

EXPLAINING DISCREPANCIES BETWEEN SELF AND PEER REPORTS OF  
AGGRESSION IN ADOLESCENCE

By

KATHERINE HALE CLEMANS

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Abstract of Dissertation Presented to the Graduate School  
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ADOLESCENCE

By

Katherine Hale Clemans

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Though most studies of aggressive behavior in early adolescence employ self- or peer-report methods to collect aggression data, these two measurement methods demonstrate weak correlations with one another in the literature. Social desirability has been identified as a source of bias in self-reported aggression and is often controlled in analyses using self-reported measures. Similarly, aggression-related social schemas could be a source of bias in peer-reported aggression; however, no control measure for this currently exists. The present study investigated potential differences in the psychosocial correlates of self- and peer-identified early adolescent direct and indirect aggressors. In addition, scales assessing gender, race, and popularity-based aggression stereotyping bias were created for the study as a way to tap participants' social schemas, and their relationships to nominations of aggressive peers were examined. Participants (314 middle school students;  $M$  age = 12.83;  $SD$  = .96) were categorized into groups based on self-reported and peer-nominated aggression scores and compared across a number of demographic and psychosocial factors. After controlling for social desirability bias, self-identified aggressors were characterized by higher levels of manipulative behavior, whereas peer-identified aggressors were characterized by particular race, gender, and sociometric patterns. Specifically, peer-identified direct aggressors were more likely than self-identified

aggressors to be African American, and peer-identified direct and indirect aggressors were less well-liked but more socially visible and popular than self-identified aggressors. Overall, results suggested that self- and peer-report methods identify qualitatively different groups of aggressive adolescents. Furthermore, participants endorsed expected gender and popularity-based stereotypes of aggressive adolescents. Endorsement of gender stereotypes of direct and indirect aggressive adolescents was related to the gender of nominated aggressive peers, but not related to peer-reported aggression levels. The wide use of peer report methods in the present literature on adolescent aggression suggests the need for better understanding of factors that influence those reports, as bias in peer reports is often not considered in interpreting findings. The potential influence of stereotyping in peer-identified aggression and the need for further investigation of procedures that control for bias in peer-report measures are discussed.

## CHAPTER 1 INTRODUCTION

Adolescent aggression has long been of interest to researchers, educators, clinicians, parents, and policy makers. Aggressive behavior during this time can be direct (e.g., physical fighting, verbal threats or insults) or indirect (e.g., rumor spreading, social exclusion, withholding of friendship). Much literature on such aggression and antisocial behavior has focused on understanding its development and on identifying factors which place individuals at risk. Despite the ample literature on the development of aggressive behavior, however, questions remain regarding the best method of assessment or source of information on aggression in adolescence. The present study investigates whether characteristics of early adolescents identified as aggressive differ as a function of self- and peer-report methods of assessment, as well as potential factors which may contribute to bias in these methods.

### **Measuring Aggression in Adolescence**

Assessment issues become increasingly important during early adolescence for several reasons. First, time spent with friends and participating in activities with peers increases (Larson & Richards, 1991), and secondly, adolescents begin to distance themselves from their parents and engage in more activities that may be unmonitored by parents and teachers (Marshall, Tilton-Weaver, & Bosdet, 2005). For this reason, the teacher and parent reports that are frequently used to obtain information on aggressive behavior in childhood may miss important behaviors, particularly concerning indirect forms of aggression that are less easily observed by an outsider to the peer group. For instance, with the advent of widespread text messaging and online social network usage among early adolescents (Hinduja & Patchin, 2008), much indirect aggression may be taking place increasingly in private venues to which adult observers have little to no access. Consequently, researchers may be better served by focusing on self-reported

information or on information given by peers, whom many researchers expect to have the most accurate information about an adolescent's social behavior—not least because peers are usually the objects at whom the adolescent directs his or her aggression (Peets & Kikas, 2006). Thus, while studies using preschool and elementary school age groups frequently employ parent and teacher ratings of aggression, almost all current studies of aggression in middle school and high school age groups use at least one self- or peer-reported measurement method.

Longitudinal evidence suggests that agreement between self-reported and peer-reported aggression peaks in early adolescence (Pakaslahti & Kelitkangas-Järvinen, 2000). However, although peer-report and self-report measures of aggression are frequently intended to be measurements of the same construct, the literature to date reveals a consistent trend of weak correlations between the two, usually falling within the range of  $r = .10$  to  $r = .35$ , which suggests a low level of shared variance between the two measures (Achenbach, McConaughy, & Howell, 1987; Card, Stucky, Sawalani, & Little, 2008; Epkins & Myers, 1994; Henry et al., 2006; Pakaslahti & Kelitkangas-Järvinen, 2000; Pellegrini & Bartini, 2000; Xie, Cairns, & Cairns, 2002). This is problematic for researchers seeking to investigate a single construct of aggressive behavior.

Figure 1-1 portrays a conceptual model of the factors which can influence self- and peer-based measures of aggressive behavior. At the core of the model lie the multitude of factors which contribute to aggression at various points in the life span. During adolescence, numerous biological, psychological, and social processes take place which shape an adolescent's social behavior. As Bronfenbrenner's Ecological Model of Development (Bronfenbrenner, 1979) indicates, adolescents develop via interactions within many different contexts, including immediate familial and peer environments, along with broader cultural and societal contexts.

Much research has been conducted on the role of these factors in the development and manifestation of aggression in adolescence. These include, but are not limited to, individual factors such as cognitive deficits, hyperactivity, emotion levels and emotion regulation abilities; familial factors such as parental punishment style and mother's IQ, social factors such as peer rejection, school involvement, and early pubertal development in relation to one's peers, broader environmental factors such as socioeconomic status and characteristics of one's neighborhood, and cultural factors such as gendered expectations for behavior (see Dodge, Coie, & Lynam, 2006, for a review). These factors are thought to directly influence or be indicative of an individual's overarching tendency to engage in aggressive behavior, and thus, barring measurement error, their influence is generally expected to be captured by self- and peer-report measurement methods in similar fashions.

If psychosocial influences were the only cause of variability in measurements of aggressive behavior, we should see considerably greater overlap in ratings of aggression originating from different sources. As it is, that is not the case. Several factors may play a role in the relatively weak overlap between different informant reports of aggression. Achenbach and colleagues (1987) suggest that, rather than calling into question the validity of any one measurement type, low correlations between aggression scales may represent variations in the same underlying behavioral construct; these variations manifest themselves differently according to the context or situations in which they are experienced. For instance, an individual rating herself/himself on aggressive behavior may recall instances in which behavior was directed toward siblings at home, which classmates would not have occasion to observe. Similarly, certain circumstances may arise in which an individual is effectively able to conceal behavior directed at peers, as in the anonymous generation of a rumor. In both of these cases, individuals

would have access to information about their own aggression which would not be shared by peers. Alternatively, individuals may be sometimes unaware of the effect of their actions on others' feelings or social reputations; leading peers to categorize as aggressive certain behaviors that the individual would not. Circumstances such as these may lead to variability in the influence of situational factors on measurements of aggressive behavior and contribute to the divergence of peer and self reports.

Low correlations between aggression measures, however, may also point to biases related to the methods in which the data are collected. Aggression is generally considered to be a socially unacceptable behavior; thus, in the case of self-reported data, individuals may underreport aggressive behavior to cast themselves in a better light to both themselves and to researchers (Peets & Kikas, 2006; Nederhof, 1985). As a result, social desirability scales, which measure an individual's tendency to report that they engage in culturally approved, though unlikely, behaviors (Crowne & Marlowe, 1960; Reynolds, 1982), have been developed, and these scales are often used as control variables to reduce the influence of social desirability bias in analyses of self-reported behavior.

Less attention has been paid to biases in peer reports of aggression, as many researchers are of the opinion that peers are more valid sources of information about an individual's behavior due to the fact that, since they are not reporting on their own behavior, issues of social desirability bias are not thought to be as applicable (e.g., Peets & Kikas, 2006). Peer reports, however, can be affected by adolescents' social schemas. A social schema is a cognitive structure that represents a person's knowledge about the traits and goals of particular individuals who fall into specific social categories (Fiske & Taylor, 1991). Social schemas help people organize and interpret information about their social world and provide expectations for others'

behavior, and thus can lead to stereotypes of particular social groups. Schemas can also create biases in the encoding and recall of information about a social event (Hamilton, Stroessner, & Driscoll, 1994; Younger, Schneider, & Daniels, 1991). An individual's gender-role stereotypes, for instance, can influence the perception and recollection of others' behavior, including a tendency to recall gender-consistent information more often than gender-inconsistent information (Fiske & Taylor, 1991; Cantor & Mischel, 1977). Alternatively, if a person possesses a schema for a certain social group which includes the traits "hostile" or "aggressive," he/she may selectively notice hostile cues over non-hostile cues in ambiguous social situations with a member of that group (Sagar & Schofield, 1980). Social schemas also become more salient when individuals think about members of social outgroups (i.e., social categories, such as race, gender, or nationality, of which the individual is not a member; Hamilton et al., 1990).

### **Comparisons of Self- and Peer-Identified Aggressive Adolescents**

Regardless of whether or not low levels of correlation between self- and peer-reported aggression are the result of participant biases, the relative lack of agreement between these measurement methods suggests that groups of students identified as aggressive may differ in important ways depending on the method by which aggression is assessed. Surprisingly little research, however, has addressed this question directly. One exception is Card et al. (2008), a meta-analysis which found that gender differences in physical aggression (i.e., boys were more physically aggressive than girls) were significantly larger for studies using peer nomination methods than for studies using self-report methods. Card and colleagues also found that peer nomination and self-report studies did not differ in the strength of relationships between aggression and emotional dysregulation. In addition, a study which examined differences in self- versus peer-reports of victimization (Graham, Bellmore, & Juvonen, 2003) found that self-identified victims experienced increased psychological maladjustment, whereas peer-identified

victims did not differ from non-victims in psychological maladjustment but did perform more poorly in school. In addition, the peer-identified victims were more likely than the self-identified victims to be African American and male. These results suggest that the profile of students identified as victims of peer aggression can differ substantially depending on the measurement method used. However, the study did not investigate group differences in peer- and self-identified perpetrators of aggression, but instead focused on victims only.

In light of the relative lack of research addressing these questions, Clemans and Sontag (2009, April) conducted a group-based analysis to investigate potential differences in the psychosocial correlates of self- and peer-identified early adolescent aggressors. Several demographic, sociometric, behavioral, and emotion/personality factors were selected on which to compare peer- and self-identified aggressors. In addition, a measure of social desirability was included in order to reduce underreporting bias and to increase the validity of the self-report aggression measures and other self-reported variables in the study (Nederhof, 1985). Similar to previous studies utilizing multiple informant reports, significant but weak correlations between self- and peer-reported aggression were found ( $r = .15, p < .001$  for both direct and indirect aggression). The low correlations suggested that substantially different groups of aggressive students were being identified by each method.

Results indicated that self- and peer-identified aggressors were indeed characterized by relatively different psychosocial profiles. Direct self-identified aggressors showed significantly higher levels of socially manipulative behavior, remorseless/unemotional affect, and delinquency than other groups, and indirect self-identified aggressors showed high levels of socially manipulative behavior and delinquency. In contrast, peer-identified aggressors were characterized by specific demographic and sociometric patterns. For instance, although self-

identified directly aggressive participants did not differ from nonaggressors in their racial/ethnic distributions, direct aggressors who were nominated by peers were significantly more likely to be African American and significantly less likely to be European American than were nonaggressors. In addition, peer-identified indirect aggressors were significantly more likely than self-identified indirect aggressors to be female, and peer-identified indirect aggressors were also more socially visible, or well-known within the social group, than either self-identified indirect aggressors or nonaggressors.

The results from Clemans and Sontag that peer-nominated direct aggressors tended to be African American, while peer-nominated indirect aggressors tended to be socially visible females, are patterns clearly reminiscent of social stereotypes of directly and indirectly aggressive adolescents that may be driven by popular media (e.g., “mean girls,” “gangsta” culture). These findings suggested that early adolescents may be using social schemas to inform their nominations of aggressive classmates, resulting in a bias due to stereotyping (Fiske & Taylor, 1991; Giles & Heyman, 2005).

### **Stereotyping Bias in Peer Nominations of Aggressive Individuals**

Stereotyping bias can come into play when beliefs about the nature of a group of people influence individuals’ interpretations and recollections of their behavior. Several studies have employed survey-based measures of stereotyping as it specifically relates to aggression or to group comparisons. A classic example of this is the Katz & Braly (1933) checklist, in which participants mark on a list the traits which they think describe a particular social or demographic group. However, this measure may be particularly susceptible to bias due to social desirability (Whitley & Kite, 2006). Sagar and Schofield (1980), employing a more subtle approach, measured the influence of racial stereotypes on the interpretation of ambiguous social behavior using a series of pictorial cues and verbal descriptions of ambiguously aggressive social

interactions in which the race of the actor or target was systematically varied. Subjects were then asked to rate the actor on several traits (eg., friendly, threatening). There are drawbacks associated with this measure, however, including the time-consuming nature of the task and its dependence on the perceived ambiguity of the social interaction in question, which can vary among scenarios as well as from person to person.

Alternatively, Ryan, Judd, and Park (1996) used a mean range and estimation task to measure racial stereotypes. This procedure consisted of a series of behavioral dimensions with opposing behaviors as endpoints (e.g., well-dressed – poorly-dressed), on which participants were asked to mark their perceived average of the racial group in question, as well as where they believed the highest and lowest members of the group would be. While this procedure is appealing because it employs a positive/negative comparison and may invoke more implicit reactions than free responses would invoke, the use of statistical terms such as “average” and “range” may be too sophisticated an instructional procedure for early adolescents. An assessment method similar to the group comparison used by Ryan et al. (1996), yet with simpler instructions, is that used by Otten & Stapel (2007). Participants indicated on a rating spectrum whether a particular behavioral or emotional trait applied more to one or another particular ethnic group, which comprised the two endpoints on the spectrum. Participants could indicate that it applied equally to both groups by selecting the midpoint of the spectrum.

The absence of an aggression stereotyping measure was a major limitation of Clemans and Sontag (2009, April), because we were not able to directly test whether aggression stereotyping tendencies impacted ratings of peer nominations. However, this study did investigate whether the tendency to nominate peers along certain demographic lines appeared to be shared among all peer nominators, or whether this tendency appeared to be particularly strong

for members of the corresponding demographic outgroup. For instance, are boys more likely than girls to nominate other-gender classmates as indirect aggressors? Because genders are highly segregated in their social interactions during early adolescence, a preference for same-sex nominations on peer-nomination measures of social behavior is expected (Coie, Dodge, & Kupersmidt, 1990; Maccoby, 1998); thus, high levels of other-sex nominations may suggest that stereotyping is taking place.

