Published in final edited form as:

Int Perspect Psychol. 2013 October 1; 2(4): . doi:10.1037/a0034533.

Gender Differences in Predictors of Self-Reported Physical Aggression: Exploring Theoretically Relevant Dimensions among Adolescents from Santiago, Chile

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Abstract

Research findings remain unclear on whether different factors predict aggression for adolescent men and women. Given that aggression research is rarely conducted with Latin American populations, the current study used multiple imputation and linear regression to assess gender differences in levels and predictors of self-reported physical aggression among a community sample of young (ages 11 through 17) men ($n=504$) and women ($n = 471$) from Santiago, Chile. Results revealed that adolescent women reported engaging in higher levels of physical aggression than men. The variables found to be significantly associated with higher levels of reported aggression—younger age, less family involvement, less parental control, less positive relationships with caregivers, having more friends who act out and use substances, having fewer friends committed to learning, presence of dating violence, and more exposure to neighborhood crime—were not moderated by gender, implying that similar factors are related to aggression in adolescent men and women from Chile. Implications for prevention and intervention efforts to address high-risk adolescents and reduce aggression among Chilean youth are discussed.

Keywords

aggression; gender differences; Latin America; Chile; adolescent

The development of aggressive and delinquent behavior during adolescence is a major concern. Adolescent aggression has been linked to a number of problems during youth, including poor school achievement (Ferguson, San Miguel, & Hartley, 2009) and has been associated with poor outcomes across many domains of life during adulthood such as higher rates of criminal behavior, lower levels of occupational prestige, more marital problems, and more health concerns (Huesmann, Dubow, & Boxer, 2009). Until recently, much of the literature on aggression has focused on young men. This is in part due to a wealth of studies that have reported higher rates of aggression among men in middle childhood and adolescence (Loukas, Paylos, & Robinson, 2005). However, interest has recently shifted to examining the development of aggression in adolescent women, as studies have begun to document what appears to be a closing of the gender gap in physical aggression by mid adolescence (Blitstein, Murray, Lytle, Birnbaum, & Perry, 2005; Clubb et al., 2001; Nichols, Graber, Brooks-Gunn, & Botvin, 2006; Odgers & Moretti, 2002). The current study extends

this research by examining rates of self-reported physical aggression among adolescent men and women in Santiago, Chile and investigating potential gender differences in predictors of physical aggression.

The development of aggression during adolescence is a complex process that results from a confluence of many individual, family, peer and community factors. While there is a debate in the literature over whether there are differential pathways for the development of aggression between genders (Moffitt & Caspi, 2001), a number of characteristics have been identified that place individuals at a greater risk for being aggressive. The investigation of risk factors associated with physical aggression during development can be guided by Problem Behavior Theory (Jessor & Jessor, 1977; Jessor, 2008). Problem Behavior Theory posits that youth problem behavior stems from the interaction and balance of risk and protective factors within three major systems: the perceived-environment system, the personality system, and the behavior system. Explanatory variables in each system are categorized as either risk factors, which heighten the probability of youth engaging in problem behavior, or protective factors, which buffer youth involvement in problem behavior (Jessor & Jessor, 1977). According to this framework, variables in the perceived-environment system include social models and support such as relationships with deviant peers, peer substance use, and perceived parental control and support (Jessor & Jessor, 1977). The personality system is made up of variables that reflect youths' values, beliefs and expectations such as religiosity, while the behavior system is comprised of variables that assess youth involvement in problem behavior (Jessor & Jessor, 1977; Jessor, Turbin, & Costa, 1998).

Problem Behavior Theory suggests that certain peer and family characteristics in the perceived-environment system are associated with an increased propensity for aggressive behavior among youth. For example, higher levels of engagement with delinquent peers who model problem behavior, including those who use substances, have been linked to aggression (Ferguson et al., 2009; Herrenkohl et al., 2003; Jessor et al., 1998). Experiencing dating violence or being physically injured or threatened by a partner during adolescence has also been associated with the aggressive behavior (Williams, Connolly, Pepler, Craig, & Laporte, 2008). Conversely, low peer approval of problem behavior and modeling of positive peer behavior, including association with peers who are committed to learning, has been associated with decreased youth aggression (Jessor et al., 1998).

Research within a Latin American context has suggested that high levels of conflict at home and a negative relationship with a parental figure may be particularly important in the development of aggressive youth behavior among Latin American families due to a cultural emphasis on family (Coatsworth et al., 2000; Loukas & Prellow, 2004). Similar to what has been documented with other populations, research with Chilean adolescents has revealed that poorer relationships with parents, particularly mothers, are associated with a number of problem behaviors, including involvement in gang and individual fights (Florenzano et al., 2009). Additionally, low parental control and family involvement have been associated with a heightened risk for physical aggression during adolescence (Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Loukas et al., 2005). Parental monitoring also appears to be important for Chilean youth. In particular, lower levels of parental supervision have been associated with higher rates of self-reported aggression among Chilean adolescents (Bares, Andrade, Delva, & Grogan-Kaylor, 2011) and higher reported levels of physical fighting among Chilean school-aged youth (Rudatsikira, Muula, & Siziya, 2008). Additional risk factors within the perceived-environment system including living in high crime or violent neighborhoods (Vanfossen, Brown, Kellam, Sokoloff, & Doering, 2010) and poor teacher-child relationship (O'Connor, Dearing, & Collins, 2010) have also been associated with aggression among adolescents.

