

Identifying Predictors of Instrumental and Reactive Aggression Among Low-Income Minority Adolescent Girls

Anne Williford
Kathryn J. DePaolis
University of Kansas

Research on both the forms and functions of aggression has yet to include the experiences of low-income minority adolescent girls, particularly Latinas. The present study addresses this limitation by applying ecological systems theory to identify risk and protective factors across multiple domains that increase and mitigate aggressive behavior among a sample of 212 low-income minority adolescent girls, primarily Latinas. Using hierarchical regression, 4 models are presented that capture significant risk and protective factors for instrumental overt aggression, instrumental relational aggression, reactive overt aggression, and reactive relational aggression. Results reveal several interesting patterns of risk and protection for each subtype of aggressive behavior. Relationships with parents and peers are key predictors for this sample, representing both risk and protection that might relate to important cultural factors. The study findings offer further considerations of culturally relevant, gender-specific risk and protective factors. Implications for social work research in terms of refining current prevention and intervention strategies are discussed.

Keywords: instrumental aggression, reactive aggression, minorities, adolescent girls, ecological systems theory, risk and protections

Social work research and practice with children and families has long understood the intersection of people and their environments—and given the field's commitment to examining mechanisms of social injustice and oppression—social work researchers strive to understand the experiences of people of color and the effects of residing in low-income communities. Despite increased attention given to aggressive behavior among girls (McKnight & Putallaz, 2005; Moretti, Holland, & McKay, 2001; Pepler & Craig, 2005), research on aggression and peer victimization in social work and allied disciplines has seldom included the experiences of girls of color, particularly Latinas, or girls who are low-income (Epstein, Botvin, Diaz, Williams, & Griffin, 2000; Storch, Nock, Masia-Warner, & Barlas, 2003). Equally important, understanding the unique patterns of risk and protection among these populations is needed to develop culturally relevant, gender-specific prevention and intervention strategies. However, little research has focused on aggressive behavior, examining both the *forms* and *functions* of such behavior among minority adolescent girls. The present study addressed this knowledge gap by applying ecological systems theory to identify risk and protective factors across multiple domains that predict instrumental and reactive aggression among a sample of low-income minority adolescent girls, with an emphasis on Latina adolescents.

Forms and Functions of Aggressive Behavior

Aggression is defined by two key features: (a) harm and injury; and (b) intent and motivation (Gendreau & Archer, 2005). Although aggression is characterized by physical or psychological harm and injury to another person, it is also important to consider the cognitive or motivational precursor (*function*) to the aggressive act (Gendreau & Archer, 2005). Hostile (Gendreau & Archer, 2005) or reactive aggression (Dodge, 1991; Dodge & Coie, 1987; Little, Jones, Henrich, & Hawley, 2003) is defined as injury or harm to another person in which the perpetrator's pleasure or satisfaction is the main reward. Proactive (Dodge, 1991; Dodge & Coie, 1987) or instrumental aggression (Gendreau & Archer, 2005; Little et al., 2003) describes an aggressive act that is intended to achieve self-serving outcomes, such as getting attention or material gain. According to social information processing or social-cognitive models, children's social behavior is "a function of sequential steps of processing, including encoding of social cues, interpretation of social cues, clarification of goals, response access or construction, response decision, and behavioral enactment" (Crick & Dodge, 1996, p. 993). Based on these processing steps, children who use aggressive behavior might have deficits in either the interpretation or response decision steps (Crick & Dodge, 1996). As such, reactive aggression is thought to capture deficits in the interpretation of social cues, whereas proactive aggression suggests problems with

response decisions (Crick & Dodge, 1996; Dodge & Coie, 1987). Reactive aggression has been linked to hostile attributional biases, or interpretation problems, because children react in a hostile manner to ambiguous provocations (Crick & Dodge, 1996; Dodge & Coie, 1987). Conversely, proactive aggression is theorized to involve response decision deficits. Although proactively aggressive children process social cues correctly, these children evaluate aggressive behavior as producing positive outcomes and as an appropriate behavioral response (Crick & Dodge, 1996; Dodge & Coie, 1987).

Further distinction has been made between two *forms* of aggression (Crick, 1996; Crick & Grotpeter, 1995; Crick & Werner, 1998; Gendreau & Archer, 2005; Little et al., 2003; Moretti et al., 2001; Owens, Shute, & Slee, 2000; Prinstein, Boergers, & Vernberg, 2001; Putallaz et al., 2007). *Overt aggression* captures verbal and physical behaviors that are directed at another individual with the intention to physically harm or threaten that person. These behaviors include hitting, kicking, pushing, or the expression of physical intimidation and threats. *Relational aggression* uses personal relationships as the vehicle to inflict harm and includes behaviors such as talking about others (e.g., gossiping, breaking confidences), exclusionary behaviors (e.g., ignoring, ostracizing), harassment (e.g., prank phone calls, note writing), and nonverbal aggression (e.g., dirty looks, gestures).

Research has indicated that different forms and functions of aggression carried significant individual and social consequences for both the perpetrators and the victims, including academic difficulties, social challenges, and emotional problems (Brock, Nickerson, O'Malley, & Chang, 2006; Crick & Grotpeter, 1995; Little et al., 2003; Owens et al., 2000; Paul & Cillessen, 2003; Pepler & Craig, 2005). Because the underlying social-cognitive and social-informational processes differ for the two functions of aggression, reactive and instrumental aggression produce distinct externalizing and internalizing consequences. For example, reactive aggression is associated with peer rejection and low self-control due to its association with hostile attributional bias (Little et al., 2003). In addition, reactively aggressive children are typically more emotional and impulsive, and report lower self-esteem; consequently, these children tend to experience higher rates of family conflict and temperament issues (Vitaro & Brendgen, 2005). Conversely, instrumental aggression is related to other forms of delinquent and dishonest behavior and has been linked to peer victimization (Little et al., 2003). In some cases, instrumental aggression has been associated with positive outcomes, such as leadership skill and social competence (Hawley, 2003; Little et al., 2003). Further, instrumentally aggressive children tend to experience family interactions that are more positive

and receive less parental monitoring than their reactively aggressive counterparts (Vitaro & Brendgen, 2005). These characteristics suggest that instrumentally aggressive children are likely savvy at manipulating personal relationships, and thus, might be more likely to engage in dishonest behavior.

Aggressive behavior in childhood and adolescence has been linked to delinquency, substance use, and mental health problems in adulthood (Fite, Stoppelbein, Greening, & Gaertner, 2008). However, not all aggressive youth experience these problems later in life. Ecodevelopmental models that are based on the interaction of risk and protective factors over time between an individual and his or her environment (Richman & Fraser, 2001; Rutter, 2001) suggest multiple pathways to problem behavior (Fite et al., 2008). As risk accumulates, the likelihood of problem behavior also increases. Rutter (2001) described this phenomenon as an individual's *level of risk*; that is, the sheer number of adversities found in a person's life. Therefore, the presence of a single risk factor does not ensure the onset of problem behavior (Richman & Fraser, 2001), but rather implies a greater likelihood or probability that a problem might occur.

Theoretical Model of Aggression Among Girls

A wide range of developmental perspectives has been proposed to explain adolescent aggression (e.g., Herrenkohl, Aisenberg, Williams, & Jenson, 2011). Ecological systems theory is a prominent theoretical framework used in social work that has been applied to the study of aggression among girls (see Pepler & Craig, 2005). This theoretical perspective characterizes human development as the interaction between a person and her or his environment. Drawing upon Bronfenbrenner's (1979, 1986, 2005) bioecological theory of human development, ecological systems theory suggests that interactive processes in a child's neighborhood, school, peer, and family contexts either help or hinder the child's developmental outcomes (Bowen, Rose, Powers, & Glennie, 2008). In the present study, ecological systems theory informed our understanding of the risk and protective factors across multiple domains that might increase or mitigate aggressive behavior among girls (see Figure 1).

Researchers have identified important individual and social-cognitive factors that increase risk for aggressive behavior among girls, including difficulties during the transition to puberty, problems with hyperactivity and inattention at early ages, challenges related to low self-esteem, and issues with emotion regulation and social-information processing (Pepler & Craig, 2005). In addition, girls' aggressive behavior can be exacerbated by dysfunctional social interactions. Within the family context, increases in aggression among both genders can be linked to contributing factors such as childhood maltreatment, family fragmentation, ineffective parenting practices,

and insecure attachment (Miller-Johnson, Moore, Underwood, & Coie, 2005; Pepler & Craig, 2005). Because girls are more likely than boys to be socialized around the importance of relationships (Brown, 2003), girls are more likely to experience greater long-term effects of poor parent-child interactional problems. Consequently, girls who

experience poor or insecure attachments to their parents may be at an elevated risk for aggressive behavior and victimization (Moretti, Catchpole, & Odgers, 2005).



Figure 1: Risk and protective factors by domain.

