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LONGITUDINAL RELATIONS BETWEEN EMOTIONAL AWARENESS AND  
AGGRESSION IN EARLY ADOLESCENCE: THE MEDIATING ROLE OF EMOTION  
DYSREGULATION.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of  
Philosophy at Virginia Commonwealth University

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## **Abstract**

### **LONGITUDINAL RELATIONS BETWEEN EMOTIONAL AWARENESS AND AGGRESSION IN EARLY ADOLESCENCE: THE MEDIATING ROLE OF EMOTION DYSREGULATION**

By Benjamin V. Rosen, M.S.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of  
Philosophy at Virginia Commonwealth University

Virginia Commonwealth University, 2016

Major Director: Terri Sullivan, Ph.D.  
Associate Professor of Psychology  
Department of Psychology

High prevalence rates exist for physical (i.e., threatened or actual physical force) and relational (i.e., actions meant to harm another's social relationships) aggression within early adolescence, and these behaviors lead to detrimental social, physical, and mental health outcomes. Thus, there is a need to identify risk and protective processes related to these subtypes of aggression, especially those that can inform violence prevention efforts. Prior studies including early adolescents have shown emotion dysregulation to be a risk factor for aggression. However, few studies have incorporated the emotional competence process of poor emotional awareness, which may be a risk factor for emotion dysregulation and, in turn, for aggression. Furthermore, little research has assessed relations between subtypes of emotion dysregulation (i.e., anger and sadness) and physical and relational aggression. The current study examined longitudinal relations between poor emotional awareness and these subtypes of emotion dysregulation and

aggression, as well as concurrent pathways between the emotion dysregulation and aggression variables. Exploratory tests for gender differences were also conducted. Rating scales were collected from 528 sixth graders (51% girls, 49% boys; missing data  $n = 8$ ) and their teachers over a six month period in the fall and spring of the school year. Across the full sample, 65% of students identified as African-American, 19% European-American, 2%, Hispanic Latino, 11% Multiracial, and 3% as “Other”(missing data  $n = 8$ ). Results indicated no significant differences by gender in the strength of relations between study variables. Poor emotional awareness was not directly related to changes in subsequent frequency of physical or relational aggression.

However, poor emotional awareness at Time 1 was associated with later rates of anger and sadness dysregulation. Furthermore, an indirect effect was found for poor emotional awareness on both physical and relational aggression via anger dysregulation, and this was true for student- and teacher-rated outcomes. Sadness dysregulation showed a negative concurrent association with teacher-rated physical aggression; and there was an indirect effect of poor emotional awareness on teacher-rated physical aggression via sadness dysregulation. Study findings have important implications for theoretical treatises, youth violence prevention programs, and future directions for research, which are all discussed.

Longitudinal Relations between Emotional Awareness and Aggression in Early Adolescence:  
The Mediating Role of Emotion Dysregulation.

**Statement of Purpose**

As will be demonstrated in the following review of the literature, aggression is prevalent in early adolescence and it is associated with a number of negative outcomes related to physical and mental health (e.g., Farrell, Sullivan, Esposito, Meyer, & Valois, 2005; Guerra & Bradshaw, 2008; Rose, Simpson, & Moss, 2015; Sullivan, Farrell, & Kliewer, 2006). The current study focuses on two frequently studied subtypes of aggression, physical (i.e., threats or acts of physical violence) and relational (i.e., behaviors designed to harm the victim's social relationships), among early adolescents. Studies have documented high rates of both physical and relational aggression perpetration in adolescent populations (e.g., Rose et al., 2015; Sullivan et al., 2006). For example, in a sample of over 14,000 sixth through twelfth graders, 63% reported perpetrating at least one act of physical aggression in the past 30 days, and 14% reported high levels of physical aggression perpetration (i.e., at least one standard deviation above the sample mean) during that same time frame. These authors also found that 42% of adolescents engaged in relational aggression perpetration at least once in the past 30 days, and 10% reported high levels of these behaviors (Rose et al., 2015). In another study, which sampled 276 early adolescents, 49% and 61% reported being the victim of at least one incident of physical or relational aggression, respectively, in the past 30 days. Additionally, a total of 33% and 38% of youth experienced multiple incidents of physical and relational aggression, respectively, during this timeframe (Sullivan et al., 2006). Furthermore, some researchers have suggested that prevalence rates for physical aggression reach a pinnacle during early adolescence (Marcus, 2007).

The high prevalence of these subtypes of aggression during adolescence is concerning because they are linked to negative outcomes including physical injury, internalizing and risk-taking behaviors, truancy, and poor academic achievement (Farrell et al., 2005; Guerra & Bradshaw, 2008; Sullivan et al., 2006). For example, Farrell and colleagues (2005) showed that frequencies of physical aggression in sixth grade predicted changes in other risk-taking behaviors including delinquency and drug use during seventh grade and at the start of eighth grade. Thus, physical and relational aggression are prevalent during early adolescence and may lead to detrimental effects on psychosocial well-being.

The prevalence and detrimental consequences associated with physical and relational aggression in early adolescence underscore the need to identify risk and protective factors for these behaviors. Emotion processes represent one set of constructs that has received attention in this regard. Specifically, both theoretical and empirical evidence suggest that emotional competence functions as a protective factor based on its negative association with aggression. Conversely, aspects of poor emotional competence function as risk factors for aggressive behavior. For instance, the frustration-aggression hypothesis and catharsis theory both implicate negative affect as a predictor of aggressive behavior (Berkowitz, 1989; Bresin & Gordon, 2013). Furthermore, it has been suggested that it is not simply the experience of negative affect, but how one perceives, addresses, and copes with this emotional experience that determines potential negative outcomes including aggression (e.g., Saarni, 1999; Thompson, 1994).

The previously mentioned theoretical premises have been supported by some empirical research, particularly for one component of emotional competence: emotion-regulation. Not only has effective emotion-regulation been demonstrated to be a protective factor in decreasing the likelihood of aggressive behavior, but emotion dysregulation has been shown to be a risk factor

for several symptoms of poor adjustment, including aggression (e.g., Bowie, 2010; Donahue, Goranson, McClure, & Van Male, 2014; Eisenberg et al., 2001; Gohm & Clore, 2002a; Herts, McLaughlin, & Hatzenbuehler, 2012; Hill, Degan, Calkins, & Keane, 2006; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Sullivan, Helms, Kliewer, & Goodman, 2010). The potential relation between emotional awareness (another component of emotional competence) and aggression has also received some support in the literature, although this association has received comparably less attention than has that between emotion-regulation and aggression. Theoretically, Saarni (1999) posits that emotional awareness, which involves being aware of one's own "emotion state," is the "most basic" skill of emotional competence (Saarni, 1999, p.79). There is some empirical evidence to suggest that higher levels of emotional awareness are associated with adaptive psychosocial functioning, whereas lower levels of this construct have been related to adjustment difficulties, including aggression (e.g., Gohm & Clore, 2002a; Honkalampi et al., 2009; Penza-Clyve & Zeman, 2002).

Despite these documented associations between emotional awareness, emotion-regulation, and aggression, the current literature linking emotional processes to aggression has several limitations. Specifically, while there appears to be strong empirical support for the notion that emotion dysregulation is a predictor of aggressive behavior, less is known about how emotional awareness may fit into this process, leaving a significant gap in the literature. According to Saarni's (1999) conceptualization, emotional awareness is a building block of emotional competence, and thus it likely plays a substantive role, not only in emotion-regulation processes, but also in influencing aggression directly and via its impact on emotion-regulation. However, due to a lack of well-focused empirical investigation, it is unknown whether poor emotional awareness is in fact a precursor of emotion dysregulation in early adolescence, or

whether these two constructs are simply related. This is an important distinction, because if it is found that poor emotional awareness is indeed an antecedent of emotion dysregulation, then prevention and intervention efforts designed to promote emotion-regulation skills may need to explicitly address emotional awareness as well.

Furthermore, little research has examined the role of poor emotional awareness itself as a potential risk factor for aggressive behavior in early adolescence. The few studies examining this construct have focused on its relation more broadly to psychosocial adjustment (Gohm & Clore, 2002a; Honkalampi et al., 2009; Penza-Clyve & Zeman, 2002). One of the few studies to specifically examine associations between poor emotional awareness and aggression showed an indirect effect of negative affect on physical aggression via poor emotional awareness for males but not females (Donahue et al., 2014). It should be noted, however, that Donahue et al. conducted their study with emerging adults, not early adolescents. Thus, there is a gap in the literature regarding how emotional awareness is related to aggression in early adolescence, which is a unique developmental period with regard to socio-emotional and social cognitive processes.

The present study will focus on secondary analyses of data collected from students in the fall and spring of their sixth grade year. This sample of early adolescents entering middle school was selected for several reasons. Early adolescents transitioning to middle school are faced with novel challenges associated with this new setting such as a larger student population, multiple teachers across academic and elective classes, and heightened academic demands in the context of expectations for increased independence and organization (Nansel, Haynie, & Simons-Morton, 2003). Adolescents are making this transition at a stage in their lives that presents unique challenges for navigating their social and emotional experiences (e.g., Arnett, 1999;

Casey, Jones, & Somerville, 2011; Nansel et al., 2003). Specifically, early adolescents face changes in cognitive abilities, brain structure, roles/identities, expectations, and saliency of peer relationships, all of which contribute to an increased likelihood for emotional volatility and the experience of negative moods (Arnett, 1999; Casey et al., 2011). For instance, as will be detailed later in the review of the literature, poor emotion-regulation appears to be a stronger risk factor for aggressive behavior for boys in adolescence than it is earlier in childhood (Bowie, 2010; Herts et al., 2012; Hill et al., 2006; McLaughlin et al., 2011; Sullivan et al., 2010). At the same time, early adolescents are more likely to engage in risky behavior due to the differing rates of the brain structure maturation, which impacts both sensitivity to rewards and cognitive control (Casey et al., 2011).

There are also well-documented risks of bullying and victimization in middle school, which again highlight the importance of investigating potential risk and protective factors for aggression during this developmental period and in this particular setting. The substantial rates of aggression experienced in the middle school setting (e.g., Marcus, 2007) may lead to difficulties navigating and adjusting to the school environment. For example, in one longitudinal study that assessed how bullying and victimization affect middle school adjustment, Nansel and colleagues (2003) identified students who over the course of their sixth grade year had been victimized by bullies three or more times (21%), those who had bullied peers three or more times (3%), and those who endorsed both bullying others and being victimized by bullies three or more times (3%). The results of Nansel et al. showed that participants in any of these three groups evidenced poorer adjustment to school than did the participants who did not endorse bullying or being victimized, and this was true after controlling for baseline scores of adjustment (Nansel et al., 2003).

In sum, the combination of role changes, fluid and developing capacities for executive functioning and emotional competence, and risks of bullying and victimization make early adolescence and the start of middle school a particularly challenging developmental period to navigate. As has already been mentioned, aggression is one common outcome of difficulties navigating this developmental period, an outcome that comes with significant negative consequences (CDC, 2015; Crick, Ostrov, & Kawabata, 2007; Farrell et al., 2005). Again, this highlights the importance of uncovering salient risk and protective factors associated with adolescent aggression, for the purpose of informing prevention and intervention programs. However, not enough attention has been paid to empirically examining aspects of emotional competence as risk and/or protective factors for aggression. Specifically, although there is ample support for the notion that emotion dysregulation is a risk factor for aggressive behavior among adolescents (e.g., Bowie, 2010; Donahue et al., 2014; Eisenberg et al., 2001; Herts et al., 2012; Hill et al., 2006; McLaughlin et al., 2011; Sullivan et al., 2010), insufficient attention has been paid to unpacking how this relation fits into the broader construct of emotional competence (i.e., its relation to poor emotional awareness). Moreover, little is known about longitudinal relations between poor emotional awareness and subtypes of physical and relational aggression, nor the degree to which emotion-regulation may mediate these associations specifically within the context of early adolescence. Not only is the picture of these processes unclear, it is also unknown whether gender differences exist among these proposed relations in early adolescence.

The current study will extend the literature related to emotional competence and aggression by examining how emotional awareness fits into the previously demonstrated relation between emotion-regulation and aggression. Specifically, the aim of this study is to test whether poor emotional awareness itself is a risk factor for aggression, and whether this relation is



mediated by emotion dysregulation. If evidence suggests this is so, it would lend support to the notion that poor emotional awareness is not only a precursor to and risk factor for emotion dysregulation, but is also a risk factor for aggression. Additionally, this study will examine whether these relations operate similarly for physical and relational aggression, and for sadness versus anger dysregulation. Tests for potential gender differences will also be included. Finally, the current study will utilize a longitudinal design that will help clarify how two components of emotional competence, emotional awareness and emotion-regulation, interact and are related to physical and relational aggression in early adolescence over time.

### **Review of the Literature**

The following review of the literature addresses relevant constructs, theories, and empirical research on aggression, emotion processes, and their interrelations to provide the background for the current study. In the first section, a few common subtypes of aggression are discussed, including their definitions, forms, and functions. Empirical evidence on the prevalence of aggression in adolescence and its harmful nature is presented to support the premise that this construct requires continued research attention. In the second section, the emotion processes for the current study are defined and their associations discussed. In the third and last section, theoretical models that focus on how emotions play important roles in the development and enactment of aggression are presented. Empirical literature on relations between the current study's emotion processes and aggression are also reviewed. This includes a discussion of potential gender differences in the strength of these relations.

### **Prevalence and Consequences of Aggression in Adolescence**

Aggression is commonly defined as set of behaviors that are meant to be hurtful and cause harm, in some manner, to others (e.g., Crapanzano, Frick, & Terranova, 2010; Lansford et al., 2012; Roberton, Daffern, & Bucks, 2012). Researchers and theorists have proposed various

ways of conceptualizing and categorizing aggressive behavior. For instance, one categorization is to identify aggression as either reactive or proactive (e.g., Crapanzano et al., 2010; Roll, Koglin, & Petermann, 2012). The distinction here is that reactive aggression is thought to be “impulsive and occurs as an angry response to a perceived provocation or threat”; whereas, proactive aggression involves behaviors that are “more planned and premeditated aggressive acts that are for instrumental gain or dominance over others” (Crapanzano et al., 2010, p.433). Thus, the function of these two subtypes of aggression differs in that reactive aggression is a direct response to alleviate anger, whereas proactive aggression is used to achieve specific material or social goals (e.g., being popular). However, it has been argued that this dichotomy does not accurately reflect typical aggressive behavior, which often involves more than one motive and more than one information processing pathway (Crapanzano, et al., 2010; Robertson et al., 2012). Thus, while it is an important conceptual distinction, the reactive versus proactive dichotomy of aggression will not be the main focus of the present study.

Another key distinction that has been made in the literature is between physical and relational aggression, based on the form and function of these subtypes of aggression. Physical aggression involves the use of actual or threatened physical harm, such as hitting or threatening to hit another person (e.g., Crick et al., 2007), and it may result in physical injury. Relational aggression, on the other hand, encompasses behaviors including gossip and rumor spreading, social exclusion, and coercion with the goal of inflicting harm by sabotaging an individual’s social relationships (e.g., Burton, Hafetz, & Henninger, 2007; Crick et al., 2007). Although physical and relational aggression represent only two of the several subtypes of aggression (e.g., verbal aggression represents direct insults and teasing to hurt others), they are important due to

the high negative costs of both in terms of psychosocial adjustment, and also the unique distinctions between these constructs for boys and girls.

Whereas it was once believed that girls were relatively non-aggressive, research incorporating measures of relational aggression suggests otherwise (e.g., Crapanzano et al., 2010; Crick et al., 2007). Some studies have found a consistent pattern in that boys engaged in higher rates of physical aggression as compared to girls in adolescence (e.g., Calvete & Orue, 2012; Lansford et al. 2012; Marsee, Lau, & Lapre, 2014). Interestingly, a number of studies including adolescents have found no differences in rates of relational aggression by gender (Burton et al., 2007; Lansford et al., 2012; Marsee et al., 2014; Paquette & Underwood, 1999).

