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# Predicting Violent Behavior: The Role of Violence Exposure and Future Educational Aspirations during Adolescence

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Abstract

Few researchers have explored future educational aspirations as a promotive factor against exposure to community violence in relation to adolescents' violent behavior over time. The present study examined the direct and indirect effect of exposure to community violence prior to 9th grade on attitudes about violence and violent behavior in 12th grade, and violent behavior at age 22 via 9th grade future educational aspirations in a sample of urban African American youth (n = 681; 49% male)**.** Multi-group SEM was used to test the moderating effect of gender.

Exposure to violence was associated with lower future educational aspirations. For boys, attitudes about violence directly predicted violent behavior at age 22. For boys, future educational aspirations indirectly predicted less violent behavior at age 22. Implications of the findings and suggestions for future research are discussed.

**Keywords:** Exposure to violence, Future educational aspirations, Violent behavior, Adolescence, Longitudinal

# Predicting Violent Behavior: The Role of Violence Exposure and Future Educational Aspirations during Adolescence

Exposure to violence is a significant public health concern. In a national survey of children ages 2 to 17 years, one-third of youth had witnessed the victimization of another person or were exposed to victimization indirectly (e.g., had someone close to them murdered but did not directly witness the murder) during the previous year, and more than half had been the victim of an assault (Finkelhor, Ormrod, Turner, & Hamby, 2005; Finkelhor, Turner, Ormrod, & Hamby, 2009). In addition, youth represent one-quarter of violent crime victims reported to law enforcement agencies (Snyder & Sickmund, 2006). The disproportionate numbers of youth who are victimized by violent crimes and witness victimization highlight an increased risk of exposure to violence during adolescence. Exposure to violence has been identified as a risk factor for violent behavior by influencing adolescents' attitudes and beliefs about violence (Huesmann & Guerra, 1997). Academic aspirations may also be influenced by violence exposure; however, they may also decrease the potential negative effects of violence exposure as youth may be reluctant to engage in behaviors that could jeopardize their goals. Because positive aspirations for the future may lead to more positive outcomes after adolescents experience adversity (Stoddard, Zimmerman, & Bauermeister, 2011), we examine whether future educational aspirations mediate the relationship between witnessing community violence and later

violent attitudes and behaviors among African American adolescents in an impoverished urban city.

**Conceptual Underpinnings**

The current study was grounded in theories associated with risk exposure and violent behavior (i.e., social learning theory and General Strain Theory; Agnew, 1992; Bandura, 1978), as well as a theory related to positive assets and resilience (i.e., resiliency theory; Fergus & Zimmerman, 2005). Social learning theory posits that behaviors are based on beliefs and attitudes acquired through observational learning and modeling behaviors (Bandura, 1978). Consistent with this perspective, Huesmann and Guerra (1997) posit that adolescents exposed to community violence are more likely to report attitudes favoring the use of violence to solve interpersonal problems and to use violent behavior compared to adolescents who witnessed less community violence. In addition, environmental factors such as exposure to community violence may contribute to cognitions that limit an adolescent's ability to think about the future (Lorion & Saltzman, 1993; McGee, 1984). According to General Strain Theory (Agnew, 1992; Agnew & White, 1992), strain can occur when an individual has negative relationships with others, such living in a violent environment or having one's goals or aspirations thwarted. Adolescents may experience and react to these negative experiences (e.g., exposure to community violence) in different ways. For some adolescents, exposure to violent events may change their expectations about their future. The reality of (or negative experiences

within) their social and environmental circumstances may conflict with their envisioned educational aspirations; the difference between the two can contribute to greater strain. Violent behavior may be used as a reaction to strain as individuals attempt to avoid, alleviate, retaliate against, or cope with its effects (Agnew, 1992). Furthermore, violent behavior may provide an opportunity to achieve certain goals that are not otherwise perceived as attainable (e.g., social status and respect).

