitioners alike need to investigate ways in which schools can effectively identify and respond to students with limited emotional empathy, as well as nurture and develop students' feelings for others.

Another important finding from the first study was that seemingly competent boys (reporting high levels of effortful control and perceptions of cohesion among students) were actually more overtly aggressive one year later. This finding highlights that seemingly positive factors may also yield negative outcomes, and thus, the definitions, processes, and contexts we attribute to such factors are of utmost importance. Further, the finding reiterates the importance of understanding the whole school climate and its distinct socializing processes for girls and boys. Based on social role theory (see Archer, 2004; Wood & Eagly, 2010), for instance, school members (e.g., teachers and peers) might respond to boys' behaviors and their interactions with others in ways that are different from girls. Boys who appear self-regulated and view relationships as cohesive might receive more approval than girls when they assert their social status and dominance over others, and thus, certain aspects of the school climate might inadvertently condone or even reinforce their aggression.

Findings from the second study further demonstrate that relationships between students' competencies, their school climate perceptions, and their sense of school connectedness are complex and subject to change. Perhaps most startling is that empathic concern and positive perceptions of the school climate (perceived cohesion and satisfaction with classes) were associated concurrently but not prospectively with school connectedness, thereby showing that students with positive school experiences early on are not necessarily bound to feel connected to their middle school later on. Given the salience of peer norms, deviant peer affiliation, and school standards for success (Wang & Dishion, 2011; Werner & Hill, 2010; Whitlock, 2006), it was suggested that pressures

to fit in and succeed in school might supersede the importance that early adolescents also place on concern for others and a positive school climate. Interestingly, though, when students felt connected to their school early on they actually showed higher levels of all competencies (empathic concern, perspective taking, effortful control) as well as perceived cohesion among students one year later. Taken together, researchers and practitioners need to investigate innovative ways in which students can interact with their school environment so as to sustain their levels of connectedness, but also so that they can feel connected to their school early on.

The second study also raised questions regarding the definitions and meanings that students ascribe to school connectedness, largely based on the finding that school connectedness contributed to lower levels of overt aggression, but for boys only. While this is a promising area of intervention, it also highlights the need for investigating instances in which school connectedness could reduce girls' overt aggression and early adolescents' relational aggression in particular. Based on Catalano and his colleagues' social development model (2004), an individual's bond to a social unit is not necessarily sufficient to reduce his or her undesirable behavior, for the behaviors, norms, and values of that social unit might very well reinforce or perpetuate the undesirable behavior. If students do not connect with positive or healthy behaviors, norms, and values, then reductions in problem behavior like relational aggression (which is more covert and socially acceptable) might not be feasible or sustainable.

It is noteworthy that both studies failed to find consistent reductions in students' relational aggression, indicating that relational aggression is a unique form of aggression

that entails innovative prevention/intervention efforts. To date, there have been two primary limitations in the literature with respect to such efforts: 1) most intervention research has advocated for comprehensive, universal efforts for reducing problem behaviors, including but not exclusive to relational aggression (e.g., Merrell, Buchanan, & Tran, 2006); and 2) the majority of students targeted in systematic intervention research have been elementary school-aged children (e.g., Domitrovich, Cortes, & Greenberg, 2007). Although there are some developmentally tailored programs targeting relational aggression among middle school youth – including Second Step: Student Success Through Prevention (SS-SSTP; Committee for Children, 2008) and the Creating a Safe School (CASS) intervention (previously known as the Ophelia Project; Nixon & Werner, 2010) – they also demonstrate the need for ongoing improvement. For instance, a recent clinical trial study evaluating the SS-SSTP program among sixth graders found that only their physical aggression was reduced, and thus, the researchers emphasized the need for schools to actively shift norms and values relevant to relational aggression (Espelage, Low, Polanin & Brown, 2013). In an evaluation of the CASS intervention also with sixth grade students, Nixon and Werner (2010) found that only students with initially high levels of self-reported relational aggression showed a decrease in their relational aggression at posttest, whereas all other students reported small but significant *increases*. This is quite alarming and raises important questions about the ways in which students internalize messages about relational aggression.

At a time when SEL is becoming increasingly popular, and evidence-based recommendations are pertinent to its growth, both studies examined in this dissertation

point to theoretical and practical implications for reducing problem behaviors like aggression. In general, the first study extends the literature by illuminating various ways in which positive competencies and school climate perceptions can interact to reduce but also heighten aggression in middle school. The second study then highlights various concurrent and prospective relationships between the individual competencies and students' school climate perceptions with their sense of school connectedness, and in turn, whether connectedness can reduce both forms of aggression. Based on the findings, both studies call for nuanced investigations of the processes and mechanisms at play when seeking to apply the SEL framework to the prevention of aggressive behaviors. Both studies also demonstrate the need for distinguishing between overt and relational forms of aggression, especially since there remains to be scarce knowledge about effectively reducing and preventing relational aggression during the middle school years.

Appendix A: Measures

The following measures are presented in the order they are discussed in the Method section. In the questionnaire distributed to students, the scales and their respective items were presented in a different order.

* = reverse coded item

Empathic Concern (Interpersonal Reactivity Index; Davis, 1980)

Response scale: from 0=Not at all like you to 4=Very much like you

1. You often feel sorry for people who don't have the things you have.
2. You often feel sorry for others when they are having problems.
3. When you see someone being picked on you feel like you'd like to help him or her.
4. You often feel sorry for others who are sad or in trouble.
5. When you see someone being treated mean, it bothers you.
6. You care strongly about the things you see happening around you.
7. You are a person who cares about the feelings of others.

Perspective Taking (Interpersonal Reactivity Index; Davis, 1980)

Response scale: from 0=Not at all like you to 4=Very much like you

1. It's easy for you to understand why other people do the things they do.
2. You sometimes try to understand your friends better by imagining how they think about things.
3. Even when you're mad at someone, you try to understand how he or she feels.
4. You try to understand how others feel before you decide what to say to them.
5. Even when you know you're right, you listen to what other people think.
6. Before you say anything bad about anyone, you try to imagine how you would feel if you were that person.
7. There are different ways to think about a problem and you try to look at all of them.

Effortful Control (Early Adolescent Temperament Questionnaire-Revised; Putnam, Ellis, & Rothbart, 2001)

Response scale: from 1=Almost always true to 5=Almost always untrue

Inhibitory Control

1. It's hard for me NOT to open presents before I'm supposed to.
2. When someone tells me to stop doing something, it is easy for me to stop.*
3. The more I try to stop myself from doing something I shouldn't, the more likely I am to do it.
4. It's easy for me to keep a secret.*

5. I can stick with my plans and goals.*

Attention Control

1. It is easy for me to really concentrate on homework problems.*
2. I find it hard to shift gears when I go from one class to another at school.
3. When trying to study, I have difficulty tuning out background noise and concentrating.
4. I am good at keeping track of several different things that are happening around me.*
5. I pay close attention when someone tells me how to do something.*
6. I tend to get in the middle of one thing, then go off and do something else.