However, there is evidence that girls and boys may view and experience physical and relational aggression differently (Galen & Underwood, 1997; Paquette & Underwood, 1999). In one study, adolescent boys and girls reported similar frequencies of relational aggression; however, girls experienced significantly more negative affect than did boys when targeted with relational aggression, and they ruminated to a greater degree about these incidents (Paquette & Underwood, 1999). In a study of fourth, seventh, and tenth graders, although girls viewed physical and relational aggression as equally hurtful, they rated relational aggression as significantly more hurtful than did boys. In contrast, boys found physical aggression more hurtful than relational aggression (Galen & Underwood, 1997). Thus, it appears that girls find relational aggression as particularly harmful and distressing, which may be due in part to gender norms, as girls tend to have smaller, more intimate and less permeable friendship groups than boys and may place a higher importance on social bonds within peer relationships (Crick et al., 2007). Conversely, boys perceived physical aggression as more hurtful than did girls (Galen & Underwood, 1997). Physical aggression may be particularly hurtful for boys based on its more

overt nature as it is clear to peers when someone is being aggressed upon. Given these differences, in order to capture aggressive behavior across genders, it is necessary to examine both physical and relational aggression.

As alluded to earlier, there are high costs associated with aggression. For instance, in a nationally representative sample of high school students, approximately 6% reported not going to school for 1 or more days out of 30 due to feeling unsafe either at school or traveling to school (CDC, 2015). Furthermore, almost 700,000 youth aged 10 to 24 were physically assaulted and required emergency department care across a one-year timeframe (CDC, 2015). While relational aggression does not include physical injury, it still is associated with significant harm. This subtype of aggression and resulting victimization experiences are positively linked with internalizing and risk-taking behaviors such as delinquency and drug use, academic difficulties, and interpersonal struggles (Crick et al., 2007). Given the costs outlined above, it is important to make continued efforts to advance the literature by identifying risk and protective factors for aggression, as this may inform prevention and intervention efforts.

### **Emotion Processes**

In an attempt to identify risk and protective factors related to aggression, a theoretical and empirical case will be made later in this literature review that emotional competence – specifically emotional awareness and emotion-regulation – plays an important role in predicting aggression, since it is involved in the process of moving from frustration and the experience of negative affect to engaging in aggressive behavior. Prior to this discussion, however, the current section will provide an operational definition of emotional competence, which will include the skills that comprise this form of competence. The main theoretical frameworks used in conceptualizing emotional competence will be also discussed before exploring the two

components of emotional competence central to this study – emotional awareness and emotion-regulation -- in more detail. These two constructs will be first presented individually, and then the relations between them will be explored.

**Emotional competence.** Several models of emotional competence have been proposed. However, there is no widely accepted label for this construct, which has been referred to as emotional competence, emotional intelligence, and affective social competence (Halberstad, Denham, & Dunsmore, 2001). These terms, though similar, are not interchangeable. The current study draws from Saarni's (1999) conceptualization of emotional competence. In contrast to *emotional intelligence*, which reflects an information processing model, Saarni's (1999) conceptualization of *emotional competence* incorporates both functionalist and social constructivist models of emotion. According to the functionalist perspective, emotions "are processes of establishing, maintaining, or disrupting the relations between the person and the internal or external environment, when such relations are significant to the individual" (Campos, Campos, & Barrett, 1989, p.395). The conceptualization of emotions from the functionalist perspective is similar to the conceptualization from the modal model of emotion, which posits that the process of emotion occurs in sequence, proceeding from a situation occurring, to the individual's attention to that situation, to the persons' appraisal of the situation, and finally to the individual's behavioral response to the situation. The modal model describes emotions as arising from "a person—situation transaction that compels attention, has particular meaning to an individual, and gives rise to a coordinated yet flexible multisystem response to the ongoing person—situation transaction" (Gross & Thompson, 2007, p.5). Thus, the functionalist and modal model definitions both emphasize that emotions are elicited only when a particular situation is meaningful to individuals and their goals; and that when emotions are elicited, they

go beyond subjective feeling states and actually promote action (Campos et al., 1989; Gross & Thompson, 2007).

According to Saarni (1999), *emotional competence* is defined as “self-efficacy in emotion-eliciting interpersonal transactions” (Saarni, 1999, p.97). Put another way, this construct refers to one’s ability to effectively navigate the emotions that are elicited in a given situation, specifically a social encounter, and to arrive at a desired outcome. Saarni (1999) outlined eight skills comprising emotional competence including: (1) emotional awareness, (2) recognition of others’ emotions, (3) emotional expression, (4) empathy toward others' emotional experiences, (5) recognition of emotional dissemblance, (6) adaptively coping with negative emotions via self-regulation (i.e., emotion-regulation), (7) recognition that relationship dynamics influence the ways in which emotions are communicated, and (8) emotional self-efficacy. The current study focuses on two aspects of emotional competence: (a) level of emotional awareness and (b) emotion-regulation, specifically the extent to which adolescents can adaptively cope with negative emotions via self-regulation and avoid the dysregulated expression of those emotions. It should be noted, however, that some studies have been designed based on a different conceptualization than Saarni’s (1999) model of emotional competence. Those studies operationalize emotional awareness as a component of emotion-regulation, rather than treating the two as related, but separate constructs (e.g., Herts et al., 2012; McLaughlin et al., 2011). As would be expected, this lack of consensus on the operationalization of emotion processes makes it difficult to reach definitive conclusions about how these two constructs relate to each other, and how they interact to influence frequencies of aggression.

**Emotional awareness.** The first, and most rudimentary skill of emotion competence is the awareness or recognition of one’s own emotional experience (Saarni, 1999). It is important to

note that Saarni's definition of awareness specifies the recognition specifically of *what* one is feeling, not just the recognition that one is experiencing some unspecified emotion. Similarly, Penza-Clyve and Zeman (2002) operationalized emotional awareness as the ability to *label* one's emotional experience, in a more specific fashion than simply recognizing that one is experiencing emotional distress. While the current study utilizes these definitions of emotional awareness (Penza-Clyve & Zeman, 2002; Saarni, 1999), it should be noted that not all theorists conceptualize emotional awareness similarly. For instance, the prior definitions of emotional awareness encompass both what Halberstad and colleagues (2001) label as *awareness*, and what they label as *identification*. Despite some differences in definitions, it is generally accepted across these theorists and researchers that emotional awareness occurs in a social context, and the ways in which individuals make sense of emotional experiences is embedded within the context of their relationships and social interactions (Halberstad et al., 2001; Penza-Clyve & Zeman, 2002; Saarni, 1999).

Prerequisites for the development of emotional awareness include a sense of self and agency, as well as the cognitive and verbal skills necessary for processing emotional cues (e.g., Lane & Schwartz, 1987; Saarni, 1999). As such, markers of emotional awareness are dependent on an individual's age and developmental stage. A child's understanding of his or her emotion is thought to shift from framing the emotion as tied to wants (ages 2 to 3), to recognizing the role of beliefs and expectations in influencing emotions (ages 4 to 5), to acknowledgement that appraisals of a social situation can drive one's emotional experience (in middle childhood) (Saarni, 1999). Additionally, a central component of Saarni's emotional awareness framework is the notion that as children mature, they develop the awareness to recognize when they are experiencing multiple emotions at the same time; as well as the awareness that at times they may

be unaware of their feelings about a particular social interaction. The awareness of and ability to identify multiple emotions is thought to develop by early adolescence (Saarni, 1999), and youth who have difficulty recognizing specific emotions may still sense general emotional arousal (Penza-Clyve & Zeman, 2002). However, it is important to note that although the capability for emotional awareness typically develops by early adolescence, it is not true that each and every adolescent has acquired this skill. Indeed, individuals of all ages can and do still experience poor emotional awareness. For example, in a study of undergraduate students, four cluster profiles were identified which differentiated participants on various aspects of emotional competence. Two of these four profiles, which accounted for 48% of the entire sample, included individuals who scored low on emotional clarity (i.e., the ability to identify and label feelings) (Gohm, 1998; Gohm & Clore, 2002b).

Another factor to take into account when discussing emotional awareness is gender. Saarni (1999) points out that some evidence exists to suggest that boys are less emotionally expressive than girls. Because emotional awareness is thought to involve having an emotional vocabulary to process and label emotional experiences, boys may be at a disadvantage because they tend to have less experience expressing their feelings. However, Saarni (1999) also notes that the evidence about whether such differences in expression actually relate to differences in awareness of one's own emotions is muddled and includes contradictory findings. For example, Penza-Clyve and Zeman (2002) found no significant differences between boys and girls in middle childhood and early adolescence on levels of poor emotional awareness.

**Emotion-regulation.** Based on Saarni's (1999) conceptualization of emotional competence, skills related to emotion-regulation include the ability to control and adaptively express negative emotions. Overall, the operational definition of emotion-regulation is complex.



Once thought to be primarily a subjective and internal phenomena, more current conceptualizations of emotion focus on the meaning of the eliciting situation, its social context, and the overall function of emotion. According to the functionalist perspective, emotions *function* as a regulatory process in that they can promote maintenance or cessation of a behavior, can motivate a person to stay or retreat from a situation, and can elicit specific types of feedback from other individuals (Campos et al., 1989). An example would be an individual who feels sad or hurt, and is thus motivated to remove himself or herself from the eliciting situation, while at the same time others are signaled that the individual may need comforting.

Emotions help individuals navigate meaningful situations and important interactions. However, at times, emotions can hinder functioning, especially when the intensity of emotional responses are not proportional to the eliciting situation, or emotional reactions are inappropriate for the given situation (Gross & Thompson, 2007). As such, emotions themselves must be regulated in order to promote adaptive functioning (e.g., Campos et al., 1989; Gross & Thompson, 2007; Robertson et al., 2012; Roll et al., 2012; Sullivan et al., 2010; Thompson, 1994; Zeman, Shipman, & Penza-Clyve, 2001). The process of *emotion-regulation* has been defined as “...the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals” (Thompson, 1994, pp. 27-28). According to the modal model, depending on the person’s goals, emotion-regulation can increase, decrease, or maintain the intensity of an emotion (Gross & Thompson, 2007). Effective emotion-regulation promotes successful functioning in one’s environment by allowing a person to manage his or her emotional experience while still behaving in a goal-oriented fashion (Robertson et al., 2012). It is believed that the basic skills necessary for adaptive emotion-regulation are often acquired by middle-childhood (Saarni,

1999). Conversely, maladaptive emotion-regulation occurs when a person either under- or over-controls their emotions (Robertson et al., 2012), which can result in various problems with functioning and mental health (e.g., Robertson et al., 2012; Roll et al., 2012; Zeman et al., 2001).

It should be pointed out that emotion-regulation is not a singular process; instead, it is an umbrella term that refers to many processes that serve the purpose of regulating one's emotional experience. Emotion-regulation can also involve deliberate or automatic strategies (Robertson et al., 2012). For the purposes of this study, the focus will be on the degree to which individuals struggle with the adaptive control of emotions via self-regulation and effective expression of these emotions.

The modal model describes five basic emotion-regulation families, which all involve deliberate strategies for regulating emotion, with several specific strategies within each family. These families are situation selection, situation modification, attention deployment, cognitive change, and response modulation (Gross & Thompson, 2007). Each of these families has a different point on the emotion generation cycle in which it could be used to regulate emotion. Situation selection and situation modification involve selecting certain types of situations or modifying existing situations in order to decrease the chances for unwanted emotional responses (Gross & Thompson, 2007). Attention deployment and cognitive change represent internal strategies for taking attention away from certain emotion-eliciting stimuli in a given situation or modifying interpretations of those stimuli (Gross & Thompson, 2007). These four families represent efforts to regulate emotion prior to an emotional response being elicited.

In contrast, the fifth and final family—response modulation—involves regulating efforts after experiencing the emotional response (Gross & Thompson, 2007). One of the major response modulation strategies involves managing how emotion is controlled and expressed

(e.g., crying when sad, yelling when angry, cowering when fearful, etc.; Gross & Thompson, 2007). It is this family of emotion-regulation (response modulation) that will be the primary focus of this study, because it has been shown that efforts to reduce aggression are more effective when they involve teaching emotion-regulation skills for dealing with emotions such as anger after anger-eliciting situations occur (Calvete & Orue, 2012).

**Relations between emotional awareness and emotion-regulation.** There are theoretical bases for hypothesizing that emotional awareness is a necessary precursor for effective emotion-regulation (Saarni, 1999; Thompson, 1994). According to Saarni (1999), emotional awareness is theorized to facilitate social functioning by allowing individuals to better evaluate interpersonal interactions and to utilize information drawn from their emotional state to facilitate adaptive emotion-regulation and problem-solving based on the dynamics of a given situation (Saarni, 1999). For instance, being aware and differentiating feelings of fear from feelings of excitement (as both could result in similar physiological experiences), allows individuals to evaluate the context of their situation for the presence of a threat. Should such a threat exist; the person would then be in a position to formulate a plan to mitigate that threat, including appropriate coping strategies related to the regulation and expression of this emotion. Furthermore, according to Saarni (1999), emotional awareness allows a person to seek social support, to receive social cues and feedback, and thus to have additional data to use in formulating a course of action. Not surprisingly, then, adolescents who are aware of their emotions are also more likely to have positive peer relationships (Cassidy, Parke, Butkovsky, & Braungart, 1992). However, poor emotional awareness may be related to difficulties in selecting adaptive emotion-regulation strategies and effectively expressing negative emotions. This is because individuals' accurate understanding of the emotions they are experiencing is a precursor to selecting effective ways to

regulate and express these emotions, and thus emotional awareness informs the use of emotion-regulation skills (Saarni, 1999). Thus, according to Saarni (1999), the development of emotional awareness is a building block that allows children to become better equipped to navigate and regulate emotion-eliciting social interactions.

Some empirical research supports this posited relation between emotional awareness and emotion-regulation. Several studies with college students have shown significant associations between emotional awareness and specific emotion-regulation strategies (Gohm & Clore, 2002a; Szczygiel, Buczny, & Banzinska, 2012). In one cross-sectional study, higher levels of emotional awareness were linked to adaptive emotion-regulation strategies, and the combination of high levels of emotional awareness and adaptive emotional-regulation strategies resulted in a lower number of errors on a laboratory task of emotional information processing (Szczygiel et al., 2012). In a separate study, Gohm and Clore (2002a) conducted a confirmatory factor analysis that supported a four-factor model for the experience of emotion. Of the four factors (intensity, attention, clarity, and expression), clarity is of interest for the present study because it closely resembles Saarni's (1999) construct of emotional awareness. Specifically, *clarity* is defined as "the ability to identify and distinguish existing emotions." (Gohm & Clore, 2002a, p.497). These authors found that clarity was positively associated with active and planful coping, as well as positive reinterpretation, and concluded that high levels of clarity facilitate the ability to shift quickly from an "initial emotional reaction to a stressful event and move on to deal with the source of the stress more quickly than do individuals low in clarity" (Gohm & Clore, 2002a, p.508). Thus it appears that, at least in adult populations, there is some evidence that emotional awareness facilitates the effective use of emotion-regulation strategies.

Similar to the studies outlined above with emerging adult populations, studies of adolescents have also yielded empirical support for the relation between emotional awareness and emotion-regulation (Eastabrook, Flynn, & Hollenstein, 2014; Penza-Clyve & Zeman, 2002). In a cross-sectional study of female adolescents aged 13 to 16 living in Canada, Eastabrook and colleagues (2014) found a positive correlation between emotional awareness and the emotion-regulation strategy of reappraisal. The researchers noted that, “because reappraisal involves cognitive re-framing of an emotional situation, it requires the understanding of specific emotional elicitors and corresponding emotions” (Eastabrook et al., 2014, p. 492). Thus, this lends support to the notion that emotional awareness is a necessary precursor to effective emotion-regulation, specifically when the strategy of reappraisal is used. Additionally, Penza-Clyve and Zeman (2002) conducted a cross-sectional study with children aged 9-12 to provide psychometric support for their Emotion Expression Scale for Children (EESC). Included in this measure are two subscales: poor emotional awareness and expressive reluctance. Results showed that among children aged 9-12, lower levels of emotional awareness were associated with lower levels of adaptive emotion-regulation coping and higher levels of dysregulated emotional expression (Penza-Clyve & Zeman, 2002).