Within a resiliency framework, risk factors (e.g., exposure to community violence) are conditions associated with a higher likelihood of negative outcomes (Kazdin, Kraemer, Kessler, Kupfer, & Offord, 1997), whereas promotive factors (i.e., individual assets and contextual resources) operate to enhance healthy development (Fergus & Zimmerman, 2005). Promotive factors can counteract the negative impact of risk through a direct, compensatory route (Fergus & Zimmerman, 2005). As such, individual assets or external resources may directly decrease the likelihood of negative behavior like violence. Optimistic future aspirations, for example, may provide motivation to pursue positive outcomes and paths for success, thereby decreasing the propensity to engage in violence (Sun & Shek, 2012). Based on these tenets, we propose that exposure to violence may contribute directly and indirectly to the acceptance of the use of violence to solve problems and violent behavior during later adolescence and early adulthood. We propose that exposure to community violence may contribute to violent behaviors in later adolescence and early adulthood by

reducing future educational aspirations while reinforcing attitudes toward the use of violence to solve problems (Figure 1). We also propose that beliefs in the future (e.g., future educational aspiration) will function as a promotive factor, reducing adolescents' later violent attitudes and behaviors both directly and indirectly, regardless of earlier violence exposure._

**Exposure to Violence**

Youth living in urban environments are exposed to higher levels of community violence (Voisin, 2007). Approximately 80% of youth living in urban areas have reported witnessing community violence and 70% report being victims of violence (Cooley-Strickland et al., 2009). Urban youth reported higher rates of being a victim or witness of violence compared to suburban youth (Stein, Jaycox, Kataoka, Rhodes & Vestal, 2003). In addition, African American adolescents are at greater risk of exposure to community violence than any other adolescent population (Buka, Stichick, Birdthistle, Earls, 2001; Voisin, 2007).

In accord with social learning theory, exposure to violence influences children and adolescents' beliefs and attitudes toward the use of violence as a form of problem solving (Bandura, 1978; Guerra, Huesmann, & Spindler, 2003). Repeatedly witnessing violent acts may influence youths' favorable violent attitudes and behavior, supporting other researchers' findings (Flannery, Wester, & Singer, 2004; Vernberg, Jacobs, Hershberger, 1999) and a social-learning model of youth violence (Huesmann & Guerra, 1997). Beliefs and attitudes that support the use of violence are associated with

violence perpetration and aggressive behavior (Farrell et al., 2012; Huesmann & Guerra, 1997; Lim & Ang, 2009; Vernberg et al., 1999; Werner & Nixon, 2005). Moreover, Spaccarelli, Coatsworth, and Bowden (1995) found that among adolescent male delinquents, beliefs supporting the use of violence mediated effects of family violence exposure on their serious violent offending. In addition, beliefs and attitudes about violence can produce stable aggressive tendencies across an individual's life span (Huesmann & Guerra, 1997; Anderson & Bushman, 2002; Bushman & Huesmann, 2010).

Despite evidence of a mediational link where violence exposure increases violent behavior through positive attitudes towards violence, direct links between violence exposure and behavior are unclear. Researchers examining the relationship between witnessing violence, victimization, and violence perpetration have yielded inconsistent results. Exposure to violence can contribute to externalizing problem behaviors (Aisenberg & Herrenkohl, 2008; Buka et al., 2001; Ozer, 2005). In a sample of African Americans, almost 75% of youth who reported perpetrating violence also reported being exposed to violence as both victims and witnesses (Feigelman, Howard, Li, & Cross, 2000). Flannery and colleagues (2004) found that youth who had either witnessed violence or been victimized at school were significantly more likely to report violent behavior. Their findings indicated that witnessing violence was the stronger predictor of violent behavior (Flannery et al., 2004). In contrast, Feigelman and colleagues (2000) found a strong association between victimization and violence perpetration; however, they

reported no association between witnessing of violence and perpetration. These inconsistencies suggest that additional mediating variables may be important to consider._

## Future Orientation and Educational Aspirations: Potential Protective Factors

Future orientation is an individual's thoughts, plans, motivations, hopes, and feelings about his or her future (Arnett, 2000; Nurmi, 1989a; Nurmi, 1991; Nuttin, 1964; Trommsdorff, 1983). It provides the basis for setting goals and making plans for multiple aspects of the future, such as educational goals and career aspirations. Adolescence is a critical time for developing, differentiating, and expanding (Greene, 1986) one's future orientation, including decisions concerning education and occupation (Nurmi, 1989b). Hopes associated with occupational and educational aspirations increase in frequency from early to middle adolescence (Kirk, Lewis, Lee, & Stowell, 2011; Nurmi, 1989b; Nurmi, Poole, & Kalakoski, 1994); however, educational aspirations may be particularly relevant for middle adolescents. Nurmi (1987) found that adolescents frequently mentioned future aspirations related to occupation and education. Yet, educational aspirations were the most often mentioned hope among middle adolescents (14-15 year olds), as opposed to occupational aspirations, which were the most frequently mentioned hope for the other age groups. Thus, educational aspirations are critical components of future orientation for young high school students who are not yet certain about their potential career opportunities and goals.