Gender differences in rates of physical aggression

Research has often demonstrated that adolescent men are more likely to engage in overt physical aggression when compared to women possibly because men are more likely to be socialized to aggressive roles earlier (Coie & Dodge, 1998; Lansford et al., 2010; Nichols et al., 2006). However, recent literature suggests that delinquency and aggression reported among adolescent women have been steadily rising over the past decade which has shrunk the gender gap of physical aggression among men and women (Nichols et al., 2006; Odgers & Moretti, 2002). In fact, studies utilizing samples of high-risk urban minority youth have documented elevated rates of physical aggression among women, as well as what appears to be a steeper increase in reports of aggression throughout adolescence in women when compared to men (Blitstein et al., 2005; Nichols et al., 2006).

Despite these findings, the few studies that have examined aggression among Latin American adolescents suggest that males still report higher rates of physical aggression than females. For example, one recent study of Colombian youth found that twice as many boys than girls reported being physically aggressive in the last 30 days (Lansford et al., 2012). Similarly, Florenzano and colleagues' (2009) study of Chilean secondary [high school] students found that significantly more men than women reported engaging in gang fights (16% vs. 4%), individual fights (10% vs. 3%), and had been in a fight at school (20% vs. 10%). Another study of adolescents in Chile found that men were almost four times as likely to report being in a physical fight than women (Rudatsikira et al., 2008). Importantly, although this study found that more men reported being in a physical fight than women, one-year prevalence rates of engaging in a physical fight were considerably high (27%) among women (Rudatsikira et al., 2008).

Gender differences in predictors of physical aggression

Studies that have examined gender differences in risk factors of aggression report conflicting results. Some studies document gender differences in the predictors and trajectories of development. In particular, Broidy et al. (2003) found that chronic physical aggression during childhood is significantly associated with the likelihood of continued physical violence during adolescence and early adulthood in adolescent men but not in women. Another study replicated this finding, suggesting that childhood physical aggression is a stronger risk factor for men than women (Huesmann et al., 2009). Other studies suggested that cumulative social risk factors alone accounted for persistent aggression in youth for women, whereas the combination of social risk factors, biological risk factors and their interaction resulted in persistent aggression for men (Brennan, Hall, Bor, Najman, & Williams, 2003). Moffitt (1993) suggests that women are more likely to delay the onset of aggressive behavior than men. Further research has supported the idea that different protective factors exist for adolescent men and women. In particular, the presence of a warm, supportive mother may be more important in preventing violent behavior for adolescent women than for men (Blitstein et al., 2005). Interestingly, research utilizing a Chilean sample of adolescents found that less positive relationships with mothers were associated with higher levels of reported aggression for women than men (Bares et al., 2011).

Other studies examining predictors of physical aggression (Martino, Ellickson, Klein, McCaffrey, & Orlando Edelen, 2008; Moffitt & Caspi, 2001) and risk and protective factors for aggression (Connor, Steingard, Andersen, & Melloni, 2003; Nichols et al., 2006) report few to no differences between genders (Connor, Steingard, Andersen, & Melloni, 2003; Nichols et al., 2006). The results of these studies imply that the pathways and processes involved in the development of physical aggression among youth are similar across genders

(eg. Moffitt & Caspi, 2001). As Moffitt, Caspi, Rutter, and Silva (2001) and Nichols and colleagues (2006) acknowledge, the variation in findings is likely due to differences in study design. Many studies fail to formally test gender differences and instead run models separately for men and women, leading some to conclude that findings of gender differences may not be robust (Nichols et al., 2006). Given these inconclusive findings, it is currently unclear whether the risk factors that predict aggression among adolescents are similar for men and women.

Current Study

Although research on the rates and predictors of adolescent aggression in cross-cultural contexts has burgeoned in the last decade (see Jessor, 2008), relatively few studies have examined risk factors of physical aggression among youth in Chile. This is concerning considering that in recent years adolescent drug use and problem behaviors including violence and gang involvement have been on the rise in Chile (CICAD, 2006; Cruz, 2000; UNOCD, 2009). Although Santiago, Chile, has one of the lowest rates of violence and crime in comparison to other major cities in Latin America (Orpinas, 1999), recent studies have shown that illicit drug trafficking and consumption among adolescents has increased throughout Chile (Blum & Nelson-Mmari, 2004), particularly in poorer, urban neighborhoods (CONACE, 2008). Many of these neighborhoods are also experiencing a rise in gang violence as a result of drug trafficking (CONACE, 2008).