Based on this literature, there is some empirical support for the notion that emotional awareness and emotion-regulation are positively correlated, and theoretical support for emotional awareness as a precursor for effective emotion-regulation (Saarni, 1999). However, there are some limitations of this literature. First, studies examining relations between emotional awareness and emotion-regulation processes in adolescence and emerging adulthood have been cross-sectional in nature, and thus do not provide information about causal relations between these constructs. The existing literature also does not specifically address associations between

emotional awareness and emotion-regulation in samples comprised exclusively of early adolescents. As discussed previously, early adolescence is a period characterized by specific aspects of emotional and social cognitive development, and thus studies with samples spanning middle childhood to early adolescence (e.g., Penza-Clyve & Zeman, 2002) or early to mid-adolescence (Eastabrook et al., 2014) may not provide specific information regarding relations between these emotion variables for early adolescents. Studies examining associations between emotional awareness and emotion-regulation have also not addressed potential gender differences in the strength of these relations (e.g., Eastabrook et al., 2014; Penza-Clyve & Zeman, 2002). The gaps in the literature are exacerbated by the lack of continuity in the operationalization of these emotion variables. For example, they are sometimes considered and assessed as separate constructs (e.g., Eastabrook et al., 2014; Penza-Clyve & Zeman, 2002) and at other times combined into a composite measure of emotion-regulation (e.g., Herts et al. 2012; McLaughlin et al., 2011). These inconsistencies make it more difficult to shed light on how, as separate constructs, emotional awareness relates to emotion-regulation.

### **Emotion Processes and Aggression**

**Theories linking emotion processes and aggression.** In order to advance the literature, it is first necessary to review current theoretical treatises on aggression. One predominant theory that has been used to explain aggression is the *frustration-aggression hypothesis*. First proposed as the Yale Hypothesis in 1939 by Dollard and colleagues, it has since been modified and reformulated to account for more empirical findings over the decades since it was introduced (Berkowitz, 1989). The basic premise is that aggression arises from frustrations, which occur when one is thwarted from obtaining an expected goal and/or rewards. (Berkowitz, 1989). Furthermore, it is thought that frustrations lead to aggression only when they involve negative

emotions (Berkowitz, 1989). Thus, frustrations that are more likely to produce negative emotions, such as when one is unexpectedly thwarted from attaining a goal with anticipated rewards, or if this thwarting is done in a way that is socially unacceptable, are also more likely to result in instigating aggression (Berkowitz, 1989). It is suggested that aggression is a response to the individual's natural urge to decrease or eliminate these aversive and unpleasant feelings (Berkowitz, 1989). This urge could also be referred to as one's aggressive drive (e.g., Bresin & Gordon, 2013).

The notion that aggression is a response to aversive affect has also been referred to as *catharsis theory* (e.g., Bresin & Gordon, 2013). Simply put, catharsis theory suggests that engaging in aggressive behavior will reduce one's aggressive drive and decrease "emotional tension" such as anger (Bresin & Gordon, 2013, p. 401). In their own study, Bresin and Gordon (2013) added to the literature that supports this premise when they found that aggressive behavior toward the source of one's frustration did in fact reduce anger.

Clearly, both the frustration-aggression hypothesis and the catharsis theory emphasize the role of emotion in aggression. Specifically, just as the frustration-hypothesis proposes that frustrations/thwartings can cause negative affect and thus increase the drive to act aggressively, the catharsis theory suggests that this build-up of "emotional tension" (Bresin & Gordon, 2013) can be lessened via aggressive acts. Thus, from these perspectives, negative emotions play an integral role in the development and maintenance of aggression.

**Emotional awareness in relation to aggression.** While there have only been a handful of studies which have explored the relation between emotional awareness and emotion-regulation, there have been even fewer studies examining how emotional awareness is related to aggression. As such, in reviewing this research, studies examining associations between a closely

related construct, alexithymia (e.g., the inability to identify and describe emotions) and externalizing behavior among adolescent and adult samples was also included.

There is some evidence to suggest that among adults, poor emotional awareness is associated with a particular subtype of aggression – impulsive aggression (Fossati et al., 2009; Teten, Miller, Bailey, Dunn, & Kent, 2008). In a cross-sectional study of Italian undergraduates, Fossati and colleagues (2009) studied how alexithymia, attachment styles, and impulsive aggression related to one another. Findings indicated that difficulties with emotional awareness and the identification of feelings were significantly related to impulsive aggression (Fossati et al., 2009). These results are consistent with those of a separate cross-sectional study of posttraumatic stress disorder conducted by Teten and colleagues (2008), which showed a similar relation between poor emotional awareness and impulsive aggression among middle-aged military veterans. Thus, there is some evidence to suggest that poor emotional awareness is a risk factor for reactive aggression among adults, particularly males. Unfortunately, it is less clear how poor emotional awareness relates specifically to physical and relational aggression among adult populations.

There is also a dearth of studies that have focused on relations between emotional awareness and aggression in an adolescent population. Instead, most studies have examined relations between emotional awareness and more general outcomes such as psychological well-being, and internalizing and externalizing symptoms (Gohm & Clore, 2002a; Honkalampi et al., 2009; Penza-Clyve & Zeman, 2002). For instance, Gohm and Clore (2002a) showed that emotional clarity (i.e., the ability to identify and label one's own emotions) was positively correlated with healthy psychological well-being, and negatively associated with poor psychological well-being among college students. Similarly, Penza-Clyve and Zeman (2002)



found that poor emotional awareness was positively associated with internalizing symptoms but not externalizing behaviors in a sample including early adolescents. However, the authors noted that these differential findings may be due to differences in measurement in that aggression was measured using peer ratings of observed behavior, while emotional awareness was measured by self-report of perceived internal processes (Penza-Clyve & Zeman, 2002). In contrast, significant relations between alexithymia and both internalizing and externalizing behaviors were found in a cross sectional study of Finnish youth aged 13 to 18 (Honkalampi et al., 2009). Age differences among the sampled populations may account for the different findings for these two studies, although other potential causes for the discrepancy cannot be ruled out at this time.

Similar to the limited research examining the relation between emotional awareness and emotion-regulation, the sparse literature on the association between emotional awareness and aggression leaves gaps in our understanding of the nature of this relation. The vast majority of this research is cross-sectional, and thus the role of poor emotional awareness as a precursor to aggression cannot be adequately determined from the current literature. Clearly, more studies are needed that focus specifically on aggression as an outcome, rather than broader categories of externalizing behaviors or psychological well-being. Furthermore, although there is some evidence of positive associations between poor emotional awareness and impulsive aggression, these studies were conducted with adult or emerging-adult populations, and thus do not address whether this relation is present in adolescent populations. Additionally, impulsive aggression does not reflect the domains assessed by physical and relational aggression, and thus associations between emotional awareness and these two subtypes of aggression have not been elucidated. Finally, gender differences in the strength of associations between poor emotional awareness and aggression have not been fully explored in the existing literature.

**Emotion-regulation in relation to aggression.** As outlined earlier, the frustration-aggression hypothesis and catharsis theory both emphasize the role of emotion in aggression, specifically the notion that aggression is a response to negative affect and a means for reducing emotional tension (Berkowitz, 1989; Bresin & Gordon, 2013). However, clearly, aggression is not the foregone conclusion of negative affect or emotional tension (e.g., Averill, 1983). In fact, there is considerable empirical evidence to suggest that how one copes with negative affect (i.e., via emotion-regulation) is an important predictor of whether the individual will engage in aggressive behavior (e.g., Bowie, 2010; Donahue et al., 2014; Eisenberg et al., 2001; Herts et al., 2012; Hill et al., 2006; McLaughlin et al., 2011; Sullivan et al., 2010).

For example, Donahue and colleagues (2014) conducted a cross-sectional study using self-report measures completed by undergraduate students to examine the relations between negative affect, emotion-regulation, and physical aggression. They found that difficulties with emotion-regulation mediated the relation between trait negative affect and trait physical aggression across gender. These findings are similar to those of studies conducted with children and early-adolescents (Bowie, 2010; Eisenberg et al., 2001; Hill et al., 2006). For instance, a cross-sectional study by Eisenberg and colleagues (2001) showed that for children aged 4 to 8, externalizing behaviors were related to poor emotion-regulation, specifically under-controlled and under-regulated sadness and anger. Two longitudinal studies offered support for emotion-regulation as a predictor of externalizing behaviors in samples spanning early and middle childhood and early adolescence. Among girls but not boys ages 4 and 5, Hill and colleagues (2006) found that under-development of emotion-regulation skills at age two predicted clinical levels of externalizing behaviors. Similarly, Bowie (2010) found that difficulties in emotion-regulation led to subsequent increases in relational aggression for girls only in a sample of youth

in middle childhood through early adolescence. These studies provide some support that emotion-regulation plays a role in predicting externalizing behaviors and relational aggression. Interestingly, neither study found that poor emotion-regulation predicted these outcomes for boys. Hill and colleagues (2006) noted that girls may mature faster with respect to emotion-regulation capabilities, and so there may be more differentiation among girls in emotion-regulation skills at earlier ages. They also pointed out that emotion-regulation skills may play a more significant role in predicting aggressive behavior for boys at later ages, as their general emotional competence becomes better developed.

In support of this notion, studies with early adolescents have found associations between emotion-regulation and aggression across gender. For example, Sullivan and colleagues (2010) used a cross-sectional design and showed that higher levels of emotion-regulation coping were negatively related to aggression in early adolescence. Specifically, among fifth and eighth graders, higher levels of sadness-regulation coping were associated with lower frequencies of relational aggression, and higher levels of anger-regulation coping were related to lower frequencies of physical aggression. Additionally, a longitudinal study conducted by McLaughlin and colleagues (2011) found that earlier emotional dysregulation was a significant predictor of later aggressive behavior, for adolescent boys and girls aged 11 to 14. Importantly, aggressive behavior at earlier measurement occasions did not predict later emotion dysregulation. Similarly, Herts and colleagues (2012) found that emotion dysregulation mediated relations between stressful life events and victimization and subsequent increases in aggressive behavior among early adolescents, and thus also directly predicted higher frequencies of aggression.

Strong associations exist between emotion dysregulation and a myriad of negative interpersonal and mental health issues such as aggression (e.g., Robertson et al., 2012; Roll et al.,

2012). The association between emotion dysregulation and aggression, specifically, may be driven by difficulties in tolerating uncomfortable emotions (Robertson, 2012); a lack of emotion-regulation skills (Calvete & Orue, 2012; Roll et al., 2012); and the use of aggression as an emotion-regulation tool, albeit one that is maladaptive (Robertson et al., 2012).

**Links between anger and sadness dysregulation and physical and relational aggression.** Given the evidence in the current literature, it appears that emotion dysregulation is an important predictor of aggressive behavior. However, in examining this association, it is necessary to focus on how specific emotions may uniquely relate to subtypes of aggression. As discussed previously, physical and relational aggression are differentiated by their form and function (inflicting physical harm to cause injury versus using social exclusion, rumors and gossip, and coercion to harm the victim's relationships). Similarly, per the functionalist perspective and the modal model, different emotions serve unique functions in the person—situation transaction (e.g., sadness influences the person—situation differently than does anger) (Campos et al., 1989; Gross & Thompson, 2007). Thus, the ways in which an individual regulates one emotion may differ from how he or she regulates another emotion, and the results of poor regulation of one emotion may be different than those stemming from the poor regulation of another emotion. Furthermore, because boys tend to express anger more frequently than girls, and girls tend to express sadness more frequently than boys (e.g. Calvete & Orue, 2012; Zeman et al., 2001), there are potential gender differences in how the dysregulation of these two emotions may relate to physical and relational aggression. Due to these potential differences, the current study will examine relationships between both anger and sadness dysregulation and physical and relational aggression. These two emotions are discussed in further detail below.

From the functionalist perspective, anger allows a person to draw on energy to use in attempts to overcome situational obstacles to a given goal (Campos et al., 1989). However, despite this necessary function, the energy from a person's anger, if not channeled and managed effectively, may spill over to people or objects that are not the actual obstacles the individual was originally attempting to overcome. Similarly, it is possible that without proper modulation, the anger directed accurately at the original obstacles (people or objects) may be too harsh for the actual situation. While the actual mechanisms that account for how anger relates to aggression are beyond the scope of this study, what is important is the association itself. There is empirical support for the association between difficulty in effectively regulating anger and aggression, particularly for physical aggression (e.g., Sullivan et al., 2010; Zeman, Shipman, & Suveg, 2002). There is also evidence that the adaptive regulation of anger decreases the risk of aggression, whereas anger dysregulation increases that risk (e.g., Calvete & Orue, 2012; Sullivan et al., 2010; Zeman et al., 2002).

As pointed out by Robertson and colleagues (2012), however, it is likely that aggression is related to the poor regulation of multiple emotions, not only anger. For instance, it has been argued that youth suffering with depressive symptoms, including sadness, exhibit aggressive behaviors (Herts et al., 2012). Thus, it is possible that aggression is also associated with dysregulated sadness. In support of this notion, Zeman and colleague's (2001) cross-sectional study with fourth and fifth grade students found that coping adaptively with sadness was associated with adaptive psychological and social functioning. Furthermore, in a cross-sectional study, Eisenberg and colleagues (2001) found that high rates of sadness were positively associated with higher frequencies of externalizing behaviors among children ages 4 to 8. Additionally, as mentioned earlier, Sullivan and colleagues (2010) demonstrated that effective

sadness-regulation coping was negatively related to higher rates of relational but not physical aggression.

There have been studies, however, that contradict the findings described above, and thus the current literature is characterized by mixed findings as to the degree to which sadness dysregulation is associated with aggression. For example, Zeman and colleagues (2002) found that effective sadness-regulation coping was not related to frequencies of either internalizing or externalizing behaviors among fourth and fifth graders. Similarly, in another cross-sectional study of children ages 7 to 10, the dysregulated expression of anger, but not of sadness, was positively related to aggressive behavior (Bohnert, Crnic, & Lim, 2003). However, one potential reason for the mixed findings across studies may be that some differentiate between physical and relational subtypes of aggression (Sullivan et al., 2010) while others do not (Bohnert et al., 2003; Zeman et al., 2002). Thus, it is possible that sadness dysregulation is uniquely related to relational aggression, as found by Sullivan and colleagues (2010). However, this conclusion is further muddled by results from a longitudinal study of children and early adolescents that showed neither sadness nor anger-regulation coping predicted increased frequencies of relational aggression (Bowie, 2010). Clearly, these mixed findings and the lack of studies that have assessed relational aggression outcomes represent a limitation of the current literature and highlight the need for additional studies in this area. Furthermore, several studies reviewed in this section were conducted with younger children, and thus do not clarify how these constructs relate to each other during early adolescence. It should also be noted that few studies have examined potential gender differences in the strength of these relations. The literature on gender differences, as related to the constructs of interest in the present study, is reviewed below.

**Gender differences.** There are some notable gender differences in the domains of aggression, emotional processes, and how these two constructs relate to each other. These gender differences likely stem from variations in gender norms (e.g., related to masculinity and femininity) (Zeman et al., 2001). Some of these differences have already been addressed, however they will be reviewed here briefly prior to presenting the proposed model for the current study. One difference that is strongly supported in the literature is that males exhibit higher frequencies of physical aggression than do females (e.g., Burton et al., 2007; Calvete & Orue, 2012; Fossatti et al., 2009; Lansford et al., 2012), and this finding is consistent across childhood and adolescence (e.g., Calvete & Orue, 2012; Lansford et al., 2012). For relational aggression among adolescents, a number of studies show no differences in the frequency of perpetration by gender (e.g., Burton et al., 2007; Lansford et al., 2012; Sullivan et al., 2006; 2010).

Considering emotional awareness, Saarni (1999) posited that boys express their feelings less frequently than do girls, and that this may put them at a relative disadvantage with regard to the ability to label emotional experiences because they have fewer opportunities to be aware or label their emotional experiences. However, this theoretical standpoint is contrary to empirical findings that boys and girls in middle childhood and early adolescence reported similar rates of poor emotional awareness (Penza-Clyve & Zeman, 2002). In terms of relations between poor emotional awareness and aggression, Donahue and colleagues (2014) found that poor emotional awareness mediated the association between negative affect and physical aggression for males but not females.

Other studies have addressed potential gender differences in relations between emotion-regulation and aggression (Bowie, 2010; Hertz et al., 2012; Hill et al., 2006; McLaughlin et al., 2011; Sullivan et al., 2010). In studies of younger children, poor emotion-regulation skills

predicted aggression for girls only (Bowie, 2010; Hill et al., 2006), but emotion-regulation processes have been associated with aggression across gender in both cross-sectional and longitudinal studies of adolescents (Herts et al., 2012; McLaughlin et al., 2011; Sullivan et al., 2010). One likely explanation for this is that emotion-regulation may develop faster in girls, and so the differentiation between those who have high emotion-regulation skills and those with poor emotion-regulation skills may appear at earlier ages for girls than boys (Hill et al., 2006).