Activation Control

1. I have a hard time finishing things on time.
2. I do something fun for a while before starting my homework, even when I'm not supposed to.
3. If I have a hard assignment to do, I get started right away.*
4. I finish my homework before the due date.*
5. I put off working on projects until right before they're due.

School Climate (My Class Inventory; Fraser, 1982)

Response scale: from 1=Not at all true to 5=Very true

Perceived Friction

1. Students in my grade are always fighting with each other.
2. Some of the students in my grade are mean.
3. How true is it that many students in your grade like to fight?
4. Certain students in my grade always want to have their own way.
5. Students in my grade fight a lot.

Perceived Cohesion

1. How true is it that everybody in your grade is your friend?
2. Some students in my grade are not my friends.*
3. All students in my grade are close friends.
4. All of the students in my grade like one another.
5. Students in my grade like each other as friends.

Perceived Competition

1. Students in my grade race to see who can finish first.
2. Most students in my grade want their work to be better than their friend's work.

3. Some students in my grade feel bad when they don't do as well as the others.
4. Some students in my grade always try to do their work better than the others.
5. A few students in my grade want to be first all of the time.

Perceived Satisfaction

1. The students in my grade enjoy their schoolwork.
2. Some of the students in my grade are not happy.*
3. Students in my grade seem to like their classes.
4. How true is it that some of the students in your grade don't like their classes?*
5. How true is it that your grade classes are fun?

School Connectedness (National Longitudinal Study of Adolescent Health; Anderman, 2002 and McNeely, Nonnemaker, & Blum, 2002)

Response scale: from 1=Strongly agree to 5=Strongly disagree

1. I feel safe in my school.
2. The teachers at this school treat students fairly.
3. I am happy to be at this school.
4. I feel like I am part of this school.
5. I feel close to people at this school.

Overt Aggression (Crick, 1993)

Response scale: from 1=Not at all to 5=All the time

1. How often do you hit, push, shove others?
2. How often do you yell and call others names?
3. How often do you start fights?

Relational Aggression (Crick & Grotpeter, 1995)

Response scale: from 1=Not at all to 5=All the time

1. When you're mad at someone, how often do you get even by excluding them from your group of friends?
2. How often do you tell your friends you will stop liking them unless they do what you say?
3. When you're mad at someone, how often do you ignore them or stop talking to them?
4. How often do you exclude some kids from your group of friends?
5. How often do you roll your eyes at other kids?
6. How often do you make mean faces at other kids to hurt their feelings?

Appendix B: Tables

Table 1. Descriptive Statistics for All Study Variables among the Participating Middle School Students, by Gender (Female $n=267$) and Combined ($N=500$)

	Females' Mean(<i>SD</i>)	Males' Mean(<i>SD</i>)	Combined Mean(<i>SD</i>)
Wave 1 Variables			
Empathic Concern	3.18(.66)	2.69(.86)	2.95(.80)
Perspective Taking	2.68(.72)	2.21(.85)	2.46(.82)
Effortful Control	3.75(.57)	3.64(.55)	3.70(.56)
Friction	2.57(.74)	2.70(.72)	2.63(.73)
Cohesion	2.56(.77)	2.46(.83)	2.51(.80)
Competition	3.00(.79)	3.14(.79)	3.06(.79)
Satisfaction	2.95(.60)	2.83(.69)	2.90(.65)
School Connectedness	3.97(.62)	3.70(.74)	3.84(.69)
Overt Aggression	1.65(.66)	2.05(.72)	1.84(.71)
Relational Aggression	1.83(.53)	1.85(.65)	1.84(.59)
Wave 2 Outcome Variables			
Overt Aggression	1.60(.61)	2.05(.72)	1.80(.75)
Relational Aggression	1.83(.63)	1.70(.57)	1.77(.60)

Table 2. Zero-order Correlations for STUDY 1 Variables across Girls' (n=253) and Boys' (n=226) Data

	1	2	3	4	5	6	7	8	9	10	11
Wave 1											
1. Empathic Concern	--	.68**	.15**	.03	.07	.11	.11	-.24**	-.30**	-.27**	-.23**
2. Perspective Taking	.68**	--	.22**	.02	.15*	.05	.14*	-.12	-.27**	-.13*	-.15*
3. Effortful Control	.20**	.30**	--	-.28**	-.01	-.12	.29**	-.35**	-.39**	-.25**	-.26**
4. Friction	.02	-.07	-.18**	--	-.17**	.47**	-.28**	.36**	.26**	.16**	.14**
5. Cohesion	.15*	.33**	.10	-.16*	--	-.03	.32**	-.03	-.09	.05	.01
6. Competition	.22**	.15*	.11	.34**	-.08	--	-.12	.19**	.11	-.02	-.02
7. Satisfaction	-.05	.14*	.28**	-.29**	.35**	-.13	--	-.10	-.20**	-.06	-.14*
8. Overt Aggression	-.20**	-.29**	-.30**	.36**	-.13	.16*	-.22**	--	.51**	.49**	.37**
9. Relational Aggression	-.10	-.23**	-.41**	.31**	-.15*	.22**	-.27**	.48**	--	.39**	.54**
Wave 2											
10. Overt Aggression	-.17**	-.17*	-.11	.18**	-.06	.04	-.11	.39**	.27**	--	.57**
11. Relational Aggression	-.14*	-.14*	-.07	.14*	-.11	.13*	-.12	.23**	.37**	.48**	--

Note. Values above the diagonal are for females and values below the diagonal are for males.

* $p < .05$. ** $p < 0.01$.

Table 3. Standardized Results for STUDY 1: Predicting Wave 2 Overt Aggression from Wave 1 Study Variables ($N=479$)

	Wave 2 Overt Aggression				
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 5</i>
Covariates					
Gender (0=female)	.20***	.17***	.18***	.18***	.18***
Grade	.02	.03	.03	.03	.03
Overt Aggression	.36***	.34***	.34***	.32***	.27***
Relational Aggression	.13**	.13**	.14**	.16***	.20**
Main Effects					
Empathic Concern (EC)		-.16**	-.14**	-.14*	-.24**
Perspective Taking (PT)		.06	.05	.06	.13
Effortful Control (Eff)		.01	.02	.04	-.02
Friction (Fric)			.05	.02	.07
Cohesion (Coh)			.04	.05	.13
Competition (Comp)			-.07	-.04	-.13
Satisfaction (Satis)			-.01	-.04	-.01
Interactions					
EC x Comp				.17**	.15
EC x Fric x Gender					.40***
PT x Fric x Gender					-.29**
EC x Coh x Gender					.30**
Eff x Coh x Gender					.17**
R ² (R ² Change)	.27	.28(.01)*	.29(.01)	.34(.05)*	.38(.05)**

Note. Only significant two- and three-way interactions are shown for purposes of simplicity. Two-way interactions were examined in the presence of all main effects, and three-way interactions in the presence of all two-way interactions.

* $p < .05$. ** $p < 0.01$. *** $p < .001$.