School violence has also been noted as a major issue in urban Chilean cities, and particularly in Santiago. One study of students attending 13 secondary schools in Santiago found that most students (61%) had witnessed violence among peers (Tijmes, 2012). The latest results of the National Survey on Violence in School, a study examining school violence in Chile since 2005, revealed that in 2010 23% of students reported being victims of aggression in school, while 28% of students reported assaulting other students (Berger, 2011; Ministry of Interior Chile, 2010). Other studies have found that upwards of 40% of Chilean youth have reported being in a physical fight in school in the past 12 months (Rudatsikira et al., 2008).

Despite high rates of violence and aggression reported among Chilean youth, few studies exist that investigate differential predictors of physical aggression among adolescent men and women in Latin America or Chile. Understanding what individual, family, peer, and community characteristics have an impact on the development of aggression during adolescence with differing cultural and ethnic groups is crucial to inform future prevention and intervention efforts. To address this gap in knowledge, we conducted a study with adolescents from Santiago, Chile, to examine rates of self-reported physical aggression. Guided by Problem Behavior Theory, we explored predictors of self-reported physical aggression and whether these predictors varied by gender with a community-based sample of Chilean adolescents. We expected to find that many of the individual, family, peer and community characteristics investigated would be associated with increased levels of reported aggression in both adolescent men and women.

Method

Sample and Procedures

For this study, we analyzed cross-sectional data from a study of community-dwelling adolescents in Santiago, Chile. The project is a collaboration between the University of Chile Institute for Nutrition and Technology of Foods (INTA in Spanish) and University of Michigan, with funding from the National Institute on Drug Abuse (NIDA). Participants for this study were recruited from a sample of approximately 1,700 families that participated in a study of nutrition when the adolescents were in infancy, and of whom 1,200 were again

assessed when the youth were 10 years old (Lozoff et al., 2003). Subsequently, between 2007 and 2010, 1,080 of these adolescents were located to participate in the present study. The reasons for adolescents not participating in the present study included relocation of their families and the resultant inability of study personnel to track their current location. There were no significant differences in socio-demographic characteristics between the adolescents who participated in this study and those who did not. Approximately 9.7% of these adolescents ($n=105$) were not from traditionally intact families and reported that a father figure was not present in their lives. Because we were interested in the role of the caregiver relationship on aggression (both father and mother), we restricted our analytic sample to youth who had both parents present in their lives. Therefore, our analytic sample consisted of 975 adolescents, 48% women ($n=471$) and 52% men ($n=504$). Participants ranged in age from 11 to 17 years ($M = 14.52$; $SD = 1.53$) (see Table 1).

Adolescents completed a two-hour interviewer-administered questionnaire with measures that had been pilot tested and validated with a sample of the population under investigation prior to conducting the present study. The questionnaire employed instruments commonly used in the U.S. and in Chile to assess constructs measured in the study. The battery of instruments measured constructs such as adolescents' relationship with parents, adolescents' perceptions of self and behavior, adolescents' health status and substance use. Instruments in English were first translated into Spanish and then assessed for face validity and language equivalence by the Chilean co-investigators and field staff in Chile. Minor modifications were made to some questions based on the reviews of the Chilean collaborators and via conversations between the U.S. and Chilean investigators. Once this was done, the entire battery of instruments was pilot tested with 30 adolescents of the same age as the adolescents in the study. The pilot test not only required participants to complete the measures but also to comment on whether they understood the questions and response categories. A few modifications were made to some items based upon participants' feedback. During the pilot testing period of the study, youth indicated that they preferred to have an interviewer read the questions to them due to the length of the questionnaire and also because some of their reading ability was limited.

Interviews were conducted in Spanish in a private office at INTA by Chilean psychologists trained in the administration of instruments. Interviewers obtained adolescent assent and parental consent prior to commencing the interviews. The study received Institutional Review Board approval from the institutional review boards of the corresponding universities.

Measures

All of the study's measures are based on adolescent reports, the exception being the measure of socioeconomic status that is based upon the parent's report. Cronbach's alpha coefficients obtained with the analytic sample of Chilean adolescents (and correlations when appropriate) are reported for each scale. Each measure is discussed in detail below.

Demographic variables—Age and gender were based on the adolescents' self-reports, and socioeconomic status (SES) of the family was assessed based on the parents' reports. Parents who accompanied the adolescent to the interview site were interviewed about their monthly family income, their educational attainment and occupation and that of their spouse. Monthly household income was measured in thousands of Chilean pesos, and ranged from 62 to 3600 thousand Chilean pesos ($M = 325.16$ (~ \$690 USD); $SD = 216.7$). The median monthly household income for the sample was 280 thousand Chilean pesos (~ \$595 USD). Parental educational attainment was measured in years, with mothers' years of education ranging from 0 to 21 and fathers' years of education ranging from 0 to 20. Both

mothers ($M = 9.88$; $SD = 2.95$) and fathers ($M = 9.80$; $SD = 2.99$) completed approximately 10 years of education on average.