Future expectations are vulnerable to stressful life experiences (Agnew, 1992; Agnew & White, 1992). As such, environmental factors such as exposure to community violence may decrease adolescents' expectations and aspirations associated with their futures. There are several processes that may explain this association. First, exposure to violence may limit an adolescent's ability to think about the future and negatively impact their academic goals (Lorion & Saltzman, 1993; McGee, 1984). Adolescents who are exposed to violence may have difficulty envisioning and planning for their future because of the many consequences of viewing community violence (e.g., symptoms of post-traumatic stress disorder, depression, perceived and chronic stress, low self-esteem, hopelessness and fear; Heinze, Stoddard, Aiyer, Eisman, & Zimmerman, 2015; Lynch, 2003; Meyers & Thomspson, 2003). Second, adolescents exposed to community violence may disengage from educational pursuits to pursue more immediately gratifying and hedonic activities (e.g., substance use, sex, dealing drugs, delinquency) or to focus on immediate personal safety concerns. Violence exposure contributes to adolescents' greater orientation to present events and immediate experiences as opposed to future orientated tasks and goals, such as schoolwork and educational aspirations, respectively. Finally, the setting in which violence exposure occurs may be closely linked with education and success. During adolescence, the school plays an integral role in a young person's community and is the setting in which youths experience the most community violence as both victims and witnesses (Slovak,

Carlson, & Helm, 2007). Adolescents exposed to community violence may not aspire academically because they fear violence in schools, which could directly affect adolescents' educational performance and goals, and engagement in other activities leading to violence (e.g., delinquency, gang affiliation)._

Regardless of the specific mechanism linking violence exposure and future-oriented thinking, it is possible that this effect impacts attitudes toward violence and violent behavior. Exposure to violence and an inability to envision a positive future may contribute to youth viewing the use of violence as an acceptable and favorable problem solving strategy without regard for the potential consequences of violent behavior. Conversely, youth who consider a positive future for themselves would be expected to engage in fewer health compromising behaviors and have educational aspirations to help ensure they reach their future goals.

A positive orientation to the future and optimistic educational aspirations are critical sources of motivation and can help direct behavior in positive ways. Furthermore, a hopeful sense for the future can facilitate positive development and successful transition into adulthood (Arnett, 2000; Nurmi, 1989b; Nurmi, Poole & Seginer, 1995). Future orientation and positive educational aspirations may be protective factors against youth violence (Chen, et. al., 2013). The relationship between future orientation and violence among African American adolescents has been explored (Birnbaum et al., 2003; DuRant, Cadenhead, Pendergrast, & Slavens, 1994; DuRant et

al., 2000). For example, a poor future outlook (e.g., chance of living to age 35) was a strong predictor of violent behavior in a cross-sectional sample of 7th graders (Birnbaum et al., 2003). In addition, use of violence was negatively correlated with the expectancy of being alive at age 25 (DuRant et al., 1994; DuRant et al., 2000). As these studies were primarily cross-sectional, they limit our understanding of the temporal relationship between exposure, future orientation and violence involvement. In a longitudinal examination of the relationship between future orientation and violent behavior during adolescence, Stoddard and colleagues (2011) found that higher levels of future career orientation were associated with greater decreases in violent behavior over time. Yet, to date, little is known about the relationship between future educational aspirations and violence among African American youth (for an exception, see Alston, 2009), though academic success or failure (e.g., GPA) as well as academic-related traits (e.g., self-efficacy) have been linked to violent behavior (Bradley & Greene, 2013; Resnick, Ireland, & Borowsky, 2004).