Table 4. Standardized Results for STUDY 1: Predicting Wave 2 Relational Aggression from Wave 1 Study Variables (N=479)

	Wave 2 Relational Aggression				
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 4</i>	<i>Step 5</i>
Covariates					
Gender (0=female)	-.14***	.16***	-.16***	-.17***	-.17***
Grade	.03	.04	.03	.02	.01
Overt Aggression	.11*	.10*	.10*	.09	.07
Relational Aggression	.40***	.41***	.41***	.42***	.45***
Main Effects					
Empathic Concern (EC)		-.16**	-.15**	-.16	-.20*
Perspective Taking (PT)		.09	.09	.11	.12
Effortful Control (Eff)		.02	.03	.03	-.09
Friction (Fric)			.01	-.01	.07
Cohesion (Coh)			.02	.03	.14
Competition (Comp)			-.03	-.02	-.11
Satisfaction (Satis)			-.04	-.05	-.06
Interactions					
EC x Satis				-.21**	-.14
PT x Satis				.18**	.22
EC x Coh x Gender					.31**
R ² (R ² Change)	.23	.24(.01)*	.24(.002)	.26(.02)	.32(.03)

Note. Only significant two- and three-way interactions are shown for purposes of simplicity. Two-way interactions were examined in the presence of all main effects, and three-way interactions in the presence of all two-way interactions.

* $p < .05$. ** $p < 0.01$. *** $p < .001$.

Table 5. Zero-Order Correlations for STUDY 2 Variables across Girls' (n=266) and Boys' (n=233) Data

	1	2	3	4	5	6	7	8	9	10	11	12
Wave 1												
1. Empathic Concern	--	.67**	.17**	.03	.06	.12*	.08	.22**	-.23**	-.31**	-.27**	-.22**
2. Perspective Taking	.70**	--	.22**	.02	.13*	.05	.13*	.28**	-.12	-.28**	-.12*	-.15*
3. Effortful Control	.27**	.34**	--	-.28**	-.01	-.12	.28**	.38**	-.35**	-.39**	-.25**	-.26**
4. Friction	-.07	-.12	-.22**	--	-.16**	.47**	-.28**	-.27**	.36**	.25**	.15*	.13*
5. Cohesion	.17*	.34**	.12	-.18**	--	-.04	.33**	.26**	-.02	-.06	.05	.03
6. Competition	.20**	.15**	.12	.32**	-.09	--	-.13*	-.11	.18**	.10	-.03	-.03
7. Satisfaction	.04	.20**	.32**	-.34**	.37**	-.12	--	.42**	-.10	-.17**	-.06	-.13*
8. School Connectedness	.22**	.32**	.36**	-.41**	.42**	-.10	.44**	--	-.23**	-.20**	-.11	-.12
9. Overt Aggression	-.23**	-.33**	-.33**	.41**	-.16*	.18**	-.27**	-.34**	--	.51**	.49**	.36**
10. Relational Aggression	-.31**	-.27**	-.42**	.33**	-.18**	.24**	-.29**	-.44**	.53**	--	.38**	.53**
Wave 2												
11. Overt Aggression	-.27**	-.19**	-.14*	.21**	-.07	.03	-.14*	-.27**	.40**	.27**	--	.57**
12. Relational Aggression	-.22**	-.13	-.08	.14*	-.12	.14*	-.13	-.25**	.28**	.39**	.47**	--

Note. Values above the diagonal are for females and values below the diagonal are for males.

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

Table 6. Covariances for STUDY 2 Variables across Girls' (n=266) and Boys' (n=233) Data

	1	2	3	4	5	6	7	8	9
Wave 1									
1. Empathic Concern	--	.69***	.25***	.08	.10	.18**	.16**	-.23**	-.31**
2. Perspective Taking	.70***	--	.28***	.06	.15*	.09	.17**	-.08	-.24***
3. Effortful Control	.27***	.34***	--	-.18**	.04	-.02	.35***	-.28***	-.30***
4. Friction	-.07	-.12	-.22***	--	-.14*	.49***	-.22***	.38***	.28***
5. Cohesion	.17**	.34***	.12	-.18**	--	-.01	.35***	-.01	-.03
6. Competition	.20***	.15*	.12	.32***	-.09	--	-.07*	.19**	.13*
7. Satisfaction	.04	.20**	.32***	-.34***	.37***	-.12	--	-.07	-.12
8. Overt Aggression	-.28***	-.33***	-.33***	.41***	-.16**	.18**	-.27***	--	.51***
9. Relational Aggression	-.19**	-.27***	-.42***	.33***	-.18**	.23***	-.29***	.53***	--
Wave 2									
Girls' Overt and Relational Aggression	.46***								
Boys' Overt and Relational Aggression	.41***								

Note. Values above the diagonal are for females and values below the diagonal are for males.

* $p < .05$. ** $p < 0.01$. *** $p < 0.001$.

Appendix C: Figures

Figure 1. Social and Emotional Learning (SEL) Logic Model proposed by the Collaborative for Academic, Social, and Emotional Learning (CASEL)