Gender differences in emotional expression have also been reported in that boys tend to express anger more frequently than girls, and girls tend to express sadness more frequently than boys (e.g., Calvete & Orue, 2012; Zeman et al., 2001). These results are consistent with literature on socialization that suggests expressions of sadness is more socially acceptable among girls, as compared to boys (Zeman et al., 2001). This supports the examination of anger and sadness dysregulation separately in determining the extent to which these constructs are related to physical and relational aggression, and whether gender differences in these relations are present. There is some evidence of such a difference. For example, in a cross-sectional study of adolescents aged 13 to 17, the authors concluded that “boys scored higher in reactive aggressive behavior partly because they experience more anger and use fewer adaptive strategies of emotion-regulation” (Calvete & Orue, 2012, pp. 343-344).

It is clear that some differences exist between boys and girls with regard to the experience and expression of emotion, as well as in the engagement in aggressive behaviors. There is also some indication that the association between emotional competence and aggression may differ across genders. However, there are still some notable gaps in the understanding of how gender affects the associations between emotional competence and aggression proposed in



the current study. Additionally, there has not been a sufficient number of longitudinal studies to clarify how some of these associations may differ by gender over time.

### **The Present Study**

The preceding review of the literature highlighted the importance of understanding risk factors for physical and relational aggression among early adolescents. This is due to the high prevalence of these behaviors (e.g., CDC, 2015; Farrell et al., 2005; Sullivan et al., 2006), as well as the associated negative consequences. These consequences include school avoidance, academic problems, internalizing symptoms, risk-taking behaviors, and physical injury (CDC, 2015; Crick et al., 2007; Guerra & Bradshaw, 2008).

Clearly, there is strong empirical support for emotion dysregulation as a risk factor for aggression (e.g., Bowie, 2010; Donahue et al., 2014; Eisenberg et al., 2001; Herts et al., 2012; Hill et al., 2006; McLaughlin et al., 2011; Sullivan et al., 2010). However, it is less clear how another component of emotional competence—emotional awareness—may fit into this process. More specifically, it is unknown whether poor emotional awareness, as would be predicted based on Saarni's (1999) construct of emotional competence, hinders effective emotion-regulation among early adolescents, and therefore is another risk factor for aggressive behavior. Furthermore, if it is a risk factor for aggression in early adolescence, it is unknown whether poor emotional awareness relates similarly to both physical and relational aggression. Finally, it is not known whether there are any potential gender differences present in these relations.

The present study will attempt to fill in these gaps by examining how emotional awareness and emotion-regulation relate to aggression. One study aim is to examine whether poor emotional awareness at the beginning of sixth grade is a risk factor for physical and relational aggression at the end of sixth grade. A second aim is to determine the degree to which

anger and sadness dysregulation at the end of sixth grade mediate longitudinal relations between poor emotional awareness and physical and relational aggression. The final aim of the current study is to examine potential gender differences among the proposed relations described above. The hypothesized relations that will be examined in the current study are discussed in more detail below.

### Proposed Model

The current study will add to the literature by testing a model where anger and sadness dysregulation at Time 2 are expected to mediate relations between poor emotional awareness at Time 1 and physical and relational aggression at Time 2. Figure 1 provides a visual representation of this proposed theoretical model. It should be noted that physical and relational aggression were measured by both student and teacher report, whereas the other variables in this model were assessed by student report only.

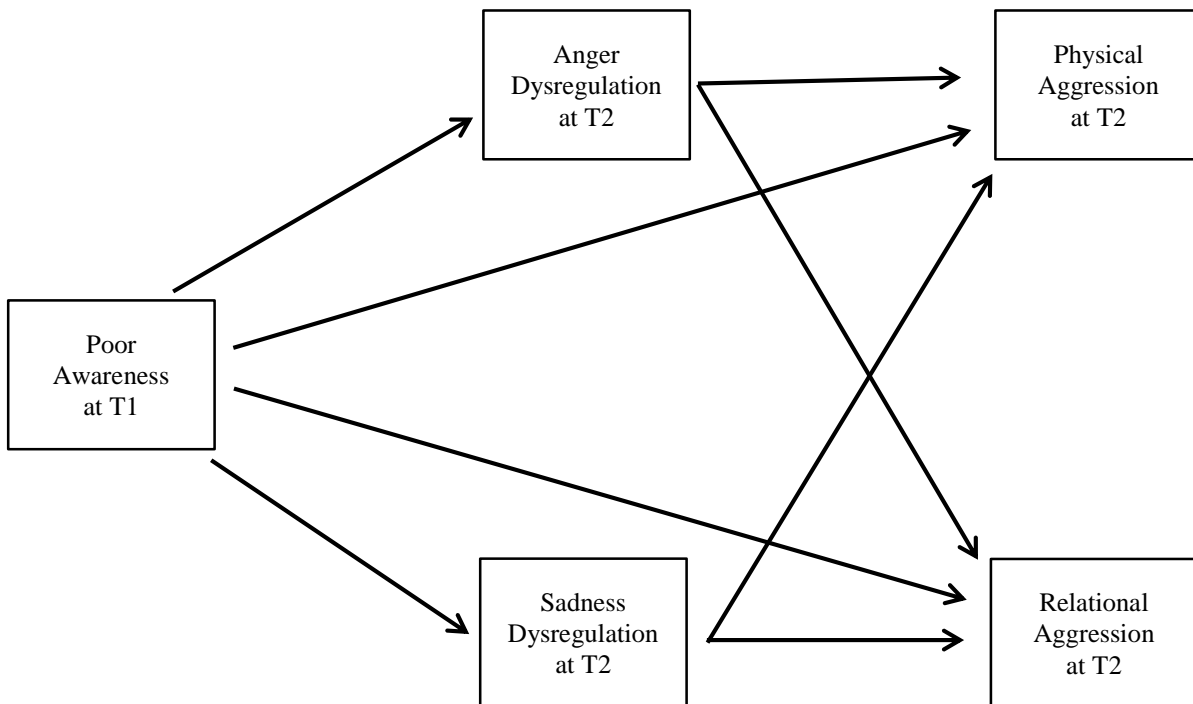


Figure 1. Theoretical model of relations between study variables.

Although empirical findings have documented links between emotion dysregulation and aggression, there is a paucity of research on these relations by subtypes of emotion dysregulation (i.e., anger and sadness) or aggression (i.e., physical and relational). Without a strong empirical basis to suggest that one but not the other subtype of emotion dysregulation is related to aggression, it was anticipated that both anger and sadness dysregulation at Time 2 would mediate relations between poor emotional awareness at Time 1 and physical and relational aggression at Time 2. Furthermore, only one pathway was hypothesized to differ in strength by gender, and the remaining pathways were tested on an exploratory basis. This was due to the fact that while some gender differences related to the constructs of interest have been well-documented in the literature, not enough is known to predict the presence or absence of gender differences for other pathways in the proposed model. Specifically, it is known that boys engage in higher rates of physical aggression than girls during adolescence (Burton et al., 2007; Crapanzano et al., 2010; Lansford et al. 2012). It has also been documented that early adolescent boys are more likely to express anger than girls (e.g., Calvete & Orue, 2012; Zeman et al., 2001). Thus, it was reasonable to expect that poor emotional awareness would be more likely to result in anger dysregulation for boys than girls. Furthermore, anger dysregulation may be more likely to lead to physical aggression for boys than girls. Thus, it was anticipated that the indirect effect of poor emotional awareness on physical aggression via anger dysregulation would be stronger for boys than girls.

However, potential gender differences in the relations between poor emotional awareness, anger and sadness dysregulation, and relational aggression are harder to predict. This is because there is a dearth of research on associations between relational aggression and emotion processes (i.e., both emotional awareness and regulation) among early adolescents (for

an exception, see Sullivan et al., 2010). Based on girls' perceptions of relational aggression as more hurtful and harmful than physical aggression (Galen & Underwood, 1997; Paquette & Underwood, 1999) and the relative importance that girls place on social bonds (e.g., Crick et al., 2007), it is possible that girls would be more likely than boys to react to both anger and sadness dysregulation with relational aggression. However, as previously noted, the prevalence rates of relational aggression are similar across gender among adolescents (Burton et al., 2007; Lansford et al., 2012; Marsee et al., 2014; Paquette & Underwood, 1999). Also, in early adolescence there is a transition from same-sex to cross-sex peer groups, meaning that boys and girls interact to a greater degree within larger group contexts (Brown, 1999). Thus, it is also plausible that no difference by gender would be found in the strength of associations between anger and sadness dysregulation and relational aggression. For these reasons, with the exception of the one hypothesis, gender differences were examined on an exploratory basis.

### **Study Hypotheses**

Based on the proposed model described above and depicted in Figure 1, the current study tested the following hypotheses. These hypotheses were tested with two identical models except for the outcome variables measured. Specifically, one model tested student-rated physical and relational aggression outcomes, while the other examined teacher-rated physical and relational aggression outcomes.

The first set of hypotheses were related to the direct effect of poor emotional awareness on both physical and relational aggression.

H1a: A direct effect of poor emotional awareness on physical aggression was expected, such that higher levels of poor emotional awareness at Time 1 were anticipated to be associated with increased frequencies of physical aggression at Time 2.

H1b: A direct effect of poor emotional awareness on relational aggression was also expected, such that higher levels of poor emotional awareness at Time 1 were anticipated to be associated with increased frequencies of relational aggression at Time 2.

The second set of hypotheses addressed the potential mediating effect of anger dysregulation on the proposed relations between poor emotional awareness and physical and relational aggression.

H2a: It was anticipated that there would be a significant indirect effect of poor emotional awareness at Time 1 on physical aggression at Time 2 via anger dysregulation at Time 2.

H2ai: It was expected that this indirect effect would be stronger for boys than for girls.

H2b: It was also anticipated that there would be an indirect effect of poor emotional awareness at Time 1 on relational aggression at Time 2 via anger dysregulation at Time 2.

The third and final set of hypotheses dealt with the potential mediating effect of sadness dysregulation on the proposed relations between poor emotional awareness and physical and relational aggression.

H3a: It was expected that there would be an indirect effect of poor emotional awareness at Time 1 on physical aggression at Time 2 via sadness dysregulation at Time 2.

H3b: It was also expected that there would be an indirect effect of poor emotional awareness at Time 1 on relational aggression at Time 2 via sadness dysregulation at Time 2.

Examination of all gender differences in the strength on relations between study variables, except as described in sub-hypothesis H2ai, were treated as exploratory.

## Method

### Setting and Participants

Participants in this study were 528 sixth graders from three middle schools within the greater metro-area of a medium-sized city in the mid-Atlantic region. Two middle schools were located in the same urban public school system ( $n = 313$ ). The third middle school was in a neighboring county school system ( $n = 215$ ). For one participant, no student or teacher data were collected at either Time 1 or 2. For two participants, no data were available for the Time 1 variables, thus, the M-Plus program used for the current study did not include these participants in the analyses. Students attending the urban middle schools differed on several demographic categories from those enrolled in the county school, which was described as “rural fringe” by the Census Bureau due to the fact that it bordered the urban area. A total of 83% of students attending the two urban middle schools identified as African-American and 83% of students from these two schools qualified for the federally subsidized school lunch program. In contrast, the racial/ethnic composition of the county school was 45% Caucasian and 40% African-American. Additionally, only 22% of students at the county school qualified for the federally subsidized school lunch program. The two most commonly reported family structures among students attending the urban and county schools were single mother with or without another adult (40%), and two biological parents (53%). Demographic statistics for gender, race/ethnicity, and age for each school setting can be found in Table 1.

The current study used data previously collected as part of a larger longitudinal study to evaluate the effectiveness of a school-based violence prevention program. Data for the larger study were collected four times approximately six months apart in Fall 2008 (baseline- sixth grade), Spring 2009 (posttest- sixth grade), Fall 2009 (6-month follow-up- seventh grade), and

Spring 2010 (12-month follow-up – seventh grade). The current study utilized data collected in the Fall of 2008 and Spring of 2009, and thus captured the beginning and near the end of students’ sixth grade year.

**Table 1.** Gender, Racial/Ethnic Identity, and Age by School Setting.

	Urban School 1	Urban School 2	Total Across Urban Schools	County School	Total Across Full Sample
Male (%)	47%	52%	50%	49%	49%
Female (%)	53%	48%	50%	51%	51%
African-American (%)	85%	82%	83%	40%	65%
Hispanic/Latino (%)	<1%	4%	2%	1%	2%
European-American (%)	<1%	<1%	<1%	45%	19%
Other (%)	4%	3%	3%	4%	3%
Multiracial (%)	10%	11%	11%	10%	11%
Age (mean)	11.29	11.32	11.31	11.27	11.29

Note: percentages for gender and race/ethnicity are valid percentages based on 520 responses, with 8 cases missing data. Mean age (at Time 1) is reported using 519 responses, with 9 cases of missing data.

## Procedures

All procedures for the current study were approved by the Institutional Review Board of Virginia Commonwealth University. Sixth graders were recruited from three local middle schools at the beginning of the 2008-2009 school year. Research staff described the study to students, including its voluntary nature and the ability to decline, limit, or discontinue participation at any time without any adverse consequences. Parental permission and student assent forms were sent home with students. A \$5 gift certificate was provided to students who reviewed these forms with their parents and then returned them, irrespective of the student and/or

parent agreeing to participation. A total of 313 of 381 eligible students from the two urban schools and 215 of 282 from the county school opted to participate, providing both parental permission and student assent.

After receiving parental permission and student assent, youth were scheduled to complete self-report measures during an elective class within their school day using a computer-assisted interview. This format of administration allowed not only for study questions to be presented visually on a computer screen, but questions were also presented as audio recordings to alleviate the effects of any potential reading difficulties. Additionally, study staff members were available for all students should they have questions while completing the self-report measures. Students were provided with a \$10 gift card for their participation at each time point. Simultaneous with the student assessments, teachers completed rating of student behaviors. One of the student's core academic teachers (i.e., their teacher for Math, Science, History, or English) was selected to complete a rating of the student's behavior including the Problem Behavior Frequency Scale-Teacher Report at each time point. Teachers provided informed consent prior to data collection. Each survey took approximately 15-20 minutes to complete and teachers received \$20 for their time and effort for each survey completed.

## **Measures**

**Poor emotional awareness.** This construct was assessed using the Poor Awareness subscale of the Emotion Expression Scale for Children (EESC; Penza-Clyve & Zeman, 2002). For this eight-item subscale, participants rated the degree to which they experienced difficulty in expressing, labeling, or identifying emotions (e.g., "I have feelings that I can't figure out"). Participants selected the response that best reflected how true each item was for them, using a five-point response scale: 1 = *Not At All True*; 2 = *A Little True*; 3 = *Somewhat True*; 4 = *Very*



*True*; and 5 = *Extremely True*. Higher scores represented poorer emotional awareness. The alpha coefficient for this subscale was .75 at Time 1.

**Anger dysregulation.** This construct was assessed using a composite measure of two subscales of the Children's Anger Management Scale (CAMS; Zeman et al., 2001). The first subscale, Anger Regulation Coping, was comprised of five items which assessed how well youth were able to regulate and effectively express their emotions (e.g., "I try to calmly deal with what is making me feel mad"). Scores on this subscale were recoded such that higher scores reflected lower levels of anger-regulation coping. The second subscale, Anger Dysregulated Expression, contained three items that measured under-controlled anger expression (e.g., "I do things like slam doors when I am mad"). Higher scores on this subscale represented high levels of anger dysregulated expression. For both subscales, adolescents rated how often they engaged in each behavior using the following response scale: 1 = *Hardly Ever*; 2 = *Sometimes*, and 3 = *Often*. The alpha coefficients for the composite measure were .76 at Time 1 and .77 at Time 2. Combining the two subscales into a composite measure was supported by confirmatory factor analyses (please see Doyle & Sullivan, 2015).

**Sadness dysregulation.** A composite measure consisting of two subscales of the Children's Sadness Management Scale (CSMS; Zeman et al., 2001) was used to assess Sadness Dysregulation. One subscale, Sadness Regulation Coping, included five items that measured the extent to which youth were able to effectively manage and express sadness (e.g., "I can stop myself from losing control over my sad feelings"). The items forming this scale were recoded such that higher scores indicated lower levels of sadness-regulation coping. The other subscale, Sadness Dysregulated Expressed, was comprised of three items that assessed under-controlled sadness expression (e.g., "I whine/fuss about what's making me sad"). Youth rated how often

they engaged in each behavior using a three-point response scale: 1 = *Hardly Ever*; 2 = *Sometimes*, and 3 = *Often* for each subscale. Higher scores reflected high levels of sadness dysregulated expression. Alpha coefficients for the composite measure were .67 at Time 1 and .62 at Time 2. The combination of these two subscales into a composite measure was supported by confirmatory factor analyses (see Doyle & Sullivan, 2015).