For gender, results showed that boys were much more likely than girls to nominate members of the other sex as indirect aggressors, resulting in a greater number of peer-identified indirectly aggressive girls. Because this result was not supported by a greater number of self-identified indirectly aggressive females in the current study, nor by results of previous meta-analytic findings of trivial differences in levels of indirect aggression between boys and girls (Card et al., 2008), it lends further support to the suggestion that some students in this study were in fact influenced by current social stereotypes of aggressive behavior in adolescence. Similar results were also found by Card, Hodges, Little and Hawley (2005): Sixth-grade males nominated a larger proportion of other-sex members as indirect aggressors than did their female classmates. Beyond Card et al., I am aware of no other research to date which directly investigates the influence of racial or gender stereotyping bias on peer nominations of aggressive individuals.

### **Psychosocial Factors Related to Aggression in Adolescence**

One purpose of the present study is to replicate and extend the findings from Clemans and Sontag, which suggest that substantially different groups of adolescents who possess dissimilar psychosocial profiles are being identified by self- and peer-report measurement methods. Although many factors can be investigated in relation to aggressive behavior, for the purposes of parsimony and specificity, the present study focuses on investigating differences in a

constellation of psychosocial characteristics which represent both individual and social influences on behavior. These include several emotional and personality traits known to be indicative of aggressive behavior as well as influential in its development, peer-driven indicators of aggressive behavior relating to social status within one's peer group, and demographic indicators linked to differences in aggressive behavior, including gender, race, and socioeconomic status.

### **Emotion and Personality Factors**

**Empathy and remorse.** Empathy refers to the personal experience of another's affective state after observing or learning of that state (Eisenberg, Spinrad, & Sadovsky, 2006); remorse, or guilt, is a feeling of discomfort following a transgression (Eisenberg, 2000). Low levels of empathy and remorse are emotional indicators of psychopathic personality and behavioral tendencies (Andershed, Kerr, Stattin, & Levander, 2002; Lynam, 1996). Children and adolescents who have low levels of these emotions engage in more frequent and severe forms of aggressive behavior (Eisenberg et al., 2002; Saltaris, 2002) and rate aggressive behavior as more morally permissible than do their peers (Eisenberg, Miller, Shell, McNalley, & Shea, 1991).

**Manipulative behavior.** Social manipulation, including the telling of lies and the use of dishonest charm to achieve social goals, is a behavioral indicator of psychopathic personality (Andershed et al., 2002) and thus is similarly linked to elevated levels of aggression in adolescence (Saltaris, 2002).

**Anger and anger regulation.** The emotional experience of anger is characterized by "physiological arousal and cognitions of antagonism" (Novaco, 1994, p. 32); trait anger is defined as an enduring propensity to become angry (Spielberger, Jacobs, Russell, & Crane, 1983). High anger levels contribute to aggressive behavior during adolescence (Cornell, Peterson, & Richards, 1999; Nichols, Graber, Brooks-Gunn, & Botvin, 2006), due, in part, to the

fact that feelings of anger increase reactive behaviors to real or perceived hostile situations (Muris, van der Pennen, Sigmond, & Mayer, 2008).

Anger and the ability to effectively regulate anger (i.e., to consciously reduce the intensity of anger through mental or behavioral exercises) are related, since an individual with a higher baseline anger level will have a relatively tougher job of controlling his/her temper. Though the influence of emotion regulation factors on behavior has received much attention in recent years (Eisenberg, Morris, & Spinrad, 2004), research on anger regulation specifically has been scarce (Zeman, Shipman, & Suveg, 2002). Some studies find no direct link between anger regulation and aggression in younger children (Dearing et al., 2002). Clemans, Graber, Nichols, Brooks-Gunn, and Botvin (2007, March), however, found that a reduced ability to consciously regulate experiences of anger in early adolescence was uniquely associated with increased aggressive behavior even after accounting for levels of trait-based anger. As such, it was of interest in the present study.

### **Social Factors**

**Social preference and social impact.** Social preference refers to how well-liked one is by one's peers, while social impact refers to how visible one is within one's peer group. Social preference and social impact have somewhat different relationships with aggressive behavior in adolescence. Specifically, high social impact is significantly related to high levels of aggression, and children and adolescents who have high social impact scores are more likely to be aggressive than children with high social preference scores (Newcomb, Bukowski, & Pattee, 1993).

**Perceived popularity.** Perceived popularity differs from peer acceptance and social visibility in that it incorporates levels of dominance within the peer group. Perceived popularity is usually correlated with social impact scores at around  $r = .50$ , and, like social impact, differs from peer acceptance in its relationships with aggressive behavior. This is particularly true for

indirect forms of aggression. Cillessen & Borch (2006) found that while relationally aggressive and non-relationally aggressive middle school students tended to have similar levels of peer acceptance, relationally aggressive students were rated a full standard deviation higher on perceived popularity measures. In contrast, physically aggressive middle school students were somewhat less well-liked than non-physically aggressive students, but the two groups had similar levels of perceived popularity.

### **Demographic Characteristics**

**Gender.** Gender has an established relationship with physical aggression in the literature. At all ages, males are more likely than females to be physically aggressive (Archer, 2004; Card et al., 2008), to engage in direct verbal aggression (Archer, 2004; Card et al., 2008), and to commit violent crime (Moffitt, Caspi, Rutter, & Silva, 2001). During high school, 44% of boys, but only 27% of girls, reported having engaged in a physical fight in the last year (Center for Disease Control and Prevention, 2008). When effect sizes from studies using self-report, peer and teacher reports, and observational measurement methods are averaged together across the lifespan, males tend to be higher than females in physical and verbal aggression by about .5 standard deviations (Hyde, 1984).

Indirect aggression does not show similar patterns of gender differences. Based on early studies in which peers perceived girls as higher than boys in these behaviors, some researchers have argued that indirectly aggressive behavior is a female-normative form of aggression (e.g., Crick, 1997). Evidence suggests that peers also endorse the view that females are the primary perpetrators of indirect aggression, rating indirect aggression by a female as more serious than the same behavior by male (Basow, Cahill, Phelan, Longshore, & McGillicuddy-DeLisi, 2007; Coyne, Archer, Eslea, & Liechty, 2008). Subsequent studies have shown mixed results when assessing actual levels of indirect aggression, however, and meta-analytic reviews have failed to

demonstrate significant gender differences in overall levels of indirectly aggressive behavior across childhood and adolescence (Archer, 2004; Card et al., 2008).

### **The Present Study**

The present study had two main parts. The first was a replication and extension of Clemans et al. which assessed potential differences in patterns of psychosocial characteristics among self- and peer-identified aggressive adolescents. To do so, participants were divided into groups based on their levels of self-reported and peer-identified aggression, and groups were compared with one another on a range of variables. The second part of the study directly examined the relationship of stereotyping bias to nominations of aggressive peers.

### **Specific Aims**

The specific aims of the present study were as follows:

**Specific aim 1:** *To replicate previous findings which showed that the psychosocial profiles of self-identified and peer-identified aggressors follow significantly different patterns, and furthermore, that these patterns are reliant on the type of aggression being assessed (i.e., direct or indirect).*

Based on findings in Clemans and Sontag (2009, April) and in previous literature, I expected self-identified aggressors to differ from peer-identified or nonaggressors on emotion and personality indicators of aggressive tendencies; self-identified aggressors should have higher levels of remorselessness, manipulative behavior, and anger, and lower levels of empathy and anger regulation, and that the patterns of these differences will similar for direct aggression and indirect aggression. Furthermore, I expected these relationships to be significant even after controlling for potential bias due to social desirability.

Similarly, it was expected that peer-identified aggressors would have higher social impact and perceived popularity scores than self-identified aggressors, that peer-identified indirect

aggressors would be disproportionately female, and that direct aggressors would be disproportionately African American. I also expected, based on previous research linking physical aggression to male gender stereotypes, that peer-identified direct aggressors will be disproportionately male (Giles & Heyman, 2005; Loy & Norland, 1981).

**Specific Aim 2:** *To determine whether variance in peer nominations of aggressive adolescents can be explained by nominators' stereotypes of aggressive peers.*

The second aim of the study was to address the lack of literature investigating potential bias in peer nominations of aggression (in Figure 1-1, the farthest-right box). To assess the use of social schemas in adolescents' nominations of aggressive peers, an aggression stereotyping measure was created for this study based on procedures used in Otten and Stappell (2007). It included a list of aggressive and prosocial behaviors on which participants compared gender (girls vs. boys), racial groups (Black vs. White), and sociometric groups (popular vs. unpopular). Stereotyping scales were expected to be correlated with their corresponding demographic or sociometric category of peer nominations (i.e., participants who tend to associate females with indirect aggression were expected to be more likely to nominate female classmates as indirect aggressors on the peer nomination portion of the survey). Furthermore, it was expected that the stereotyping scales would account for some of the variance in peer-reported aggression that was not explained by levels of self-reported aggression, thus recommending their use as control variables in future studies of aggression utilizing peer-reported measurement methods.

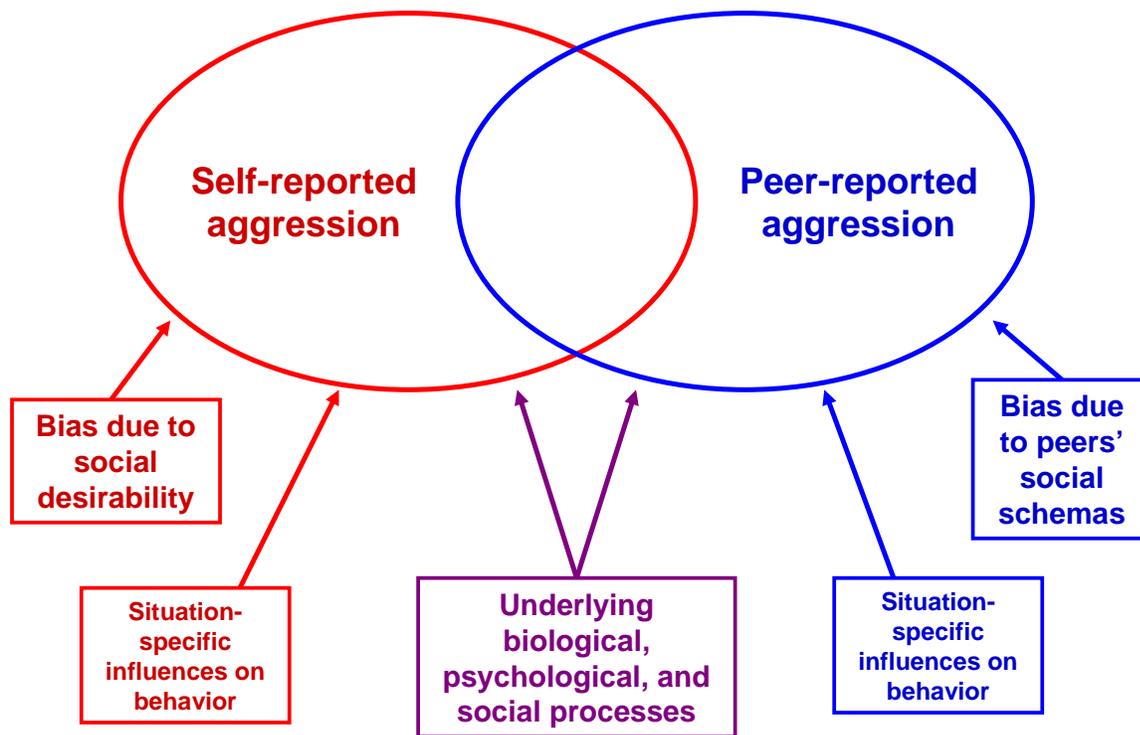


Figure 1-1. Conceptual model of factors influencing self- and peer-based measures of aggressive behavior.

## CHAPTER 2 METHODS

### **Participants**

Participants were 315 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade students ( $M$  age = 12.83;  $SD$  = .96) from a single middle school in a small Southeastern city. Ninety-six percent of the student population participated in the study. The student body of the school was representative of racial and socioeconomic distributions of the county in which it was located. Approximately 35% of students attending the school are eligible for the free/reduced lunch program (an indirect measure of socioeconomic status). Participants were 50.8% European American, 22.6% African American, 15.0% Hispanic/Latino, 2.8% Asian, and 8.9% other ethnicities. Girls comprised 49.5% of the sample.

### **Procedure**

Consent procedures were approved by the Internal Review Board of the University of Florida. The review board approved a waiver of active parental consent due to the fact that active consent procedures may exclude students with the highest levels of problematic behavior, reducing the generalizability of all findings (Tigges, 2003). Letters were sent to the home addresses of parents/guardians which contained a letter explaining the purpose of the study, details about the anonymity and confidentiality measures in place to protect students' privacy, and a prepaid, self-addressed postcard which parents could use to decline consent for their child's participation if they so desired. Phone and email contact information for the study office were also provided for this purpose.

All measures were presented in self-report surveys administered by a trained research team during school periods. Prior to administration of the surveys, students were given an assent cover sheet, which briefly introduced the study explained the anonymity and confidentiality

procedures. Questionnaires were identifiable by a unique ID number only. Students were verbally asked for their consent to participate prior to beginning the survey, and were informed that they could stop at any time once they started with no negative consequences. Students who declined to participate or who were withdrawn by their parents were given a free period until their class completed the survey.

To address potential priming effects of the aggression stereotyping measures on peer nominations, the survey was divided into two shorter counterbalanced sections, one containing the aggression stereotyping measure and one containing the peer nomination measure. Participants completed the sections in two separate class periods at least one week apart. Researchers also returned to the school for a final day of data collection so that students who had been absent on a regular administration day could complete their missed surveys.

## **Measures**

### **Peer-Reported Aggression**

Peer-reported aggression measures were based on procedures used in Putallaz et al. (2007). The measure comprised ten items, five of which assessed directly aggressive behaviors and five of which assessed indirectly aggressive behaviors. Because a specific aim of this study was to make comparisons between peer- and self-reported aggression, the wording peer-report aggression items mirrored as closely as possible a subset of items from the self-reported aggression measures (described below). Example items include “gossip or say mean things about other kids behind their backs” (indirect aggression) and “get in fights a lot” (direct aggression). A complete list of items is included in Appendix A.

For each item, students were instructed to write the first and last names of kids in their grade who best fit the item description. Students could nominate an unlimited number of names if they wished, although the vast majority nominated 0 to 3 names for each item. Rosters listing

the first and last names of same-grade classmates were provided during this portion of the questionnaire in order to assist in identification and spelling.