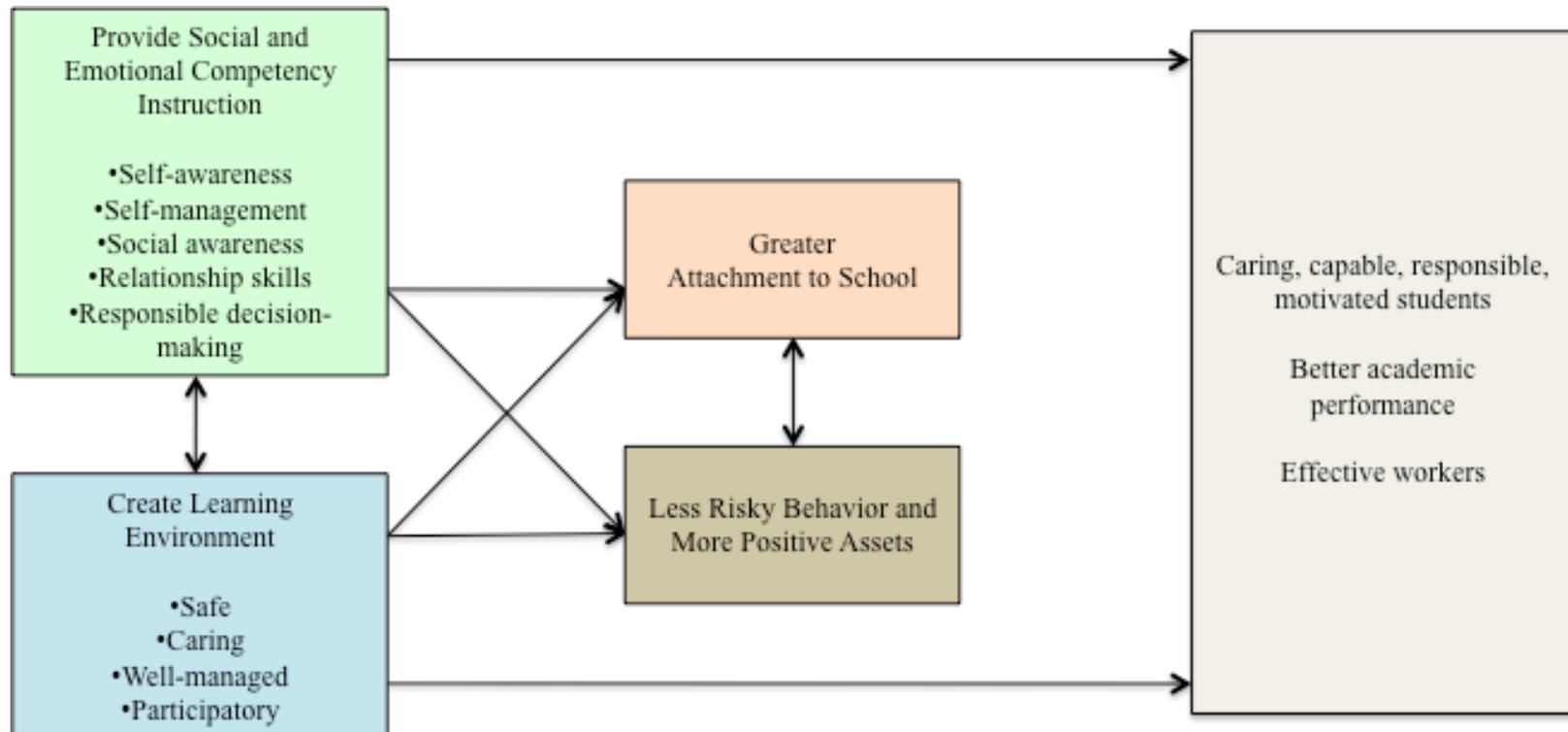


Figure 2. Integrated Logic Model Guiding the Current Dissertation

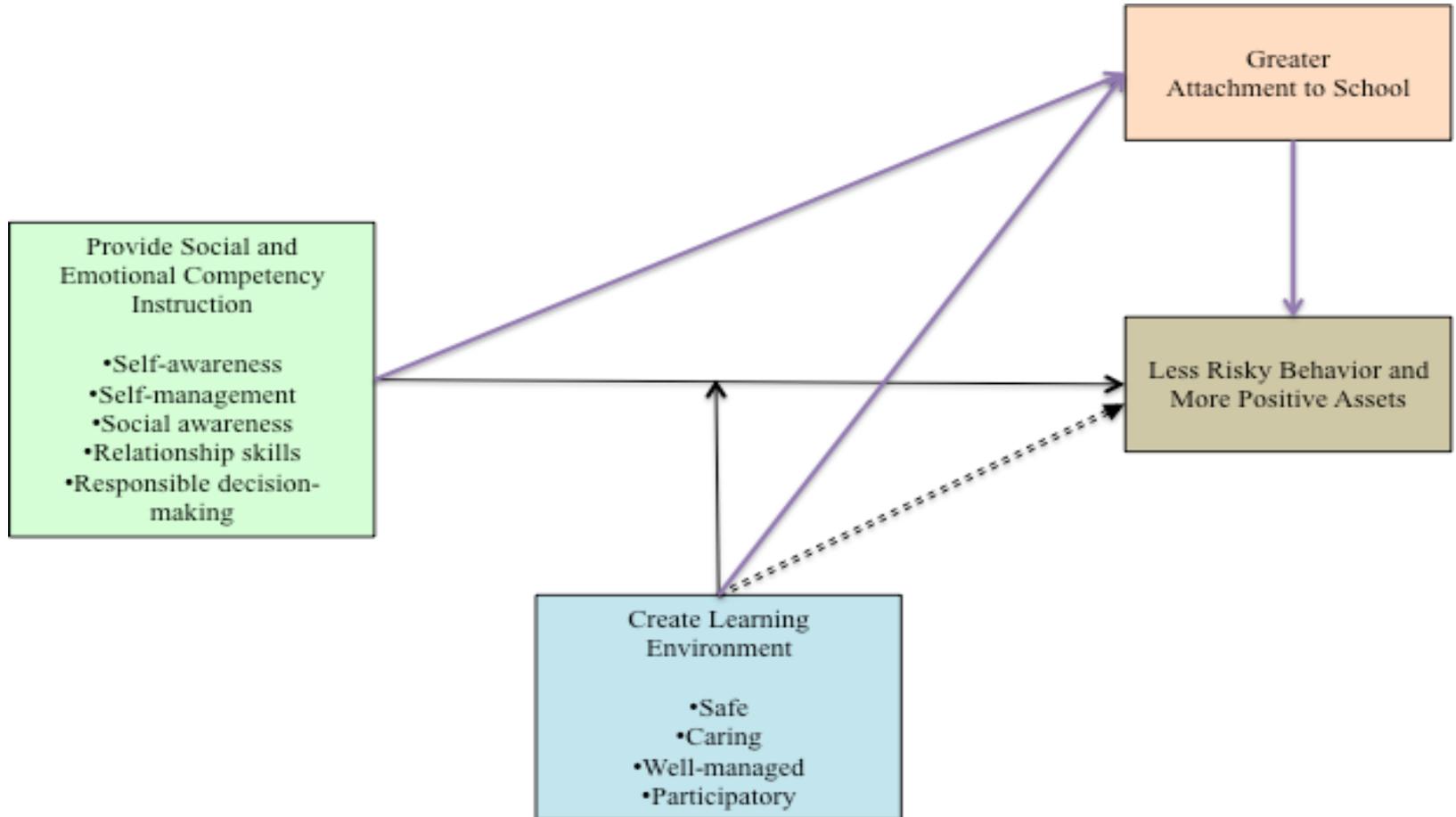


Figure 3. Moderation Model for STUDY 1

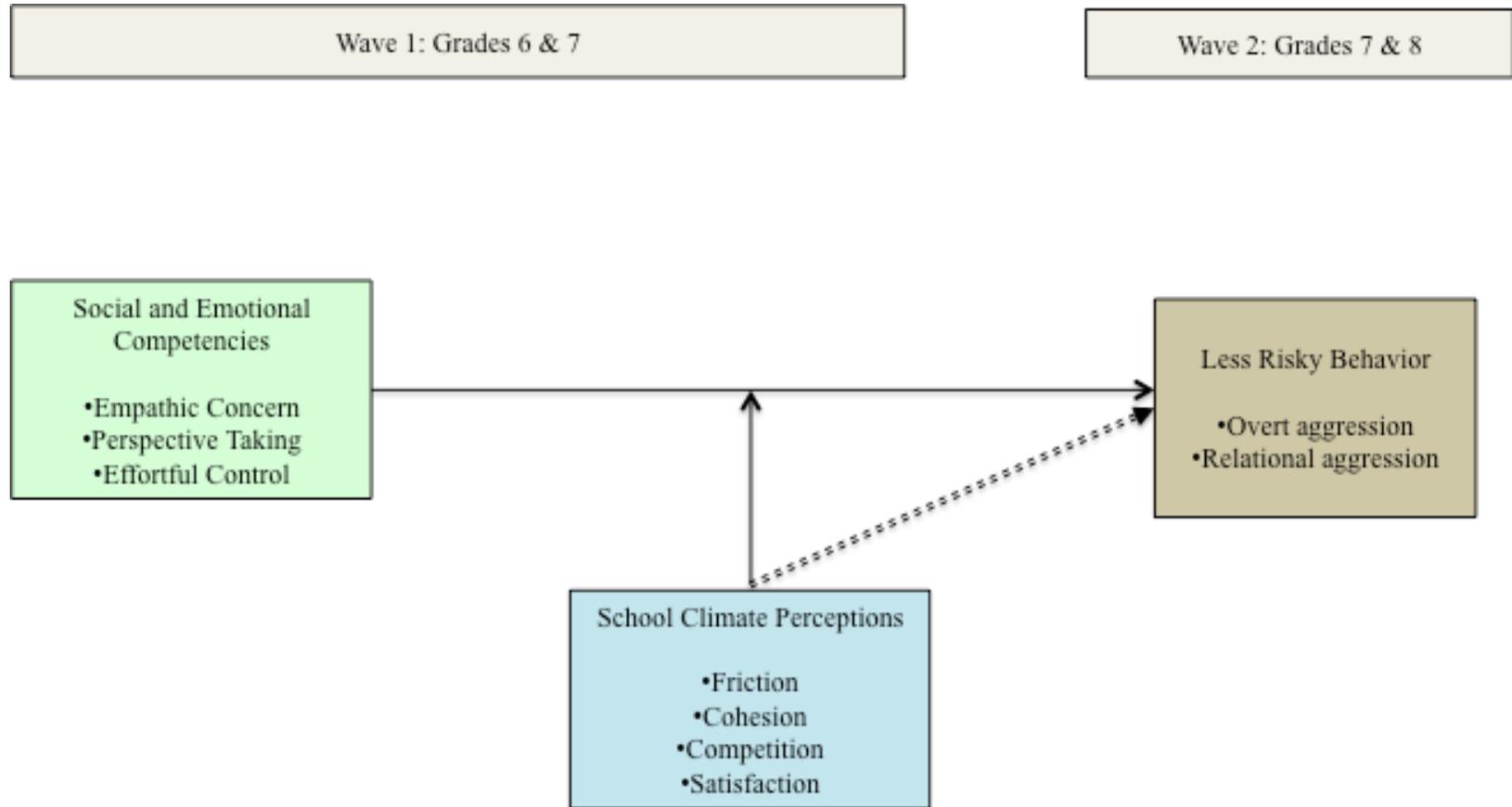