**Gender Differences**

Previous research consistently indicates that there are gender differences in violence exposure, future aspirations, acceptance of the use of violence, and violent behavior. Boys are exposed to more community violence (Buka et al., 2001; Stein et al., 2003), hold more favorable views of aggression (Huesmann & Guerra, 1997), and more often participate in violence than girls (Centers for Disease Control and Prevention, 2009; Durant

et al., 1994; Herrenkohl et al., 2000). Previous work with our sample has shown that African American boys report higher levels of violent behavior than girls in grades 9 through 11 (Choe & Zimmerman, 2014). Previous research also indicates that girls report higher educational expectations and less uncertainty compared to boys (Gutman, Schoon & Sabates, 2012; Mello, 2008). These gender differences are embedded in cultural factors and may be particularly relevant among African Americans. Compared to girls, African American boys are rated more negatively by teachers in skills and motivation when they enter high school (Roderick, 2003). According to Hall (2009), African American boys struggle with managing their self-presentation and asserting 'manhood,' which leads to behavior that is counter-productive to their academic achievement.

Previous research also suggests that the relationship among these factors may differ according to gender. Boys and girls may be differentially affected by their exposure to community violence (Broidy & Agnew, 1997; Pinchevsky, Wright and Fagan, 2013; Zona and Milan, 2011). In a sample of urban youth, Pinchevsky and colleagues (2013) found that although boys were exposed to more violence, exposure to violence predicted alcohol use and binge drinking only among girls. Similarly, Zona and Milan (2011) found that although boys witnessed more violence, girls who were exposed to violence were more likely to experience dissociative symptoms. These findings suggest that girls may be more vulnerable than boys to trauma. Additionally, exposure to community violence may have a more robust effect

on the academic outcomes of boys than girls, because boys spend more time in the neighborhood (Drukker, Feron, Mengelers, & Van Os, 2009). Furthermore, Huesmann and Guerra (1997) found that normative beliefs in favor of aggression correlated with aggressive behavior in a sample of urban children, especially for boys. These findings suggest the potential for gender differences in the relationship between exposure to community violence, future educational aspirations, attitudes toward violence and later violent behavior. However, we are unaware of previous research investigating these links.

**Purpose and Hypotheses**

The purpose of this study was to explore the relationship between self-reported exposure to violence in the 12 months prior to 9th grade, future educational aspirations in 9th grade, attitudes about the use of violence and violent behavior in 12th grade, and violent behavior at age 22. The first aim of this study was to examine how future educational aspirations influence the relationship between exposure to violence and later violent attitudes and behaviors in a sample of urban, African American adolescents. We expected that exposure to violence would predict lower levels of future educational aspirations, and that youth with a more positive outlook on their future educational prospects in 9th grade would report less acceptance of the use of violence to solve problems and lower levels of violent behavior during later adolescence and early adulthood. Based on the social learning theory of aggression (Bandura, 1978; Huesmann & Guerra, 1997), we expected that

exposure to violence would predict more acceptance of the use of violence to solve problems. In addition, both exposure to violence and acceptance of the use of violence to solve problems would predict violent behavior during adolescence and early adulthood. Because previous research suggests that violence exposure leads to low future orientation, and low future orientation leads to violent behavior (Lorion & Saltzman, 1993; McGee, 1984; Stoddard et al., 2011), we posited that future-oriented educational aspirations partially mediate the effect of community violence exposure on adolescents' future violent behavior and attitudes (i.e., future educational aspirations would have both a direct and indirect effect on future violent attitudes and behaviors).

The second aim was to assess for gender differences on study variables. We expected that boys would report higher exposure to violence in the 12 months prior to 9$^{th}$ grade, more favorable attitudes about the use of violence and violent behavior in 12$^{th}$ grade, and more violent behavior at age 22 compared to girls. We expected that girls would report higher future educational aspirations in 9$^{th}$ grade compared to boys. The final aim was to test whether gender moderated the previously described relationships between the study variables. We expected that there would be gender differences in the direct and indirect relationships between violence exposure, future educational aspirations, and violent attitudes and behaviors; however, we lacked previous research to guide specific

hypotheses about gender differences in our conceptual model. Thus, we followed an exploratory approach to identify gender differences.

## Method

### Participants

This secondary data analysis is based on data collected as part of a 12-year longitudinal study of youth from mid-adolescence to young adulthood. Data were collected from 850 adolescents at the beginning of 9th grade in four public high schools in a Midwestern city. The purpose of the parent study was to explore the protective factors associated with school dropout and alcohol and substance use. To be eligible for the study, participants had a grade point of 3.0 or lower at the end of the 8th grade, were not diagnosed by the school as having emotional or developmental impairments, and self-identified as African American, White, or Bi-racial (African American and White). A threshold for grade point average (3.0 or lower) was selected to include those students most at risk for leaving school before graduation. The present study focused on adolescents self-identifying as African American, who constituted 80% of the sample in year 1 ($9^{th}$ grade; $N$ = 681). We focus our analyses on this subsample because we were interested in the relationship between future educational aspirations and violence among a sample of youth at greater risk for violent behavior. The mean age in study year 1 for the African American participants (51% female) in this study was 14.86 years ($SD$=.65).