**Student-reported physical and relational aggression.** The Physical and Relational Aggression subscales of the Problem Behavior Frequency Scales - Student Form (PBFS-S: Farrell, Sullivan, Goncy, & Le, 2015) were used to assess these two subtypes of aggression. The six-item Physical Aggression subscale measured acts or threats of physical aggression (e.g., “hit or slapped someone”). The Relational Aggression subscales was also comprised of six items that assessed behaviors designed to harm peers’ social relationships (e.g., “spread a false rumor about someone”). For both subscales, students reported how often they engaged in each behavior in the past 30 days using a six-point response scale: 1 = *Never*; 2 = *1-2 times*; 3 = *3-5 times*; 4 = *6-9 times*; 5 = *10-19 times*; and 6 = *20 or more times*. Higher scores on each subscale reflect higher frequencies of aggression. Alpha coefficients for the Physical Aggression scale were .80 at Time 1 and .82 at Time 2, and for Relational Aggression were .69 for Time 1 and .74 for Time 2.

**Teacher-reported physical and relational aggression.** The Physical and Relational Aggression subscales of the Problem Behavior Frequency Scale – Teacher Form (PBFS-T: Farrell et al., 2015) were used to measure these aggression subtypes. Both subscales were comprised of six items. For the Physical Aggression subscale, teachers reported students’ rates of threats or acts of physical aggression (e.g., “threatened to hit or physically harm someone” and “shoved or pushed someone”). For the Relational Aggression subscale, teachers reported students’ rates of behaviors that were intended to damage other students’ social relationships

(e.g., “Left another kid out on purpose when it was time to do an activity”). For each subscale, teachers rated student behavior using a four-point response scale: 1 = *Never*, 2 = *Sometimes*, 3 = *Often*, and 4 = *Almost Always*. Higher scores for each subscale represented higher levels of aggression. Alpha coefficients were .90 at Time 1 and .89 at Time 2 for Physical Aggression, and .84 for Time 1 and .85 at Time 2 for Relational Aggression.

**Demographics.** Questions were included to assess age, gender, race/ethnicity, and family structure. Based on the differences in demographic characteristics for the county versus urban schools (i.e., family structure, race/ethnicity, and the proportion of students eligible for the federal free or reduced meal plan), school was included as a covariate and coded: 0 = the county school and 1 = the urban schools. Intervention condition was also included as a covariate and was coded as 0 = control and 1 = intervention condition. Finally, simple effects coding was used to include race/ethnicity as a covariate. Specifically, contrast coding was used to create four comparison groups comparing European-American students to each other racial/ethnic identity. For all comparison groups, students identifying as European-American were coded as -1. In the first comparison group (C1), students identifying as African-American were coded: as 1 while all other racial/ethnic minority students were coded as 0. For the second comparison group (C2), students who identified as Hispanic/Latino were coded as 1 and all other racial/ethnic minority students were coded as 0. In the third comparison group (C3), students who identified as “Other” were coded as 1, with all other racial/ethnic minority students coded as 0. For the final comparison group (C4), students who identified as “Multiracial” were coded as 1, with all other racial/ethnic minority students coded as 0.

## **Data Analysis Plan**

All study hypotheses were tested using analyses conducted in M-Plus 7.3 (Muthén & Muthén, 2013). However, prior to running these analyses, the data were first cleaned using IBM Statistics SPSS –Version 23 software (IBM Corp, 2013). Specifically, the range of values for each variable were calculated to ensure that they fall within the possible range. Additionally, the skewness and kurtosis were examined to test for the assumption of normality of the data distribution for each variable. Variables with values of skewness or kurtosis that were greater than 2 or less than -2 were considered skewed and/or kurtotic (George, 2010), and they were log transformed prior to being included in any analyses. Specifically, student-rated physical aggression at Times 1 and 2, student-rated relational aggression at Times 1 and 2, and teacher-rated relational aggression at Time 2 were all kurtotic; while teacher-rated physical aggression at Times 1 and 2, as well as teacher-rated relational aggression at Time 1 were both kurtotic and skewed.

Data were then imported into M-Plus, and means, standard deviations, and correlations were calculated for all variables. Next, analyses of variance (ANOVAs) were run to test for potential differences in the mean values of each variable by gender. For each model, multiple group analyses were then run to test for potential differences in the strength of associations between variables by gender. To assess for potential gender differences, a Chi-square difference test was used to compare a fully saturated model with all path coefficients constrained for boys and girls to a model where path coefficients are allowed to vary by gender. A significant difference in the Chi-square values would indicate that the unconstrained model is favored over the constrained model and that significant gender differences in the relations between variables exist. Whenever this is the case, tests of invariance by gender should be run for each path.

Two separate mediation models were then run using the full sample. The first model tested the indirect effects of poor emotional awareness at Time 1 on student-reported physical and relational aggression at Time 2 via increased sadness and anger dysregulation at Time 2. The second model assessed the indirect effects of poor emotional awareness at Time 1 on teacher-reported physical and relational aggression at Time 2 through sadness and anger dysregulation at Time 2. Covariates included in both models were intervention condition, school, race/ethnicity, sadness and anger dysregulation at Time 1, and physical and relational aggression at Time 1.

Goodness of fit indices, including the comparative fit index (CFI) and root mean square error of approximation (RMSEA), were evaluated. Models with an adequate fit typically have CFI values of .95 or greater (Hu & Bentler, 1999) and RMSEA values of 0.07 or below (Steiger, 2007). To assess whether the indirect effects were significant, bootstrapping procedures were used where 3,000 samples were run using random sampling with replacement (Shrout & Bolger, 2002). Confidence intervals were generated and evaluated. A 95% confidence interval (i.e., between the 5% and 95% percentile) that does not contain a zero value is significant at  $p < .05$ .

## **Results**

### **Descriptive Statistics**

The means and standard deviations of study variables are reported in Table 2 for the total sample and by gender. T-tests were run to identify any significant differences in the study variable means for boys and girls. Girls reported significantly higher rates of sadness dysregulation at both Times 1 and 2 than did boys. Teacher-rated physical aggression was higher for boys than girls at both Times 1 and 2. Additionally, teacher-rated relational aggression was significantly higher for boys than girls at Time 1 only. There were no other significant differences in study variables found by gender at either Time 1 or Time 2.

**Table 2.** Means and Standard Deviations for Poor Awareness, Emotion Dysregulation, and Aggression

	Total		Boys		Girls		<i>t</i> (520)	Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Poor Awareness (T1)	19.18	6.34	18.99	6.37	19.38	6.31	-0.66	8-38
Anger Dysregulation (T1)	14.73	3.50	14.95	3.55	14.54	3.44	1.36	8-24
Sadness Dysregulation (T1)	14.39	3.11	13.77	3.20	14.98	2.92	-4.45**	8-24
Physical Aggression -- Student Rated (T1)	10.19	5.00	10.40	5.12	9.98	4.87	0.98	6-34
Physical Aggression -- Teacher Rated (T1)	7.24	2.69	7.63	2.94	6.89	2.40	3.13**	6-24
Relational Aggression -- Student Rated (T1)	9.17	3.82	9.44	4.05	8.91	3.58	1.57	6-27
Relational Aggression -- Teacher Rated (T1)	7.54	2.58	7.80	2.52	7.29	2.63	2.29*	6-20
Anger Dysregulation (T2)	15.19	3.34	15.45	3.38	15.00	3.27	1.58	8-24
Sadness Dysregulation (T2)	14.27	2.88	13.78	2.83	14.75	2.86	-3.70**	8-24
Physical Aggression -- Student Rated (T2)	11.09	5.70	10.83	5.59	11.25	5.78	-0.66	6-35
Physical Aggression -- Teacher Rated (T2)	7.86	3.18	8.16	3.51	7.56	2.81	2.15*	6-24
Relational Aggression -- Student Rated (T2)	9.58	4.29	9.82	4.41	9.35	4.17	1.23	6-27
Relational Aggression -- Teacher Rated (T2)	8.25	2.98	8.24	3.01	8.26	2.96	-0.03	6-22

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

Table 3 depicts the correlations between study variables. A Bonferroni correction was used to account for family-wise Type 1 error when making multiple comparisons. A family-wise Type 1 error rate of  $p < .10$  was used, and a per-test significance rate was calculated to be  $p < .001$ . Sadness and anger dysregulation were significantly correlated with each other at Time 1 and Time 2, and poor emotional awareness was related to sadness and anger dysregulation at both time points. All aggression variables were significantly correlated at Time 1 and Time 2. Poor emotional awareness was concurrently related to student- but not teacher-reported physical and relational aggression. Anger dysregulation at Time 1 was related to student-reported physical and relational aggression at Time 1 and all aggression variables at Time 2. Anger dysregulation

at Time 2 was associated with all aggression variables at Time 1 and 2. Sadness dysregulation at Time 1 was positively correlated with student-reported physical and relational aggression at Time 1.

**Prevalence of aggression.** At Time 1, 70.9% of students endorsed engaging in one or more physically aggressive behaviors over the past 30 days. Prevalence rates for individual items ranged from 6.8% (“threatened someone with a weapon”) to 54.2% (“hit or slapped someone”) across items of the physical aggression subscale. The prevalence of student-reported physical aggression was slightly higher at Time 2, with 75% of students reporting that they had engaged in one or more acts of physical aggression in the past 30 days. Prevalence rates for individual items at Time 2 ranged from 8% (“threatened someone with a weapon”) to 60.8% (“hit or slapped someone”).

Teacher-reports of physical aggression showed much lower prevalence rates as compared to student self-reports. At Time 1, teachers reported that they believed that 30.1% of student-participants engaged in at least one physically aggressive behavior over the past 30 days, and the teacher-rated prevalence rates across items ranged from 1.8% (“threatened someone with a weapon”) to 23.1% (“shoved or pushed someone”). At Time 2, teachers-report of student physical aggression increased, as compared to Time 1, but was still lower than student-reported prevalence rates. Specifically, according to teacher ratings at Time 2, 41.6% of student-participants had engaged in one or more physically aggressive behaviors in the past 30 days, ranging across items from 2.1% (“threatened someone with a weapon”) to 34.4% (“shoved or pushed someone”).

**Table 3.** Correlations between Awareness, Emotion Dysregulation, and Aggression Variables at Time 1 and Time 2.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Poor Awareness (T1)	----												
2. Anger Dysregulation (T1)	.19*	----											
3. Sadness Dysregulation (T1)	.16*	.37*	----										
4. Physical Aggression – Student Rated (T1)	.18*	.47*	.21*	----									
5. Physical Aggression – Teacher Rated (T1)	.06	.14	.05	.24*	----								
6. Relational Aggression – Student Rated (T1)	.22*	.34*	.21*	.66*	.20*	----							
7. Relational Aggression – Teacher Rated (T1)	.01	.14	.11	.21*	.80*	.18*	----						
8. Anger Dysregulation (T2)	.20*	.53*	.19*	.37*	.12	.28*	.12	----					
9. Sadness Dysregulation (T2)	.18*	.22*	.48*	.15	.03	.13	.06	.22*	----				
10. Physical Aggression – Student Rated (T2)	.09	.31*	.08	.52*	.15	.35*	.14	.31*	.12	----			
11. Physical Aggression – Teacher Rated (T2)	.12	.21*	.10	.32*	.57*	.31*	.53*	.21*	.02	.24*	----		
12. Relational Aggression – Student Rated (T2)	.11	.25*	.10	.44*	.27*	.49*	.26*	.25*	.12	.65*	.31*	----	
13. Relational Aggression – Teacher Rated (T2)	.10	.23*	.10	.27*	.46*	.29*	.46*	.23*	.11	.25*	.75*	.31*	----

\* p < .001.



For relational aggression, at Time 1 70.6% of students reported in engaging in at least one relationally aggressive behavior over the past 30 days. Across items of the relational aggression subscale, prevalence rates ranged from 16.3% (“told someone you wouldn’t like them unless they did what you wanted them to do”) to 51.1% (“said things about another kid to make other kids laugh”). The overall prevalence of student-reported relational aggression was similar at Time 2, with 70.4% of students engaging in one or more relationally aggressive behaviors over the past 30 days. Prevalence rates of items at Time 2 ranged from 16% (“told someone you wouldn’t like them unless they did what you wanted them to do”) to 55.7% (“said things about another kid to make other kids laugh”).

Similar to physical aggression, teachers reported lower prevalence rates for relational aggression than did students. At Time 1, teachers reported that 43.7% of student-participants had engaged in at least one act of relational aggression over the past 30 days. Across items, the prevalence rates of items ranged from 9.1% (“told would not like someone unless they did what she or he wanted them to do”) to 37.4% (“said things about another kid to make other kids laugh”). At Time 2, teachers endorsed that 55.8% of student-participants had engaged in one or more relationally aggressive behaviors over the past 30 days. Prevalence rates across items at Time 2 ranged from 16.2% (“told would not like someone unless they did what she or he wanted them to do”) to 50% (“said things about another kid to make other kids laugh”).

### **Model with Student-Rated Outcomes**

**Gender differences.** Potential gender differences in the student-rated outcome model were assessed by comparing a saturated model where all path coefficients were constrained to be equal across gender to an unconstrained model where path coefficients were allowed to vary for boys and girls. Study variables were: poor emotional awareness at Time 1; anger and sadness

dysregulation at Time 2; and student-rated physical and relational aggression at Time 2. Covariates included anger and sadness dysregulation at Time 1, student-reported physical and relational aggression at Time 1, student-reported race/ethnicity, school setting, and intervention condition. The relative fit of the resulting models were assessed using the  $\chi^2$  difference test which was not significant ( $\Delta\chi^2[8] = 7.15, ns$ ). Thus, the constrained model was favored as it fit the data more parsimoniously. As such, the remainder of the analyses conducted to examine the model with student-rated outcomes were run using the full sample.

**Mediation model.** The hypothesized direct and indirect effects of poor emotional awareness at Time 1 on student-rated physical and relational aggression at Time 2 via anger and sadness dysregulation at Time 2 were then assessed. The model fit the data well,  $\chi^2[10] = 12.26, p = .27$  (CFI = 1.00, RMSEA = .02), and the pathways between variables are illustrated in Figure 2. Correlations between Time 1 variables (with the exception of intervention condition) and Time 2 outcome variables were included in the model but are not represented in Figure 2 to reduce complexity.

No direct effects were found between poor emotional awareness at Time 1 and either student-rated physical ( $\beta = -.05, CI [-.12, .03]$ ) or relational aggression ( $\beta = -.01, CI [-.10, .07]$ ) at Time 2. Poor emotional awareness at Time 1 was associated with increased rates of anger ( $\beta = .09, p = .046$ ) and sadness dysregulation ( $\beta = .11, p = .03$ ) at Time 2. Higher rates of anger dysregulation at Time 2 were associated with higher frequencies of self-reported physical ( $\beta = .37, p < .001$ ).and relational ( $\beta = .34, p < .001$ ) aggression, also at Time 2. Sadness dysregulation at Time 2 was not significantly associated with either self-reported physical ( $\beta = -.05, p = .33$ ).or relational ( $\beta = -.04, p = .48$ ) aggression at Time 2.