Figure 4. Mediation Model for STUDY 2

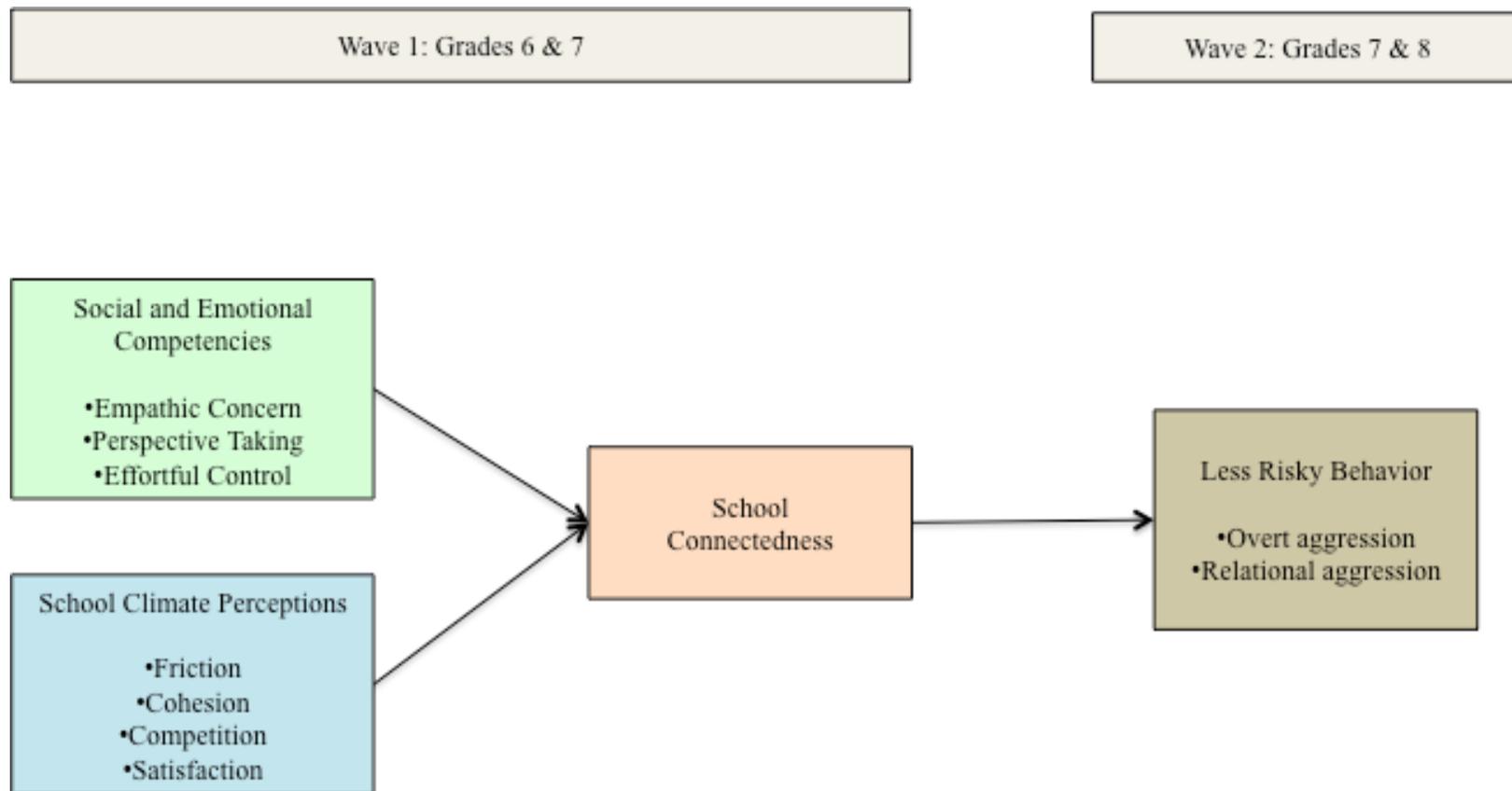


Figure 5. Examining the Empathic Concern x Competition Interaction for Early Adolescents' Self-Reported Wave 2 Overt Aggression: STUDY 1