The peer group asserts significant influences on girls’ development, particularly during adolescence (Steinberg, 2005; Zimmer-Gemback, Geiger, & Crick, 2005). Girls’ interactions with peers can create a sense of belonging and connection, but can also serve as a source of conflict, victimization, and alienation (Pepler & Craig, 2005). Evidence has suggested that aggressive girls experience significantly greater peer conflicts, less positive interactions with peers, higher rates of peer victimization, increased associations with deviant peers, and lower social preference than nonaggressive girls (Cillessen, Jiang, West, & Laszkowski, 2005; Juvonen & Ho, 2008; Pepler & Craig, 2005; Sullivan, Farrell, & Kliewer, 2006; Xie, Farmer, & Cairns, 2003; Zimmer-Gemback et al., 2005).

Although the literature on childhood and adolescent aggression is disproportionately focused on risk factors, researchers have recognized the importance of protective factors in mitigating aggressive behavior (Moretti et al., 2005). Even though less is known

about key protective factors, some authors have suggested important gender differences might exist (Moretti et al., 2005). Because girls are likely to be more strongly influenced by parent-child interactions and the development of positive personal relationships (Moretti et al., 2005; Pepler & Craig, 2005), it follows that positive and supportive relationships with parents and others are important protective factors in reducing girls’ risk for violence and aggression (Moretti et al., 2005). For example, in Kim-Cohen, Moffitt, Caspi, and Taylor’s (2004) study of children in low-income households, the researchers found that maternal warmth was a primary protective factor in promoting positive adjustment among girls despite low-income status. In Bender and Losel’s (1997) study on highly aggressive girls demonstrated that having a moderately prosocial boyfriend served as a protective factor for their sample and influenced the girls toward reducing their involvement in aggressive and anti-social behaviors.

The application of an ecological systems perspective to understanding girls' aggressive behavior highlights the centrality of family and peer relationships to girls' development, particularly in adolescence. However, many studies have primarily included Caucasian youth (e.g., Bender & Losel, 1997; Cillessen et al., 2005; Kim-Cohen et al., 2004; Moretti et al., 2005). Moreover, the few studies of aggressive behavior among ethnic minorities have focused on African American youth (see Miller-Johnson et al., 2005; Sullivan et al., 2006; Xie et al., 2003; Zimmer-Gemback et al., 2005). Consequently, little is known about the experiences of low-income minority girls, particularly Latinas.

Aggressive Behavior Among Diverse Populations

Because socialization practices tend to depend on a person's culture, it follows that a unique set of risk and protective factors is likely related to aggression for different cultural groups. For example, differential patterns of socialization are thought to relate to differences in the rates of aggressive and violent behavior for Latino/Latina adolescents (i.e., Zayas, Gulbas, Fedoravicius & Cabassa, 2010). Latino/Latina adolescents are likely to experience challenges as they negotiate two cultures, each promoting different values that are often in opposition to one another (Smokowski & Bacallao, 2006; Zayas et al., 2010). Conflicting cultural values may place some Latino/Latina adolescents at a heightened risk for developing internalizing and externalizing problems as they may struggle to develop a sense of belonging in either culture (Smokowski & Bacallao, 2006; Smokowski, David-Feron, & Stroupe, 2009; Zayas et al., 2010).

Accordingly, recent literature has given greater attention to the needs of Latino/Latina youth. In particular, several researchers have theorized about the relationship between the process of acculturation and problem behavior among Latino/Latina youth. For example, youths' level of acculturation has been linked to increased aggressive and violent behavior among Latino/Latina youth (Bui & Thongniramol, 2005; Smokowski & Bacallao, 2006; Smokowski et al., 2009). Increased U.S. cultural involvement, that is, greater acculturation, has been found to increase Latino/Latina youths' risk for aggression and violence. For example, Bui and Thongniramol (2005) found that second and third generation Latino/Latina youth were 60% and 88%, respectively, more likely to report violent behavior than their first generation peers. This finding suggested that bicultural youth are likely not only to struggle with developing a sense of belonging in either cultural context but also to be at elevated risk for engaging problem behavior. Notably, several studies have shown the effects of acculturation

differ by gender, suggesting that females experience greater risk than males for a range of problems as they acculturate to the dominant culture (Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998). It is important to note that the influence of acculturation on problem behavior among youth may be determined by whether an individual is native to the United States and fluent in English as compared to a foreign-born and non-native English speaker. Moreover, despite potential differences across various countries-of-origin, existing research has seldom considered variations in aggressive behavior across subgroups of Latino/Latina youth (Estrada-Martínez, Padilla, Caldwell, & Schulz, 2011).

In addition, research has established that important disparities exist in the rates of aggressive and violent behavior among youth living in poverty (Snyder & Sickmund, 2006), suggesting that certain environmental factors increase the risk for engaging in aggressive behavior. Because minority groups are more likely to live in poverty than their White, non-Latino/Latina counterparts (U.S. Census Bureau, 2010), youth of color may experience disproportionate greater risk for engaging in aggressive behavior given the effects of living in an impoverished community. In fact, McNulty and Bellair (2003) found that the differences in rates of violent crime between White and minority youth could be explained by variation at the community level, specifically social and economic disadvantage, involvement in gangs, and lack of pro-social bonds. Moreover, researchers using an evolutionary perspective of aggressive behavior have argued that aggression serves an adaptive function (Hawley, 1999, 2003; Hawley, Little, & Rodkin, 2007). For example, research has shown that children and youth may adapt to certain ecological settings where instrumental or proactive aggressive behaviors are tolerated and can be used to gain social or material resources (cf. resource control theory; see Hawley, 2003). Recent evidence has also suggested that youth from low-income communities engage in reactive aggression as a means of survival through forced self-defense or retaliation (Aceves, Hinshaw, Mendoza-Denton, & Page-Gould, 2010). Further, in their study of ethnic minority youth (primarily African American boys) Graham, Hudley, and Williams (1992) asserted that sociocultural environments characterized by violence and poverty contributed to hostile attributional biases commonly associated with reactive aggression. Accordingly, youth from these communities might be quick to assign blame or retaliate as a means to cope with and survive the daily stresses of life in impoverished communities. Researchers have argued that such evidence suggests that reactive aggression represents adaptation to an environmental context that offers relatively few effective alternatives for responding to

aggressive or violent peers (Aceves et al., 2010; Dodge & Coie, 1998; Graham et al., 1992).

Conversely, a youth's connection to his or her culture-of-origin appears to serve as a protective factor that buffers against risk for a range of problems, including academic difficulties, mental health issues, and aggression (Marsiglia, Parsai, & Kulis, 2009; Smokowski & Bacallao, 2006; Smokowski, Buchanan, & Bacallao, 2009). For example, Marsiglia and colleagues (2009) found that certain cultural beliefs common among Latino/Latina families, such as *familism*, and the level of family cohesion protected Latino/Latina youth from behavioral problems such as aggression, conduct problems, and rule breaking. However, Rodriguez (2003) noted that Latino/Latina cultures commonly mark socialization practices by gender. Moreover, socialization patterns within Latino/Latina families often promote adherence to traditional gender roles (Kasturirangan & Williams, 2003; Raffaelli & Ontai, 2004; Rodriguez, 2003). For example, many Latino/Latina families promote different messages to girls and boys. Girls are often perceived as more dependent (both physically and emotionally) than boys, and therefore, are raised with stricter rules believed to provide greater protection for the girls (Raffaelli & Ontai, 2004; Rodriguez, 2003). Further, Raffaelli and Ontai noted the cultural value of *respeto*, which emphasizes the "hierarchy in social relationships" (p. 288). Consequently, the distinct cultural values commonly found among Latino/Latina families bear particular significance for girls and their development. Thus, relationships with parents may be an important protective factor for Latina youth, particularly for girls. However, it is important to note that significant variation exists across Latino/Latina families in how these cultural beliefs are communicated (Lac, Unger, Basáñez, Ritt-Olson, & Soto, 2011).

Although a growing body of evidence has examined the experiences of low-income minority adolescents, additional research is needed to determine the ways in which risk is experienced across diverse populations and contributes to problem behavior. Accordingly, the present study sought to identify culturally specific risk factors that contribute to aggressive behavior as well as protective factors that reduce risk.

Present Study

Research to date has yet to explore both the *forms* and *functions* of aggression among low-income minority adolescent girls, particularly Latinas. The purpose of the present study was to apply ecological systems theory as a way of identifying risk and protective factors that predict instrumental and reactive aggression. Because the underlying social-cognitive

and social-informational processes differ across the functions of aggression (Gendreau & Archer, 2005; Little et al., 2003; Vitaro & Brendgen, 2005), we hypothesized that different factors would predict instrumental versus reactive aggression. Specific hypotheses included the following:

Hypothesis 1. Instrumental aggression will be predicted by greater dishonest behavior, relational and overt peer victimization, more positive relationships with parents, and higher levels of school connectedness.