Each member of the research team in Chile and the U.S. (a total of 11 individuals) independently rated the mothers' and fathers' occupations on a scale from 0 to 10, with 0 representing the lowest level of occupational prestige and 10 representing the highest level of prestige for a population of low economic resources. These scores were then summed across all raters. Possible scores of parental occupational prestige ranged from 0 to 60. In our sample, mothers' occupation prestige ranged from 20 to 51 ($M = 31.91$; $SD = 6.39$) and fathers' occupational scale ranged from 12 to 57 ($M = 32.17$; $SD = 6.38$). Reliability was estimated using Cronbach's alpha correlating each rater with the total scale (excluding each rater from the total sum when required). The corresponding reliabilities for the mothers' and fathers' occupational prestige scales were 0.87 and 0.90, respectively.

Subsequently, an index of socioeconomic status was created that consisted of a weighted linear combination of four items: mother's and father's completed years of education, monthly family income, and the higher of the occupational prestige scores of the mother or father. The SES index demonstrated high reliability ($\alpha = 0.81$). Participants' SES index scores ranged from -3.38 to 4.52 , with higher scores reflecting greater socioeconomic status. Adolescents in our sample were generally of low socioeconomic status ($M = 0.05$; $SD = 0.03$).

Behavior system factors

Aggressive behavior: The outcome of interest for this study was assessed using the aggression subscale of the Youth Self Report (YSR) (Achenbach & Rescorla, 2001). The YSR is a widely used measure that has been utilized in multiple cultural contexts, including among youth in Chile, and that has shown good reliability and validity in assessing a broad range of behavioral and emotional problems in adolescence. Adolescents rated how well 17 items described them over the past 6 months on a 3 point scale ranging from 0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *to very true or often true*. Example of items included "I am mean to others," "I physically attack people," "I get in many fights," and "I threaten to hurt other people." Responses to the items were summed and averaged to create a mean score with higher scores representing more reports of aggressive behavior ($\alpha = 0.81$).

Personality system factors

Importance of religion: Two questions, adapted from the National Survey of American Life, were used to measure the importance of religious faith (Program for Research on Black Americans, 2001). Respondents' scores on "How important or unimportant is religious faith in how you live your daily life?" and "How important or unimportant is religious faith in making major life decisions?" were averaged. Response categories were 1 = *not important at all*, 2 = *not very important*, 3 = *somewhat important*, 4 = *very important*, and 5 = *extremely important* with higher scores indicating a stronger importance of religious faith ($r = 0.73$).

Perceived-environment system factors

Maternal and paternal parenting behaviors: Adolescent perceptions of parenting behaviors were assessed using two subscales from the Parental Warmth, Support and Hostility measure (Conger & Ge, 1999). This questionnaire asked adolescents to report on the extent to which parents engage in a continuum of more to less positive parenting behaviors (Conger & Ge, 1999). Relationship with mother was assessed using 17 questions from the parental warmth-mother and parental hostility-mother subscales. Relationship with father was assessed using 17 questions from the parental warmth-father and parental

hostility-father subscales. Examples of items were “How often does your (mother/father) let you know (she/he) really cares about you?”, “...listens carefully to your point of view?”, “... gets angry at you?”, “...boss you around a lot?”, “...insult or swear at you?”, with response categories being 1 = *Never*, 2 = *Sometimes*, 3 = *Often*, and 4 = *Always*. Eight items were reverse scored. Items were averaged to create a mean score for each of the mother and father scales. Higher scores represented more positive relationships with each parent or guardian, respectively. The Parental Warmth, Support and Hostility measure demonstrated good reliability for adolescents’ relationship with mother ($\alpha=0.89$) and adolescents’ relationship with father ($\alpha=0.89$).

Family characteristics: Family involvement was assessed from the Child Health and Illness Profile (CHIP) family involvement scale (Riley et al., 1998). Adolescents rated the number of times they engaged in a variety of activities with their family within the past 4 weeks on a 5-point scale. Example items included “Eat meals with you,” “Talk with you or listen to your opinions and ideas,” and “Spend time with you doing something fun.” Response categories included 1 = *no days*, 2 = *1 to 3 days*, 3 = *4 to 6 days*, 4 = *7 to 14 days*, and 5 = *15 to 28 days*. Responses to the 5 items were averaged with higher scores indicating greater family involvement ($\alpha=0.73$). Adolescents’ perception of parental drug use was measured on 3 items using the question, “During the past 12 months, do you think your parents or someone who takes care of you has tried any of the following substances?” Substances included, “marijuana,” “cocaine or *pasta base*,” and “other illicit drugs.” Response categories included 1 = *definitely no*, 2 = *probably no*, 3 = *probably yes*, 4 = *definitely yes*. Responses were averaged with higher scores representing greater adolescent perception of parental drug use ($\alpha=0.78$). To evaluate parental versus adolescent control over adolescent decision making, participants were asked to rate “How do you make most of the decisions about the following topics” on a 5 point scale ranging from 1 = *my parent(s) decide* to 5 = *I decide all by myself*. Example items included “How late you can stay up on a school night,” “How you dress,” and “What you do with your money” (Brody, Moore, & Glei, 1994). Higher scores on this 8-item measure indicated lower levels of parental involvement in adolescent decision-making ($\alpha=0.68$).