### Procedures

Structured face-to-face interviews were conducted by trained interviewers with students in school or in a community setting. Interviews averaged 60 minutes. After the interview portion of the protocol, participants completed a self-administered paper and pencil questionnaire about alcohol and substance use and other sensitive information. The study had a 90% response rate over the first four years of data collection (i.e., participants' high school years) and a 75% response rate when the participants were approximately 22 years of age. Preliminary analysis of sample attrition at 12$^{th}$ grade and age 22 was conducted with STATA 13.1. Only a sex difference was found. At 12$^{th}$ grade, more males (n = 43) than females (n = 23) were in the attrition group (9.7%), $\chi^2$ (1) = 7.45, p = .006. At age 22, more males (n = 100) than females (n = 67) were in the attrition group (24.5%), $\chi^2$ (1) = 10.11, p = .001.

**Measures**

**Exposure to community violence.** Two items assessed whether a participant witnessed violence in the 12 months prior to 9$^{th}$ grade (e.g., *How often have you seen someone commit a violent crime where a person was hurt* and *How often have you seen someone get shot, stabbed, or beaten up; r* = .52). Response options ranged from 1 (*0 times*) to 5 (*4 or more times*). Higher scores indicating more exposure to community violence.

**Future educational aspirations.** Two items assessed participants' beliefs about their future educational aspirations in 9$^{th}$ grade (e.g., *How likely is it that you will graduate from high school* and *How likely is it that you will*

*go to trade school or college*?; *r* = .44). Response options ranged from 1 (*Not at all likely*) to 5 (*Very likely*). Higher levels of future educational aspirations.

**Attitudes about violence**. Four items measured participants' attitudes about using violence to solve problems in 12th grade (e.g., *Fighting is the best way to solve problems*). Response options ranged from 1 (*strongly disagree*) to 4 (*strongly agree*). Higher scores indicated more acceptance of the use of violence to solve problems (Cronbach's α = .76).

**Violent behavior**. In 12th grade, participants indicated how often they had engaged in each behavior during the preceding 12 months: *gotten into a fight at school*, *gotten into a fight outside of school*, and *hurt someone badly enough to need bandages or a doctor (3 items;* (Cronbach's α = .68*)*. Response options ranged from 1 (*0 times)* to 5 (*4 or more times)*. At age 22, participants indicated how often they had engaged in each behavior during the preceding 12 months: *gotten into a fight, hurt someone badly enough to need bandages or a doctor*, *taken part in a group fight (3 items;* Cronbach's α = .79). Response options ranged from 1 (*0 times)* to 5 (*4 or more times)*. Higher scores indicated more violent behavior.

**Demographic characteristics**. In 9th grade, participants reported their birth month and year. We computed their age by subtracting the date of the interview from the birth month and year. Participants also reported their sex (male = 1, female = 0). Socio-economic status was assessed as the highest occupational prestige score for either parent (Nakao & Treas, 1990). When both parents reported, the higher of the two scores was used. Scores

for study participants ranged from 29.28 (household work) to 64.38 (professional). The mean occupational prestige score was 39.81 (*SD* = 10.48), which represented blue-collar employment (e.g., automobile factory).

### *Data Analytic Strategy*

Descriptive analyses using Stata 13 were conducted for the full sample and separately for adolescent boys and girls.

We tested our hypotheses using structural equation modeling in M*plus* version 7 (Muthén & Muthén, 2010). We created a measurement model to assess whether measured variables were appropriate indictors for our latent constructs (exposure to community violence, future educational aspirations, attitudes towards the use of violence, and violent behavior). We then created a structural model with the full sample to test relations between study variables. After estimating the model with the full sample, we conducted multiple-group confirmatory factor analysis to assess measurement equivalence across male and female participants. These tests directly compare factor loadings and intercepts/thresholds between groups. We then conducted multi-group structural equation modeling to test for the moderating effects of gender. Robust maximum likelihood estimation using the MLR estimator with standard errors and a mean-adjusted chi-square test statistic, the Satorra-Bentler chi-square (SB $\chi^2$), were used in order to account for the non-normality and non-independence of the data (Yuan & Bentler, 2000). Model parameter estimates are reported in both