Hypothesis 2. Reactive aggression will be predicted by lower self-esteem, less emotional stability, lower quality of friendships with boys and girls, and less positive relationships with parents.

Last, given socialization practices common in Latino/Latina families that stress the importance of family cohesion and traditional gender role expectations, we investigated whether Latina status moderated the association of the youths' relationships with parents and our outcomes of interest. We also examined socioeconomic status and age in each model.

Using hierarchical regression, we constructed four models to examine instrumental overt aggression, instrumental relational aggression, reactive overt aggression, and reactive relational aggression; these models are presented below. Because aggression is a multidimensional construct (Fite et al., 2008; Little et al., 2003), testing separate regression models offers greater distinction between the subtypes of aggression by disentangling the forms and functions, thus enabling us to examine a unique set of correlates for each subtype (Fite et al., 2008). Consistent with ecological systems theory, individual factors were entered first in each model, followed by family factors, and then peer and school factors. Results for each model are provided and discussed in light of considerations of gender, race/ethnicity, and social class.

Method

Participants

The sample for this study consisted of 212 eighth-grade girls (mean age 13.5 years, $SD = .81$) drawn from five middle schools in Denver, Colorado. The sample was predominantly minority and low-income girls. Eighth-grade girls were selected as the study target based on evidence that suggested this developmental period was an important marker for the onset and maintenance of risk behavior as well as the development of risk and protection patterns (Blum, 1998). The five participating schools had 472 girls enrolled in the eighth grade (Colorado Department of Education, 2007). Parental consent rates varied across schools, ranging from 28% to 64%, with an overall study consent rate of 45%. Although the sample was

primarily Latina (71%, $n = 150$), the participants represented racial/ethnic diversity with 9% ($n=18$) Black; 9% ($n=18$) Multiracial; 6% ($n=13$) White, non-Latino/Latina; 5% ($n=10$) Asian; and 2% ($n=3$) other. More than 75% ($n=159$) of the sample participated in free or reduced-price lunch programs, and approximately 43% ($n=92$) of participants indicated their mother or female guardian did not complete high school. As indicated by data from the Colorado Department of Education, the study participants were similar to other girls in the five participating schools in terms of age, race/ethnicity, and rate of participation in the free or reduced-price lunch program. However, data on maternal levels of education were not available for the eighth-grade population in the district.

Procedures

After obtaining study approval from the sponsoring university and the school district, schools with the highest rates of minority enrollment were recruited to participate in the study. Ten schools, stratified by the four geographic quadrants in the city, were targeted within the district. Principals of 5 of the 10 targeted schools agreed to their school's participation in the study. Active parental consent forms were distributed by eighth grade teachers in each school. All students who returned their consent forms—regardless of consent status—were entered into a drawing for an iPod shuffle. The principal of each school determined an appropriate class time during the school day for survey administration. After gaining youth assent, consented girls completed a one-time, anonymous survey that assessed demographic characteristics, aggressive behavior, victimization, and self-concept.

Measures

Demographic data for race/ethnicity, age, and socioeconomic status (SES) was collected from participants. SES was measured by two questions that asked about (a) participation in free and reduced-price lunch programs: and (b) level of maternal education, which is a common proxy measure of SES (Entwisle & Astone, 1994).

The Little Aggression Inventory (LAI; Little et al., 2003) is a 24-item self-report instrument that was used to assess the forms (relational and overt) and functions (reactive and instrumental) of aggression. The LAI has four subscales and each subscale contains six items: overt reactive aggression (e.g., "When I'm threatened by someone, I often threaten back"); overt instrumental aggression (e.g., "I often start fights to get what I want"); relational reactive aggression (e.g., "If others upset or hurt me, I often tell my friends to stop liking them"); and relational instrumental aggression (e.g., "I often tell my friends to stop liking someone to get what I want").

Responses were measured using a 4-point scale, ranging from *completely true about me* to *not true at all about me*. Prior investigations have established adequate reliability and model fit for each subscale (Fite et al., 2008; Little, Brauner, Jones, Nock, & Hawley, 2003; Little et al., 2003). The present study found adequate internal consistency for all subscales (alphas ranged from .72 to .82).

The peer victimization scale from the Revised Olweus Bully/Victim Questionnaire (Olweus, 1996) was used to assess rates of relational and overt victimization. Six items asked respondents to report whether they had been the victim of name calling, exclusionary practices, false rumors, physical aggression, stealing, and physical intimidation or threats from peers. Items were prefaced with the question, "Have you been bullied in the last 30 days in one or more of the following ways?" The response options for all items were (a) *it hasn't happened to me*, (b) *only once or twice*, (c) *two or three times a month*, (d) *about once a week*, and (e) *several times a week*. Cronbach's alpha for the study sample was .88.

Self-report items from the Self-Description Questionnaire-II (SDQII) were used to assess components of self-concept at the individual, peer, school, and family levels (Marsh, Ellis, Parada, Richards, & Heubeck, 2005). The SDQII consists of 40 items that measure general self-esteem (6 items), honesty (5 items), emotional stability (4 items), relationship quality with other girls (4 items), relationship quality with boys (4 items), parent relationships (4 items), and connection to school (4 items). General self-esteem items assessed the extent to which the girls perceived themselves as effective, capable, and proud of whom they are. Honesty items measured a student's self-perception of her honesty or trustworthiness by asking how often she lied, took things from others, kept promises, cheated, and told the truth. Items assessing emotional stability asked respondents to rate her level of nervousness or depression as well as how easily she became upset or worried. Items assessing relationship quality measured girls' perceptions of their popularity and their ease in making friends with other girls and boys. The parent relationship questions assessed how well the girl got along with her parents, whether she liked her parents, and the quality of her interactions with her parents. Last, items assessing the connection to school items asked whether the girl liked school in general, how much she enjoyed and looked forward to going to school, and how interesting she found her classes. Each item was assessed using a 6-point Likert scale, ranging from *false – not like me at all* to *true – this is very much like me*. Reliability estimates for the nine subscales ranged from .72 to .84 for this sample.

Analytic Method

Hierarchical multiple regression was used to evaluate the relationship between individual-, peer-, family-, and school-level characteristics on aggression among adolescent girls in the sample population. In hierarchical regression, variables are entered into the analysis in specified blocks or groups based on prior empirical evidence and theory. Statistical tests then estimate the significance of each added block of variables and determine the contribution of each block to the unique variance explained (Aron, Aron, & Coups, 2011).

For this study, we conducted separate regressions to analyze the relationships between each predictor and the four outcomes of interest: instrumental relational aggression (IRA), instrumental overt aggression (IOA), reactive relational aggression (RRA), and reactive overt aggression (ROA). All models were estimated in Mplus Version 5.2 (Muthén & Muthén, 2008) using full information maximum likelihood estimation (FIML). The percentage of missing data was low for all variables (< .5%) except for the relational and overt victimization items, which ranged from 2% to 4% missingness. Further testing conducted on these items (Little's MCAR test: $\chi^2 = 21.149$, $df = 14$, $p = .098$) revealed the data were missing completely at random. Thus, FIML is an appropriate estimation method (Carter, 2006). To account for the nested data structure as children were nested within schools, a cluster variable was specified (CLUSTER = SCHOOL) in the variable statement, which provided robust standard errors that accounted for the nested data structure (Antonakis, Bendahan, Jacquart, & Lalive, 2010; Lake, 2006; Stapleton, 2006). Although hierarchical linear modeling (HLM) is a commonly used technique for analyzing nested data, HLM was not used in this study because the small number of Level 2 units could produce biased parameter estimates and variance components (Bell, Ferron, & Kromrey, 2008; Maas & Hox, 2005; Scherbaum & Ferrer, 2009). For example, as reported in Bell et al. (2008), a simulation study conducted by Mok (1995) found that as few as five Level 2 units resulted in biased variance estimates.

Six blocks of variables were entered for each model. To control for differences by ethnicity, a dummy code was created for Latina (Y) or non-Latina (N) given the high percentage of Latina participants in the sample. Therefore, the first block entered into the model included the demographic variables of *age*,

participation in free or reduced-price lunch program, and *Latina status*. To obtain valid scores for each scale, the scale items were summed and divided by the number of nonmissing items. These mean scores were then entered into the models. Thus, individual-level variables were entered in Block 2, including the mean scores for general *self-esteem*, *honesty*, and *emotional stability*. The family-level factor, *relationship quality with parents*, was introduced in Block 3. Peer factors (*quality of relationships with boys* and *quality of relationships with other girls*, *overt victimization*, and *relational victimization*) and *school connectedness* were added to Blocks 4 and 5, respectively. Last, to test for moderation between Latina status and parental relationships, an interaction term was entered into Block 6. The increase in the coefficient of determination (R^2) was used to illustrate the relative improvement in the amount of variance explained in the outcomes as each block of variables was added into the analysis.