Total nominations for each item were standardized by grade and summed to create two individual scales reflecting peer-report direct aggression ( $\alpha = .88$ ) and indirect aggression ( $\alpha = .77$ ).

### **Self-Reported Aggression**

**Direct self-reported aggression.** Direct self-reported aggression was assessed using items from the Aggression Scale (Orpinas & Frankowski, 2001). This scale has demonstrated good reliability in previous research by its authors. Students were asked to indicate how often they had engaged in a range of behaviors during the past year. Example items included “I got into a physical fight” and “I threatened to hurt or hit someone.” Response options utilized a 1-4 Likert Scale in which 1=Never, 2=Once or twice, 3=A few times, and 4=Often. Responses were averaged to create two individual scales reflecting self-reported direct and indirect aggression; higher scores indicated higher levels of aggression.

The full direct aggression scale contained 8 items ( $\alpha = .85$ ). However, in order to keep the construction of the self-report and peer-report aggression measures as similar as possible, a reduced scale, which contained 5 items with similar wording to those assessed in the direct peer-report measure, was utilized in subsequent analyses. The reduced scale was highly correlated with the full direct aggression scale ( $r = .96$ ) and demonstrated acceptable reliability ( $\alpha = .78$ ).

**Indirect self-reported aggression.** Indirect self-reported aggression was assessed using items from the Revised Peer Experiences Questionnaire (Prinstein, Boergers, & Vernberg, 2001). The RPEQ indirect aggression subscale has demonstrated good reliability with youth in this age range and demographic background. Students were asked to indicate how often they had engaged in a range of behaviors during the past year. Example items include “I said mean things about

someone behind his/her back” and “I left someone out on an activity or conversation that he/she really wanted to be included in.” Response options utilized a 1-4 Likert Scale in which 1=Never, 2=Once or twice, 3=A few times, and 4=Often. Responses were averaged to create two individual scales reflecting self-reported direct and indirect aggression; higher scores will indicated higher levels of aggression.

The full indirect aggression scale contained 12 items ( $\alpha = .77$ ). A reduced scale which contained 5 items with similar wording to those assessed in the direct peer-report measure was also created. The reduced scale was highly correlated with the full indirect aggression scale ( $r = .90$ ) but demonstrated low, though not unacceptable, reliability ( $\alpha = .56$ ). The lower alpha levels for indirect aggression are likely due to the fact that several different types of behavior are assessed (including social exclusion, rumor spreading, and withdrawal of friendship), whereas direct aggression items assess only physical and verbal forms and therefore overlap with each other to a greater extent. Other often-used assessments of indirect aggression utilizing low item counts have shown similarly low reliability levels. In order to keep the construction of the self-report and peer-report aggression measures as similar as possible, the reduced scale was employed in all subsequent analyses of indirect aggression.

### **Aggression Stereotyping**

The aggression stereotyping scales for this study used a format adapted from Otten and Stapel (2007) and were comprised of 12 items listing aggressive and prosocial behaviors. For each item, students were asked to indicate on a 7-point spectrum scale whether they thought the behavior applied more to one particular group of people, more to another group of people, or equally to both groups. The set of 12 items was repeated for three group comparisons: gender (“boys vs. girls”), race (“Black kids vs. White kids”), and popularity (“popular kids vs.

unpopular kids”). These three dyads were chosen based on observed patterns in the demographic and sociometric characteristics of peer-nominated aggressors in previous research.

Of the 12 items in each scale, 10 assessed aggression and tapped similar behaviors as the 5 direct and 5 indirect items from the peer-reported aggression scale. The two remaining items, which assessed prosocial behavior, were included as filler items. A complete list of items is presented in Appendix A. Scores on the aggressive behavior items were averaged to produce overall direct and indirect aggression scores for each scale, and centered so that negative values indicated greater bias toward the left-hand listed group and positive values indicated greater bias toward the right-hand listed group. Reliability scores for the aggression stereotyping scales were as follows: direct gender ( $\alpha = .68$ ); direct race ( $\alpha = .78$ ); direct popularity ( $\alpha = .80$ ); indirect gender ( $\alpha = .61$ ); indirect race ( $\alpha = .66$ ); indirect popularity ( $\alpha = .71$ ).

**Nominators’ average stereotyping scores.** In some analyses, a variable representing the average stereotyping scores of the peers nominating a particular individual was used. This was initially calculated in two ways: (1) For each time a participant's name was nominated on a peer-reported aggression item, the corresponding score of the peer who made that nomination was substituted and these scores were averaged together; (2) The same procedure, except before averaging, scores were checked for redundancy nominations (e.g., a peer nominated the same participant on multiple aggression items), and redundancies were removed before scores were averaged so that each nominator’s score was only counted once. This was done for all three stereotyping scales and conducted separately for direct and indirect aggression, resulting in six average scores.

The two different methods of calculation did not significantly effect scores. Correlations between the two calculation methods on any one particular scale were very high ( $r = .98$  to  $.99$ ,  $p$

< .001), indicating that the method of calculation did not significantly affect scores. Thus, only the scores with redundancies removed (method 2) were used in subsequent analyses.

### **Social Desirability**

Social desirability bias was assessed using a 10-item version of the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972), which consists of a series of statements about socially desirable or undesirable behavior (e.g., “I am always polite, even to people who are disagreeable”). Participants were asked to indicate whether the statements were true or false as they pertained to themselves. Items were assigned a 1 if the participant selected the more socially desirable response and a 0 if the participant selected the less socially desirable response. Items were then averaged to produce an overall score with a range of 0-1, with higher scores indicating greater social desirability bias.

### **Sociometric Categorizations**

**Social preference and impact.** Four additional items were included in the peer-nomination portion of the questionnaire. The first two, “write the names of kids in your grade whom you like the most” and “write the names of kids in your grade whom you like the least,” were used to mathematically compute social preference and social impact scores (Coie, Dodge, & Coppotelli, 1982). Social preference scores were created by subtracting standardized “liked least” scores from standardized “liked most” scores. Social impact scores were created by summing standardized “liked most” and “liked least” scores.

**Perceived popularity.** The final two items, “write the names of kids who are the most popular in your grade” and “write the names of kids who are the least popular in your grade,” assessed perceived popularity, or how popular one is within one’s group. A popularity spectrum score was created by subtracting standardized “least popular” nominations from standardized “most popular” nominations.

## **Emotion and Personality Indicators**

**Manipulative behavior.** Socially manipulative behavior ( $\alpha = .88$ ) was measured using 15 items from the Youth Psychopathic Traits Inventory (YPI; Andershed et al., 2002) which assessed manipulateness, dishonest charm, and lying behaviors. Participants were asked to indicate how well each item applied to them. Example items include “I am good at getting people to believe me when I make something up;” “It’s easy for me to charm others to get what I want from them.” The response scale ranged from 1 (“almost always untrue”) to 5 (“almost always true”). Responses were averaged such that higher scores indicated greater levels of manipulative behavior.

**Remorselessness.** Remorselessness ( $\alpha = .69$ ) was measured using 5 items from the YPI which assessed a lack of guilty feelings in relation to one’s behaviors. Participants were asked to indicate how well each item applied to them. Example items included “I seldom regret the things I do, even if other people feel that they are wrong.” The response scale ranged from 1 (“almost always untrue”) to 5 (“almost always true”). Responses were averaged such that higher scores indicated greater remorselessness.

**Empathy.** Empathetic responding ( $\alpha = .82$ ) was assessed using the 20-item Basic Empathy Scale (BES; Joliffe & Farrington, 2006). Participants are asked to indicate how much they agree or disagree with a series of statements. Example items include “I can usually work out when my friends are scared” and “I don’t become sad when I see other people crying” (reverse coded). The response scale ranged from 1 (“strongly disagree”) to 5 (“strongly agree”). Responses were averaged such that higher scores indicated greater levels of empathy.

**Anger.** The seven-item anger subscale from the Buss and Perry (1992) Aggression Questionnaire was used to assess trait levels of anger ( $\alpha = .72$ ). Students were asked to rate how well a series of statements fit them. Items included “I sometimes feel like a powder keg ready to

explode” and “Some of my friends think I’m a hothead.” Response categories ranged from 1 (Really Not True for Me) to 5 (Really True for Me). Items were averaged such that higher scores indicated greater anger.

**Anger regulation.** Anger reduction skills ( $\alpha = .68$ ) were assessed with a six-item scale created for the Life Skills Training Program (Epstein, Botvin, Diaz, Baker, & Botvin, 1997). Participants were asked how often they engaged in a series of activities when they felt really angry. Items included “Count to ten,” “Take a few deep breaths,” and “Tell myself this isn’t worth fighting over (it’s no big deal.)” Response categories ranged from 1 (Never) to 5 (Always). Items were averaged such that higher scores indicated greater skill at conscious anger reduction.

## CHAPTER 3 RESULTS

### **Creation of Aggressor Groups**

Following procedures utilized in Cillessen and Borch (2006), groups of students were created based on self-reported (reduced scale) and peer-reported aggression scores. Two sets of groups, one for direct aggression and one for indirect aggression, were created. Within each type of aggression, students could fall into one of three categories: (1) low aggression (henceforth referred to in results and discussion as “low”); (2) high self-reported aggression only (“high self”); (3) high peer-reported aggression only (“high peer”); (4) high in both self and peer aggression (“high multiple”). Group membership within aggression type (i.e., direct versus indirect) was mutually exclusive, but students could be members of both a direct and an indirect high-aggression group.

### **Preliminary Analyses**

What constituted “high” aggression for self- and peer-reported scores was determined by cutoff scores based on methods utilized in past literature as well as on conceptual considerations. For instance, Cillessen and Borch (2006) selected, as their criterion for membership in a high sociometric popularity or perceived popularity group, the cutoff of  $.5 SD$  above the mean on one of these measures. This resulted in 39.4% of their sample achieving membership in at least one of the two “high popularity” groups. Clemans and Sontag (2009, April) also utilized the  $.5 SD$  cutoff for membership in either high self-reported or high peer-reported aggression groups, resulting in 23-28% of the sample meeting the criteria for a high self-reported aggression, 15-17% of the sample meeting the criteria for high peer-reported aggression, and 45.5% of the sample achieving membership in at least one “high” direct or indirect aggression group; individual group *Ns* for high self, high peer, and high multiple report groups ranged from 18 to

57. In that study, the .5 SD cutoff score was sufficient to produce diverging patterns of behavioral, emotional, and sociometric characteristics for high self and high peer groups.

In the present study, as in prior work, the .5 *SD* criterion resulted in about 40% of the sample meeting criteria for at least one “high” group. One concern is whether the .5 SD cutoff is sufficiently stringent for identifying truly aggressive adolescents. Notably, measures of self-reported aggression almost always result in positively skewed data, since the majority of any normative adolescent population engages in either no involvement or only sporadic involvement in direct and indirect aggressive behavior. This results in a smaller subset of students who score .5 *SD* or higher above the mean on any one measure than would be expected with normally distributed data. The relatively large percentage of students meeting the criteria for at least one “high” group in previous research may be interpreted as an indicator of the varied forms that aggression takes during adolescence, as well as the range of opinions between individuals and their peers as to who engages in “high” aggression, rather than as evidence of too lenient a cutoff score.

In addition, preliminary analyses found a pronounced positive skewness in the peer-reported aggression measures. Although the majority of students did not receive any nominations on peer-reported aggression items, the range of scores was quite large, and there were several outliers with exceptionally high nomination tallies (one student received 108 total nominations on individual aggression items), resulting in substantially fewer numbers of students who were above the .5 *SD* cutoff for peer-reported aggression (12.5% to 15.8% of total sample) than were above the cutoff for self-reported aggression (21.9% to 24.3% of total sample). In this case, it was determined that the .5 *SD* cutoff might be non-representative for peer-reported aggression and that selecting a “high” group based on a nomination tally cutoff score would be

more appropriate for creating “high” peer-reported aggression groups. A cutoff of 4 nominations was selected for the reason that it included relatively the same numbers of students (23.7% to 24.9% of total sample) as the .5 *SD* cutoff for self-reported aggression, which increased the equality of high aggression group *N*s.

To explore the effect of using more stringent cutoff criteria, all group-based analyses in the present investigation were also conducted with 1 *SD* cutoff criteria for self-reported scales and a cutoff of 5 nominations for the peer-reported aggression. This approach produced smaller cell sizes for the aggression groups, but for the most part, patterns of differences between groups did not change. Findings using the more stringent criteria which differed from the reported analyses are presented and discussed in Appendix D.

### **Criteria for Group Membership**

As such, the criteria for group membership within aggression groups were as follows: “High self” aggressors were students whose self-reported aggression score was .5 *SD* or higher above the mean, but who had fewer than 4 total nominations for peer-reported aggression. “High peer” aggressors were students who had 4 or more total nominations for peer-reported aggression, but who scored lower than .5 *SD* above the mean on self-reported aggression. “High multiple” aggressors had scores .5 *SD* or higher above the mean or higher on self-reported aggression and 4 or more total nominations for peer-reported aggression. The “low” group was comprised of the remaining students. High self, high peer, high multiple, and low aggression groups were created for both direct and indirect aggression separately, resulting in a total of eight groups. Table 3-1 presents group *N*s, mean levels of aggression for each group. Table 3-2 presents membership agreement across direct and indirect aggression. Seventy-five students (23.8% of the sample) were members of both a direct and an indirect high-aggression group.

## Descriptive Statistics

### Aggression

Means and standard deviations for all self-reported and peer-reported aggression variables are presented in Table 3-3. Consistent with data on aggressive behavior in normative populations, all were positively skewed. Thus, in subsequent analyses, aggression variables have been transformed via the square root function to increase the normality of their distributions (this excludes group-based analyses using previously created “high aggression” groups).

A full table of correlations between all study variables is presented in Appendix B. As expected, Pearson correlations between the self- and peer-reported forms of aggression were significant but somewhat small,  $r = .27, p < .001$  for self- and peer-reported direct forms;  $r = .23; p < .001$  for self- and peer-reported indirect forms. Controlling for social desirability did not affect the strength of either relationship. The low amount of shared variance indicated by these correlations suggested that substantially different groups of individuals were being identified as high in aggression according to each method.

Agreement within reporting method was better,  $r = .42, p < .001$  for direct and indirect self reports;  $r = .68, p < .001$  for direct and indirect peer reports. Students appeared to make more of a distinction between direct and indirect forms of aggression in their own behavior than they did in their peers' behavior. Since more than 50% of the variance in even the peer-reported measures was unshared, however, direct and indirect aggression were treated as distinct forms and were evaluated separately in subsequent analyses.