Peer characteristics: A four-item scale, adapted from the Study of Early Child Care and Youth Development (National Institute of Child Health & Human Development (NICHD, 2008), measured peers’ commitment to learning. Adolescents were asked to estimate the number of peers who “do well in school” and “work hard at school” with response categories ranging from 1 = *none of them* to 5 = *all of them* ($\alpha=0.63$). Peers’ acting out behavior was assessed using an 8-item scale derived from the same study (NICHD, 2008). Adolescents ranked the number of friends who “try to get away with things” and “cheat on tests” across 5 response categories ($\alpha=0.74$). Responses to items were averaged and a mean score was created. Higher mean scores represented more friends who were committed to learning and more friends who were acting out. Adolescent perception of peer drug use was assessed using items from the CHIP peer influences subscale (Riley et al., 1998). To measure perception of peer drug use, participants’ responded to the question, “How many of your friends would you estimate used <drug item>?” Examples of the 9 items included “smoke cigarettes,” “drink alcoholic beverages,” “smoke marijuana,” and “use inhalants.” A 5 category response set, ranging from 1 = *none* to 5 = *all*, allowed participants’ to indicate the number of peers who used alcohol and drugs. A higher mean score indicated a higher number of peers who used alcohol and drugs ($\alpha=0.87$).

Dating violence: Two questions, adapted from the Study of Early Child Care and Youth Development (NICHD, 2008), were used to measure adolescents’ lifetime experiences with dating violence. Adolescents were asked to report how many times in their entire life they

have “been shouted at, made fun of, or threatened by a person (they) were dating.” Response categories included 1 = *none*, 2 = *1 time*, 3 = *2-5 times*, 4 = *6-10 times*, and 5 = *more than 10 times*. Since a small proportion of adolescents in our sample (7%) experienced threatening dating violence in their lifetimes, all non-zero responses were aggregated and a dichotomous variable was created. Participants who answered ‘*1 time*’ (n = 31), ‘*2-5 times*’ (n = 21), ‘*6-10 times*’ (n = 4), or ‘*more than 10 times*’ (n = 9) were coded as 1 and considered to have experienced threatening dating violence for purposes of this analysis. Adolescents who were dating and did not experience threatening dating violence and those who had never dated (and therefore were not asked questions about dating violence) were coded as zero. Similar procedures were also used to identify adolescents who experienced physical dating violence. Adolescents were asked to report how many times in their entire life they have “been physically hurt, such as been slapped, pushed, or punched, on purpose by a person (they) were dating” on a scale ranging from 1 = *none*, 2 = *1 time*, 3 = *2-5 times*, 4 = *6-10 times*, and 5 = *more than 10 times*. All non-zero responses were aggregated and coded as 1 to determine the proportion of adolescents who had experienced physical dating violence in their lifetimes. Among our sample, 35 adolescents (3.6%) had experienced physical dating violence, 23 (2.4%) of which experienced physical dating violence ‘*1 time*,’ 8 (0.8%) of which experienced physical dating violence ‘*2-5 times*,’ 1 (0.1%) of which experienced physical dating violence ‘*6-10 times*,’ and 3 (0.3%) of which experienced physical dating violence ‘*more than 10 times*.’

Relationship with teachers: Adolescents’ quality of relationship with their school teachers was measured using a scale from the Study of Early Child Care and Youth Development (NICHD, 2008). Adolescents were asked to rate the quality of relationship with their teachers using 2 questions, “My teachers treat me fairly” and “The teachers at my school treat students fairly,” with response categories 1 = *not at all true*, 2 = *not very true*, 3 = *sort of true*, and 4 = *very true*. Items were averaged with higher scores reflecting greater quality of relationship with teachers ($r=0.58$).

Neighborhood crime: Neighborhood crime was assessed using 3 items of an adapted questionnaire from the National Survey of American Life (Program for Research on Black Americans, 2001). Example items included “How often are there problems with muggings, burglaries, assaults, or anything else like that in your neighborhood?” with response categories ranging from 1 = *never* to 5 = *very often* and “How much of a problem is the selling and using of drugs in your neighborhood?” with response options of 1 = *never* to 5 = *very serious*. Responses to items were averaged with higher scores representing more crime in the neighborhood ($\alpha=0.71$).