Results

Factors Associated with Reactive Overt Aggression (ROA)

Hierarchical regression results for reactive overt aggression (ROA) are provided in Table 1. As discussed previously, the first block of variables entered into the model included demographic characteristics; *age* was significantly related to ROA in only the first step. When the individual-level variables were added to the model in Step 2, a significant increase in R^2 occurred. Further, once the individual-level variables were entered, the *age* variable was no longer significant. The variable *honesty* was significantly related to ROA, indicating that higher levels of honesty were associated with decreased reactive overt aggression. The *parental relationships* variable added in Step 3 was not found to be significantly related to ROA. The addition of peer-level factors in Step 4 again resulted in a significant increase to R^2 . The variable for *quality of relationships with other girls* was significantly related to ROA, but the variable for *quality of relationships with boys* was not significant. The addition of the school-level indicator in Step 5 was significantly related to ROA and produced a significant improvement to the model. The interaction term added in Step 6 was not significant, and did not result in a significant improvement in R^2 . The final model explained 22.4% of the variance in reactive overt aggression.

Table 1
Hierarchical Regression Results for Reactive Overt Aggression

Predictors	Unstandardized coefficients (<i>b</i>)					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age	-.09 ***	-.04	-.04	-.05	-.04	-0.03
FRED	.06	-.03	-.04	-.04	-.04	-0.04
Latina	-.28	-.20	-.18	-.19	-.19	-0.87
General Self-Esteem		-.08	-.07	-.08 +	-.03	-0.03
Emotional Stability		.02	.02	.01	.01	0.01
Honesty		-.27 ***	-.25 ***	-.22 ***	-.20 ***	-0.21 ***
Relationships with Parents			-.05	-.05	-.05	-0.15
Relationships with Boys				.13	.14	0.15
Relationships with Other Girls				-.14 ***	-.12 ***	-0.12 ***
Relational Victimization				-.03	-.01	-0.01
Overt Victimization				-.02	.01	0.01
School Connectedness				.02	-.12 *	-0.11 *
Parents x Latina						0.15
R^2	.035	.130 ***	.136	.193 **	.212 *	0.224
R change		.095	.006	.057	.019	.012

FRED = Free and Reduced Lunch Participation * $p < .05$; ** $p < .01$; *** $p < .001$; + $p < .07$

Factors Associated with Reactive Relational Aggression (RRA)

Table 2 summarizes the results for reactive relational aggression (RRA). For each block of variables added to the model, age was found to be significantly related to RRA. There was a significant negative relationship between age and RRA indicating that older girls reported less reactive relational aggression. A significant increase in R^2 occurred when individual-level factors were added into the model in Block 2. Similar to results for ROA, the variable for *honesty* was found to be a significant predictor of RRA. Although the addition of the *parental relationships* variable in Step 3 did not significantly improve the model, the parent variable was a significant predictor of RRA. Similar to the ROA results, the variable for *quality of relationships with other girls* was significantly related to RRA, but the *quality of relationships with boys* was not. In contrast with the ROA findings, the variable for *relational victimization* was a significant predictor of RRA. The addition of peer-level factors resulted in a significant increase in R^2 . The school-level indicator added in Step 5 was found not to be significantly related to RRA. Similar to the ROA results, the interaction term added in Block 6 was not significant, and resulted in no improvement in R^2 . Once this interaction was added, *parental relationships* variable was no longer significant. The final model explained 27.4% of the variation in reactive relational aggression.

Factors Associated with Instrumental Overt Aggression (IOA)

Results for instrumental overt aggression (IOA) are provided in Table 3. As with the previous regression models, demographic variables were entered first and, as found with ROA, *age* was significantly related to IOA in Step 1 only. Unlike the two previous models, *Latina status* was significantly related to IOA in Step 1. Once individual-level factors were added in Step 2, a significant increase in R^2 occurred. The variable *honesty* was also significantly related to IOA, with participants who reported higher levels of honesty reporting lower IOA involvement. As with RRA, the *parental relationships* variable was added in Step 3 and was significantly related to IOA but did not result in a significant increase in R^2 . Peer-level variables that were added in Step 4 resulted in a significant improvement in the overall model. The variable for *quality of relationships other girls* was found to be a significant predictor of IOA, whereas the variable *quality of relationships with boys* approached significance ($p = .069$). As with reactive relational aggression, the school-level variable added in Step 5 was found not to be a significant predictor of IOA. In this model, the interaction term between Latina status and *parental relationships* was significant and resulted in a significant improvement in R^2 . Thus, the effect of *parental relationships* on IOA depends on whether a girl is Latina. The final model explained 25.8% of the variation in IOA.

Table 2
Hierarchical Regression Results for Reactive Relational Aggression

Predictors	Unstandardized coefficients (b)									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6				
Age	-.15 ***	-.11 ***	-.11 ***	-.11 **	-.11 ***	-.11 **				
FRED	.04	-.04	-.05	-.06	-.06	-.06				
Latina	-.10	-.03	-.01	-.01	-.01	-.01				
General Self-Esteem		-.06	-.05	-.04	-.05	-.05				
Emotional Stability		-.04	-.04	-.04	-.04	-.04				
Honesty		-.24 ***	-.22 ***	-.20 ***	-.20 ***	-.20 ***				
Relationships with Parents			-.06 *	-.06 *	-.06 *	-.06 *				
Relationships with Boys				.06	.06	.06				
Relationships with Other Girls				-.06 *	-.06 *	-.06 *				
Relational Victimization				.03 +	.03 **	.03 **				
Overt Victimization				.01	.01	.01				
School Connectedness					.01	.01				
Parents x Latina										
R^2	.059	.226 ***	.242	.274 *	.274	.274				
R change		.167	.016	.032	0	0				
FRED = Free and Reduced Lunch Participation * $p < .05$; ** $p < .01$; *** $p < .001$; + $p < .07$										

Table 3
Hierarchical Regression Results for Instrumental Overt Aggression

Predictors	Unstandardized coefficients (B)									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6				
Age	-.06 ***	-.03	-.03	-.04	-.03	-.03				
FRED	.04	-.03	-.04	-.04	-.04	-.04				
Latina	-.22 *	-.17 *	-.15 +	-.15 *	-.15 *	-.15 *				
General Self-Esteem		-.06	-.05	-.05	-.03	-.03				
Emotional Stability		.02	.03	.02	.02	.02				
Honesty		-.18 ***	-.16 ***	-.14 **	-.14 **	-.14 **				
Relationships with Parents			-.04 ***	-.04 ***	-.04 ***	-.04 ***				
Relationships with Boys				.07 +	.07 +	.07 +				
Relationships with Other Girls				-.08 ***	-.08 ***	-.08 ***				
Relational Victimization				.01	.01	.01				
Overt Victimization				.01	.01	.01				
School Connectedness					-.04	-.04				
Parents x Latina										
R^2	0.057	.170 ***	.180	.232 **	.237	.258				
R change		.113	.010	.052	.005	.021 *				
FRED = Free and Reduced Lunch Participation; * $p < .05$; ** $p < .01$; *** $p < .001$; + $p < .07$										

Factors Associated With Instrumental Relational Aggression (IRA)

Table 4 summarizes the results for instrumental relational aggression (IRA). Demographic characteristics were entered in the first step and *age* was found to be significantly related to IRA. Older girls had lower IRA scores. As found in the three previous analyses, the addition of individual-level factors in Step 2 of the

model led to a significant increase in R^2 . Variables for *general self-esteem* and *honesty* were significantly related to IRA. When the family-level variable was entered into the model in Step 3, a significant improvement occurred to the model. In addition, the *parent relationship* variable was significantly related to IRA. In other words, poor quality of parental relationships was significantly related to higher IRA

scores among this sample of study participants. Interestingly, IRA was not explained further by the addition of peer-level variables. Last, the school-level variable entered in Step 5 was not significantly related to IRA, which was consistent with the findings from

the RRA and IOA models. Although the interaction term approached significance ($p = .064$), the interaction did not produce a significant increase in R^2 . The final model accounted for 35.8% of the variation in IRA.