### Stereotyping

Means and standard deviations for individual stereotyping scales are presented in Table 3-3. All scores had good distribution. The shift of each scale in one direction or the other from the center reflected common social stereotypes relating to the gender and popularity of

aggressive adolescents: Students endorsed the view that boys were more likely to engage in direct aggression (shift to boys' side = 1.05 *SD*), whereas girls were more likely to engage in indirect aggression (shift to girls' side = .96 *SD*); students also believed that popular students were more likely than unpopular students to engage in both forms of aggression, but this was particularly true for indirect forms (shift to popular side = 1.15 *SD* for direct and 1.49 *SD* for indirect).

Students showed the least evidence of aggression stereotyping for racial groups. Students endorsed the view that Black students were more likely than White students to engage in direct aggression (shift to Black side = .72 *SD*), but this was the smallest significant shift out of all the scales. No significant shift was found for indirect aggression. Three percent of the sample ( $N = 11$ ) completed the stereotyping scales for gender and popularity but left the racial group stereotyping scales blank, presumably because they were uncomfortable answering these particular questions. These students were compared to the rest of the sample on all relevant study variables (including aggression, aggression stereotyping, peer nomination demographic percentages, and behavioral and emotional characteristics) on a series of t-tests of independent samples; no significant differences at  $p < .05$  were present.

Direct and indirect aggression stereotyping scales comparing popular and unpopular students showed the most agreement ( $r = .61, p < .001$ ); students believed that popular students were more likely than unpopular students to engage in all types of aggression. Students who endorsed the view that popular students were more indirectly aggressive than unpopular students were also slightly more likely than other students to believe that girls were more indirectly aggressive than boys ( $r = .20, p < .001$ ). Although other correlations between stereotyping scales

were significant at  $p < .05$ , all were weak ( $r < .20$ ); as such, they were not considered particularly notable.

### **Behavioral, Emotional, and Sociometric Characteristics**

The behavioral and emotional characteristics measured in the current study included manipulative behavior ( $M = 2.16$ ,  $SD = .69$ ), remorselessness ( $M = 2.14$ ,  $SD = .78$ ), empathy ( $M = 3.52$ ,  $SD = .50$ ), anger ( $M = 2.55$ ,  $SD = .79$ ), and anger regulation skills ( $M = 2.39$ ,  $SD = .80$ ). Each had good distribution, with minimal positive skew for manipulative behavior and remorselessness. The sociometric characteristics measured in the current study included social preference, social impact, and perceived popularity; these were standardized into  $z$ -scores or calculated from standardized scores. All had normal distribution.

Out of 10 possible correlations between behavioral and emotional characteristics, 7 were significant at the  $p < .01$  level, and all variables were significantly related to at least two others (see Appendix B for correlation values). Furthermore, all significant relationships made conceptual sense (e.g., lower levels of empathy were associated with higher levels of remorselessness and manipulative behavior). These results suggested that together, the variables represented a psychosocial profile which, reversing empathy, could be considered prosocial at lower levels and antisocial at higher levels.

Previous literature (e.g., Newcomb et al., 1983) has suggested that social preference and social impact tend to be distinct domains of sociometric status. The present study corroborated these findings: social preference and social impact were weakly correlated ( $r = -.14$ ,  $p < .05$ ). Both, however, were related to perceived popularity ( $r = .37$ ,  $p < .001$  for social preference;  $r = .40$ ,  $p < .001$  for social impact). This supported the conceptual distinction that social preference is most related to likeability, social impact is most related to notice and influence within the peer

group, and students who are universally considered to be the most popular in their grade tend to be high in both of these qualities.

## **Potential Covariates**

### **Social Desirability**

The Marlow-Crowne social desirability scale ( $M = .50$ ,  $SD = .24$ ) was employed in this study as a measure of reluctance to self-report socially undesirable behavior. Accordingly, social desirability scores were significantly correlated at  $p < .01$  with self-reported direct aggression ( $r = -.32$ ), self-reported indirect aggression ( $r = -.43$ ), anger ( $r = -.43$ ), manipulative behavior ( $r = -.38$ ), and remorselessness ( $r = -.25$ ). Social desirability was not related to any other self-reported variables in the study, including anger regulation, empathy, and stereotyping scores, and did not significantly differ by race, gender, or grade level.

### **Gender**

Mean differences between boys and girls were significant at the  $p < .05$  level for several behavioral, emotional, and sociometric characteristics as well as a few stereotyping scales. All significant findings are presented in Appendix C. In general, girls reported lower levels of antisocial characteristics and higher levels of prosocial characteristics, and were considered by peers to be more well-liked and popular than boys. Girls were also more likely than boys to endorse the stereotypes of girls and popular students as indirect aggressors. Finally, boys showed greater levels of both self- and peer-reported direct aggression than girls, while girls had higher levels of self-reported indirect aggression than boys. (The relationship of gender to aggression is further addressed in group-based analyses below.)

### **Race**

Fewer significant differences within study variables existed for racial groups. All significant findings are presented in Appendix C. African American students showed slightly

lower levels of empathy than European American students and had slightly lower social preference scores. Differences that did exist tended to be within stereotyping scales: African American students were less likely than other students to endorse stereotypes of African Americans as direct and indirect aggressors as well as less likely to endorse the stereotype of girls as indirect aggressors. African American students also had higher self-reported direct aggression scores than did other students, and were more likely than other students to be nominated by peers as both directly and indirectly aggressive. (The relationship of race to aggression is further addressed in group-based analyses below).

### **Grade**

One-way analyses of variance revealed several grade-level differences on relevant study variables, including stereotyping scales and behavioral and emotional characteristics. All significant findings are presented in Appendix C. The majority of findings seemed due to differences between the 6<sup>th</sup> graders and the other two grades. For instance, 6<sup>th</sup> graders tended to report lower levels of antisocial characteristics than did students in higher grades. No significant differences by grade level emerged for self-reported direct or indirect aggression (peer reported aggression variables were standardized by grade).

### **Form order**

The presentation of measures was counterbalanced during data collection, with half of each grade completing stereotyping measures the first week and aggression measures the second week (and vice versa). To test for possible form order effects, a series of *t*-tests of independent means was conducted for all relevant study variables. Only two significant effects emerged: students who completed stereotyping measures last were slightly more likely to endorse the stereotype of girls as indirect aggressors ( $M$  difference = .25,  $t = 2.57$ ,  $p < .05$ ) and students who

completed aggression measures last nominated a higher percentage of female classmates as indirect aggressors ( $M$  difference = 14%,  $t = 2.23$ ,  $p < .05$ ).

## **Summary**

Social desirability, gender, race, and grade were identified as necessary covariates for analyses addressing Question 1 (below), due to significant relationships with aggression variables used to assign group membership and/or at least one of the behavioral, emotional, or sociometric outcome variables. Gender, race, grade, and form order were also related to stereotyping scores and peer nomination demographic percentages, and thus were included where relevant in analyses addressing Question 2 (below).

### **Analyses Addressing Question 1: Do Self-Identified and Peer-Identified Aggressive Adolescents Show Distinct Patterns of Psychosocial and Demographic Characteristics?**

#### **Behavioral & Emotional Characteristics**

As indicated, it was hypothesized that higher levels of antisocial emotional and behavioral characteristics would characterize self-identified aggressive adolescents, whereas peer-identified aggressive adolescents would resemble nonaggressors in these characteristics. The significant relationships between the five behavioral and emotional characteristics suggested the need for a multivariate approach to examine group mean differences. For both direct and indirect aggression, these variables were analyzed in multivariate analyses of covariance (MANCOVAs) as well as planned univariate follow-up tests for specific group differences on individual variables. All analyses included social desirability, gender, race (coded as African American vs. other) and grade level as covariates due to the significant relationships found in preliminary analyses. Estimated marginal group means and 95% confidence intervals for individual behavioral and emotional characteristics are graphically represented in Figure 3-1 for both direct and indirect aggressor groups.

## **Direct Aggression**

The multivariate effect for direct aggression was significant, Wilkes'  $\lambda = .81$ ,  $F(15,731.95) = 3.94$ ,  $p > .001$ . Univariate analyses revealed that the multivariate effect was primarily driven by significant group differences for manipulative behavior ( $F = 11.31$ ,  $p < .001$ ), remorselessness ( $F = 6.70$ ,  $p < .001$ ), anger ( $F = 6.43$ ,  $p < .001$ ), and, to a lesser extent, anger regulation ( $F = 2.71$ ,  $p < .05$ ). Empathy did not have a significant univariate effect.

Estimated marginal means comparisons (Figure 3-1) indicated that self-identified aggressive adolescents (the high self and high multiple groups) had significantly higher levels of manipulative behavior than either the high peer group or the low aggression group ( $M$  differences = .43 to .54;  $p < .01$ ). The high peer group and the low aggression group did not significantly differ from one another. For remorselessness, self-identified aggressive adolescents (the high self and high multiple groups) had significantly higher levels of remorselessness than did the low aggression group ( $M$  differences = .45 to .50;  $p < .01$ ), whereas solely peer-identified aggressors (the high peer group) did not significantly differ in remorselessness from the low aggression group. Similarly for anger, the high self and high multiple groups had higher levels of anger than did the low aggression group ( $M$  differences = .44 to .48;  $p < .01$ ), whereas the high peer and low aggression groups did not significantly differ from one another. Finally, for anger regulation, the significant univariate effect for anger regulation was primarily driven by lower levels in the high multiple group compared to all other groups ( $M$  differences = .37 to .41;  $p < .01$ ); no other significant group differences were present.

**Summary.** The overall pattern of findings for direct aggression groups suggested that self-identified aggressors (the high self and high multiple groups) had the highest levels of antisocial behavioral and emotional characteristics. In addition, solely self-identified aggressors had higher levels of manipulative behavior than solely peer-identified aggressors. Although the

high self group differed from low aggressors on three of the five variables, no significant differences between the high peer and low direct aggression groups were present.

### **Indirect Aggression**

The multivariate effect for indirect aggression was significant, Wilkes'  $\lambda = .84$ ,  $F(15,731.95) = 3.15$ ,  $p > .001$ . In a similar pattern to that of direct aggression, univariate analyses revealed that the multivariate effect was primarily driven by significant group differences for manipulative behavior ( $F[3,281] = 11.53$ ,  $p < .001$ ), remorselessness ( $F[3,281] = 6.21$ ,  $p < .001$ ) and anger ( $F[3,281] = 3.15$ ,  $p < .05$ ). No significant univariate effects existed for anger regulation or empathy. Estimated marginal means comparisons (Figure 3-1) indicated that self-identified aggressive students (high self and high multiple groups) had significantly higher levels of manipulative behavior than both the high peer group or the low aggression group ( $M$  differences = .44 to .68;  $p < .01$ ). Solely peer-identified aggressive students (the high peer group) did not differ from the low aggression group.

The significant univariate effect for remorselessness was primarily driven by significantly elevated levels in the high multiple group compared to all other groups ( $M$  differences = .50 to .69;  $p < .01$ ). Similar to remorselessness, the high multiple group had significantly elevated levels of anger compared to both the low aggression and high peer groups. However, the high multiple group did not differ from the high self group in anger levels.

**Summary.** The overall pattern of findings for direct aggression groups suggested that indirect aggressors identified both by themselves and by their peers had the highest levels of antisocial behavioral and emotional characteristics. In addition, solely self-identified aggressors had higher levels of manipulative behavior than solely peer-identified aggressors. Again, no significant differences between the high peer and low aggression indirect groups were present.

## Demographic and Sociometric Characteristics

It was hypothesized that peer-identified aggressive adolescents would be distinguished from self-identified or nonaggressive adolescents by demographic and sociometric patterns which evoke common social stereotypes of direct and indirect aggression. Specifically, the high peer group for direct aggression was expected to contain greater percentages of males and African Americans than the high self group for direct aggression. In addition for indirect aggression, the high peer group was expected to contain a greater percentage of females and to have higher social visibility than the high self group.

### Demographics

Group differences in gender and racial distributions were each assessed via Pearson  $\chi^2$  analyses. These were performed in three ways. First, an overall  $\chi^2$  tested for differences in race or gender in the full sample using all four possible groups, including the low aggression group. Pending a significant effect in the overall test, comparisons between groups were tested first by comparing the low aggression group to all other students and then by comparing only high aggression groups while excluding the low aggression group. These follow-up tests provided information as to whether significant effects were a result of differences between the specific methods (self or peer report) used to measure aggression, or whether they were primarily driven by differences between nonaggressors and aggressive students identified by any measurement type.

**Direct aggression: gender.** The overall analysis for gender was significant,  $\chi^2(3) = 20.18, p < .001$ . This indicated that a significant relationship existed between gender and direct aggression group membership. Observed and expected cell counts for the overall test are provided in Table 3-4. Follow-up analyses revealed that the significant overall effect was primarily driven by differences between students low in aggression and students identified as

high in aggression by either method ( $\chi^2(1) = 18.14, p < .001$ ), rather than by differences between high aggression groups ( $\chi^2(2) = 2.28, p > .05$ ). This suggests that boys were especially likely to be identified as direct aggressors, regardless of the reporting type used.

**Direct aggression: race.** The overall analysis for race/ethnicity was significant,  $\chi^2(6) = 30.08, p < .001$ . This indicated that a significant relationship existed between race/ethnicity and aggression group membership. Observed and expected cell counts for the overall test are provided in Table 3-4. Follow-up chi-squares revealed that, similar to gender, the significant overall effect was primarily driven by differences between students low in aggression and students identified as high in aggression by either method ( $\chi^2(2) = 17.56, p < .001$ ). However, a non-random racial group distribution also existed among high aggression groups ( $\chi^2(4) = 10.04, p > .05$ ). Distribution across aggression groups for African American students showed the most deviation from expected cell counts: African American students accounted for 15.8% of the low aggression group and 18.9% of the high self group, but accounted for 39.0% of the high peer group and 51.4% of the high multiple group.

**Indirect aggression: gender.** The overall analysis for gender was significant,  $\chi^2(3) = 11.66, p < .01$ . This indicated that a significant relationship existed between gender and direct aggression group membership. Observed and expected cell counts for the overall test are provided in Table 3-4. Similar to direct aggression, follow-up chi-squares revealed that the significant overall effect was primarily driven by differences between students low in aggression and students identified as high in aggression by either method ( $\chi^2[1] = 10.14, p < .01$ ), rather than by differences between high aggression groups ( $\chi^2[2] = .92, p > .05$ ). This suggests that girls were especially likely to be identified as indirect aggressors, regardless of the reporting type used.