Data Analysis

First, we used multiple imputation to address the missing data (7%) in our analytic sample. As described by Royston (2004) multiple imputation analysis creates multiple copies of the original dataset and replaces missing data with multiple plausible sets of values. Each imputed dataset is then analyzed independently and parameters of interest are averaged across imputations, thus allowing for estimates that are not biased by missing data (Grogan-Kaylor, 2005). We imputed our data multiple times, resulting in 20 datasets with imputed values. An independent samples t-test was then conducted on the imputed data to explore gender differences in rates of self-reported physical aggression. Multiple linear regression was also conducted on the imputed data to examine if there were gender differences in aggression while accounting for a number of variables that represented individual, family, peer, and community domains. The independent variable was gender, and the dependent variable consisted of adolescents’ scores on the aggression subscale of the Youth Self Report (YSR) (Achenbach & Rescorla, 2001). Demographic (e.g. age, SES), individual (e.g.

religiosity), family (e.g. relationship with mother/father, parent drug use), peer (e.g. peer drug use, dating violence), and community (e.g. neighborhood crime) characteristics were used as covariate predictors. The first linear regression model tested the relationship of gender on reports of aggression while controlling for individual, family, peer, and community characteristics. The second linear regression model examined gender differences in risk factors for aggression by testing the interaction of gender with each covariate predictor (e.g. gender by age; gender by religiosity). Since none of the interactions were significant, we only present results of the main effects model.

Results

Gender differences in rates of physical aggression

Women in our sample ($M = 0.51$; $SD = 0.30$) reported engaging in higher levels of physical aggression than men ($M = 0.46$; $SD = 0.27$) ($t = -2.44$, $p < .05$). As shown in Table 2, even after controlling for a number of demographic, individual, family, peer and community factors, women were still more likely to report engaging in physical aggression than men ($\beta = 0.10$, $p < .001$).

Gender differences in risk factors of physical aggression

A multiple linear regression [dv: aggressive behavior, iv: gender, covariates: age, SES, individual, family, peer, and community characteristics] revealed that a number of family, peer, and community characteristics were significantly associated with reports of high aggression among adolescents (see Table 2). Higher aggression was significantly associated with younger aged adolescents ($\beta = -0.08$, $p < .05$), reporting less positive relationships with maternal caregivers ($\beta = -0.12$, $p < .01$), less positive relationships with paternal caregivers ($\beta = -0.10$, $p < .01$), and less family involvement ($\beta = -0.08$, $p < .05$). Higher aggression was also associated with reporting lower levels of parental involvement in adolescent decision-making ($\beta = 0.09$, $p < .01$), having a greater number of friends who act out ($\beta = 0.26$, $p < .001$), having peers who use substances ($\beta = 0.09$, $p < .05$), having fewer friends who are committed to learning ($\beta = -0.06$, $p < .05$), and experiencing physical dating violence across the lifespan ($\beta = 0.09$, $p < .01$). More exposure to neighborhood crime was also significantly associated with reporting higher aggression ($\beta = 0.06$, $p < .05$). The second regression model tested the interaction of gender with each covariate controlling for age and SES. No significant interaction effects were found.

Discussion

The purpose of this study was to test for gender differences in predictors of self-reported physical aggression among adolescents from a Latin America county. Using Problem Behavior Theory as our guiding framework, we also sought to determine if a number of individual, family, peer, and community variables were associated with reported levels of aggressive behavior among adolescents from Chile and whether these associations differed by gender. Our study extends existing literature by examining factors associated with aggression for men and women utilizing a sample of Latin American adolescents from Chile.

We found that adolescent women were more likely to report engaging in overt, physical aggression than men. In fact, even after controlling for age and socioeconomic status and a number of individual, family, peer, and community characteristics, women were still more likely to report being aggressive than men. To our knowledge, these findings are novel and contrast with reports of existing studies of Latin American and Chilean youth that have documented higher rates of self-reported gang fighting (Florenzano et al., 2009) and

physical aggression among boys (Lansford et al., 2012; Rudatsikira et al., 2008). However, findings that girls report elevated rates of physical aggression are consistent with nascent research documenting high levels of overt aggression among young females living in urban areas (Nichols et al., 2006; McLaughlin, Hilt, & Nolen-Hoeksema, 2007). Nichols et al. (2006) hypothesizes that previously held social norms, including that boys are allowed and expected to be more aggressive than girls, may be changing and may account for the increase in aggression reported among urban, adolescent girls. It is currently unknown whether the differences observed in our sample are a result of similar shifting social norms in developing countries, or if there is something particular to Latin American adolescent women that places them at a greater risk of being physically aggressive than men. Further research is needed to examine the lives and experiences of these girls to better understand why they may be experiencing greater levels of aggression in adolescence (McLaughlin et al., 2007).