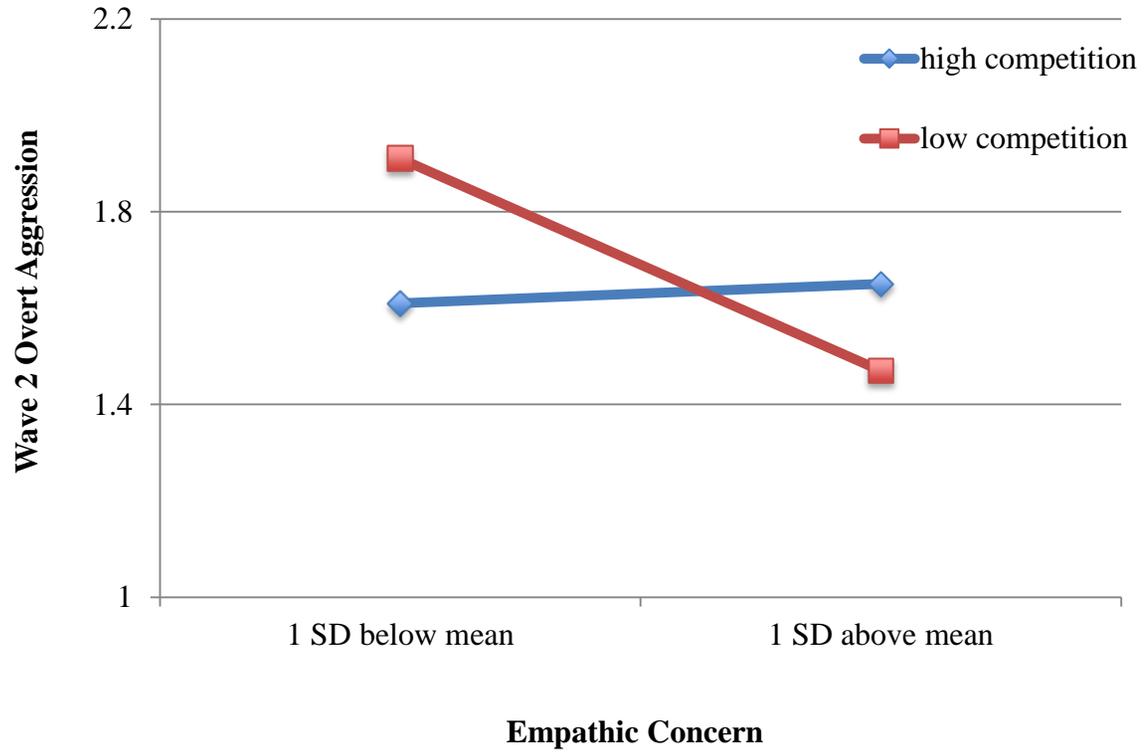


Figure 6. Examining the Empathic Concern x Cohesion x Gender Interaction for Girls' Self-Reported Wave 2 Overt Aggression: STUDY 1

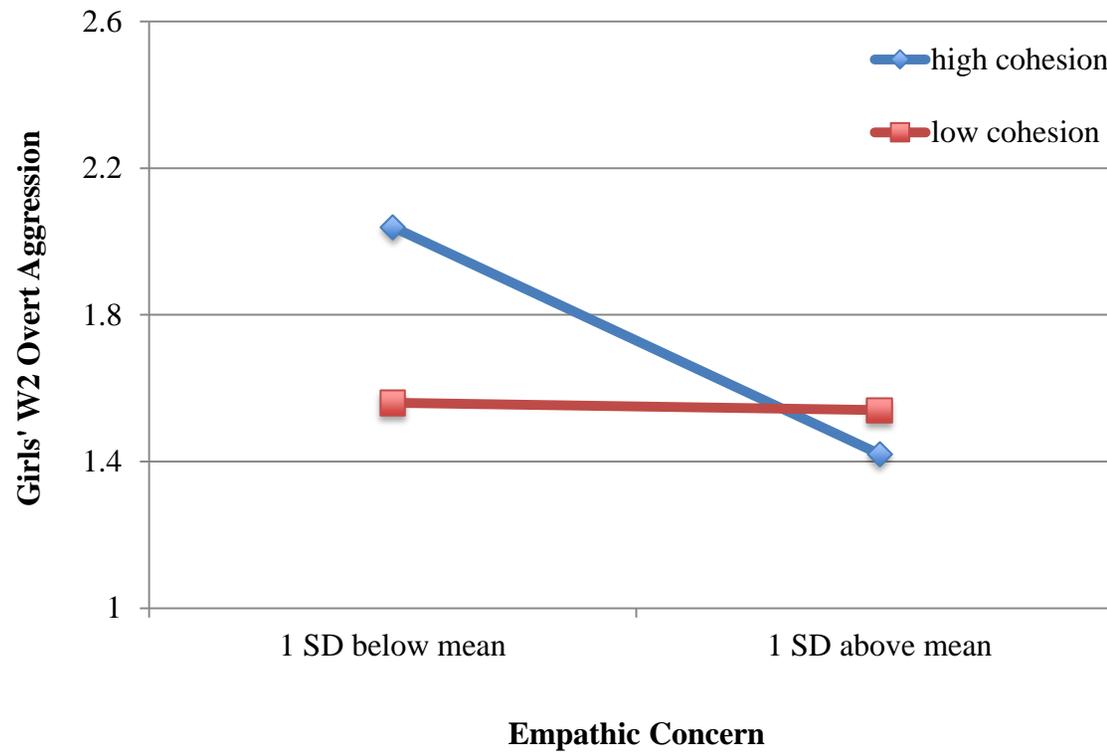


Figure 7. Examining the Effortful Control x Cohesion x Gender Interaction for Boys' Self-Reported Wave 2 Overt Aggression: STUDY 1