Table 4
Hierarchical Regression Results for Instrumental Relational Aggression

Predictors	Unstandardized coefficients (<i>b</i>)											
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Age	-.14	***	-.08	***	-.09	***	-.09	**	-.09	**	-.08	**
FRED	.08		-.01		-.02		-.04		-.04		-.04	
Latina	-.18		-.11		-.08		-.08		-.08		-.35	
General Self-Esteem			-.09	**	-.07	*	-.06	*	-.06		-.06	
Emotional Stability			.01		.01		.01		.01		0.01	
Honesty			-.24	***	-.23	***	-.21	***	-.21	***	-.21	***
Relationships with Parents					-.06	***	-.06	***	-.06	***	-.10	***
Relationships with Boys							.04		.04		0.04	
Relationships with Other Girls							-.05		-.05		-.05	
Relational Victimization							.01		.02		0.02	
Overt Victimization							.02		.02		0.02	
School Connectedness											-.01	
Parent x Latina									-.01		0.06	+
R^2	.082		.311	***	.326	*	.352		.358		0.358	
R change			.229		.015		.026		.006		0.000	

FRED = Free and Reduced Lunch Participation * $p < .05$; ** $p < .01$; *** $p < .001$; + $p < .1$

Discussion

Our investigation addressed an important gap in the literature because little research has examined patterns of risk and protection for the forms and functions of aggressive behavior among low-income minority girls, particularly Latinas. The findings of this investigation suggest several interesting patterns of risk and protection for each of the four subtypes of aggression. We hypothesized that the patterns of risk and protection would vary by the function of aggression because different social-information processing mechanisms underscore instrumental versus reactive aggression (Crick & Dodge, 1996). This research was guided by two hypotheses. First, we hypothesized that instrumental aggression would be predicted by greater levels of dishonest behavior, higher levels of relational and overt peer victimization, positive relationships with parents, and higher levels of school connectedness. Second, we hypothesized that reactive aggression would be predicted by lower levels of self-esteem, less emotional stability, lower quality of friendships with boys and girls, and less positive relationships with parents. We also investigated whether Latina status moderated the relationship between parental relationships and our four outcomes of interest.

Age was found to be a significant predictor of both types of relational aggression (i.e., reactive and instrumental) but neither type of overt aggression. Older girls were less likely to report relationally aggressive tendencies as compared with younger girls. Notably, participation in the free or reduced-price lunch program was not a significant predictor in any model. Although maternal level of education data, as a proxy for SES, were collected in the present study, participation in free or reduced-price lunch programs is a commonly used measure of SES among school-aged children. Given the high multicollinearity of the variable for *participation in free and reduced-price lunch* with the variable for *maternal education level*, the only indicator included in our initial models was that for the free and reduced-price lunch participation. However, the lunch program participation might not be the most appropriate indicator for SES. Thus, we reexamined each model and included the maternal level of education as our measure of SES by creating a dummy variable of *did not finish high school* as compared with all other categories. Interestingly, maternal level of education was also nonsignificant in each model. Future studies might need to consider comprehensive indicators of SES that are not solely self-reported by youth but verified by other data sources.

In all four models, the *honesty* variable was a significant predictor, suggesting that less honest behavior is associated with higher levels of aggression regardless of the form or function of the aggression. Although reactive aggression is theorized to relate to emotional problems (Vitaro & Brendgen, 2005), emotional stability was not a significant predictor of any outcome in the present study. General self-esteem was related only to instrumental relational aggression (IRA), despite prior evidence that demonstrated a link between lower levels of self-esteem and reactive aggression (Vitaro & Brendgen, 2005). However, self-esteem became nonsignificant as other variables were entered into the model. Evidence has suggested that the relationship between aggression and self-esteem is complex and that a child's attachment to his or her parents is likely to influence the relationship between aggression and self-esteem (Laible, Carlo, & Roesch, 2004). Given the unique cultural values and socialization practices in Latino/Latina families, investigating the role of self-esteem in aggressive behavior might be worthwhile in future research on Latina youth.

Previous research has noted that relationships with parents, or family cohesion, might be an important protective factor for Latina youth (Marsiglia et al., 2009). Moreover, social-information processing, including attributional processes and response decisions, might be context-specific and culture-dependent. Thus, the functions of aggression are thought to differ by race/ethnicity, social class, and gender (Halgunseth, Ispa, & Rudy, 2006). For example, prior evidence has suggested that values such as interdependence and familism, which are common in Latino/Latina families, might serve as filters through which social-information processing occurs (Halgunseth et al., 2006). Further, specific contextual issues, such as acculturative stress and socioeconomic pressure (Halgunseth et al., 2006), can influence the ways in which young Latinas process and respond to social information. In the present study, Latina status was a significant moderator of the relationship between the quality of parental relationships and IOA; further, Latina status approached significance for IRA. However, the link between parental relationships and reactive aggression was not moderated by Latina status. As previously noted, the underlying social-information processing deficits differ for reactive aggression as compared with instrumental aggression (Crick & Dodge, 1996; Dodge & Coie, 1987). Culture might play a bigger role in response decisions, and thus, affect instrumental aggression; however, additional research is needed in this area. Another possibility is that additional differences would have been identified if the analyses had used a multicategorical indicator of

race/ethnicity instead of the binary indicator of Latina versus non-Latina status.

Although prior evidence suggested that instrumental aggression was linked with positive parental relationships (Vitaro & Brendgen, 2005), our findings suggest potential differences in the way in which parental relationships affect instrumental aggression for Latinas as compared with non-Latina youth. Whereas instrumentally aggressive youth can be savvy manipulators of their interpersonal relationships (Hawley, 2003), and thus, have positive relationships with parents (Vitaro & Brendgen, 2005), this scenario might be the inverse for Latina youth. Conceivably, given the values of interdependence and familism that are common in Latino/Latina families, the resulting better quality relationships with parents might exert greater influence on reducing instrumentally aggressive behaviors for Latina youth as compared with non-Latina peers. Moreover, the quality of parental relationships appears to play a particularly important role for reducing risk of IOA. Socialization practices in Latino families often promote traditional gender role expectations to girls; accordingly, girls are regarded as more physically and emotionally dependent on their parents, and therefore, in need of greater protection (Kasturirangan & Williams, 2003; Raffaelli & Ontai, 2004; Rodríguez, 2003). Adherence to these traditional gender roles might reduce Latinas' risk for IOA. For example, feminist scholars (i.e., Brown, 2003; Brown & Gilligan, 1992) have asserted that girls' participation in overt forms of aggression can serve as a strategy for challenging traditional feminine norms. Potentially, Latina girls might be less willing to engage in overt aggression because that behavior goes against traditional feminine role expectations.

Despite prior evidence that aggressive girls (Moretti et al., 2005), particularly instrumentally aggressive girls (Little et al., 2003), were at heightened risk for peer victimization, relational victimization was a significant predictor *only* for RRA. Possibly, the peer rejection commonly experienced by reactively aggressive youth (Little et al., 2003) could be captured in the poor quality of relationships with girls found in the present study with RRA but also captured in these youth's experiences of relational victimization. Thus, reactive aggression, due to its association with hostile attributional biases, might be not only related to peer rejection by other girls but also to relational victimization. Although peer victimization was not associated with any other outcome, ROA and IOA were related to poor quality of relationships with other girls. Previous research has found that girls perceive aggression more negatively than boys (Salmivalli, Kaukiainen, & Lagerspetz, 2000). In theory, this negative perception is related to the fact that girls are

socialized around the importance of personal relationships (Brown, 2003) as well as gendered norms emphasizing cooperation and prosociality (Smith, Rose, & Schwartz-Mette, 2010). In particular, overt forms of aggression could be especially problematic for the quality of girls' relationships with other girls because such behaviors conflict with gendered norms.

In this study, the parameter estimates for relationships with boys were positive for both relational and overt aggression, although the estimates were not significant. Nonetheless, the direction of these effects was counterintuitive, especially given that researchers might expect girls' problematic relationships with boys—not positive relationships—to contribute to aggressive behavior. However, prior research has shown that relationally aggressive girls, not overtly aggressive girls, were more well-liked by boys (Salmivalli et al., 2000; Smith et al., 2010). As noted, many prior studies on aggressive behavior among girls have included few ethnic minorities. Different norms and values might contribute to aggression among minority adolescent girls and the ways in which overt *and* relational aggression are perceived by opposite-gender peers. Further research in this area would be valuable, given the lack of clarity of these complex relationships, particularly for ethnic minority girls.

The *school connectedness* variable was a significant predictor only for ROA in the present study despite prior evidence suggesting a relationship between aggressive behavior and lower school commitment among girls (Pepler & Craig, 2005). School connectedness might not be the only school-level variable relevant for aggressive behavior. Thus, future studies should assess other school outcomes such as academic performance and rates of truancy and dropout, which have been linked to aggressive behavior and bullying (Ma, Phelps, Lerner, & Lerner, 2009).

In sum, the findings of our study reveal several notable patterns of risk and protection for the different forms and functions of aggressive behavior among the sample of eighth-grade girls. Because the available research on aggression and peer victimization has seldom included the experiences of minority or low-income populations (Epstein et al., 2000; Storch et al., 2003), the understanding of the distinct patterns of risk and protection has been equally limited. The results of this investigation offer evidence to suggest a unique set of risk and protective factors exists that can be targeted in prevention and intervention strategies for ethnic minority girls, particularly Latinas, of lower income status.

Implications for Social Work and Directions for Future Research

Aggression is considered a multidimensional construct (Fite et al., 2008; Little et al., 2003); thus disentangling the forms from the functions offers greater distinction between the subtypes of aggression and enables researchers to examine unique sets of correlates (Fite et al., 2008). Our analyses revealed several interesting patterns of relationships for the four subtypes of aggression. However, several key relationships were found to be nonsignificant.