Despite the finding that adolescent women were more likely to report engaging in physical aggression than men, none of the interactions tested between the covariates and gender emerged significant. This suggests that there appear to be more similarities than differences in the predictors of self-reported aggressive behavior between adolescent men and women in our sample. In fact, a number of family, peer, and community characteristics in the perceived-environment system were found to be significantly associated with increased levels of reported aggression for both adolescent women and men. Interestingly, risk factors from the perceived environment system, such as friends acting out and peer drug use, significantly predicted physical aggression even after controlling for protective factors that possibly decrease risk, such as positive relationships with teachers. Our results are in line with a large body of other cross-national studies of adolescent problem behavior that indicate similar underlying relationships between family, peer, and community characteristics and aggression (for a review see Jessor, 2008).

In particular, our study found that having friends that are less committed to learning and who use substances, and experiences of dating violence were associated with reports of aggression for both adolescent men and women. Having a greater number of friends who act out emerged as one of the strongest predictors of reported physical aggression in our study. A history of physical dating violence, and specifically being physically hurt, such as being slapped, pushed, or punched, purposely by a partner, was also associated with physical aggression among both men and women. Research utilizing U.S. samples has long identified the association between deviant peers and problem behavior (Ferguson et al., 2009; Herrenkohl et al., 2003). Other research using Latin American samples has also found that association with deviant peers is related to subsequent violent behavior (Brooks et al., 2003). It is not surprising that similar results were found among our Chilean sample. Reducing associations with negative peers and addressing teen dating violence may be important in reducing aggressive behavior for Chilean youth.

Less family involvement and lower levels of parental involvement in adolescent decision-making were also associated with higher levels of reported physical aggression in both adolescent men and women in our study. Additionally, we found that positive relationships with caregivers were associated with decreased levels of reported aggression among boys and girls. These findings are consistent with an existing study on Chilean youth that documents a link between poor child-caregiver relationships and heightened problem behavior (Florenzano et al., 2009). Although Jessor (2008) suggests that predictors of aggression are similar across cultural contexts, we hypothesize that caregiver relationships and family involvement may be particularly important for Latin American youth. Family occupies a central role in the lives of Chilean youth as Latino's collectivist culture places a heavy emphasis on family loyalty, solidarity, and cohesion (Vega, 1990). In fact, one study

comparing family values across adolescents with Asian, Latin American and European backgrounds found that Latin American youth had greater values and expectations regarding their obligations to assist, respect and support their families than peers with European backgrounds (Fuligni, Tseng, & Lam, 1999). Because the influence of parent relationship on aggressive behavior in youth may be pronounced in Latin American families due to cultural emphasis on family interdependence (Loukas & Prelow, 2004), family-based prevention efforts may be particularly critical for Chilean youth who engage in aggressive behavior.

Community level variables were also found to be associated with increased reporting of aggression in adolescent men and women. Youth who experienced greater neighborhood crime reported higher levels of physical aggression. This finding is troubling given existing research that documents high levels of community violence, including gang violence, in Latin American communities (Rodgers & Jones, 2009) and an association between neighborhood victimization and youth violent behavior (Brook et al., 2003). Decreasing community and gang violence may assist in reducing rates of aggression in Chilean youth; however, as noted by Problem Behavior Theory (Jessor, 1991), intervention and prevention efforts that are comprehensive in scope may be the most likely to reduce youth problem behavior. Because risk factors often interact to increase youth proneness to problem behavior (e.g. community violence exposure heightens risk for negative peer association and the presence of both increases the likelihood that youth will engage in problem behavior), programs that fail to engage multiple risk factors are unlikely to be successful. Instead, prevention and intervention efforts that work to simultaneously reduce risk while promoting protection are critical (Jessor, 1991). These programs will likely have to encompass many domains of adolescents' lives, including community environment, school environment, family relationships, and peer relationships.

It has been noted that current prevention and intervention programs are not equipped to handle the specific needs of aggressive girls (Perry et al., 2003). Although there may be few differences in the factors related to aggression in girls and boys, gender responsive services may be essential in reducing high rates of aggression of Latin American adolescent girls. Bloom and Convington (2001) argue that in order for treatment to be effective in reducing behavioral problems exhibited by adolescent girls, programming must take into account the multiple and unique issues girls face, including their psychological development and possible history of trauma. Studies documenting high rates of trauma history among Chilean female youth highlight the need for gender responsive services (Hassan et al., 2004; Lehrer, Lehrer, & Zhao, 2010). For example, one study found that one fifth of Chilean adolescent girls had experienced childhood sexual abuse and more than a third had witnessed adult-on-adult partner violence (Lehrer et al., 2010). Future research is needed to develop and tailor gender informed prevention and intervention services, which address trauma history and the unique psychological development of adolescent girls, to Chilean girls.

Limitations

The study findings should be viewed within the context of the following limitations. First, the sample is not a random sample of Chilean adolescents, preventing us from generalizing to the larger population of Chilean adolescents. It is unclear if a larger and randomly selected sample of Chilean adolescents would generate similar findings. Second, our analyses are based on a cross-sectional design precluding us from making statements about the causal, and even, temporal, associations between variables. Third, although our study was guided by Problem Behavior Theory, with the exception of importance of religion, our study lacked predictors in the personality system (i.e. variables that reflect youths' values, beliefs and expectations). Additionally, the reliability coefficients for two of our scales were lower than desired (between 0.60 and 0.70) though most reliability coefficients were higher

than 0.70. Future research using longitudinal designs and random sampling is needed to better understand the role of gender in physical aggression among Latin American youth.