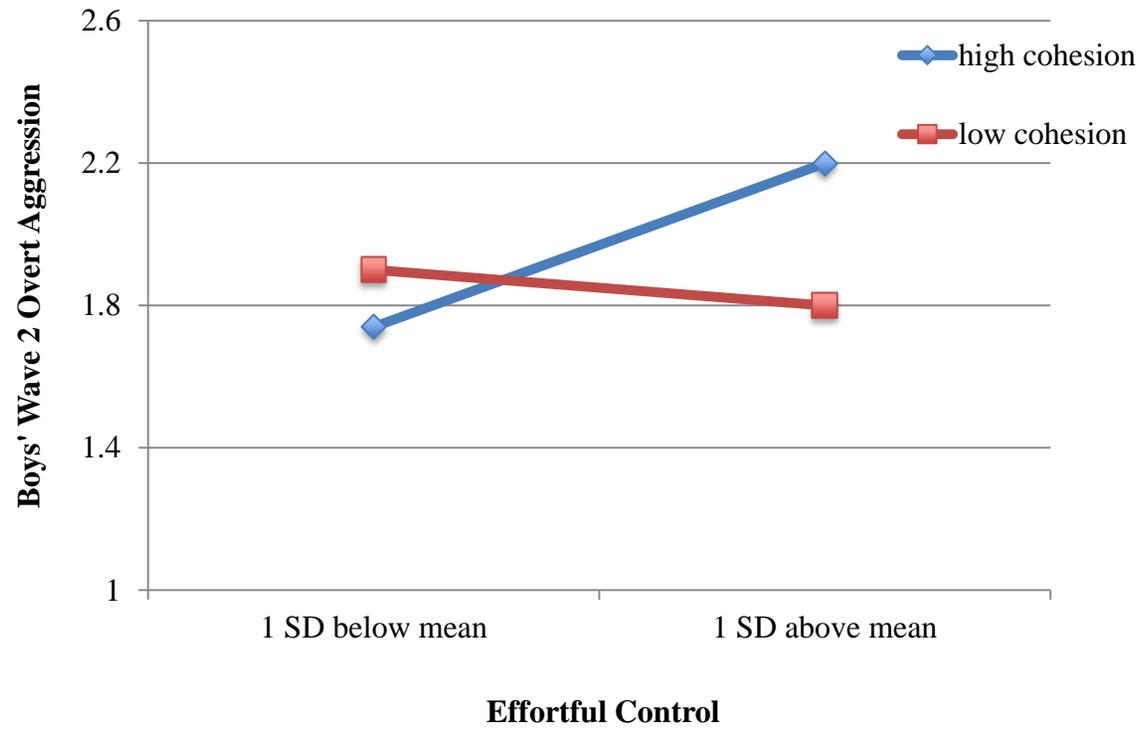


Figure 8. Examining the Empathic Concern x Satisfaction Interaction for Early Adolescents' Self-Reported Wave 2 Relational Aggression: STUDY 1

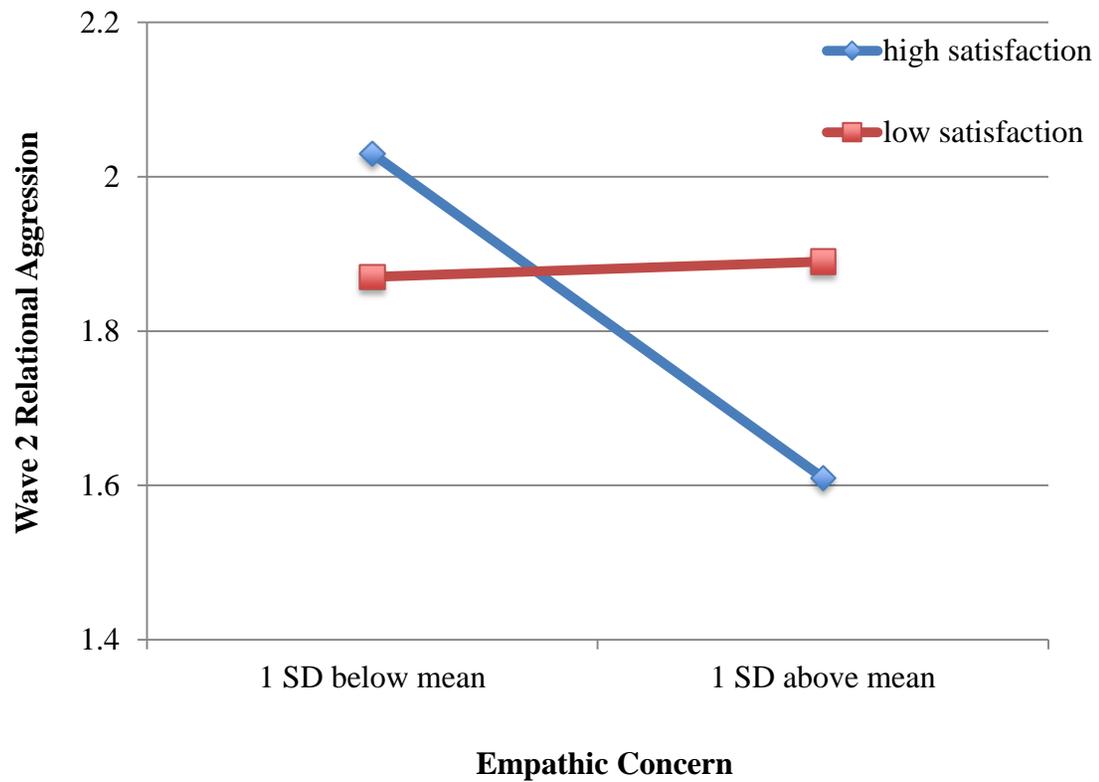


Figure 9. Hypothetical Model Examining Wave 1 School Connectedness as a Mediator of Wave 1 Intraindividual and School Climate Effects on Wave 2 Overt and Relational Aggression: STUDY 2