**Indirect aggression: race.** The overall analysis for race was significant,  $\chi^2(6) = 14.94, p < .05$ . This indicated that a slight but significant relationship existed between race/ethnicity and indirect aggression group membership; however, both follow-up  $\chi^2$  tests failed to reach significance at the  $p < .05$  level. This suggests that the significant overall  $\chi^2$  effect may have resulted from unexpected distributions across the low aggressors and potentially one other high aggression group. Observed and expected cell counts for the overall test are provided in Table 3-4; the largest disagreements between observed and expected cell counts are as follows: Fewer African American students than expected were members of the low aggression group (18.7%), whereas more African American students than expected were members of the high peer group (33.3%) and high multiple group (33.3%), and fewer “Other” students than expected (9.7% , compared to 27.9-33.3% in other groups) were members of the high peer group.

**Summary.** Although nonrandom gender and racial distributions were present across both direct and indirect aggression groups, they were mainly driven by differences between students who had low aggression levels and students who were identified as aggressive by at least one type of report method. However, nonrandom distributions of racial groups were evident for direct aggression: the percentage of African American students within the high peer and high multiple groups was substantially larger than within the low aggression or high self groups. Although hypothesized to be present, no gender differences existed between high self and high peer groups for indirect aggression.

### **Sociometric Characteristics**

Significant relationships between perceived popularity, social preference, and social impact suggested the need for a multivariate approach to examine group mean differences. MANCOVAs were run for both direct and indirect aggression, as well as univariate planned follow-up tests for specific group differences on individual variables. All analyses included

gender and race as covariates due to their significant relationships with the distribution of aggressor groups and at least one of the outcome variables. Since all outcome variables were standardized by grade before being analyzed, grade level was not included as a covariate. For both direct and indirect aggressor groups, estimated marginal group means and 95% confidence intervals for individual sociometric characteristics are graphically represented in Figure 3-2.

**Direct aggression.** The multivariate effect for direct aggression was significant, Wilkes'  $\lambda = .70$ ,  $F(9,737.57) = 13.03$ ,  $p > .001$ ). Univariate tests revealed that social preference ( $F[3,305] = 12.18$ ,  $p < .001$ ), social impact ( $F[3,305] = 26.12$ ,  $p < .001$ ), and perceived popularity ( $F[3,305] = 4.37$ ,  $p < .01$ ) all showed evidence of mean differences across aggression groups. Furthermore, estimated marginal means comparisons revealed the same pattern of group differences for all three variables: students in the high self and high multiple groups had lower levels of social preference, higher levels of social impact, and higher levels of perceived popularity than students in the low aggression and high self groups ( $M$  differences = .69 to 1.19,  $p < .05$ ). No significant differences existed on any sociometric characteristic between the high self and high multiple groups, nor between the low aggression and high self groups.

**Indirect aggression.** The multivariate effect for indirect aggression was significant (Wilkes'  $\lambda = .66$ ,  $F(9,737.57) = 15.34$ ,  $p > .001$ ), and univariate tests revealed that social preference ( $F[3,305] = 11.86$ ,  $p < .001$ ), social impact ( $F[3,305] = 27.97$ ,  $p < .001$ ), and perceived popularity ( $F[3,305] = 8.07$ ,  $p < .01$ ) all showed evidence of mean differences across aggression groups. The high peer group had higher social impact and lower social preference scores than both the high self or low aggression groups, and the high multiple group had higher social impact and lower social preference scores than all other groups. Differences for perceived popularity followed the same pattern as for direct aggression: The high peer and high multiple

groups were perceived as significantly more popular than either the high self or low aggression groups. Again, no significant differences existed between the high self and low aggression groups for any sociometric characteristic.

**Summary.** Significant differences between exclusively self-identified and exclusively peer-identified aggressive adolescents existed for all sociometric characteristics. For both direct and indirect aggression, peer-identified aggressors were more popular, more socially visible, and less well-liked than those identified solely through self-report. In addition, solely self-identified aggressors did not differ from the low aggression group on any sociometric characteristic, regardless of aggression type.

### **Analyses Addressing Question 2: Is the Tendency to Endorse Particular Aggression Stereotypes Related to Nominations of Aggressive Peers?**

#### **Stereotyping Scores and Nominated Peers' Gender, Race, and Popularity**

It was hypothesized that participants' stereotyping scores would be related to characteristics of peers nominated as directly or indirectly aggressive. To test this, a series of hierarchical regression analyses were conducted; direct and indirect aggression were examined separately for each of the three stereotyping categories, resulting in a total of six analyses. For direct and indirect stereotyping scales relating to gender, the outcome variable in question was the percentage of males that an individual nominated on direct or indirect peer-reported aggression items; for scales relating to race, it was the percentage of African American students<sup>1</sup>. For scales relating to popularity, the outcome variable was the mean perceived popularity score of nominated peers.

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<sup>1</sup> The "African-American vs. other" dichotomous distinction was chosen for analysis due to the fact that preliminary analyses suggested that the European American and "other" racial categories tended to resemble one another on aggression and stereotyping measures.

For each analysis, covariates including gender, race (dummy coded as African American vs. all others), grade level, and form order were entered in Step 1; however, only those covariates which demonstrated a significant effect in the full model were retained in the final analysis. The appropriate stereotyping scale, which corresponded to the same aggression type and demographic or sociometric category as the outcome variable, was entered in Step 2. In step 3, an interaction term was added to determine whether the strength of these relationships varied across gender and racial categories or as a participant's own perceived popularity increased.

**Direct aggression.** Table 3-5 presents the results of the analysis for gender, which compared participants' scores on the girls—boys direct aggression stereotyping scale to the gender distribution of the peers whom they nominated as directly aggressive. Gender distribution was entered as the percentage of nominations that were of male peers. No effect of race, grade level, or form order was present, so these covariates were dropped from the final model. After controlling for gender, girls—boys stereotyping scores explained unique variance in the gender distribution of nominated peers,  $\beta = .26, p < .001; \Delta R^2 = .07$ . Students who were more likely to endorse the view that boys were direct aggressors were more likely to nominate male peers on the direct aggression items, and students who were more likely to endorse the view that girls were direct aggressors were more likely to nominate female peers on the direct aggression items. Furthermore, girls and boys were equally likely to demonstrate this relationship: there was no interaction effect between respondent's gender and stereotyping score,  $\beta = .04, p > .05, \Delta R^2 < .01$ .

Gender was the only category in which there existed a relationship between direct aggression stereotyping and corresponding characteristics of nominated peers. After controlling for covariates, analyses failed to demonstrate significant unique effects or interaction effects for

black—white ( $\beta = .01$  to  $.04$ ,  $p > .05$ ,  $\Delta R^2 < .01$ ) or popular—unpopular ( $\beta = -.02$ ,  $p > .05$ ,  $\Delta R^2 < .01$ ) stereotyping scores.

**Indirect aggression.** Table 3-5 also presents the results of the analysis of gender for indirect aggression, which compared participants' scores on the girls—boys indirect aggression stereotyping scale to the gender distribution of the peers whom they nominated as indirectly aggressive. The indirect aggression analysis followed a similar pattern as that for direct aggression. No effect of race, grade level, or form order was present, so these covariates were dropped from the final model. After controlling for gender, girls—boys stereotyping scores explained unique variance in the gender distribution of nominated peers,  $\beta = .21$ ,  $p < .01$ ,  $\Delta R^2 = .05$ . Students who were more likely to endorse the view that boys were indirect aggressors were also more likely to nominate male peers on the indirect aggression items, and students who were more likely to endorse the view that girls were indirect aggressors were more likely to nominate female peers on the indirect aggression items. Overall, students tended to endorse the stereotype that girls engaged in indirect aggression rather than boys. Also similar to direct aggression, girls and boys were equally likely to demonstrate this relationship: there was no interaction effect between gender and stereotyping score,  $\beta = -.07$ ,  $p > .05$ ,  $\Delta R^2 < .01$ .

Gender was the only category in which there existed a significant relationship between indirect aggression stereotyping and corresponding characteristics of nominated peers. After controlling for covariates, analyses failed to demonstrate significant unique effects for black—white ( $\beta = -.07$ ,  $p > .05$ ,  $\Delta R^2 < .03$ ) or popular—unpopular ( $\beta = -.02$ ,  $p > .05$ ,  $\Delta R^2 < .01$ ) stereotyping scores.

**Summary.** Students' scores on aggression stereotyping scales appeared to be related to the gender of peers nominated as aggressive, and this was true for both direct and indirect

aggression. Furthermore, this relationship did not vary by the gender of the nominating student. Gender was the only stereotyping category for which this relationship was present. No significant relationships were found between aggression stereotyping and either the race or popularity of nominated peers.

### **Stereotyping Scores and Aggression Group Membership**

Prior analyses tested whether social schemas influenced the peers whom students nominated as aggressive. Additionally, it was hypothesized that scales measuring aggression stereotyping might prove to be useful as a control variable for future studies employing peer-reported aggression measures, similar to the way in which social desirability bias measures are currently used to explain variance in self-reported aggression.

The efficacy of social desirability bias in accounting for discrepancies between aggression measurement methods was supported in the current sample. A one-way ANOVA comparing aggression groups on mean social desirability scores indicated that, for both direct and indirect aggression, the high self group had significantly lower levels of social desirability bias ( $M = .36$ ,  $SD = .04$ ) than all other groups ( $M = .49$  to  $.53$ ,  $SD = .02$  to  $.04$ ;  $F(3,292) = 5.37$ ,  $p < .01$ ). Thus, students in the high self group, who had been identified as aggressive by themselves only, could be distinguished from students who had been identified as aggressive by multiple sources by an increased willingness to report socially undesirable behavior.

It was similarly hypothesized that students who were identified as aggressive solely by peers might be distinguished from other students by the degree of aggression stereotyping present in the peers who had nominated them – in other words, whether students in the high peer group were more likely than those in other groups to be the targets of aggression stereotyping bias. If a student was nominated as aggressive, it was possible to calculate the average stereotyping scores on each scale of the peers who nominated that student. A series of two-way

ANOVAs and planned follow-up comparison tests of estimated marginal means investigated group differences in nominators' average stereotyping scores. Analyses were run separately for direct and indirect aggression. Because nominators' average stereotyping scores were expected to skew in opposing directions for each opposing pair of social groups which comprised the endpoints of the scales, the interaction between group membership and the nominees' corresponding gender, racial, or sociometric category was also assessed. As an example, for the analysis of aggression group differences in nominators' average scores on the girls—boys direct aggression stereotyping scale, group membership and gender were both entered into the model as predictors, and the main effects of each were investigated along with the effect of the interaction term.

Due to the fact that not all students received nominations on peer-report aggression items (and thus could not be assigned average nominators' stereotyping scores), these analyses included only those students who were nominated at least once on the peer-report aggression measure. One hundred sixty-three students were nominated at least once on direct items and thus included in analyses of direct aggression, and 184 students were nominated at least once on indirect items and thus included in analyses of indirect aggression. Note that the high peer report and combined (peer and self) report groups had to have 4 or more nominations in order to be classified as "high" on peer report. Thus, students who received at least one but fewer than four nominations comprised a nominated group that was compared to the high peer report and combined groups ( $N = 85$  for direct aggression and 103 for indirect aggression).

**Findings.** Of the race, gender, and popularity variables, only gender showed significant main effects for differences in nominators' average scores on the girls—boys stereotyping scales; this was true for both direct ( $F[1,155] = 8.36, p < .01$ ) and indirect aggression ( $F[1,174] = 7.95,$

$p < .01$ ). While the nominators of both boys and girls tended to have scores that skewed farther toward the boys' side for direct aggression, this was more true for the nominators of boys ( $M = 1.20$ ,  $SD = .07$ ) than for girls ( $M = .86$ ,  $SD = .10$ ). Similarly, while the nominators of both boys and girls tended to have scores that skewed farther toward the girls' side for indirect aggression, this was more true for the nominators of girls ( $M = 1.08$ ,  $SD = .08$ ) than for boys ( $M = .73$ ,  $SD = .10$ ). No main effects were found for race or for perceived popularity.

Importantly, there were no significant aggression group differences in any of the nominators' average stereotyping scores, nor were any significant interaction effects present across analyses. (Because of the absence of significant findings, results from individual analyses are not reported here for the sake of brevity.) The absence of increased stereotyping bias in the nominators of students in the high peer group compared to other groups suggests that, unlike social desirability bias, the aggression stereotyping scales cannot be used to explain discrepancies between self- and peer-reported aggression scores.

### **Nominators' Average Stereotyping Scores and Levels of Peer-Reported Aggression**

A final set of analyses examined whether nominators' stereotyping scores explained variance in peer-reported aggression over and above what was already explained by self-reported aggression scores. Although the previous set of analyses suggested that the use of stereotyping scales in this role may be limited, a main impetus of the current study was the possibility that stereotyping scales could be utilized as a control variable to explain variance in peer-reported aggression. Thus, I re-examined this relationship using continuous forms of self- and peer-reported aggression, as most studies of aggression in adolescence do not employ a group-based approach.

A series of hierarchical linear regressions were conducted to examine whether nominators' stereotyping scores explained variance in peer-reported aggression over and above

what was already explained by self-reported aggression scores. Again, these analyses included only those students who were nominated at least once on the peer-report aggression measure. Direct and indirect aggression were investigated separately.

In each analysis, peer-reported aggression was the dependent variable. Gender, race (entered as African American vs. all others), and perceived popularity were entered in Step 1, and self-reported aggression was entered in Step 2. Together, gender, race, and perceived popularity explained 18.7% of the variance in peer-reported direct aggression and 18.0% of the variance in peer-reported indirect aggression. After accounting for these variables, self-reported direct aggression predicted an additional 2.3% of the variance in peer-reported direct aggression ( $\beta = .16$ ,  $F[1,153] = 11.81$ ,  $p < .001$ ); and self-reported indirect aggression predicted an additional 2.0% of the variance in peer-reported indirect aggression ( $\beta = .15$ ,  $F[1,172] = 4.24$ ,  $p < .01$ ).

In step 3 of each analysis, nominators' average stereotyping scores on a particular scale (e.g., girls—boys direct aggression) were entered along with the interaction between the scale and its corresponding demographic or sociometric category (gender, race, or perceived popularity). This was run six times in order to investigate the impact of each stereotyping scale separately.

One marginally significant effect emerged. Nominators' average scores on the girls—boys indirect aggression stereotyping scale was marginally related to peer-reported indirect aggression ( $\beta = .13$ ,  $p = .067$ ). The interaction between gender and nominators' stereotyping scores was also marginally related to peer-reported indirect aggression ( $\beta = -.12$ ,  $p = .069$ ), indicating that the relationship between nominators' scores and peer-reported indirect aggression was slightly stronger for boys than it was for girls. Together, they accounted for an additional

3% of variance in peer-reported aggression ( $F[2,170] = 3.44, p < .001$ ). No effects were significant for any other category of nominators' average stereotyping scores.