Another major limitation of our study was the reliance on adolescent self-report to measure physically aggressive behavior and other peer/parent characteristics. Because aggression was measured using self-report, it is unknown if our findings that adolescent women were more likely to report engaging in physical aggression than men are a result of actual increased levels or a reporting bias. Adolescents may have been reluctant to report aggressive behavior or over-reported the aggressive behavior in which they actually engaged in because they felt it was more socially desirable to do so. Although self-report is limited in that it does not equate to observed behavior, previous research has supported the use of adolescents' reports of physical aggression when studying the relationship between aggressive behavior and later risk of anti-social behavior (Di Giunta et al., 2010). Additionally, protocols were established during the interview process to generate valid reporting of youth behavior.

A related concern was the lack of back translation when adapting the questionnaire to Spanish. With the exception of measures (e.g., YSR) and items (e.g., drug questions) that were already available in Spanish and had been used in Chile, all questions were translated into Spanish by the research team which consisted of U.S. and Chilean investigators. Back translation was not formally done due to time and resource constraints. However, upon translation, a process that lasted over six months, ongoing discussions ensued concerning language and conceptual equivalency that resulted with some words being slightly modified to retain the conceptual meaning of the questions and response categories. No statistical analyses were conducted to examine factor equivalency.

Conclusions

Notwithstanding these limitations, our findings that adolescent women from this community sample of Latin American youth are more likely to report being aggressive than men merits further attention and points to the need to conduct additional research to identify gender specific risk factors and appropriate interventions. Our findings that relationships with caregivers, family involvement, parental control, association with delinquent peers, and presence of dating violence predict reported aggression among Latin American youth provide evidence that prevention efforts centered on strengthening families and promoting positive peer relationships might effectively prevent and reduce aggressive behavior among at-risk youth in Chile. Although this research represents an important step in our understanding of adolescent aggressive behavior in a Latin American context, a great deal of work remains to be done. Given that Chile, similar to other Latin American urban cities, has seen a rise in illicit drug trafficking, violence and gang involvement among youth, additional research is needed. Future studies should investigate the correlates of problem behavior among youth in Latin American countries to inform prevention and intervention efforts and ultimately reduce the increasing violence that is occurring in these communities.

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Table 1**Demographics**

	Total Sample (<i>n</i>= 975)	
	<i>Mean or %</i>	<i>SD</i>
Demographic		
Gender (Female)	48.4 %	--
Age	14.52	1.53
SES	0.05	0.03
Individual		
Aggressive behavior	0.48	0.01
Importance of Religion	3.15	0.03
Family		
Relationship with mother	3.26	0.02
Relationship with father	3.19	0.02
Family involvement	3.73	0.03
Parent drug use	1.20	0.02
Parental control	3.82	0.02
Peers		
Friends acting out	2.24	0.02
Friends committed to learning	2.92	0.02
Peer drug use	1.69	0.02
Dating violence – threat	6.7 %	--
Dating violence – physical	3.6 %	--
Community		
Relationship with teachers	3.21	0.02
Neighborhood crime	2.98	0.03

Table 2

Multiple Linear Regression of Gender on Aggression Problem Behavior, Controlling for Demographic, Individual, Family, Peer, and Community Characteristics (n= 975)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>spr</i>
Demographic					
Age	-0.01	0.01	-0.08	-2.07*	-0.06
SES	0.01	0.01	0.02	0.72	0.02
Individual					
Importance of Religion	-0.00	0.01	-0.00	-0.09	-0.00
Family					
Relationship with mother	-0.07	0.02	-0.12	-3.35***	-0.09
Relationship with father	-0.05	0.02	-0.10	-2.96**	-0.08
Family involvement	-0.03	0.01	-0.08	-2.47*	-0.07
Parent drug use	0.02	0.02	0.03	1.14	0.03
Parental control	0.04	0.01	0.09	2.94**	0.08
Peers					
Friends acting out	0.12	0.01	0.26	7.99***	0.22
Friends committed to learning	-0.03	0.01	-0.06	-2.04*	-0.06
Peer drug use	0.04	0.02	0.09	2.32*	0.06
Dating violence - threat	0.05	0.04	0.05	1.54	0.04
Dating violence – physical	0.13	0.05	0.09	2.81**	0.08
Community					
Relationship with teachers	0.00	0.02	-0.00	0.00	0.00
Neighborhood crime	0.02	0.01	0.06	2.02*	0.06
Gender	0.06	0.02	0.10	3.51***	0.10

Note. “spr” = semi-partial regression coefficient and was included as an indicator of effect size.

* $p < .05$,

** $p < .01$,

*** $p < .001$.