Notably, both measures of SES (i.e., maternal level of education and participation in free or reduced-price lunch programs) were nonsignificant in each of the four models. Although widely used, these kinds of self-report measures might not be the most appropriate measures to understand the complex intersection between individuals and their sociocultural contexts. An evolutionary perspective of aggressive behavior considers aggression as adaptive to certain sociocultural contexts (Hawley, 1999, 2003; Hawley et al., 2007) in which aggression is perceived as normative and adaptive for survival and necessary to gain the acceptance and approval of peers who value those behaviors (Aceves et al., 2010). Using comprehensive indicators of income status and data sources from multiple informants might better explicate these relationships and provide greater insight. Given our values and ethical commitments in social work to understanding the experiences of impoverished communities, further investigation of the ways in which problem behaviors become normative and adaptive in certain environmental contexts is a particularly relevant direction for future research.

Findings from this study revealed several interesting patterns of risk and protective factors found to predict aggression. For example, our findings suggest that a young Latina's positive relationships with her parents can serve as a powerful protective factor for instrumental aggression. In addition, generational status or level of acculturation appears to increase the risk for aggression and violence among Latino/Latina adolescents (Bui & Thongniramol, 2005; Smokowski & Bacallao, 2006; Smokowski et al., 2009); therefore, prevention intervention strategies that target young Latinos/Latinas and their families may be particularly relevant. Increasing family cohesion and strengthening parent-child attachment may be important factors in buffering against risk for certain kinds of aggression and counterbalancing the potentially detrimental effects of acculturation on Latina youth. Moreover, relationships with peers emerged as an important factor. Consistent with prior evidence, relationships with other girls appears to be negatively affected by aggressive behavior. Accordingly, targeting girls'

relationship-building skills with same-gender peers might be central to reducing aggressive behavior among girls.

The results of this investigation suggest that multiple domains in a girl's life can affect aggressive behavior, which is consistent with an ecological systems approach and with social work's person-in-environment perspective. Thus, interventions are likely to be most effective when strategies are tailored to address environmental factors as well as targeted to enhance family functioning, such as parent-child attachment and family cohesion, as well as peer relationships.

Study Limitations

It is important to note several limitations in the present study. First, the cross-sectional data used in this analysis provide only a single point-in-time examination of aggression. A cross-sectional study does not allow researchers to fully understand the ways in which developmental processes affect the different forms and functions of aggression. Moreover, cross-sectional data limit our ability to understand whether these correlates operate as precursors or consequences of aggressive behavior.

Second, parental consent rates for study participation varied across schools. Students who returned their consent forms may differ from students who did not.

Third, self-report data is limited in part because of social desirability bias. Given this bias, participants might have knowingly or unknowingly underreported their aggressive behavior.

Fourth, several interrelated issues are present due to the high percentage of Latina youth in the sample; however, these issues (e.g., acculturation status, level of assimilation, degree of familism, presence or absence of key family members, generational status, immigration status, neighborhood-level integration) were not assessed in the present study. For example, acculturation is thought to influence the ways in which norms and values are communicated within Latino/Latina families (Zayas et al., 2010), and as such, acculturation might increase risk for aggressive and violent behavior among Latino/Latina youth (Bui & Thongniramol, 2005; Smokowski & Bacallao, 2006; Smokowski et al., 2009). Future research on aggression must assess elements of ethnic identity and culture for Latina youth and their parents to refine the

current understanding of aggressive behavior among diverse populations and the impact of U.S. cultural involvement as a risk factor.

Another study limitation was that participants did not indicate a specific culture-of-origin beyond the broad ethnic category of Latina. In addition, participants did not indicate whether they were native to the United States and fluent in English as compared with foreign-born, English-language learners. Intervention and prevention strategies would be strengthened for Latino/Latina youth and their families by further explicating cultural differences in the patterns of risk and protection across Latino/Latina subgroups.

Conclusion

Despite these limitations, the results of this study make a meaningful contribution to the knowledge base by revealing interesting patterns of risk and protection that might, in part, be a function of key cultural differences. Given that little research to date has explored both the forms and functions of aggression among diverse populations, this study adds to the understanding of important correlates for the different subtypes of aggression. In particular, understanding significant risk and protective factors at the individual, family, peer, and community levels can be particularly helpful and relevant for refining prevention and intervention efforts. Thus, the study's findings offer further considerations of culturally relevant, gender-specific malleable risk and protective factors and contribute to the precision of prevention and intervention strategies for low-income minority adolescent girls.

Author Note

Anne Williford is an assistant professor in the School of Social Welfare, University of Kansas.

Kathryn J. DePaolis is a graduate research assistant in the School of Social Welfare, University of Kansas: kdku91@ku.edu

Correspondence regarding this article should be directed to Dr. Anne Williford, University of Kansas School of Social Welfare, 1545 Lilac Lane, Lawrence, KS 66045-3129 or via e-mail at awilliford@ku.edu

This research was supported with funding from the University of Denver, Graduate School of Social Work.

References

- Aceves, M. J., Hinshaw, S. P., Mendoza-Denton, R., & Page, Gould, E. (2010). Seek help from teachers or fight back? Student perceptions of teachers' actions during conflicts and responses to peer victimization. *Journal of Youth and Adolescence*, *39*, 658-669. doi:10.1007/s10964-009-9441-9
- Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2010). On making causal claims: A review and recommendations. *Leadership Quarterly*, *21*, 1086-1120. doi:10.1016/j.leaqua.2010.10.010
- Aron, A., Aron, E. N., & Coups, E. (2011). *Statistics for the behavioral and social sciences: A brief course* (5th ed.). Boston, MA: Pearson Education.
- Bell, B. A., Ferron, J. M., & Kromrey, J. D. (2008, August). Cluster size in multilevel models: The impact of sparse data structures on point and interval estimates in two-level models. *Proceedings of the Joint Statistical Meetings*. Retrieved from <http://www.amstat.org/sections/srms/proceedings/y2008/Files/300933.pdf>
- Bender, D., & Losel, F. (1997). Protective and risk effects of peer relations and social support on antisocial behaviour in adolescents from multi-problem milieus. *Journal of Adolescence*, *20*, 661-678. doi:10.1006/jado.1997.0118
- Blum, R. W. (1998). Healthy youth development as a model for youth health promotion. *Journal of Adolescent Health*, *22*, 368-375. doi:10.1016/S1054-139X(97)00261-9
- Bowen, G. L., Rose, R. A., Powers, J. D., & Glennie, E. J. (2008). The joint effects of neighborhoods, schools, peers, and families on changes in the school success of middle school students. *Family Relations*, *57*, 504-516. doi:10.1111/j.1741-3729.2008.00518.x
- Brock, S. E., Nickerson, A. B., O'Malley, M. D., & Chang, Y. (2006). Understanding children victimized by their peers. *Journal of School Violence*, *5*, 3-18. doi:10.1111/j.1741-3729.2008.00518.x
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (1986). Ecology of the family as a context to human development: Research perspectives. *Developmental Psychology*, *22*, 723-742. doi:10.1037/0012-1649.22.6.723
- Bronfenbrenner, U. (Ed.). (2005). *Making human beings human: Bioecological perspectives on human development*. Thousand Oaks, CA: Sage.
- Brown, L. M. (2003). *Girlfighting: Betrayal and rejection among girls*. New York, NY: New York University Press.
- Brown, L. M., & Gilligan, C. (1992). *Meeting at the crossroads: Women's psychology and girls' development*. Cambridge, MA: Harvard University Press.
- Bui, H. N., & Thongniramol, O. (2005). Immigration and self-reported delinquency: The interplay of immigration generations, gender, race, and ethnicity. *Journal of Crime and Justice*, *28*, 71-99. doi:10.1080/0735648X.2005.9721639
- Carter, R. L. (2006). Solutions for missing data in structural equation modeling. *Research & Practice in Assessment*, *1*, 1-6. Retrieved from <http://www.rpajournal.com/dev/wp-content/uploads/2012/05/A1.pdf>
- Cillessen, A. H. N., Jiang, X. L., West, T. V., & Laszkowski, D. K. (2005). Predictors of dyadic friendship quality in adolescence. *International Journal for the Study of Behavioral Development*, *29*, 165-172. doi:10.1080/01650250444000360
- Colorado Department of Education. (2007). *Fall 2007 pupil membership*. Retrieved from <http://www.cde.state.co.us/cdereval/rv2007pmlinks.htm>
- Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child Development*, *67*, 2317-2327. doi:10.2307/1131625
- Crick, N. R., & Dodge, K. A. (1996). Social-information processing mechanisms in reactive and proactive aggression. *Child Development*, *67*, 993-1002. doi:10.2307/1131875
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*, 710-722. doi:10.2307/1131945
- Crick, N. R., & Werner, N. E. (1998). Response decision processes in relational and overt aggression. *Child Development*, *69*, 1630-1639. doi:10.1111/j.1467-8624.1998.tb06181.x
- Dodge, K. A. (1991). The structure and function of reactive and proactive aggression. In D. J. Pepler & K.H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 201-218). Hillsdale, NJ: Lawrence Erlbaum.
- Dodge, K. A., & Coie, J. D. (1987). Social-information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, *53*, 1146-1158. doi:10.1037/0022-3514.53.6.1146