Table 3-1. Group *N*s and Aggression Means and Standard Deviations by Aggressor Group

Group	<i>N</i>	<u>Aggression Type</u>			
		Self-Reported Direct	Peer-Reported Direct	Self-Reported Indirect	Peer-Reported Indirect
Direct aggression					
Low	200	1.35 (.28)	-.33 (.12)	1.54 (.42)	-.27 (.50)
High self	37	2.50 (.48)	-.29 (.11)	1.96 (.55)	-.25 (.49)
High peer	41	1.47 (.30)	.93 (1.67)	1.68 (.44)	.94 (1.67)
High multiple	35	2.61 (.57)	1.17 (1.68)	1.86 (.38)	.89 (1.43)
Indirect aggression					
Low	179	1.48 (.49)	-.29 (.20)	1.40 (.27)	-.43 (.19)
High self	53	1.97 (.76)	-.15 (.62)	2.24 (.29)	-.35 (.23)
High peer	54	1.66 (.54)	.63 (1.55)	1.51 (.24)	1.05 (1.16)
High multiple	27	2.04 (.71)	1.04 (1.94)	2.32 (.36)	1.64 (1.61)

*Note.* Self-reported values represent mean scores on 1-5 Likert scale. Peer reported values have been standardized so that the full sample mean for each variable = 0; *SD* = 1.

Table 3-2. Membership agreement for direct and indirect aggression groups

Direct Groups	<u>Indirect Groups</u>			
	Low	High self	High peer	High multiple
Low	141	29	22	8
High self	16	16	3	2
High peer	13	4	16	8
High multiple	9	4	13	9

*Note.* Values represent the number of participants falling into each category.

Table 3-3. Means and Standard Deviations for Aggression and Aggression Stereotyping

Measure/Variable	Direct	Indirect
Aggression		
self-reported	1.64 (.61)	1.64 (.46)
peer-reported (unstandardized)	4.1 (10.78)	2.7 (5.20)
Aggression stereotyping		
boys—girls	.96 (.91)	-.81 (.84)
black—white	-.72 (.89)	.17 (.71)
popular—unpopular	-1.15 (1.01)	-1.43 (.96)

*Note.* Standard deviations in parentheses. Values for aggression stereotyping scales have been centered so that 0 represents a neutral view, negative scores represent a shift in the direction of the left-hand (first-listed) group, and positive scores represent a shift in the direction of the right-hand (second-listed) group.

Table 3-4. Observed and Expected Gender and Race Distributions across Aggression Groups

Category/Level	<u>Direct Aggression</u>				<u>Indirect Aggression</u>			
	Low	High Self	High Peer	High Multiple	Low	High Self	High Peer	High Multiple
<b>Gender</b>								
<b>Boys</b>								
observed (expected)	84 (102)	21 (19)	29 (21)	25 (18)	106 (92)	19 (27)	24 (27)	10 (14)
% within aggression group	41.4%	56.8%	70.7%	71.4%	58.2%	35.8%	44.4%	37.0%
<b>Girls</b>								
observed (expected)	119 (101)	16 (18)	12 (20)	10 (17)	76 (90)	34 (26)	30 (27)	17(13)
% within aggression group	58.6%	43.2%	29.3%	28.6%	41.8%	64.2%	55.6%	63.0%
<b>Race/Ethnicity</b>								
<b>European American</b>								
observed (expected)	114 (102)	18 (18)	14 (21)	13 (18)	91 (92)	25(27)	31 (27)	9 (14)
% within aggression group	56.2%	48.6%	34.1%	50.3%	51.6%	47.2%	57.4%	33.3%
<b>African American</b>								
observed (expected)	32 (47)	7 (9)	16 (10)	18 (8)	34 (42)	12 (12)	18 (13)	9 (6)
% within aggression group	15.8%	18.9%	39.0%	51.4%	18.7%	22.6%	33.3%	33.3%
<b>Other</b>								
observed (expected)	57 (54)	12 (10)	11 (11)	4 (10)	54 (48)	16 (14)	5 (14)	9 (7)
% within aggression group	28.1%	32.4%	26.8%	11.4%	29.7%	30.2%	9.3%	33.3%

Table 3-5. Summary of hierarchical regression analyses for participants' gender stereotyping scales predicting gender percentages of nominated peers

Variable	Direct Aggression		Indirect Aggression	
	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$
Step 1	.10***		.28***	
gender (female vs. other)		-.35***		-.50***
grade level		-.05		-.24***
Step 2	.06***		.04**	
gender (female vs. other)		-.32***		-.47***
grade level		-.01		-.23***
girls—boys stereotyping score		.23**		.20**
Step 3	<.01		<.01	
gender (female vs. other)		-.34***		-.47***
grade level		< .01		-.24***
girls—boys stereotyping score		.23**		.21**
gender X girls—boys stereotyping score		.10		-.07

\*\*\* $p < .001$ . \*\*  $p < .01$ .

*Note.* Dependent variables = % males out of the total number of nominated peers for direct and indirect aggression items, respectively. Only covariates which remained significant in at least one of the final models have been reported here.

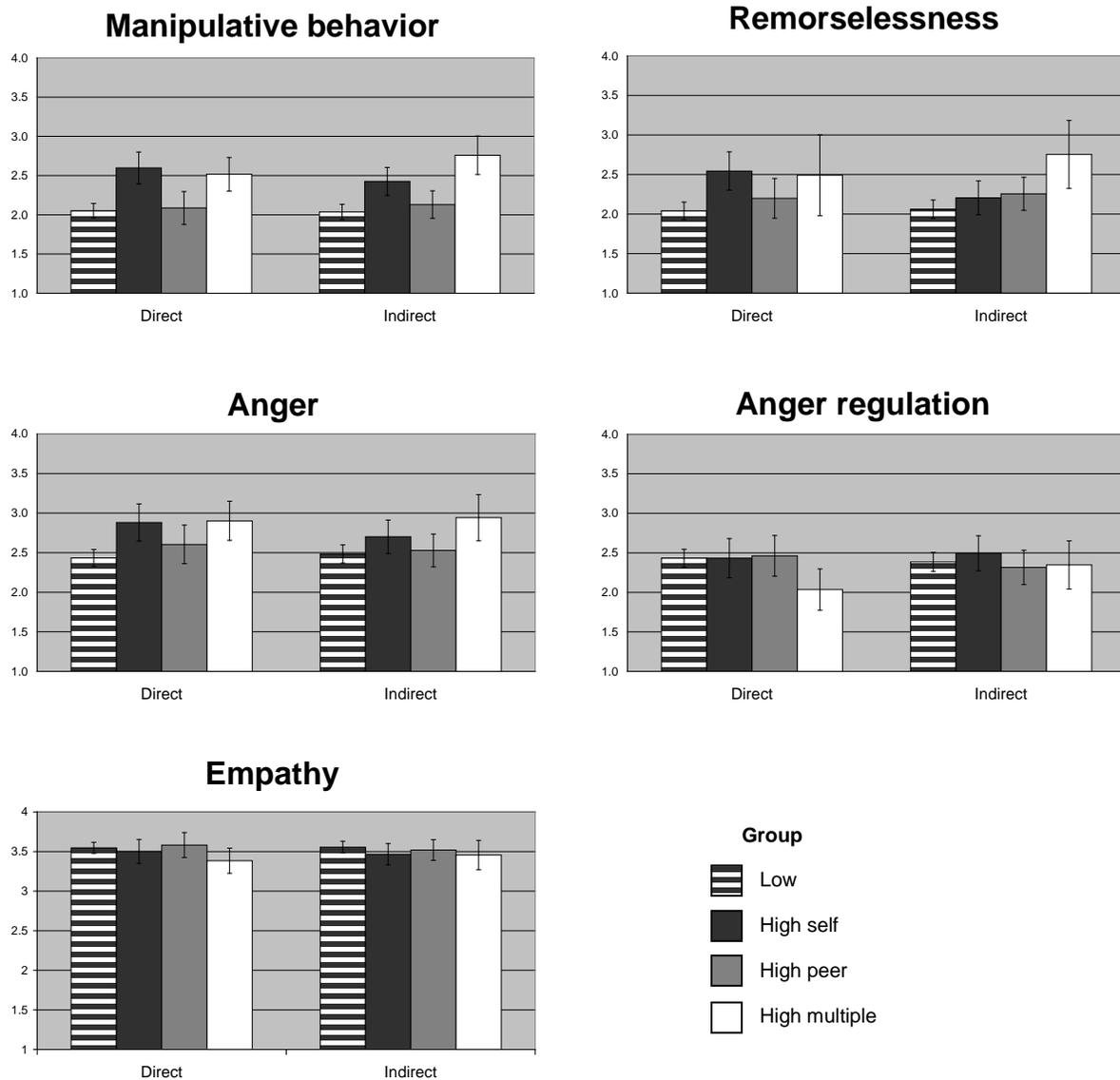


Figure 3-1. Graphical representation of group means by aggression type for behavioral and emotional characteristics. Direct and indirect aggression groups were examined in separate analyses. Values are mean scores on 1-5 Likert Scales. Brackets around each mean represent 95% confidence intervals. Significant group differences at  $p < .05$  are represented by pairs of confidence interval brackets which overlap by  $< \sim 30\%$ ; significant group differences at  $p < .01$  are represented by pairs of confidence interval brackets which show no overlap (Cumming & Finch, 2005).

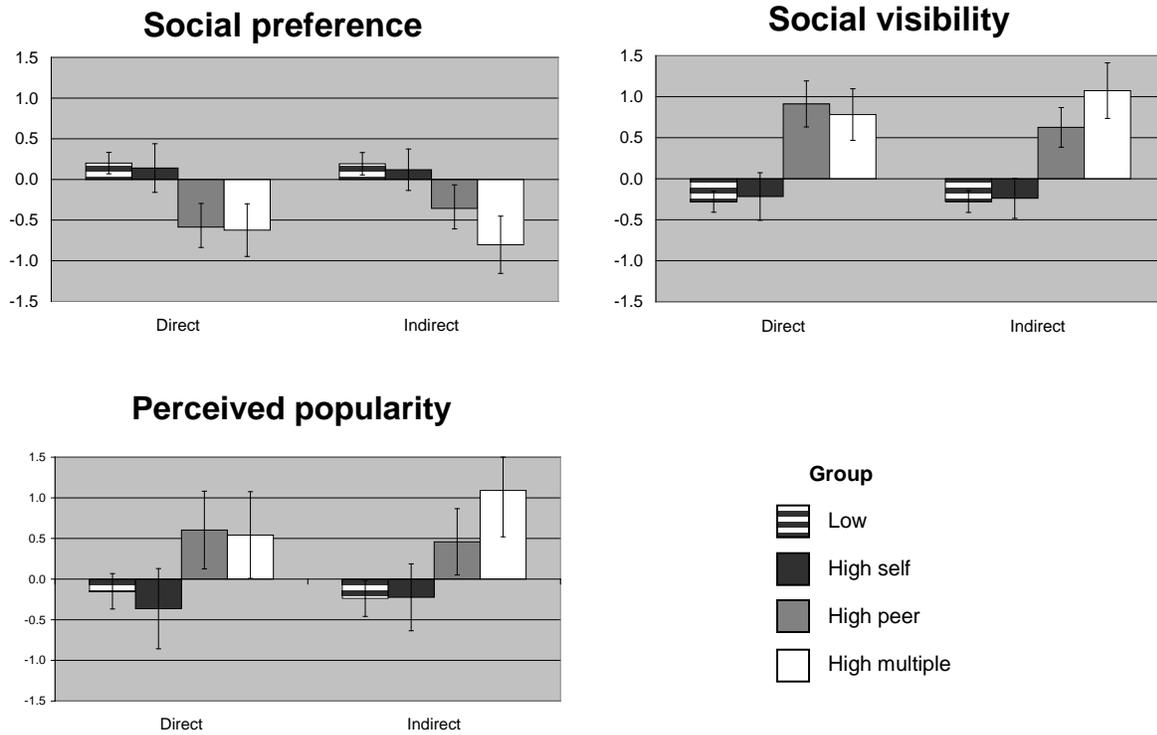


Figure 3-2. Graphical representation of group means by aggression type for sociometric characteristics. Direct and indirect aggression groups were examined in separate analyses. Variables are standardized so that the sample mean = 0;  $SD = 1$ . Brackets around each mean represent 95% confidence intervals. Significant group differences at  $p < .05$  are represented by pairs of confidence interval brackets which overlap by  $< \sim 30\%$ ; significant group differences at  $p < .01$  are represented by pairs of confidence interval brackets which show no overlap (Cumming & Finch, 2005).

## CHAPTER 4 DISCUSSION

The present study addressed two issues concerning the identification of aggression in early adolescence. First, to determine whether self-report and peer-report measurement methods identify students with differing psychosocial profiles, groups of self-identified, peer-identified, self and peer-identified, and low aggressors were compared on several emotional, behavioral, sociometric, and demographic characteristics. Second, the incidence of aggression stereotyping bias among early adolescents was examined, along with its relationship to the demographic and sociometric characteristics of adolescents identified as aggressive by their peers, and its potential use as a control variable to explain variance in peer-reported aggression.

### **Do Self- and Peer-Report Aggression Measures Identify Students with Different Psychosocial Profiles?**

Although self- and peer-reported measures of aggression are usually intended to be measurements of the same underlying construct, research on aggressive behavior in childhood and adolescence has found relatively low agreement among the two types of measurement methods. This suggests that self- and peer-report methods of assessing aggression are identifying different groups of students. One goal of the present study was to determine whether students identified as aggressive by self- and peer-report methods differed from one another on a range of key psychosocial characteristics.

A group-based analytic approach was used to identify students who were high in self-reported aggression (“high self”), high in peer-reported aggression (“high peer”), high in both self- and peer-reported aggression (“high multiple”), or high in neither (“low”). Groups were created for both direct and indirect forms of aggression and compared with one another on several behavioral, emotional, sociometric, and demographic indicators. It was hypothesized that self-identified aggressive students would have elevated levels of antisocial emotional and

behavioral traits, while peer-identified aggressors would be characterized by patterns of demographic and sociometric characteristics which resembled common social stereotypes of aggressive adolescents (e.g., “mean girls”). Specifically, peer-identified direct aggressors were expected to be characterized by higher percentages of male and African American students, while peer-identified indirect aggressors were expected to be characterized by higher percentages of female students, lower levels of social preference, and higher levels of social impact and perceived popularity.