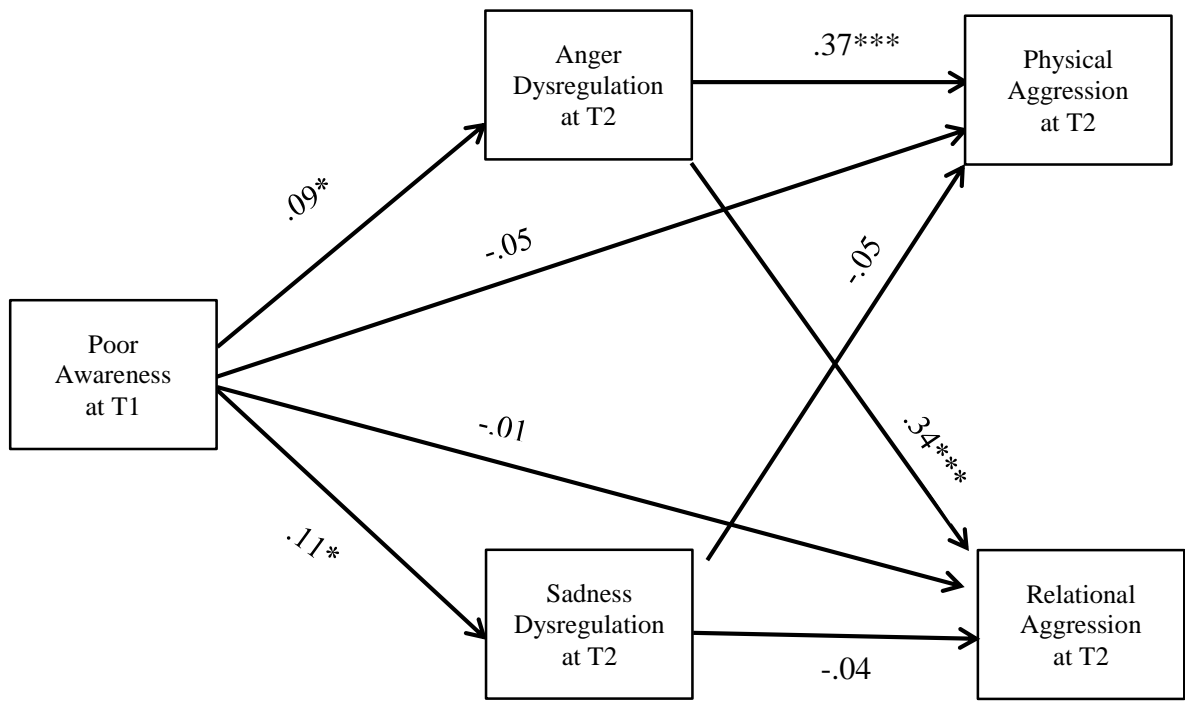


Figure 2. Longitudinal relations between poor emotional awareness, emotion dysregulation, and student-reported aggression. Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Although the proposed direct effects of poor emotional awareness on physical and relational aggression were found to be non-significant, this does not preclude the analysis of potential indirect effects (Mackinnon, Cheong, & Pirlott, 2012). The indirect effect of poor emotional awareness at Time 1 on self-reported physical aggression at Time 2 via anger dysregulation at Time 2 was significant ( $\beta = .03$ , CI [.002, .068]). Similarly, the indirect effect of poor emotional awareness at Time 1 on student-rated relational aggression at Time 2 via anger dysregulation at Time 2 was significant ( $\beta = .03$ , CI [.002, .064]). For sadness dysregulation, the non-significant paths between sadness dysregulation and the aggression outcome variables precluded the examination of the indirect effects.

**Covariates.** Not surprisingly, values measured at Time 1 were significantly associated with values at Time 2 for sadness dysregulation, ( $\beta = .45$ ,  $p < .001$ ), anger dysregulation ( $\beta = .42$ ,

$p < .001$ ), student-rated physical aggression ( $\beta = .43, p < .001$ ), and student-rated relational aggression ( $\beta = .38, p < .001$ ). Higher frequencies of student-rated physical aggression at Time 1 ( $\beta = .17, p = .004$ ) were related to increased rates of anger dysregulation at Time 2. School setting was associated with aggression, such that students in the urban schools reported higher frequencies of both physical ( $\beta = .12, p = .01$ ), and relational aggression at Time 2 ( $\beta = .11, p = .01$ ). Students who self-identified as European-American at Time 1, as opposed to those who endorsed “other” for their race/ethnicity reported lower rates of anger dysregulation at Time 2 ( $\beta = .23, p = .045$ ). No other significant associations between co-variables and study variables were found.

### **Model with Teacher-Rated Outcomes**

**Gender differences.** Similar to the previous model, potential gender differences in the model using teacher-rated outcomes were assessed by comparing a fully saturated model where path coefficients were constrained to be equal across gender to an unconstrained model where path coefficients were allowed to vary by gender. Study variables were: poor emotional awareness at Time 1; anger and sadness dysregulation at Time 2; and teacher-rated physical and relational aggression at Time 2. Covariates included anger and sadness dysregulation at Time 1, teacher-reported physical and relational aggression at Time 1, student-reported race/ethnicity, school setting, and intervention condition. The results of the  $\chi^2$  difference test were not significant ( $\Delta\chi^2[8] = 7.74, ns$ ), meaning that the constrained model was favored, and subsequent analyses used the full sample.

**Mediation model.** Based on the results of the comparison between the constrained and unconstrained models for gender, the hypothesized direct and indirect effects of poor emotional awareness at Time 1 on teacher-rated physical and relational aggression at Time 2 via anger and

sadness dysregulation at Time 2 were assessed using the full sample. This model fit the data well,  $\chi^2[10] = 9.23, p = .51$  (CFI = 1.00, RMSEA = .00), with the pathways between variables represented in Figure 3. As with the model using student-rated outcomes, correlations between Time 1 variables (with the exception of intervention condition) and Time 2 outcome variables were included in the model but are not represented in Figure 3 to reduce complexity.

Results for the model using teacher-rated outcomes were similar to those from the model with student-rated outcomes, except for the association between sadness dysregulation and physical aggression at Time 2. There were no direct effects found between poor emotional awareness at Time 1 and teacher-rated physical ( $\beta = .07, CI [-.01, .14]$ ) or relational aggression ( $\beta = .04, CI [-.05, .12]$ ) at Time 2. Higher levels of poor emotional awareness at Time 1 were related to increased rates of anger ( $\beta = .11, p = .02$ ) and sadness dysregulation ( $\beta = .10, p = .03$ ) at Time 2. Higher rates of anger dysregulation at Time 2 were associated with higher frequencies of teacher-reported physical ( $\beta = .12, p = .04$ ) and relational ( $\beta = .16, p = .004$ ) aggression at Time 2. Higher rates of sadness dysregulation at Time 2 were negatively associated with teacher-reported physical aggression ( $\beta = -.10, p = .04$ ), but were not significantly associated with relational aggression ( $\beta = .003, p = .95$ ) at Time 2.

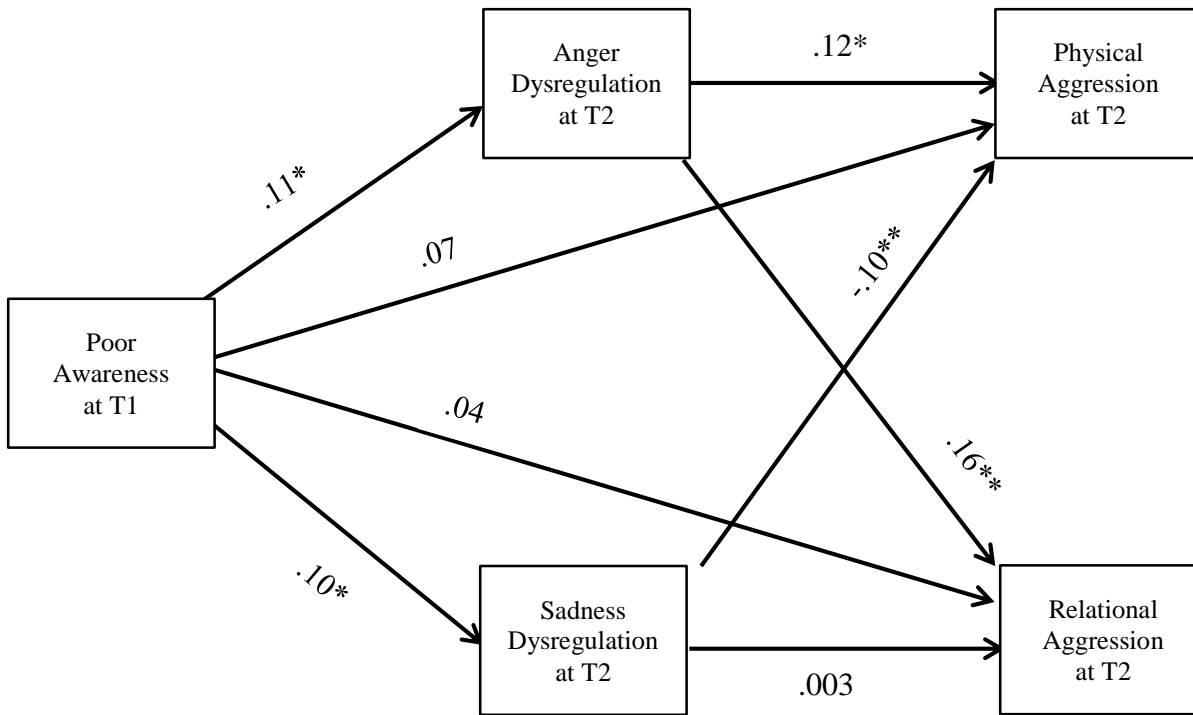


Figure 3. Longitudinal relations between poor emotional awareness, emotion dysregulation, and teacher-reported aggression. Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

The indirect effect of poor emotional awareness at Time 1 on teacher-reported physical aggression (Time 2) via anger dysregulation (Time 2) was significant ( $\beta = .01$ , CI [.001, .04]). Additionally, the indirect effect of poor emotional awareness at Time 1 on teacher-rated relational aggression (Time 2) via anger dysregulation (Time 2) was significant ( $\beta = .02$ , CI [.004, .04]). The indirect effect of poor emotional awareness at Time 1 on teacher-rated physical aggression at time 2 via sadness dysregulation at Time 2 was also significant ( $\beta = -.01$ , CI [-.03, -.001]). However, the non-significant path between sadness dysregulation and relational aggression, both at Time 2, prohibited the examination of an indirect effect involving this pathway.

**Covariates.** As with the model using student-rated outcomes, Time 1 values were significant predictors of Time 2 values for sadness dysregulation, ( $\beta = .45, p < .001$ ), anger dysregulation ( $\beta = .48, p < .001$ ), teacher-rated physical aggression ( $\beta = .38, p < .001$ ), and teacher-rated relational aggression ( $\beta = .21, p = .006$ ). Interestingly, students who were rated by their teachers as high in relational aggression at Time 1 were more likely to be rated highly in physical aggression at Time 2 ( $\beta = .15, p = .046$ ); and student who were rated as high in physical aggression at Time 1 were more likely to be rated highly in relational aggression at Time 2 ( $\beta = .25, p = .002$ ). Compared to European-American students, students who identified as “other” for race/ethnicity were rated by their teachers as engaging in significantly higher rates of physical aggression ( $\beta = .15, p = .045$ ). No other significant associations between co-variates and study variables were found.

### **Discussion**

The current study evaluated the mediating role of emotion dysregulation on relations between poor emotional awareness and teacher- and self-reported aggression. No direct effect of poor emotional awareness at Time 1 was found on any of the teacher or student rated aggression outcomes at Time 2. However, poor emotional awareness at Time 1 was associated with higher levels of sadness and anger dysregulation at Time 2, and anger dysregulation at Time 2 was positively associated with all teacher- and self-reported aggression outcomes at the same time point. No significant concurrent associations were found between sadness dysregulation and student-rated physical or relational aggression, nor teacher-rated relational aggression. However, a significant negative association was found between sadness dysregulation and teacher-ratings of physical aggression. Significant indirect effects were found for relations between poor emotional awareness at Time 1 and teacher- and self-reported physical and relational aggression at Time 2 via anger dysregulation at Time 2. Additionally, there was an indirect effect of poor

emotional awareness at Time 1 on teacher-rated physical aggression at Time 2 via sadness dysregulation at Time 2. No gender differences were found in the strength of relations between study variables.

The present study advances the literature in several ways. Prior research showed positive relations between emotion dysregulation and aggression in adolescence (e.g., Bowie, 2010; Donahue et al., 2014; Eisenberg et al., 2001; Herts et al., 2012; Hill et al., 2006; McLaughlin et al., 2011; Sullivan et al., 2010). However, little research has addressed how another deficit in emotional competence, poor emotional awareness, may contribute to this process. Specifically, few studies have examined, from a temporal standpoint, whether poor emotional awareness is a precursor to emotion dysregulation, as would be suggested by Saarni's (1999) conceptualization of emotional competence. Further, there is a dearth of research on direct effects between poor emotional awareness and changes in physical and relational aggression over time, or the potential indirect effect of poor emotional awareness on these subtypes of aggression via sadness and anger dysregulation. This is especially true during the developmental period of early adolescence; a timeframe where prevalence rates for aggression are high and associated with negative outcomes (e.g., Farrell et al., 2005; Guerra & Bradshaw, 2008; Marcus, 2007; Sullivan et al., 2006); and in which early adolescents experience unique challenges related to their social and emotional functioning (e.g., Arnett, 1999; Casey et al., 2011; Nansel et al., 2003). Finally, the current study adds to the literature by assessing for potential gender differences among relations between poor emotional awareness, emotion dysregulation, and aggression.

### **Prevalence of Aggression**

Approximately 70% of students in the current study reported engaging in one or more acts of physical (71% at Time 1 and 75% at Time 2) or relational aggression (71% at Time 1 and



70% at Time 2) over the past 30 days. Prevalence rates found in this study were somewhat higher than those found in several other studies that include early adolescents (e.g., Henry, Tolan, Gorman-Smith, & Schoeny, 2012; Marcus, 2007; Rose et al., 2015; Wang, Iannotti, & Nansel, 2009). Across these studies, prevalence rates ranged from 15% to 63% for physical aggression and from 28% to 42% for relational aggression for time periods spanning 1 to 12 months. Although this provides a general sense of aggression prevalence across these studies, it is important to note that comparisons are difficult based on differences in the ages of study participants, varying severity of items included in the measures (e.g., whether these included making verbal threats), and different timeframes used to assess aggression.

Teacher-ratings of physical (30% at Time 1 and 42% at Time 2) and relational (44% at Time 1 and 56% at Time 2) aggression were lower than student-rated aggression across both subtypes of aggression at Times 1 and 2. One possible explanation for this discrepancy is that teacher- and self-report forms of the Problem Behavior Frequency Scales assess aggression without regard to a specific context. Therefore, students likely reported aggressive behaviors which occurred both within and outside of the school setting whereas teachers were likely unaware of the extent of students' aggressive behavior outside of school. Moreover, some acts of relational aggression are less overt and thus difficult for observers who are not directly involved with the situation to detect. However, it is also possible that students choose to exaggerate or inflate their involvement in aggressive behaviors. These differences in prevalence rates of aggression across raters highlight important considerations for prevention and intervention program design. For instance, the representation of aggression captured by each type of rater may vary and indicate different facets of aggression. Thus, utilizing multiple rater perspectives may capture a fuller picture of the adolescents' experiences of aggression.

## **Gender Differences**

One aim of the current study was to examine potential gender differences not only in the strength of relations among study variables, but also at the univariate level. Mean score comparisons across study variables for boys and girls showed that girls rated themselves as experiencing significantly higher rates of sadness dysregulation than did boys, both at Time 1 and Time 2. This finding is consistent with empirical literature that suggests female adolescents express sadness more readily than do males (e.g., Calvete & Orue, 2012), and thus it would make sense that girls are also more likely to exhibit signs of dysregulated sadness than adolescent boys. This premise is supported by Zeman and colleagues (2001) who, similar to the present study, found that fourth and fifth grade girls reported significantly higher rates of sadness dysregulation than their male peers. As noted by Zeman and her colleagues (2001), these findings may be due to societal norms and pressures, wherein it is more socially acceptable for girls to outwardly express sadness than it is for boys.

In the present study, boys were rated as exhibiting significantly higher rates of physical aggression by their teachers than were girls at both Times 1 and 2. However, self-report ratings of physical aggression by students were not significantly different between boys and girls at either time point. There is a strong body of literature that suggests adolescent boys do in fact engage in higher rates of physical aggression, compared to adolescent girls (e.g., Burton et al., 2007; Calvete & Orue, 2012; Fossatti et al., 2009; Lansford et al., 2012). Thus, the results from the current study may reflect accurate depictions of physical aggression by teachers, but either an under-reporting of physical aggression by boys or an over-reporting by girls. However, an alternative explanation for these findings is that the boys and girls in this particular sample are

not significantly different with regard to physical aggression, but teachers rated boys higher due to their expectations/perceptions that boys are more physically aggressive in adolescence.

Finally, teachers rated the boys in the current sample as significantly higher in rates of relational aggression than girls at Time 1. However, teacher ratings at Time 2 of relational aggression showed no significant gender difference, and no differences were seen in student-rated relational aggression at either time point. With the exception of teacher-rated relational aggression at Time 1, these findings are consistent with studies that suggest adolescent boys and girls engage in similar rates of relational aggression (e.g., Burton et al., 2007; Lansford et al., 2012; Sullivan et al., 2006; 2010). It is curious, then, that boys were initially rated by their teachers as engaging in higher rates of relational aggression than their female peers, and may reflect a general tendency for teachers to rate boys as higher in aggression than girls, especially at the beginning of the school year when they are less familiar with each student.