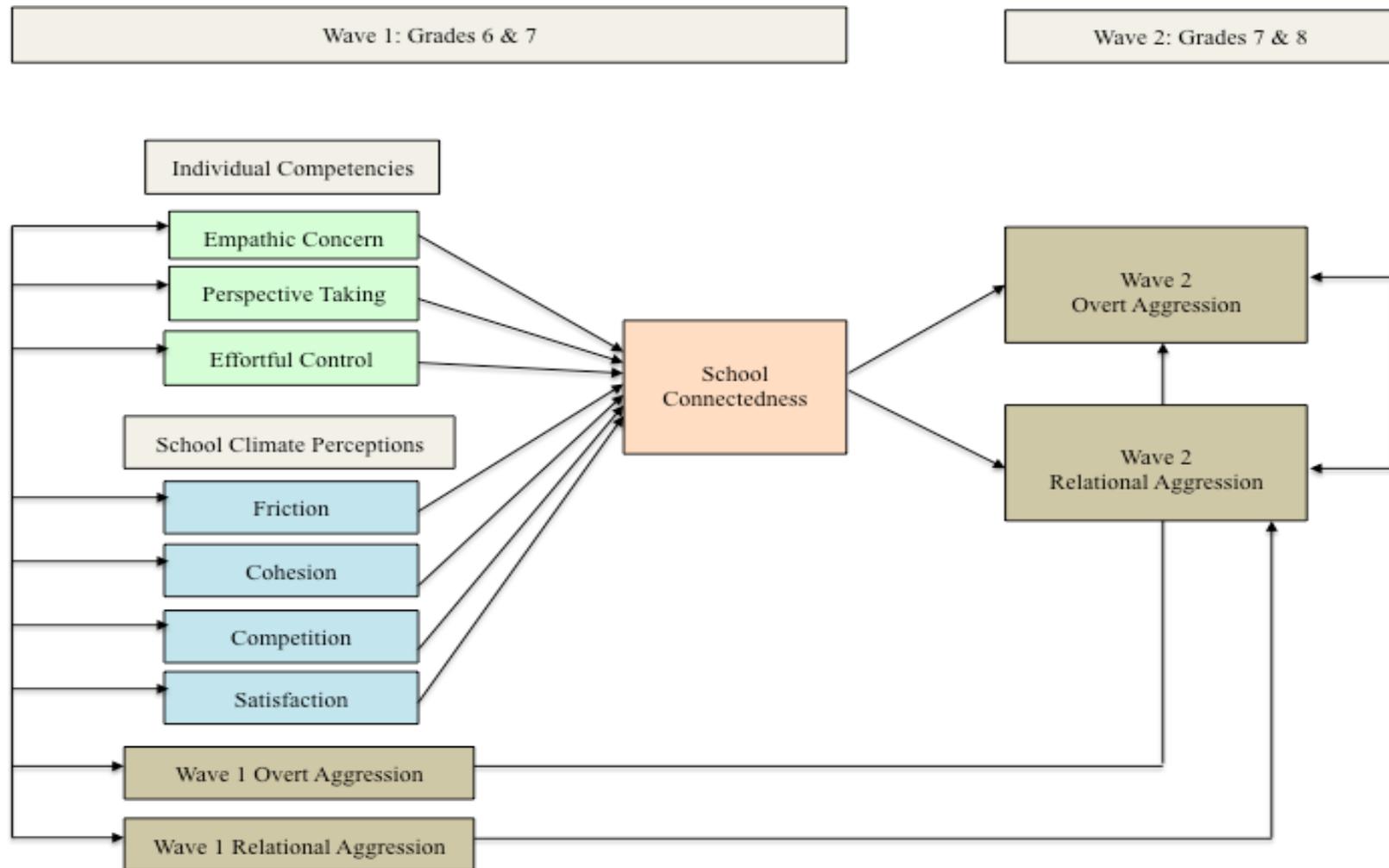
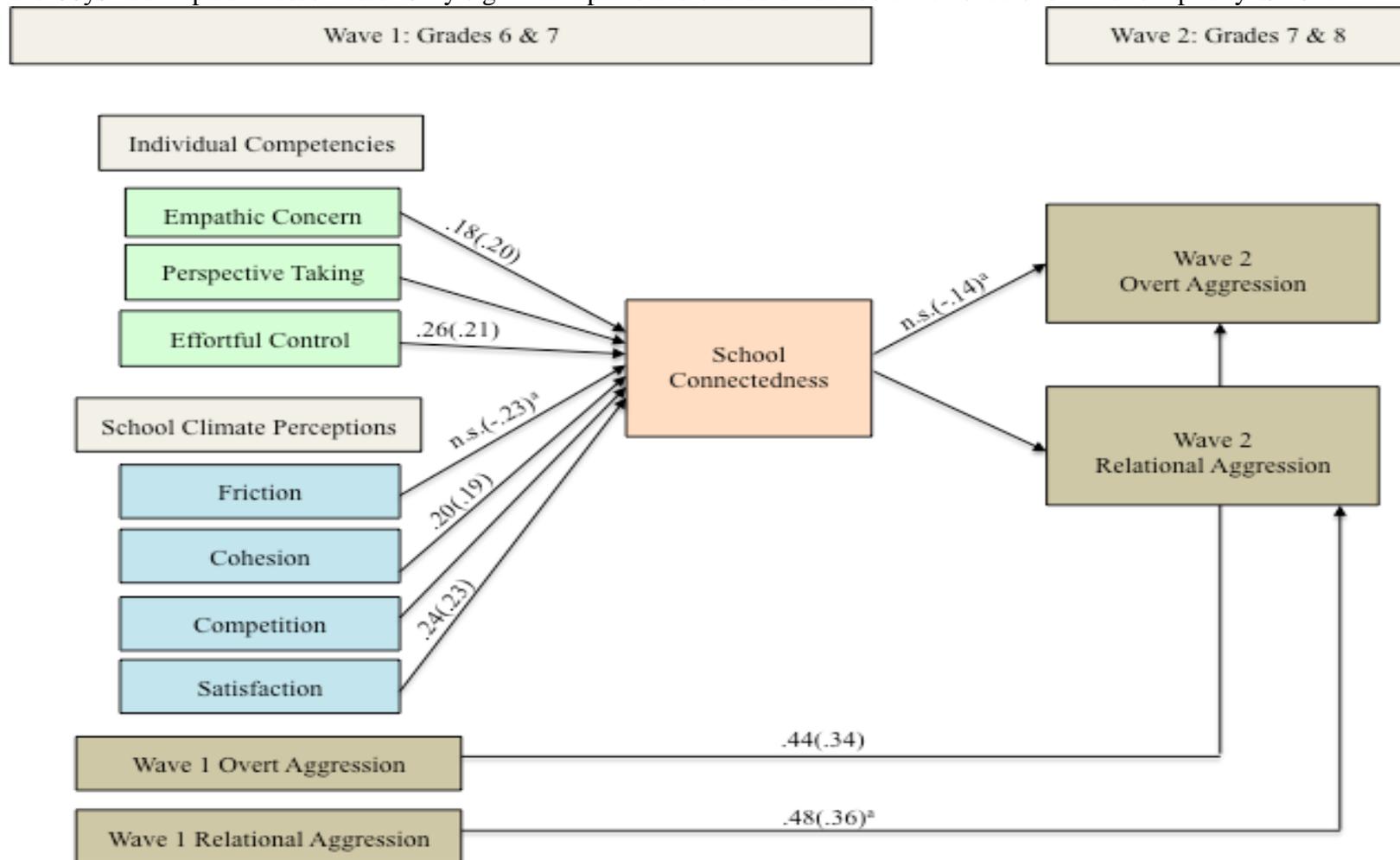


Figure 10. Standardized Solution for the Final Two-Group Model (Girls' $n=266$, Boys' $n=233$). All paths were constrained to be equal across gender, ^awith the exception of three paths that were allowed to freely vary. Girls' coefficients are listed first and boys' are in parentheses. Note: Only significant paths and standardized coefficients are shown for simplicity: STUDY 2



Glossary

Aggression – Behavior that is generally aimed at harming or injuring another person. For the purposes of this dissertation, two forms of aggression are examined:

Overt aggression is characterized by direct acts of aggression, including physical aggression and overt verbal attacks, such as taunting and yelling in order to harm or intimidate another.

Relational aggression comprises less direct, often covert strategies for harming others through purposeful manipulation and damage of their peer relationships. Examples include threatening to withdraw one's friendship, purposefully excluding a peer from social activities, and spreading malicious gossip about a peer.

Effortful Control – A major form of self-regulation comprised of three primary components (inhibitory control, attention control, and activation control) that allow for modulating reactivity and managing one's behavioral impulses.

Empathy – A complex, multidimensional phenomenon involving the capacities for understanding and sharing another's circumstance. For the purposes of this dissertation, two components of empathy are examined:

Empathic concern is the affective or emotional component of empathy that refers to feelings of concern and sympathy for another's circumstance.

Perspective taking is the cognitive component of empathy that refers to the understanding of another's condition.

Mediator – An intervening variable that may wholly or partially explain the relationship

between two other variables.

Moderator – A modifying variable that may act as a vulnerability or exacerbating factor, elevating risk for negative outcomes, or as a protective factor, buffering or offsetting the impact of risk factors on adolescent outcomes.

School Climate – A multidimensional construct that generally refers to the quality and character of a school as shaped by various dimensions, including organizational (e.g., order and discipline), instructional (e.g., teacher practices and curriculum content), and interpersonal (e.g., student-student and student-teacher relationships).

School Connectedness – Students' affective experiences with their school, including their sense of safety, belonging, and commitment to the school.

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