### **High Self vs. High Peer: Antisocial Indicators**

Of particular interest in the analyses were comparisons of the high self and high peer groups – that is, students who were identified solely by self report or solely by peer report. Results suggested that, after controlling for social desirability and relevant demographic indicators, such as gender, race, and grade level, self-identified and peer-identified aggressive adolescents differed somewhat from one another on emotional and behavioral indicators of antisocial personality. For both direct and indirect aggression, the high self group showed significantly higher levels of manipulative behavior than the high peer group. In addition, for direct aggression, the high self group had significantly elevated levels of both anger and remorselessness over the low aggression group, while the high peer group was indistinguishable from low aggressors on these variables.

These results may suggest that direct aggression is a better indicator of antisocial tendencies than indirect aggression. However, on the majority of antisocial indicators, although the high self group’s levels were higher than those of the high peer group, the high self and high peer groups did not significantly differ from one another. It is possible that this was due to the fact that the high aggression group sizes were somewhat small, which may have affected the power of the analyses. Nevertheless, Clemans and Sontag (2009, April) found significant

differences between high self- and high peer-report groups with similar group sizes. As such, the hypothesis that self- and peer-identified aggressors would show distinct differences on indicators of antisocial personality was partially supported by the present study.

### **High Self vs. High Peer: Sociometric and Demographic Characteristics**

One area in which hypotheses of group differences were fully supported, however, was sociometric characteristics. Social standing within the peer group was assessed by social preference (how well liked one is), social impact (how socially visible one is) and perceived popularity (how “popular” one is considered by his/her classmates). For both direct and indirect aggression, all three variables showed similar, pronounced patterns of results, with the high peer group being less well-liked, more socially visible, and higher in perceived popularity than the high self group or the low aggressors.

Furthermore, it was expected that group differences in demographic characteristics would vary between direct and indirect aggression. For gender, this proved to be the case: Regardless of measurement type, boys were more likely than girls to be identified as direct aggressors, and girls were more likely than boys to be identified as indirect aggressors. Surprisingly, no significant gender differences across the high aggression groups were observed for either type of aggression, although it had been hypothesized that these gender patterns would be significantly more pronounced in the high peer groups than in the high self groups.

There were, however, differences between the high self and high peer groups in racial categorization. Specifically, African Americans made up only 19% of the high self group (which was similar to the percentage of African Americans in the full sample), but comprised nearly 40% of the high peer group. An elevated percentage of African Americans was also seen in the high peer group for indirect aggression (33%), whereas the high self group again was comparable to the racial distribution of the full sample.

In summary, it appeared that students identified solely by self-reported measures (especially those who identified themselves as being high in direct aggression) tended to have elevated levels of antisocial behavioral and emotional characteristics over students low in aggression, but resembled low aggressors in demographic and sociometric characteristics. In contrast, students identified solely by peer-reported measures mimicked students with low aggression in emotional and behavioral traits, but were distinguished from low aggressors by lower social preference, higher social impact, higher perceived popularity, and greater percentages of African American students. Gender, surprisingly, was the only variable category which did not demonstrate different patterns of findings for self- and peer-reported aggressors.

### **The High Multiple Group: “True” Aggressors?**

There was quite a bit of evidence that, for both direct and indirect aggression, the high multiple report group was distinct from either of the other two high aggression groups and may be the most valid representation of aggressive adolescents. This group, for instance, had the most pronounced levels of antisocial indicators: students in the high multiple group were significantly different than low aggressors on almost every indicator which demonstrated differences between groups. For direct aggression groups, this included higher levels of manipulative behavior, remorselessness, anger, and lower levels of anger regulation; for indirect aggression groups, higher levels were seen for remorselessness and anger. In some cases, the high multiple group also showed more elevated levels of antisocial indicators than both of the other high aggression groups, although patterns suggested that on these indicators, the high multiple group tended to have levels that more closely resembled those of solely self-identified aggressors than those of solely peer-identified aggressors.

In sociometric characteristics, however, the high multiple group was indistinguishable from the high peer group. For both direct and indirect aggression, both the high multiple and

high peer groups were less well-liked, more socially visible, and more popular than the high self or low aggressors. Additionally, both the high peer and high multiple groups had elevated percentages of African American students (this was particularly true for direct aggression).

In short, the high multiple group conformed to nearly all characteristics measured in this study that were found in previous research to be characteristic of aggressive adolescents, while the high self group tended to be distinguished only on antisocial tendencies and the high peer group tended to be distinguished only on demographic and sociometric characteristics.

Achenbach (1987) suggested that both self- and peer-report methods may provide unique and important information about adolescent problem behavior that would not be captured by other informant methods. As such, the use of multiple informant methods as a general rule for research on aggressive behavior may be advised. In addition, while several studies have included peer- and self-reported behaviors, often the decision is made to use only one reporting type in analyses. The present investigation suggests that this is not an arbitrary decision and will likely impact the results. Ideally, future studies should report how findings may have varied by reporter.

Of course, not all research endeavors have the time and monetary resources to collect aggression data from multiple informants. For those studies utilizing a single measure of aggression, potential sources of bias become a more salient issue. We know that social desirability accounts for variance in self-reported aggression, and for this reason it is frequently utilized as a control variable in studies that employ self-reported aggression measures. On the other hand, no similar ubiquitous assessment of bias exists for peer-reported aggression measures. Therefore, the second goal of the current study was to investigate the utility of a measure designed to assess students' tendency to endorse demographic and sociometric

stereotypes of aggressive behavior, as it was hypothesized that this tendency might result in bias in nominations of aggressive peers.

### **Are Stereotyping Scores Related to the Demographic and Sociometric Characteristics of Peers Nominated as Aggressive?**

A series of scales designed to measure direct and indirect aggression stereotyping bias were created for the purpose of this study. Three scales, each item of which comprised a spectrum with a dichotomous pair of gender, racial, or popularity-based groups as its endpoints, described an aggressive behavior and asked students to rate whether each item applied more to the first group, more to the second group, or equally to both groups. Each scale demonstrated good distribution and skewed away from center in the direction one would expect according to common social stereotypes of aggressive adolescents. Students tended to endorse the view that boys were more directly aggressive than girls, that girls were more indirectly aggressive than boys, that African American students were more directly aggressive than European American students, and that popular students were more directly and indirectly aggressive than unpopular students. The association between popularity and indirect aggression was the strongest of all the scales. Internal reliability was acceptable for racial and popularity scales, and on the low side (though not in the unacceptable range) for gender scales.

The relationship of the aggression stereotyping scales to students' tendencies to nominate particular demographic and sociometric categories of aggressive peers was examined. Effects were found mostly for those scales which tapped gender stereotyping. Linear regression analyses indicated that, after controlling for gender, a student's score on the direct gender stereotyping scale was significantly associated with the gender distribution of the peers he or she nominated as directly aggressive, and the same was true for indirect aggression. For each scale, the more one skewed toward the boys' side of the stereotyping spectrum, the more likely one

was to nominate male peers on peer-report aggression items (and vice versa for females). Thus, one's tendency to endorse a gender-typed view of aggression does appear to explain variance in the gender of the peers one identifies as being aggressive. Similar results, however, were not found for race or for popularity.

Although stereotyping scores partially accounted for gender differences in nominated peers, this relationship did not appear to be helpful in explaining variance in overall levels of peer-reported aggression. A comparison of students who were solely-peer identified high aggressors and students who were identified as aggressive by multiple sources revealed no significant differences in stereotyping scores between the two; furthermore, no group differences existed when the interactions between stereotyping scores and demographic/sociometric characteristics were examined. Finally, with the exception of one marginal effect for the indirect aggression gender scale, stereotyping scores did not explain any significant variance in peer reports of aggression over and above that already explained by participants' self-reported aggression scores. As such, although the stereotyping scales used in this study do seem to predict some characteristics of aggressive peer nominations, as a whole they do not appear to be particularly useful as control variables for peer-reported aggression.

The ineffectiveness of the stereotyping scales to explain variance in levels of peer-reported aggression might be interpreted in several ways. It was hypothesized that bias due to social schemas of aggressive adolescents would be associated with the type of peers one nominated as aggressive, and thus with overall peer-reported aggression levels for particular demographic and sociometric categories of adolescents. Although the first part appeared to be true in the case of gender, the study found no significant relationships between levels of peer-reported aggression and scores on any of the stereotyping scales. These findings make sense in

that among those who stereotype, nominations are influenced by these stereotypes. Yet across young adolescents, nominations demonstrated expected gender distributions as found in other studies: that is, boys have higher rates of direct aggression and girls and boys had similar rates of indirect aggression (e.g., similar numbers of nominations).

Of course, it may also be the case that adolescents' social schemas about aggressive peers are having a greater influence on peer reports of aggression than found in the present study, but that the stereotyping scales created for this study are simply not doing a very good job of accurately describing those schemas. For instance, a scale which allowed one to rate social groups individually, rather than through comparison format, may have produced a more nuanced picture of adolescents' views on the relative levels of aggression among social groups. In addition, the scales only assessed social schemas of gender, race, and popularity; it is possible that adolescents' social schemas of aggression involve demographic and/or social criteria that were not assessed, such as socioeconomic status, physical appearance, or membership in specific social crowds.

Although social desirability bias was not related to the patterns of answers observed for the stereotyping scales, there was evidence that some students were uncomfortable categorizing social groups in this way, particularly for the scale which compared racial groups. It is also possible, then, that the ineffectiveness of stereotyping scales to explain variance in peer-reported aggression may be due to their relatively explicit format. Since explicit and implicit stereotypes can differ from one another in direction (Whitley & Kite, 2006), a measure designed to assess implicit aggression stereotyping may produce different patterns of results and affect overall conclusions about the role of stereotyping in peer-reported aggression.

## **Strengths and Limitations**

A strength of the present study is that it utilized a passive consent procedure, which is crucial for research investigating aggression and other socially undesirable behavior in the school setting (Tigges, 2003). Ninety-six percent of all middle school students at the school participated in the study. Thus, the peer-report data for this school is considered to be highly reliable (Crick & Ladd, 1990). However, the investigation of these relationships in only one setting is a potential limitation and may affect the generalizability of the results. The school in question is not a traditional public middle school: Although there are no tuition costs and it strives to enroll a student body that is demographically representative of the larger county, students and their families have to complete an application process, which necessitates some level of parental involvement and selection. In addition, due to the fact that it is a research school affiliated with a large state university, students may have had more experience with educational and psychological research than students at other schools in the county. Thus, the student body may differ from other schools in ways which affected the results of the study. Replication of these findings in other middle school settings would be required to fully address this question.

Additionally, it should be observed that self- and peer-reported aggressors differed from low aggressors mostly on scales which employed the same measurement type as the aggression scale in question; that is, self-reported aggressors had elevated levels of self-reported, socially undesirable behavioral and emotional characteristics, whereas peer-reported aggressors differed from low aggressors on sociometric variables which were derived from peer nominations. The possibility of measurement bias is thus a concern. To address the issue of measurement bias within self-reports, a measure of social desirability bias was incorporated into the survey, which assessed participants' unwillingness to admit to common but social undesirable thoughts, feelings and behaviors. Accordingly, social desirability bias was negatively correlated with

scores for manipulative behavior, remorselessness, anger, and both direct and indirect self-reported aggression. After factoring out variability due to social desirability bias, however, relationships between self-reported aggression and manipulative behavior, remorselessness, and anger remained significant. Furthermore, self-reported direct aggression showed significant negative associations with anger regulation, which was not itself related to social desirability bias but fit conceptually into a constellation of antisocial characteristics. Together, these findings increase the likelihood that self-reported results are representative of true findings and not artifacts of measurement error. At the present time, there is no established construct that can be controlled for in order to reduce bias in peer reports. Rather, additional research is needed on factors that influence reporter bias (see below). It should be noted, however, that peer-reported sociometric variables actually incorporate peers' opinions into their definition (e.g., whom do you like? Whom do you think is popular?) and thus may be more robust to potential bias than peer-reported variables which measure behavior.

The present study sought to provide explanations for discrepancies between self-reported and peer-reported measurement of aggression by assessing the roles of social desirability bias and aggression stereotyping bias. It should be noted that I left unexamined many other potential reasons as to why self and peer reports of aggression may differ in adolescence. For instance, the same behavior may appear aggressive when coming from a member of one particular social group but not when coming from another. Similarly, students may rate a behavior as aggressive in an unknown peer, but may not consider the same behavior to be aggressive if performed by a friend. Discrepancies between self- and peer-reported aggression may also arise from a lack of awareness on the part of some self-raters to recognize their behavior as aggressive in the eyes of other students. In addition to examining the effects of social desirability and social stereotyping,

a thorough investigation of the model in Figure 1-1 should also take these factors into account.

Finally, the direction of effects in the relationship between stereotypes and reports of peer behavior should also be investigated in order to shed light on the origin and maintenance of social schemas of aggression.

### **Developmental Considerations**

The present study focused on the measurement of aggressive behavior during the early adolescent period, using a sample which was approximately 11 to 14 years old. This age group was selected in part because longitudinal investigation of self and peer reports of aggression indicated that agreement between the two is higher during this particular stage than at any other time in childhood or adolescence. Thus, estimations of discrepancies between self and peer reports were expected to be at their most conservative during this time, increasing the likelihood that the differences found would apply to other stages of childhood and adolescence as well. In addition, both self and peer reports of behavior are often used with early adolescents due to the fact they are mature enough to complete lengthy survey measures, yet still attend schools in which they are familiar with the majority of same-grade peers.

At the same time, early adolescence is a unique period of the life span. For instance, early to midadolescence is the life stage during which the influence of the peer group on physical appearance, likes/dislikes, and social behavior is at its strongest (Brown, 2004). This is also a period when gender intensification, which refers to strengthening in the adherence to traditional gender roles, is observed in many individuals (Galambos, Almeida, & Petersen, 1990; Hill & Lynch, 1983; see Clemans, DeRose, Graber, & Brooks-Gunn, 2010, for a review of gender development in adolescence). Finally, early adolescence marks the end of the period of pervasive gender self-segregation which begins in middle childhood (Maccoby, 1998). As such, it is a unique developmental time in a young person's life, and it remains unclear as to whether

relationships between stereotyping and peer reports of aggression undergo systematic changes across longer age ranges. For instance, the tendency of some early adolescents to intensify in their endorsement of traditional gender role stereotypes may make gender stereotypes of aggression more salient at this period than they would be at other developmental periods. Future studies which examine this relationship should ideally do so at multiple points in childhood and adolescence to assess possible developmental trends.

### **Conclusions**

The results of the present study suggest that the identification of aggressive individuals is a multifaceted issue and that adolescents with differing demographic and psychosocial characteristics may be identified depending on the method of assessment (Graham et al., 2003). It is important that researchers and educators seeking to identify and/or curb aggressive behavior in school settings remain aware that assessment methods may be providing different perspectives on aggressive behavior. The present study investigated discrepancies between self and peer reports of aggression; however, parent and teacher reports are also commonly utilized in childhood and early adolescence, and should be similarly examined in regard to their relationships with other reporting methods. The use of an aggregate measure of aggression derived from multiple report methods, rather than the reliance on a single measurement type, is advised for future studies.