In contrast to the findings of a few mean-level gender differences in study variables, no differences by gender in the strength of paths between study variables were detected. This was true using both teacher- and student-rated aggression outcomes. Based on a shortage of prior studies on relations between poor emotional awareness, emotion dysregulation, and aggression among early adolescents, and the mixed results from the few studies which have examined such relations, the analyses of gender differences were mostly exploratory. The finding of no significant gender differences adds to the existing literature which includes some congruent findings (Herts et al., 2012; McLaughlin et al., 2011; Sullivan et al., 2010); but also some discrepant results of significant gender differences in the relations between study variables (Calvete & Orue, 2012; Donahue, et al., 2014). However, the studies which point to gender differences in the relations between emotional competence variables and aggression are not

directly comparable to the current study due to methodological dissimilarities (e.g., different constructs included in the mediating models and sampling from different age ranges).

It should be noted that one path was expected to vary significantly by gender. Specifically, based on the empirical literature (Burton et al., 2007; Calvete & Orue, 2012; Crapanzano et al., 2010; Lansford et al. 2012; Zeman et al., 2001), it was hypothesized that the path between anger dysregulation and physical aggression (both at Time 2) would be stronger for boys than girls. This hypothesis was not supported by the results of the study. The different paths tested by the current study will be discussed in more detail below, with regard to how this non-significant finding fits with the theoretical and empirical literature.

No gender differences were found for relations between emotional awareness and dysregulation. Saarni (1999) noted evidence that boys are less emotionally expressive than girls, and thus may have a smaller emotional vocabulary. However, she surmised that this may not lead to actual differences in emotional awareness. This notion is supported by Penza-Clyve and Zeman (2002) who showed that males and females reported similar rates of poor awareness in middle childhood and adolescence. Furthermore, Saarni's (1999) model of emotional competence does not predict differences based on gender in the strength of the associations between emotional awareness and emotion-regulation. Thus, the current findings are in line with Saarni's (1999) model. These results suggest that boys and girls who have poor emotional awareness are no different from each other in the likelihood that they will experience emotion dysregulation, nor are they different in the likelihood that their poor emotional awareness will be associated with aggressive behaviors over time.

As compared to the pathways involving poor emotional awareness, there is more evidence in the literature supporting the findings that the strength of relations between emotion

dysregulation and aggression in general did not differ by gender among early adolescents (Herts et al., 2012; McLaughlin et al., 2011; Sullivan et al., 2010). Unfortunately, few studies have been designed to parse out differences between sadness and anger dysregulation, or the difference between physical and relational aggression, as they relate to the pathways within the mediating model of the current study. Thus, it is hard to draw firm conclusions based on the finding that no gender differences exist in the strength of these specific associations. One of the few studies to make such distinctions appears to contradict the findings of the present study because stronger relations between anger, lower rates of adaptive emotion-regulation strategies, and reactive aggression were found among adolescent boys than girls (Calvete & Orue, 2012). An important distinction, however, is that the gender difference found in Calvete and Orue's study (2012) was specifically for *reactive aggression*. The current study did not differentiate between reactive or proactive aggression. Thus, the finding that the strength of the relations between anger dysregulation and either physical or relational aggression was similar for boys and girls is not necessarily contradictory to those of Calvete and Orue (2012). The findings of the current study suggest that when they *do* experience anger, *and* have trouble regulating their affective behaviors, boys and girls are no different in how likely they are to engage in physical or relational aggression. The same can be said for sadness dysregulation.

### **The Mediation Model**

**Relations between poor emotional awareness and emotion dysregulation.** Poor emotional awareness at Time 1 was significantly associated with anger and sadness dysregulation six months later. This was true for both the model testing student-rated aggression and for the model assessing teacher-rated aggression. These findings fit well with Saarni's (1999) overall model of emotional competence. Specifically, Saarni (1999) posited that

emotional awareness is a fundamental component of emotional competence, which allows for the development of more complex and integrated facets of this area of competence. As Saarni (1999) points out, poor emotional awareness inhibits one's ability to recognize and select the most appropriate and effective means for regulating and expressing the experienced emotion. She specifically stated, "individuals who are impoverished in their awareness of emotions...would have parallel deficits in knowing how to respond adaptively to their environment" (Saarni, 1999, p.105). Thus, the finding that poor emotional awareness precedes emotion dysregulation is in line with what would be predicted from Saarni's (1999) model of emotional competence.

Empirically, this finding extends the literature in this area by showing that poor emotional awareness was a precursor to emotion dysregulation. Several studies assessing emotional awareness have operationalized it as a component of emotion-regulation (e.g., Herts et al., 2012; McLaughlin et al., 2011), and thus have not examined the relations between emotional awareness and emotion-regulation as separate constructs. The few studies which have considered these constructs separately were cross sectional in nature and found positive correlations between emotional awareness and emotion-regulation (Estabrook et al., 2014; Penza-Clyve & Zeman, 2002). Thus, the current study is consistent with existing literature and provides additional support for Saarni's conceptualization of emotional awareness as a building block for emotion-regulation (and conversely, poor emotional awareness as a precursor to emotion dysregulation). Additionally, the two aforementioned cross-sectional studies included samples which spanned from either middle-childhood into early-adolescence (Penza-Clyve & Zeman, 2002), or from early-adolescence into mid-adolescence (Estabrook et al, 2014). Thus, the current study also adds to the literature by providing support for this relation between poor emotional awareness and emotion dysregulation over time specifically within the context of early adolescence.

Broad implications of the current study results will be addressed later in the implications section. However, an implication specific to the links found between poor emotional awareness and anger and sadness dysregulation over time is that prevention programs designed to promote adaptive emotion-regulation may be more effective if they target poor emotional awareness as a risk factor for emotion dysregulation.

**Relations between emotion dysregulation and aggression.** The concurrent pathways between anger dysregulation and physical and relational aggression were significant and positive, for teacher- and student-rated aggression. This is consistent with documented evidence of anger dysregulation as a risk factor for aggression in middle childhood and adolescence within the empirical literature (e.g., Bohnert et al., 2003; Calvete & Orue, 2012; Sullivan et al., 2010; Zeman et al., 2002). A notable incongruent finding is from the longitudinal study by Bowie (2010) which showed that from middle-childhood to mid-adolescence neither sadness- nor anger-regulation at Times 1 or 2 was significantly associated with relational aggression at Times 2 or 3, respectively. Thus, it is notable that for the present study anger dysregulation was significantly related to relational aggression, and not to just to physical aggression. The current findings are in line with theoretical thinking about the constructs of aggression and emotion-regulation. The frustration-aggression hypothesis and catharsis theory both highlight the role of negative affect and emotional tension in leading to aggressive behavior (Berkowitz, 1989; Bresin & Gordon, 2013); while the treatise on emotion-regulation posits that it is not only the experience of tension and negative affect, but how one manages and copes with these experiences via emotion-regulation that will determine the risk for engaging in aggressive behaviors (Thompson, 1994).

Clearly, the theoretical premises discussed above apply to emotion dysregulation in general, not simply anger dysregulation. As mentioned previously, there has been some discordance in the literature regarding the role of sadness dysregulation as a risk factor for aggression. This may be related to the fact that studies which have shown no association between sadness dysregulation and aggression (e.g., Bohnert et al., 2003; Zeman et al., 2002) did not differentiate between physical and relational aggression. However, although the study by Sullivan and colleagues (2010) showed that poor sadness-regulation coping was uniquely associated with higher rates of relational aggression (i.e., sadness-regulation coping was not associated with physical aggression), these results were not replicated by the current study. Specifically, the concurrent pathway between sadness dysregulation and relational aggression was not significant based on either teacher- or student-rated aggression. Further research is necessary to investigate the discrepancy between this finding and those of the earlier study by Sullivan and colleagues (2010).

Associations between sadness dysregulation and student-rated physical aggression were not found to be significant. However, students who rated themselves as higher in sadness dysregulation were more likely to be rated lower in physical aggression by their teachers. It is not clear how to interpret this finding in the context of the existing literature, since most studies have either found a positive association between sadness dysregulation and aggression (Eisenberg et al., 2001; Sullivan et al., 2010), or have found no significant relation (Bohnert et al., 2003; Zeman et al., 2002). Campos and colleagues (1989) highlight that one function of sadness is to elicit social support. Thus, students' sadness dysregulation may result in increased rates of social support from teachers, which in turn may make these students less likely to engage in aggression. If true, this would likely apply particularly within the school context, whereas



outside of school there may not be as many resources for support. This would account for the difference in sadness dysregulation being linked to lower rates of teacher-rated physical aggression (i.e., in school), but not in lower rates of student-rated physical aggression (i.e., across settings). In contrast, anger dysregulation often leads to warnings and subsequent disciplinary action from adults at school which may be less likely to provide the underlying support needed to mitigate escalating behavior patterns. It is also possible, however, that the finding of a negative association between sadness dysregulation and teacher-rated physical aggression stems from teachers' bias wherein teachers who observe a student who is dysregulated with sadness are less likely to interpret the actions of that student as aggressive (e.g., making threats). Future research should attempt to replicate and further clarify this finding.

Overall, the current findings suggest that it is anger dysregulation in particular, and not simply a more general construct of emotion dysregulation which includes both anger and sadness, that is positively associated with both physical and relational aggression. A specific implication, then, is that programs and interventions targeting a reduction of physical and/or relational aggression may be most effective and efficient if such programs focus specifically on addressing anger dysregulation.

**Relations between poor emotional awareness and aggression.** Contrary to study hypotheses, no direct effects were found between poor emotional awareness and higher levels of physical or relational aggression over time. This finding is not consistent with previous studies which demonstrated significant associations between similar constructs, such as between lower levels of emotional clarity and poor psychological well-being among college students (Gohm & Clore, 2002a); and between alexithymia and impulsive aggression among undergraduate students (Fossati et al., 2009) as well as among middle-aged military veterans (Teten et al., 2008).

Furthermore there is evidence that alexithymia is significantly associated with externalizing behaviors among Finnish adolescents aged 13 to 18 (Honkalampi et al., 2009). However, Penza-Clyve and Zeman (2002) found that poor emotional awareness was not significantly related to externalizing behaviors among fourth and fifth graders in the United States. The current study findings were consistent with those of Penza-Clyve and Zeman (2002); however, given the discrepancies in the literature, further research is needed with other early adolescent samples.

**Indirect effects of poor emotional awareness on aggression via anger dysregulation.**

As expected, significant indirect effects were found between poor emotional awareness at Time 1 and teacher- and student-reported physical and relational aggression at Time 2 via anger dysregulation at Time 2. As mentioned previously, the absence of a direct effect of poor emotional awareness at Time 1 on either aggression outcome at Time 2 did not preclude examining these indirect effects (Mackinnon, Cheong, & Pirlott, 2012). Thus, current study findings suggested that while poor emotional awareness, in and of itself, is not a significant risk factor for physical aggression, it adds indirectly to the risk of early-adolescents engaging in physical and relational aggression through its relation to increased anger dysregulation. This fits with theories of aggression and Saarni's (1999) conceptualization of emotional competence. As outlined earlier, the frustration-aggression hypothesis and catharsis theory both emphasize the role of negative affect and emotional tension in the development of aggressive behavior (Berkowitz, 1989; Bresin & Gordon, 2013). It has also been theorized that beyond the basic experience of negative affect and emotional tension, it is how the individual copes with and regulates this emotional experience that influences whether such experiences lead to aggression (Saarni, 1999; Thompson, 1994). Furthermore, how one is able to cope with and regulate his or her emotions is thought to be facilitated by having the emotional awareness to label one's

emotional experience and then choose the most adaptive regulation strategies for that particular context (Saarni, 1999). Thus, it makes sense that poor emotional awareness would be linked to physical and relational aggression by the fact that it contributes to anger dysregulation, which in turn is associated with higher rates of physical aggression.

### **Indirect effects of poor emotional awareness on aggression via sadness**

**dysregulation.** It was anticipated that there would be an indirect effect of poor emotional awareness at Time 1 on physical and relational aggression at Time 2 via sadness dysregulation at Time 2. However, this hypothesis was not tested using student-rated physical and student- and teacher-rated relational aggression due to the fact that the concurrent pathways between sadness dysregulation and these outcomes were not significant, precluding an indirect effect.

Interestingly, results indicated an indirect effect on relations between poor emotional awareness at Time 1 and teacher-rated physical aggression at Time 2 via sadness dysregulation at Time 2. Thus, for the students sampled in this study, those who rated themselves as higher in poor emotional awareness (at Time 1) also rated themselves higher in sadness dysregulation at (Time 2), and this in turn was related to lower teacher-ratings of physical aggression (at Time 2). While some potential explanations for the negative concurrent association between sadness dysregulation and teacher-rated physical aggression were discussed previously, further research on relations between each these variables is needed as no empirical or theoretical work to date has suggested this indirect relation.

In summary, current study results showed that higher levels of poor emotional awareness at Time 1 were associated with later high levels of both anger and sadness dysregulation at Time 2. Anger dysregulation was more strongly associated with concurrent physical and relational aggression across genders, as compared to sadness dysregulation. And while poor emotional

awareness at Time 1 did not have a significant direct effect on either relational or physical aggression at Time 2, there was an indirect effect on both via anger dysregulation. The current study also produced interesting findings surrounding sadness dysregulation and teacher-rated physical aggression which should prompt future research to replicate and illuminate the underlying mechanisms.

### **Limitations**

Although the current study advanced the literature on relations between emotion processes and aggression in early adolescence, it is not without limitations. Control variables were included for baseline levels of study variables, school setting, race/ethnicity, and intervention condition; however, there are other potential covariates which were not measured. A few of the known potential confounds will be discussed below, however this should not be considered an exhaustive list of all possible confounding variables which could affect the interpretation of the data from the current study.

Language skill development reflects one set of potential confounds that were not assessed in the current study. Saarni (1999) noted that emotional awareness is related to language development (e.g., having an adequate vocabulary), and that the development of emotional awareness may be hindered for children who exhibit delays in language development. Similarly, language development is related to youths' ability to effectively express, communicate, and regulate their emotions (Saarni, 1999). Furthermore, other factors associated with the development of language skills such as socioeconomic status and parental factors including parents' speech (e.g., Hoff, 2003; Pungello, Iruka, Dotterer, Mills-Koonce, & Reznick, 2009) are also potentially important covariates that were not accounted for in the analyses.

More generally, the current study's focus on emotional awareness should not be taken as an assumption that it is the most influential determinant of emotion dysregulation. There are a number of additional factors which contribute to emotion dysregulation, such as stress and depleted ego strength (e.g., Hagger, Wood, Stiff, & Chazisaranis, 2010). However, since these were not measured and included in the analyses for the current study, the role they may play is unclear. Moreover, just as emotional awareness is not considered the only factor in determining emotion dysregulation, it is also important to acknowledge that other unmeasured covariates may influence relations between emotion dysregulation and aggression. These include school environment and peer group affiliations (Cillessen & Mayeux, 2004; Cornell & Huang, 2016; Pattiseanno, Kornelis Dijkstra, Steglich, Vollenbergh, & Veenstra, 2015). Given these potential confounds, among others, it is not possible to make definitive causal inferences about the influence of emotional awareness on either emotion dysregulation or aggression; nor is it possible to draw definitive conclusions about the concurrent associations between anger dysregulation and aggression.

Another limitation of the present study is that we were not able to meaningfully assess potential cultural differences based on race/ethnicity, even though there is some theoretical and empirical support to suggest that such differences do exist in the experience and expression of emotions (e.g., Dunbar, Perry, Cavannaugh, & Leerkes, 2015; Nelson, et al. 2012; Saarni, 1999). Unfortunately, in the current study, confounds are present in the demographic characteristics of the urban schools and county school that preclude the ability to test for cultural differences by race/ethnicity. More specifically, analyses designed to examine potential cultural differences would partially conflate racial/ethnic identity with spurious variables related to school setting, such as type of community (e.g., urban versus rural), socioeconomic status (i.e., differences in

the percentage of students eligible for the federal free or reduced lunch program in urban schools versus the county school), and unique school district characteristics (e.g., district policies and procedures).