- Entwisle, D. R., & Astone, N. M. (1994). Some practical guidelines for measuring youth's race/ethnicity and socioeconomic status. *Child Development, 65*, 1521-1540. doi:[10.2307/1131278](https://doi.org/10.2307/1131278)
- Epstein, J. A., Botvin, G. J., Diaz, T., Williams, C., & Griffin, K. (2000). Aggression, victimization, and problem behavior among inner-city minority adolescents. *Journal of Child & Adolescent Substance Abuse, 9*, 51-66. doi:[10.1300/J029v09n03_04](https://doi.org/10.1300/J029v09n03_04)
- Estrada-Martínez, L. M., Padilla, M. B., Caldwell, C. H., & Schulz, A. J. (2011). Examining the influence of family environments on youth violence: A comparison of Mexican, Puerto Rican, Cuban, Non-Latino Black, and Non-Latino White adolescents. *Journal of Youth and Adolescence, 40*, 1039-1051. doi:[10.1007/s10964-010-9624-4](https://doi.org/10.1007/s10964-010-9624-4)
- Fite, P. J., Stauffacher, K., Ostrov, J. M., & Colder, C. R. (2008). Replication and extension of Little et al.'s (2003) forms and functions of aggression measure. *International Journal of Behavioral Development, 32*, 238-242. doi:[10.1177/0165025408089273](https://doi.org/10.1177/0165025408089273)
- Gendreau, P. L. & Archer, J. (2005). Subtypes of aggression in humans and animals. In R.E. Tremblay, W.W. Hartup, & J. Archer (Eds.), *Developmental origins of aggression* (pp. 25-46). New York, NY: Guilford Press.
- Graham, S., Hudley, C., & Williams, E. (1992). Attributional and emotional determinants of aggression among African-American and Latino young adolescents. *Developmental Psychology, 28*, 731-740. doi:[10.1037/0012-1649.28.4.731](https://doi.org/10.1037/0012-1649.28.4.731)
- Halgunseth, L. C., Ispa, J. M., & Rudy, D. (2006). Parental control in Latino families: An integrated review of the literature. *Child Development, 77*, 1282-1297. doi:[10.1111/j.1467-8624.2006.00934.x](https://doi.org/10.1111/j.1467-8624.2006.00934.x)
- Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review, 19*, 97-132. doi:[10.1006/drev.1998.0470](https://doi.org/10.1006/drev.1998.0470)
- Hawley, P. H. (2003). Prosocial and coercive configurations of resource control in early adolescence: A case for the well-adapted Machiavellian. *Merrill-Palmer Quarterly, 49*, 279-309. doi:[10.1353/mpq.2003.0013](https://doi.org/10.1353/mpq.2003.0013)
- Hawley, P. H., Little, T. D., & Rodkin, P. (Eds.). (2007). *Aggression and adaptation: The bright side to bad behavior*. Hillsdale, NJ: Lawrence Erlbaum.
- Herrenkohl, T. I., Aisenberg, E., Williams, J. H., & Jenson, J. M. (2011). *Violence in context: Current evidence on risk, protection, and resilience*. New York, NY: Oxford University Press.
- Juvonen, J., & Ho, A.Y. (2008). Social motives underlying antisocial behavior across middle schools. *Journal of Youth Adolescence, 37*, 747-756. doi:[10.1007/s10964-008-9272-0](https://doi.org/10.1007/s10964-008-9272-0)
- Kasturirangan, A., & Williams, E. N. (2003). Counseling Latina battered women: A qualitative study of the Latina perspective. *Journal of Multicultural Counseling and Development, 31*, 162-178. doi: [10.1002/j.2161-1912.2003.tb00541.x](https://doi.org/10.1002/j.2161-1912.2003.tb00541.x)
- Kim-Cohen, J., Moffitt, T.E., Caspi, A., & Taylor, A. (2004). Genetic and environmental processes in young children's resilience and vulnerability to socioeconomic deprivation. *Child Development, 75*, 651-668. doi:[10.1111/j.1467-8624.2004.00699.x](https://doi.org/10.1111/j.1467-8624.2004.00699.x)
- Lac, A., Unger, J. B., Basáñez, T., Ritt-Olson, A., & Soto, D. W. (2011). Marijuana use among Latino adolescents: Gender differences in protective familial factors. *Substance Use & Misuse, 46*, 644-655. doi:[10.3109/10826084.2010.528121](https://doi.org/10.3109/10826084.2010.528121)
- Laible, D. J., Carlo, G. & Roesch, S. C. (2004). Pathways to self-esteem in late adolescence: The role of parent and peer attachment, empathy, and social behaviors. *Journal of Adolescence, 27*, 703-716. doi:[10.1016/j.adolescence.2004.05.005](https://doi.org/10.1016/j.adolescence.2004.05.005)
- Lake, E. T. (2006). Multilevel models in health outcome research Part II: Statistical and analytic issues. *Applied Nursing Research, 19*, 113-115. doi:[10.1016/j.apnr.2006.01.001](https://doi.org/10.1016/j.apnr.2006.01.001)
- Little, T. D., Brauner, J., Jones, S. M., Nock, M. K., & Hawley, P. H. (2003). Rethinking aggression: A typological examination of the functions of aggression. *Merrill-Palmer Quarterly, 49*, 343-369. doi:[10.1353/mpq.2003.0014](https://doi.org/10.1353/mpq.2003.0014)
- Little, T. D., Jones, S. M., Henrich, C. C., & Hawley, P. H. (2003). Disentangling the "whys" from the "whats" of aggressive behavior. *International Journal of Behavioral Development, 27*, 122-133. doi:[10.1080/01650250244000128](https://doi.org/10.1080/01650250244000128)
- Ma, L., Phelps, E., Lerner, J. V., & Lerner, R. M. (2009). Academic competence for adolescents who bully and who are bullied: Findings from the 4-H Study of Positive Youth Development. *Journal of Early Adolescence, 29*, 862-897. doi:[10.1177/0272431609332667](https://doi.org/10.1177/0272431609332667)
- Maas, C. J. M., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology: European Journal of Research Methods for the*