The present study also tested the hypothesis that bias due to social schemas of aggressive adolescence would account for variance in peer reports of aggression. Although the applicability of the social stereotyping scales used here was limited, research in this area has been extremely scarce, and future studies which investigate this relationship and other potential sources of peer report bias are warranted. The endorsement of expected aggression stereotypes by participants in the present study indicates the continued salience of demographic and social stereotypes in our

society. It is important to understand how these and other biases may influence peer relationships and promote labeling in the peer group not merited by behavior.

## APPENDIX A SURVEY MEASURES

### **Aggression Stereotyping**

Instructions: The following three sections will ask you about things other kids do. Please make sure to read the instructions carefully.

For each item, indicate how much you think the statement applies to **(group 1)** or **(group 2)**. (This instruction was repeated three times at the beginning of each scale; group 1 and group 2 were replaced with **girls** or **boys**, **black kids** or **white kids**, and **popular kids** or **unpopular kids**.)

Scale: 7-point spectrum; 1 = Mostly true of (group 1); 4 = Equally true of both groups; 7 = Mostly true of (group 2)

#### Indirect Aggression Stereotyping

1. Leave other kids out on purpose.
2. Gossip or say mean things about other kids behind their backs.
3. Spread rumors about other kids.
4. Give other kids the silent treatment.
5. Tell other kids they won't be their friend anymore in order to get something they want.

#### Direct Aggression Stereotyping

1. Tease other kids.
2. Call other kids mean names to their face.
3. Push or shove other kids.
4. Get in fights a lot.
5. Threaten other kids.

#### Prosocial Filler Items

1. Are nice and friendly to people when they need help.
2. Stick up for kids who are being picked on or excluded.

### **Peer-Reported Aggression**

Instructions: the following section is about other kids in your grade. For each question, write the first and last names of the kids to whom you think the statement best applies. Do not write anything else about any person except his or her first and last name. If you are unsure of how to spell a name, please look it up on the roster provided. You can nominate the same person for more than one item if you want.

Write the names of kids who...

#### Peer-Reported Indirect Aggression

1. ... say mean things about other kids behind their backs.
2. ...give other kids the silent treatment.
3. ...spread rumors about other kids to damage their social reputation.
4. ...leave other kids out of activities that those other kids really want to be included in.

5. ...tell other kids they won't be their friend anymore in order to get back at them for something.

Peer-Reported Indirect Aggression

1. ...tease other kids to make them angry.
2. ...get into physical fights.
3. ...push or shove other kids.
4. ...threaten to hurt or hit other kids.
5. ...call other kids bad names to their face.

APPENDIX B  
CORRELATIONS BETWEEN STUDY VARIABLES

Variable	1	2	3	4	5	6	7	8	9	10
1. Self-reported direct aggression										
2. Self-reported indirect aggression	.45**									
3. Peer-reported direct aggression	.33**	.19**								
4. Peer-reported indirect aggression	.19**	.24**	.70**							
5. Direct aggression stereotyping (gender)	.02	-.02	-.02	-.05						
6. Direct aggression stereotyping (race)	.07	-.03	.10	-.02	-.12*					
7. Direct aggression stereotyping (popularity)	-.06	-.05	-.09	-.12*	-.14*	.12*				
8. Indirect aggression stereotyping (gender)	.02	-.14*	.01	-.07	.14*	.17**	.13*			
9. Indirect aggression stereotyping (race)	.03	.06	.03	.00	.09	.16**	-.10	-.03		
10. Indirect aggression stereotyping (popularity)	.02	-.11	.01	-.05	-.17**	.18**	.61**	.20**	.01	
11. Manipulative behavior	.46**	.49**	.16**	.12*	-.05	.03	-.02	-.03	.09	-.01
12. Remorselessness	.34**	.26**	.17**	.16**	-.01	.09	-.09	.04	.04	.01
13. Empathy	-.21**	-.02	-.15**	.04	.12*	-.10	.02	.05	.02	-.06
14. Anger	.36**	.35**	.09	.06	-.01	.05	-.10	-.03	.05	-.14*
15. Anger regulation	-.22**	.07	-.16**	-.04	.06	-.13*	.05	-.08	-.08	-.06
16. Social desirability	-.34**	-.44**	-.02	-.04	.00	-.02	.04	-.02	-.03	.09
17. Social preference	-.14*	-.04	-.52**	-.38**	-.10	-.08	.18**	-.06	.00	.12*
18. Social impact	.14*	.17**	.58**	.60**	-.03	-.02	.01	.03	-.05	.07
19. Perceived popularity	.06	.17**	.19**	.39**	-.12*	-.09	.05	-.04	.03	.11

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

Variable	11	12	13	14	15	16	17	18
1. Self-reported direct aggression								
2. Self-reported indirect aggression								
3. Peer-reported direct aggression								
4. Peer-reported indirect aggression								
5. Direct aggression stereotyping (gender)								
6. Direct aggression stereotyping (race)								
7. Direct aggression stereotyping (popularity)								
8. Indirect aggression stereotyping (gender)								
9. Indirect aggression stereotyping (race)								
10. Indirect aggression stereotyping (popularity)								
11. Manipulative behavior								
12. Remorselessness	.51**							
13. Empathy	-.19**	-.38**						
14. Anger	.29**	.32**	.03					
15. Anger regulation	-.09	-.19**	.36**	.04				
16. Social desirability	-.38**	-.25**	.01	-.43**	.11			
17. Social preference	-.05	-.20**	.18**	-.10	.19**	.09		
18. Social impact	.09	.06	.13*	.05	.01	.02	-.14	
19. Perceived popularity	.08	-.09	.10	-.07	.04	-.03	.39**	.44**

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

APPENDIX C  
STUDY VARIABLE MEAN DIFFERENCES FOR GENDER, RACE, AND GRADE LEVEL

**Significant differences within selected study variables - GENDER**

Measure/Variable	Boys <i>M</i> ( <i>SD</i> )	Girls <i>M</i> ( <i>SD</i> )	<i>t</i>	<i>df</i>	<i>p</i>
<b>Aggression</b>					
self-reported direct aggression	1.32 (.23)	1.20(.19)	4.64	(311)	<.001
self-reported indirect aggression	1.24 (.16)	1.30 (.18)	-2.74	(311)	.006
peer-reported indirect aggression	1.01 (.40)	.87 (.20)	3.98	(315)	<.001
<b>Aggression stereotyping</b>					
boys—girls (indirect)	-.69 (.81)	-.93 (.86)	2.44	(297)	.015
popular—unpopular (indirect)	-1.29 (1.01)	-1.56 (.89)	2.50	(297)	.013
<b>Peer nominations on aggression items</b>					
direct aggression - % male	.88 (.23)	.70 (.34)	4.62	(234)	<.001
direct aggression - % African American	.42 (.33)	.55 (.33)	-3.04	(234)	.003
indirect aggression - % male	.69 (.40)	.29 (.36)	7.48	(189)	<.001
<b>Behavioral/Emotional Characteristics</b>					
manipulative behavior	2.28 (.71)	2.04 (.65)	3.02	(306)	.003
remorselessness	2.26 (.76)	2.01 (.77)	2.74	(304)	.006
empathy	3.32 (.49)	3.73 (.43)	-7.70	(299)	<.001
anger reduction	2.16 (.76)	2.63 (.76)	-5.50	(308)	<.001
<b>Sociometric Characteristics</b>					
social preference	-.18 (1.14)	.18 (.77)	-3.23	(309)	.001

*Note.* Analyses performed on all relevant study variables. Only those significant at  $p < .05$  are listed.

### Significant gender differences within selected study variables - RACE

Measure/Variable	White <i>M</i> ( <i>SD</i> )	African American <i>M</i> ( <i>SD</i> )	Other <i>M</i> ( <i>SD</i> )	<i>F</i>	<i>df</i>	<i>p</i>
<b>Aggression</b>						
self-reported direct aggression	1.24 (.20) <sub>a</sub>	1.33 (.25) <sub>a,b</sub>	1.24 (.21) <sub>b</sub>	4.87	(2,310)	.008
peer-reported direct aggression	.90 (.28) <sub>a</sub>	1.13 (.44) <sub>a,b</sub>	.87 (.21) <sub>b</sub>	17.10	(2,313)	<.001
peer-reported indirect aggression	.90 (.33) <sub>a</sub>	1.05 (.44) <sub>a,b</sub>	.86 (.38) <sub>b</sub>	5.67	(2,313)	.004
<b>Aggression stereotyping</b>						
girls—boys (direct)	1.04 (.93) <sub>a</sub>	.70 (.88) <sub>a,b</sub>	1.01 (.84) <sub>b</sub>	3.78	(2,300)	.024
black—white (direct)	-.79 (.91) <sub>a</sub>	-.36 (.78) <sub>a,b</sub>	-.88 (.88) <sub>b</sub>	6.59	(2,285)	.002
black—white (indirect)	.06 (.67) <sub>a</sub>	.37 (.67) <sub>a</sub>	.20 (.77)	4.68	(2,286)	.010
<b>Peer nominations on aggression items</b>						
indirect aggression - % White	.48 (.38) <sub>a</sub>	.30 (.36) <sub>a</sub>	.40 (.38)	3.40	(2,188)	.036
<b>Behavioral/Emotional Characteristics</b>						
empathy	3.58 (.51) <sub>a</sub>	3.35 (.47) <sub>a,b</sub>	3.57 (.49) <sub>b</sub>	5.74	(2,298)	.004
<b>Sociometric Characteristics</b>						
social preference	.03 (.97)	-.29 (1.10) <sub>a</sub>	.20 (.89) <sub>b</sub>	4.91	(2,308)	.008

*Note.* Analyses performed on all relevant study variables with post-hoc Games-Howell correction due to unequal group sizes; only variables with significant differences are listed. Same-subscript pairs within a single variable indicate significant mean differences at  $p < .05$ .

### Significant gender differences within selected study variables - GRADE LEVEL

Measure/Variable	6th <i>M</i> ( <i>SD</i> )	7th <i>M</i> ( <i>SD</i> )	8th <i>M</i> ( <i>SD</i> )	<i>F</i>	<i>df</i>	<i>p</i>
Aggression stereotyping						
girls—boys (direct)	1.09 (.97) <sub>a</sub>	1.08 (.90) <sub>b</sub>	.70 (.79) <sub>a,b</sub>	6.19	(2,300)	.002
black—white (direct)	-.96 (.98) <sub>a,b</sub>	-.59 (.85) <sub>a</sub>	-.62 (.79) <sub>b</sub>	5.25	(2,285)	.006
black—white (indirect)	-.06 (.81) <sub>a</sub>	.36 (.65) <sub>a</sub>	.18 (.59)	8.69	(2,296)	<.001
Peer nominations on aggression items						
direct aggression - % African American	.51 (.32) <sub>a</sub>	.35 (.33) <sub>a,b</sub>	.58 (.31) <sub>b</sub>	10.76	(2,229)	<.001
indirect aggression - % African American	.43 (.40) <sub>a</sub>	.20 (.32) <sub>a,b</sub>	.41 (.38) <sub>b</sub>	8.28	(2,184)	<.001
Behavioral/Emotional Characteristics						
manipulative behavior	2.03 (.65) <sub>a</sub>	2.12 (.64)	2.33 (.75) <sub>a</sub>	5.31	(2,302)	.005
remorselessness	2.02 (.74) <sub>a</sub>	2.14 (.78)	2.29 (.80) <sub>a</sub>	3.06	(2,300)	.048
anger reduction	2.57 (.85) <sub>a</sub>	2.23 (.72) <sub>a</sub>	2.37 (.78)	4.69	(2,307)	.010

*Note.* Analyses performed on all relevant study variables with post-hoc Bonferroni correction; only variables with significant differences are listed. Same-subscript pairs within a single variable indicate significant mean differences at  $p < .05$ .

APPENDIX D  
SUMMARY OF QUESTION 1 ANALYSES WITH MORE STRINGENT GROUP CRITERIA

All analysis addressing Question 1 were re-run using group membership cutoff criteria of one SD for self-reported aggression and 5 nominations for peer-reported aggression (referred to below as “more stringent”). In general, patterns of results mirrored those of the .5 standard deviation/4 nomination analyses (referred to below as “less stringent”).

Differences in the patterns of results were observed for emotional and behavioral characteristics only; these are reported below. Patterns of results for demographic and sociometric characteristics did not change.

**Emotional and Behavioral Characteristics**

**Manipulative behavior.** Using the more stringent criteria for direct aggression, estimated marginal means comparisons indicated that the high multiple group had significantly higher levels of manipulative behavior than the low aggression group only. With the less significant criteria, it was higher than both the low aggression and high peer groups. This was because the estimated marginal mean of the high peer group increased slightly, from 2.09 to 2.23. All other differences remained unchanged.

For indirect aggression, the high multiple group increased slightly, from 2.76 to 2.94, causing the difference between the high self and high multiple groups to become significant at  $p < .05$ . All other differences remained unchanged.

**Remorselessness.** Estimated marginal means of the direct high self and high peer groups increased slightly (from 2.54 to 2.69 for high self; from 2.20 to 2.35 for high peer). This caused the difference between the high peer and low aggression groups to become significant at  $p < .05$ ; other significance patterns remained unchanged.

For indirect aggression, a slight increase in the high peer group resulted in a significant difference between the high peer and high self groups at  $p < .05$ . All other differences remained unchanged.

**Anger.** For direct aggression, estimated marginal means of the high self and high peer groups increased slightly (from 2.88 to 3.10 for high self; from 2.60 to 2.72 for high peer). The difference between the high self and high peer groups became significant at  $p < .05$ ; other patterns remained unchanged. Patterns for indirect aggression remained unchanged.

**Anger regulation.** The estimated marginal mean of the direct high self group decreased slightly (from 2.42 to 2.31) and was no longer significantly different than the high multiple group. Other patterns remained unchanged.

**Summary.** Use of the more stringent criteria resulted in slight increases in antisocial behavior for the high self and high peer groups. However, the overall patterns of findings remained unchanged from the previous analyses in that the high self and high multiple groups had the highest levels of manipulative behavior, remorselessness, and anger, and the lowest levels of anger regulation.

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## BIOGRAPHICAL SKETCH

Katherine Clemans received a B.A. in psychology from Duke University in 2002 and an M.S. in psychology from the University of Florida in 2007. She is a recipient of the University of Florida's J. Hillis Miller Presidential Fellowship. Her research interests include the development of aggression and moral judgment during adolescence.