This represents a significant limitation because the experience and expression of emotions are embedded in a larger cultural context (e.g., Mesquita & Frijda, 1992; Saarni, 1999). For example, the socialization of responses to negative emotions among young children has been found to differ among African-American and Caucasian mothers in that African-American mothers viewed displays of negative emotions as less acceptable and were less likely to provide supportive responses after children's expressions of negative emotions than were Caucasian mothers (Nelson et al., 2012). Dunbar and colleagues (2015) noted that expressions of negative emotionality, especially anger, may be perceived as more threatening when made by African-American as compared to Caucasian youth. Thus, the lower rates of supportiveness for expressing negative emotions among African-American mothers may be due to a desire to teach their children suppression of these emotions, to avoid stereotyping and racial discrimination (Dunbar et al., 2015).

However, it is not known whether racial/ethnic differences in emotion socialization correspond to differences in emotional competence. For instance, among adult women with elevations in trait anger, remembered non-supportive emotion socialization was related to higher levels of depression symptoms for Caucasian but not African-American participants (Leerkes, Supple, Su, & Cavanaugh, 2013). Additionally, some studies have found little difference in emotion-regulation based on race/ethnicity (Garner & Mahatmya, 2015; Rischel, Tone, Schoemann, & Lim, 2015). Specifically, Rischel and colleagues (2015) sampled undergraduate students to assess the factor structure of the Difficulties in Emotion Regulation Scale (DERS)

and found it to be invariant by race/ethnicity for African American and Caucasian students. In another study, Garner and Mahatmya (2015) found no significant differences in emotion-regulation skills among African-American and Caucasian students. Thus, even if it were possible to assess for racial/ethnic differences at the univariate level and/or in relations between study variables, such analyses would have been exploratory.

Finally, it is important to note that the design of the current study limits some of the conclusions which can be drawn from the results. For example, a true mediation model includes a predictor variable(s) at Time 1, mediating variable(s) at Time 2, and the outcome variable(s) at Time 3. However, the current study only included two time points – the fall and spring of sixth grade. The decision was made to confine the data to one school year, instead of extending into the fall of seventh grade based on the typical decline seen in frequency of aggression during the fall versus spring of the school year. However, based on this decision, no conclusions can be drawn about temporal relations between emotion dysregulation and aggression. Additionally, the anger and sadness dysregulation measures used in this study were constructed using two subscales (Anger Regulation Coping and Anger Dysregulated Expression, or Sadness Regulation Coping and Sadness Dysregulated Expression) of the Children’s Anger Management Scale (CAMS: Zeman et al., 2001) and Children’s Sadness Management Scale (CSMS: Zeman et al., 2001), respectively. However, the internal reliability, as measured by alpha-coefficients, for these two composite scales were marginal. Thus, future research is needed to consider the psychometrics of these scales.

### **Implications and Directions for Future Research**

Despite the aforementioned limitations, the current study adds to the existing literature in several important ways. Although its design precludes claims of causality, the longitudinal nature

and accompanying results do lend support to Saarni's (1999) model of emotional competence, specifically that poor emotional awareness appears to be a temporal precursor to both anger and sadness dysregulation. This is congruent with Saarni's (1999) depiction of emotional awareness as a building block which allows for more effective regulation of one's emotions; and conversely the absence of which makes emotion-regulation more difficult. One implication of this finding is that focusing on poor emotional awareness as the target of a prevention program *may* also promote effective emotion-regulation. However, while longitudinal relations between poor emotional awareness and emotion dysregulation lends credence to Saarni's (1999) model and suggests a possible target for promoting effective emotion-regulation, more research is needed to determine if this findings is replicable across other early adolescent samples.

The tests of associations between anger and sadness dysregulation and physical and relational aggression represent another way this study contributes to the literature. Results replicated those of several previous studies which found positive associations between anger dysregulation and physical aggression (e.g., Calvete & Orue, 2012; Sullivan et al., 2010; Zeman et al., 2002), although they did not support the hypothesis that this association would be stronger for boys than girls. Given these results, future research should examine whether such gender differences apply specifically to early-adolescent populations. The results of the current study also contribute to the sparse literature regarding the relations between anger dysregulation and relational aggression, which were significantly associated. Further research should be conducted to determine whether anger dysregulation is a risk factor for relational aggression among early adolescents.

Beyond anger dysregulation, a theoretical and empirical case can be made for targeting the dysregulation of other emotions, such as sadness, when trying to prevent or reduce



aggression (Eisenberg et al, 2001; Herts et al., 2012; Robertson et al., 2012; Sullivan et al., 2010; Zeman et al., 2001). However, most current violence prevention programs for early adolescents do not include explicit interventions related to sadness dysregulation (e.g., Bierman et al., 2013; Botvin & Griffin, 2004; Committee for Children, 1997; Olweus & Limber, 2010); and the results of the current study do not support adding sadness dysregulation as a target for decreasing either physical or relational aggression. Thus, the present study supports the current focus in youth violence prevention programs on emotional competencies specifically related to anger-regulation. Future studies may wish to decipher whether additional forms of emotion dysregulation related to emotions/affective states such as anxiety, fear, jealousy, etc. are significantly associated with either physical or relational aggression.

The significant indirect effects of poor emotional awareness on both physical and relational aggression suggest that programs for preventing aggression should consider targeting emotional awareness as one component of teaching emotional competence. A detailed description of current school-based violence prevention programs for middle school students is outside the scope of this study. However, relevant to the current study is how these programs address issues of emotional awareness, if at all. For instance, the Fast Track program places specific emphases on the promotion of emotional awareness in school-aged children in first through fifth grades, via its implementation of the PATHS (Promoting Alternative THinking Strategies) curriculum (Bierman et al., 2013; Conduct Problems Prevention Research Group [CPPRG], 1999). However, the Fast Track program for children transitioning to middle school shifts focus away from identifying emotions and accompanying problem-solving (i.e., regulatory) strategies. Instead, groups for social support and individualized academic tutoring are

provided for students who are determined to be in-need of such support (Bierman et al., 2013; Conduct Problems Prevention Research Group [CPPRG], 1999).

Similarly, other violence prevention programs targeting early-adolescents, such as Second Step, Life Skills, and the Olweus Bullying Prevention Program do not explicitly address emotional awareness (Botvin & Griffin, 2004; Committee for Children, 2008; Olweus & Limber, 2010). Thus, it appears that to date most prevention programs designed for early-adolescents either assume adolescents have already developed a healthy level of emotional awareness, or they overlook the importance of this aspect of emotional competence. Therefore, the results of the present study suggest that programs targeting aggression among early-adolescents may want to place a greater emphasis on explicitly teaching students how to identify and label their emotions, and then in turn how to use this understanding to select effective regulation strategies in lieu of resorting to physical or relational aggression. As discussed in the limitations section, such efforts should also attend to students' language skill development, since delays in language development could impair the development of students' emotional awareness. Outcome studies would be needed to confirm if adding a greater emphasis on teaching emotional awareness does in fact significantly improve the effectiveness of current youth violence prevention programs.

There are two additional study results which do not suggest specific implications for intervention or prevention programs, but do raise areas for future research. The first has to do with the fact that the mediating model from the current study did not show differences by gender in the strength of relations between study variables. As previously noted, this result adds to the mixed findings in the literature regarding gender differences in relations between emotional competence and aggression (Calvete & Orue, 2012; Donahue, et al., 2014; Herts et al., 2012; McLaughlin et al., 2011; Sullivan et al., 2010). Additional research is necessary to further clarify

these relations to determine the extent to which gender does (or does not) impact the strength of these relations. Additionally, the fact that the current study revealed a negative association between sadness dysregulation and teacher-rated physical aggression should be the subject of further research. Specifically, future research is needed to determine if this is a replicable result, and if so, what mechanisms may underlie it. Finally, future research should include factors which likely influence teachers' interpretation and rating of aggressive behaviors, including teachers' own cultural backgrounds and biases, in order to better contextualize this process.

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**Appendix A**  
**Student Report Demographics**

Gender

A. ALL WAVES

1) Original Items and Response Format

What is your gender?

- 1 = Boy
- 2 = Girl
- 3 = Skip

Race and Ethnicity

A. WAVE 1

1) Original Items and Response Format

What race do you consider yourself to be? You can choose more than one.

- 1 = Asian-American
- 2 = African-American or Black
- 3 = Hispanic or Latino/a (Spanish)
- 4 = White, Caucasian American, or European
- 5 = American Indian
- 6 = Other (Please fill in the blank) [Respondent Specify]
- 7 = Skip [Exclusive]

B. WAVE 2

1) Original Items and Response Format

Do you consider yourself to be Hispanic or Latino/Latina? That is, you are (or your family is) of Latin American or Spanish-speaking descent.

- 1 = Yes
- 2 = No
- 3 = Don't know
- 4 = Skip

What race do you consider yourself to be? You can choose more than one.

- 1 = American Indian or Alaska Native

- 2 = Asian or Pacific Islander
- 3 = Black or African American
- 4 = White or Caucasian
- 5 = More than one race (please type which races in the blank) [Respondent Specify]
- 6 = Other (please fill in the blank) [Respondent Specify]
- 7 = Skip [Exclusive]

### Age

#### A. ALL WAVES

##### 1) Original Items and Response Format

How old are you?

What is your birth date?

### Family Structure

#### A. ALL WAVES

##### 1) Original Items and Response Format

Who lives in your house with you ALL or MOST of the time? (You can choose more than one)

- 1= Biological (Natural) Mother
- 2= Biological (Natural) Father
- 3= Stepmother
- 4= Stepfather
- 5= Foster Mother
- 6= Foster Father
- 7= Adoptive Mother
- 8= Adoptive Father
- 9= Grandparent(s)
- 10= Other Adults (If yes, how many?) [Respondent Specify]
- 11= Brothers and Sisters (including step, adopted, and foster siblings) (If yes, how many?)  
[Respondent Specify]
- 12= Other Children (If yes, how many?) [Respondent Specify]
- 13= Skip [Exclusive]

### Parents

Who do you consider to be your parents? By “parents” we mean the adults that are most responsible for taking care of you. (You can choose more than one)

- 1= Biological (Natural) Mother
- 2= Biological (Natural) Father
- 3= Stepmother
- 4= Stepfather
- 5= Foster Mother
- 6= Foster Father
- 7= Adoptive Mother
- 8= Adoptive Father
- 9= Grandmother
- 10= Grandfather
- 11= Aunt
- 12= Uncle
- 13= Other Adult (Who? Type the relationship of this person to you, not their name.) [Respondent Specify]
- 14= Skip [Exclusive]

## Appendix B

### Poor Awareness Subscale from the Emotion Expression Scale for Children (EESC)

#### A. RESPONSE FORMAT

Click on the number that goes with how true the sentence is for you.

1 = Not At All True

2 = A Little True

3 = Somewhat True

4 = Very True

5 = Extremely True

6 = Skip

EmEx03	When something bad happens, I feel like exploding
EmEx05	I have feelings that I can't figure out
EmEx08	When I feel upset, I do not know how to talk about it
EmEx09	I often do not know how I am feeling
EmEx10	People tell me I should talk about my feelings more often
EmEx11	Sometimes I just do not have the words to describe how I feel
EmEx14	I know I should show my feelings, but it is too hard
EmEx15	I often do not know why I am angry

## Appendix C

### Sadness Dysregulation Composite Measure from the Children's Sadness Management Scale (CSMS)

#### A. RESPONSE FORMAT

How much do you agree with the following statements?

1 = Hardly Ever

2 = Sometimes

3 = Often

4 = Skip

#### Items from the Sadness Emotion Regulation Coping subscale

CSMS16	When I am feeling sad, I can control my crying and carrying on.
CSMS18	I stay calm and don't let sad things get to me.
CSMS21	When I'm sad, I do something totally different until I calm down.
CSMS23	I can stop myself from losing control over my sad feelings.
CSMS25	I try to calmly deal with what is making me feel sad.

#### Items from the Sadness Dysregulated-Expression subscale

CSMS19	I whine/fuss about what is making me sad.
CSMS24	I cry and carry on when I am sad.
CSMS26	I do things like mope around when I am sad.



## Appendix D

### Anger Dysregulation Composite Measure from the Children's Anger Management Scale (CAMS)

#### A. RESPONSE FORMAT

How much do you agree with the following statements?

1 = Hardly Ever

2 = Sometimes

3 = Often

4 = Skip

#### Items from the Anger Emotion Regulation Coping subscale

CAMS01	When I am feeling mad, I control my temper
CAMS03	I stay calm and keep my cool when I am feeling mad
CAMS08	I can stop myself from losing my temper
CAMS10	I try to calmly deal with what is making me feel mad
CAMS13	Even when I'm mad, I can think through ways to cope with my anger

#### Items from the Anger Dysregulated-Expression subscale

CAMS04	I do things like slam doors when I am mad.
CAMS06	I attack whatever it is that makes me mad.
CAMS09	I say mean things to others when I am mad.

## Appendix E

### Physical Aggression Subscale from the Problem Behavior Frequency Scales – Student Report (PBFS)

#### A. RESPONSE FORMAT

In the last 30 days, how many times have you... (Items PBFS01-PBFS35)

1 = Never

2 = 1-2 times

3 = 3-5 time

4 = 6-9 times

5 = 10-19 times

6 = 20 or more times

7 = Skip

PBFS11	Hit or slapped someone.
PBFS12	Thrown something at someone to hurt them.
PBFS15	Threatened to hit or physically harm someone.
PBFS18	Shoved or pushed someone.
PBFS31	Been in a fight in which someone was hit.
PBFS33	Threatened someone with a weapon (gun, knife, club, etc.).

## Appendix F

### Relational Aggression Subscale from the Problem Behavior Frequency Scales – Student Report (PBFS)

#### A. RESPONSE FORMAT

In the last 30 days, how many times have you... (Items PBFS01-PBFS35)

1 = Never

2 = 1-2 times

3 = 3-5 time

4 = 6-9 times

5 = 10-19 times

6 = 20 or more times

7 = Skip

PBFS01	Told someone you wouldn't like them unless they did what you wanted them to do.
PBFS02	Spread a false rumor about someone.
PBFS05	Tried to keep others from liking another kid by saying mean things about him/her.
PBFS14	Left another kid out on purpose when it was time to do an activity.
PBFS17	Said things about another kid to make other kids laugh.
PBFS26	Not let another kid be in your group anymore because you were mad at them.

## Appendix G

### Physical Aggression Subscale from the Problem Behavior Frequency Scales – Teacher Report (PBFT)

#### A. RESPONSE FORMAT

In the last 30 days, how frequently does this student engage in the following behavior...  
(Items PBFS01-PBFS44)

1 = Never

2 = Sometimes

3 = Often

4 = Frequently

PBFT12	Hit or slapped someone
PBFT13	Thrown something at someone to hurt them
PBFT18	Threatened to hit or physically harm someone
PBFT23	Shoved or pushed someone
PBFT39	Been in a fight in which someone was hit
PBFT42	Threatened someone with a weapon

## Appendix H

### Relational Aggression Subscale from the Problem Behavior Frequency Scales – Teacher Report (PBFT)

#### A. RESPONSE FORMAT

In the last 30 days, how frequently does this student engage in the following behavior...  
(Items PBFS01-PBFS44)

1 = Never

2 = Sometimes

3 = Often

4 = Frequently

PBFT02	Told would not like someone unless they did what she or he wanted them to do
PBFT03	Spread a false rumor about someone
PBFT05	Tried to keep others from liking another kid
PBFT15	Left another kid out on purpose when it was time to do an activity
PBFT20	Said things about another kid to make other kids laugh
PBFT34	Didn't let another kid be in their group anymore

## **Vita**

Benjamin Victor Rosen was born on March 24<sup>th</sup>, 1983 in Chicago, Illinois. He is an American citizen. Benjamin graduated in May of 2001 from James Madison Memorial High School in Madison, Wisconsin. He received a Bachelor of Arts degree from the University of Wisconsin-Madison in May of 2006, double majoring in Psychology and Sociology. Benjamin subsequently worked from 2006 to 2009 as a group leader, and later as a supervisor, at New Dominion Boys School, a residential wilderness therapy program. He also worked from 2009 to 2010 at Family Preservation Services as an intensive in-home counselor for children and adolescents at risk for removal from their homes. He earned a Master of Science in Psychology from Virginia Commonwealth University (Richmond, VA) in 2013. Benjamin will begin his predoctoral internship at the Virginia Treatment Center for Children (Richmond, VA) in July 2016.