- Behavioral & Social Sciences, 1*, 85-91.
[doi:10.1027/1614-2241.1.3.85](https://doi.org/10.1027/1614-2241.1.3.85)
- Marsh, H. W., Ellis, L. A., Parada, R. H., Richards, G., & Heubeck, B. G. (2005). A short version of the Self-Description Questionnaire II: Operationalizing criteria for short-form evaluation with new applications of confirmatory factor analyses. *Psychological Assessment, 17*, 81-102.
[doi:10.1037/1040-3590.17.1.81](https://doi.org/10.1037/1040-3590.17.1.81)
- Marsiglia, F. F., Parsai, M., & Kulis, S. (2009). Effects of familism and family cohesion on problem behaviors among adolescents in Mexican immigrant families in the Southwest United States. *Journal of Ethnic and Cultural Diversity in Social Work, 18*, 203-220.
[doi:10.1080/15313200903070965](https://doi.org/10.1080/15313200903070965)
- McKnight, K. & Putallaz, M. (2005). Commentary: A relationship focus on girls' aggressiveness and conduct disorder. In D. J. Pepler, K. C. Madsen, C. Webster, & K. S. Levene (Eds.), *The development and treatment of girlhood aggression*. (pp. 47-52). Mahwah, NJ: Lawrence Erlbaum.
- McNulty, T. L., & Bellair, P. E. (2003). Explaining racial and ethnic differences in serious adolescent violent behavior. *Criminology, 41*, 709-748.
[doi:10.1111/j.1745-9125.2003.tb01002.x](https://doi.org/10.1111/j.1745-9125.2003.tb01002.x)
- Miller-Johnson, S., Moore, B. L., Underwood, M. K., & Coie, J. D. (2005). African-American girls and physical aggression: Does stability of childhood aggression predict later negative outcomes? In D.J. Pepler, K. C. Madsen, C. Webster, & K.S. Levene (Eds.), *The development and treatment of girlhood aggression*. (pp. 75-95). Mahwah, NJ: Lawrence Erlbaum.
- Moretti, M. M., Catchpole, R. E. H., & Odgers, C. (2005). The dark side of girlhood: Recent trends, risk factors, and trajectories to aggression and violence. *Canadian Child and Adolescent Psychiatry Review, 14*, 21-25. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2538724/pdf/0140021.pdf>
- Moretti, M. M., Holland, R., & McKay, S. (2001). Self-other representations and relational and overt aggression in adolescent girls and boys. *Behavioral Sciences & the Law, 19*, 109-126.
[doi:10.1002/bsl.429](https://doi.org/10.1002/bsl.429)
- Muthén, L., & Muthén, B. (2008). *Mplus Version 5.2*. Los Angeles, CA: Muthén & Muthén.
- Olweus, D. (1996). *The revised Olweus Bully/Victim Questionnaire for students*. Bergen, Norway: University of Bergen. Retrieved from <http://vinst.umdnj.edu/VAID/TestReport.asp?Code=ROBVQ>
- Owens, L., Shute, R., & Slee, P. (2000). "Guess what I just heard!": Indirect aggression among teenage girls in Australia. *Aggressive Behavior, 26*, 67-83.
[doi:10.1002/\(SICI\)1098-2337\(2000\)26:1<67::AID-AB6>3.0.CO;2-C](https://doi.org/10.1002/(SICI)1098-2337(2000)26:1<67::AID-AB6>3.0.CO;2-C)
- Paul, J., & Cillessen, A. (2003). Dynamics of peer victimization in early adolescence: Results from a four-year longitudinal study. *Journal of Applied School Psychology, 19*, 25-43.
[doi:10.1300/J008v19n02_03](https://doi.org/10.1300/J008v19n02_03)
- Pepler, D., & Craig, W. (2005). Aggressive girls on troubled trajectories: A developmental perspective. In D. J. Pepler, K. C. Madsen, C. Webster, & K. S. Levene, (Eds.), *The development and treatment of girlhood aggression*. (pp. 3-28). Mahwah, NJ: Lawrence Erlbaum
- Prinstein, M. J., Boergers, J., & Vernberg, E. M. (2001). Overt and relational aggression in adolescents: Social-psychological adjustment of aggressors and victims. *Journal of Clinical Child & Adolescent Psychology, 30*, 479-491.
[doi:10.1207/S15374424JCCP3004_05](https://doi.org/10.1207/S15374424JCCP3004_05)
- Putallaz, M., Grimes, C. L., Foster, K. J., Kupersmidt, J. B., Coie, J. D., & Dearing, K. (2007). Overt and relational aggression and victimization: Multiple perspectives within the school setting. *Journal of School Psychology, 45*, 523-547. [doi:10.1016/j.jsp.2007.05.003](https://doi.org/10.1016/j.jsp.2007.05.003)
- Raffaelli, M. & Ontai, L.L. (2004). Gender socialization in Latino/a families: Results from two retrospective studies. *Sex Roles, 50*, 287-299.
[doi:10.1023/B:SERS.0000018886.58945.06](https://doi.org/10.1023/B:SERS.0000018886.58945.06)
- Richman, J. M., & Fraser, M. W. (2001). Resilience in childhood: The role of risk and protection. In J. M. Richman & M. W. Fraser (Eds.), *The context of youth violence: Resilience, risk, and protection*. (pp. 1-12). Westport, CT: Praeger.
- Rutter, M. (2001). Psychosocial adversity: Risk, resilience, and recovery. In J. M. Richman & M. W. Fraser (Eds.), *The context of youth violence: Resilience, risk, and protection*. (pp. 13-42). Westport, CT: Praeger.
- Rodriguez, T. D. (2003). School social context effects on gender differences in academic achievement among second-generation Latinos. *Journal of Hispanic Higher Education, 2*, 30-45.
[doi:10.1177/1538192702238725](https://doi.org/10.1177/1538192702238725)
- Salmivalli, C., Kaukiainen, A., & Lagerspetz, K. (2000). Aggression and sociometric status among peers: Do gender and type of aggression matter? *Scandinavian Journal of Psychology, 41*, 17-24.
[doi:10.1111/1467-9450.00166](https://doi.org/10.1111/1467-9450.00166)

- Scherbaum C. A., & Ferreter, J. M. (2009). Estimating statistical power and required sample sizes for organizational research using multilevel modeling. *Organizational Research Methods, 12*, 347-367. [doi:10.1177/1094428107308906](https://doi.org/10.1177/1094428107308906)
- Smith, R. L., Rose, A. J., & Schwartz-Mette, R. A. (2010). Relational and overt aggression in childhood and adolescence: Clarifying mean-level gender differences and associations with peer acceptance. *Social Development, 19*, 243-269. [doi:10.1111/j.1467-9507.2009.00541.x](https://doi.org/10.1111/j.1467-9507.2009.00541.x)
- Smokowski, P. R., & Bacallao, M. L. (2006). Acculturation and aggression in Latino adolescents: A structural model focusing on cultural risk factors and assets. *Journal of Abnormal Child Psychology, 34*, 659-673. [doi:10.1007/s10802-006-9049-4](https://doi.org/10.1007/s10802-006-9049-4)
- Smokowski, P. R., Buchanan, R.L., & Bacallao, M. (2009). Acculturation and adjustment in Latino adolescents: How cultural risk factors and assets influence multiple domains of adolescent mental health. *Journal of Primary Prevention, 30*, 371-394. [doi:10.1007/s10935-009-0179-7](https://doi.org/10.1007/s10935-009-0179-7)
- Smokowski, P. R., David-Feron, C., & Stroupe, N. (2009). Acculturation and violence in minority adolescents: A review of the empirical literature. *Journal of Primary Prevention, 30*, 215-263. [doi:10.1007/s10935-009-0173-0](https://doi.org/10.1007/s10935-009-0173-0)
- Snyder, H. N., & Sickmund, M. (2006). *Juvenile offenders and victims: 2006 national report*. Washington, DC: U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention. Retrieved from <http://www.ojjdp.gov/ojstatbb/nr2006/downloads/NR2006.pdf>
- Stapleton, L. M. (2006). Using multilevel structural equation modeling techniques with complex sample data. In G. R. Hancock & R. O. Mueller, *Structural equation modeling: A second course* (pp. 345-384). Greenwich, CT: Information Age.
- Steinberg, L. (2005). *Adolescence* (7th ed.). New York, NY: McGraw Hill.
- Storch, E. A., Nock, M. K., Masia-Warner, C., & Barlas, M. E. (2003). Peer victimization and social-psychological adjustment in Hispanic and African-American children. *Journal of Child and Family Studies, 12*, 439-452. [doi:10.1023/A:1026016124091](https://doi.org/10.1023/A:1026016124091)
- Sullivan, T. N., Farrell, A. D., & Kliever, W. (2006). Peer victimization in early adolescence: Association between physical and relational victimization and drug use, aggression, and delinquent behaviors among urban middle school students. *Development and Psychopathology, 18*, 119-137. [doi:10.1017/S095457940606007X](https://doi.org/10.1017/S095457940606007X)
- U.S. Census Bureau (2007). *2007 Census*. Retrieved from <http://www.census.gov/>
- Vega, W. A., Alderete, E., Kolody, B., Aguilar-Gaxiola, S. (1998). Illicit drug use among Mexican Americans in California: Effects of gender and acculturation. *Addiction, 93*, 1839-1850. [doi:10.1046/j.1360-0443.1998.931218399.x](https://doi.org/10.1046/j.1360-0443.1998.931218399.x)
- Vitaro, F., & Brendgen, M. (2005). Proactive and reactive aggression: A developmental perspective. In R. E. Tremblay, W. W. Hartup, & J. Archer (Eds.), *Developmental origins of aggression* (pp. 178-201). New York, NY: Guilford Press.
- Xie, H., Farmer, T. W., & Carns, B. D. (2003). Different forms of aggression among inner-city African-American children: Gender, configurations, and school social networks. *Journal of School Psychology, 41*, 355-375. [doi:10.1016/S0022-4405\(03\)00086-4](https://doi.org/10.1016/S0022-4405(03)00086-4)
- Zayas, L., Gulbas, L. E., Fedoravicius, N., & Cabassa, L. J. (2010). Patterns of distress, precipitating events, and reflections on suicide attempts by young Latinas. *Social Science & Medicine, 70*, 1773-1779. [doi:10.1016/j.socscimed.2010.02.013](https://doi.org/10.1016/j.socscimed.2010.02.013)
- Zimmer-Gemback, M. J., Geiger, T.C., & Crick, N. R. (2005). Relational and physical aggression, prosocial behavior, and peer relations: Gender moderation and bidirectional associations. *Journal of Early Adolescence, 25*, 421-452. [doi:10.1177/0272431605279841](https://doi.org/10.1177/0272431605279841)

Submitted: February 16, 2012
 Revision submitted: May 15, 2012
 Revision submitted: July 5, 2012
 Accepted: July 6, 2012
 Published online: August 28, 2012

APA Citation for this article:

Williford, A., & DePaolis, K. J. (2012). Identifying predictors of instrumental and reactive aggression among low-income, minority adolescent girls. *Journal of the Society for Social Work and Research, 3*, 145- 161. [doi:10.5243/jsswr.2012.10](https://doi.org/10.5243/jsswr.2012.10)