unstandardized and standardized forms. Inferences about total and specific indirect pathways were assessed with parameter point estimates and their associated 95% confidence intervals (CI). If zero was not between the upper and lower bounds of the 95% confidence interval of the standardized specific direct and indirect effect, we concluded that there was a significant effect (Hayes, 2009). Model fit indices include Satorra-Bentler-scaled chi-square with degrees of freedom (*df*) and *p*-value, comparative fit index (CFI; Bentler, 1990), Tucker-Lewis Index (TLI), root mean square error of approximation (RMSEA; Browne & Cudeck, 1993), and its 90% confidence interval (CI). CFI > .90 and RMSEA < .05 are indicative of a good fit (Kline, 2011).

## Results

### Descriptive statistics

Descriptive statistics and correlations for the full sample (n = 681), and separately for boys (n = 335) and girls (n = 346), are reported in Tables 1 and 2. Adolescent boys and girls differed significantly on all variables of interest (Table 2). As expected, boys reported more exposure to community violence, more acceptance of the use of violence, and more violent behavior in 12$^{th}$ grade and at age 22. Girls reported more positive future educational aspirations. Exposure to community violence and attitudes about violence were positively correlated with violent behavior in 12$^{th}$ grade and at age 22. Future educational aspirations were negatively correlated with exposure to community violence, attitudes about violence and violent behavior in 12$^{th}$ grade and violent behavior at age 22.

**Full Sample Model**

We examined the relationship between exposure to community violence in the 12 months prior to 9th grade, future educational aspirations in 9th grade, attitudes about the use of violence and violent behavior in 12th grade, and violent behavior at age 22 for the full sample (Figure 2). The model had a good fit to the data: ([*SB* $\chi^2(37)$, N = 681] = 59.47, $p < .01$; CFI = .98; TLI = .97; RMSEA = .03, 90% CI [.01, .04]; SRMR = .03). Exposure to community violence predicted lower future educational aspirations and more favorable attitudes about violence (Table 3). Participants who reported more positive educational aspirations reported less favorable attitudes about violence. Both exposure to community violence and attitudes about violence predicted higher levels of self-reported violent behavior in 12th grade. In addition, higher levels of self-reported violent behavior in 12th grade predicted higher levels of violent behavior at age 22. Exposure to community violence indirectly predicted more favorable attitudes about violence via future educational aspirations. Exposure to community violence indirectly predicted greater violent behavior in 12th grade via fewer future educational aspirations and more favorable attitudes about violence. Future educational aspirations indirectly predicted less violent behavior in 12th grade via attitudes about violence. Exposure to community violence indirectly predicted greater violent behavior at age 22 via greater violent behavior in 12th grade. Future educational aspirations indirectly predicted less violent behavior at age 22.

## Multiple Group SEM

**Measurement Model.** Two measurement models were estimated: one model's parameters were constrained to be equal across gender groups, and the other model's parameters were allowed to differ between groups. According to the fit statistics for the constrained ([*SB* $\chi^2(46)$, N = 680] = 65.199, $p < .033$; CFI = .98; TLI = .98; RMSEA = .04, 90% CI [.011, .053]; SRMR = .04) and unconstrained ([*SB* $\chi^2(31)$, N = 680] = 42.600, $p < .08$; CFI = .99; TLI = .98; RMSEA = .03, 90% CI [.001, .06]; SRMR = .03) models, and the Satorra-Bentler scaled chi-square difference test, $\Delta\chi^2(15) = 22.5991$, *ns*, there was no significant difference in overall model fit between the fully constrained measurement model and the freely estimated measurement model. Thus, we found no gender difference in the measurement model, so we used the more parsimonious constrained measurement model in our structural analysis.

**Structural Model.** After testing the proposed model with the full sample, we tested for moderating effects of gender. Satorra-Bentler scaled chi-square difference tests ($\Delta\chi^2$) were used to contrast the fit of nested models. We first fit a model in which all path coefficients were constrained to be equal between gender groups. We then used Lagrange multiplier (LM) tests of equality across samples to determine which, if any, constraints should be removed. The process resulted in a final model that was partially constrained that was a good fit to the data: ([MLR$\chi^2(188)$, $N = 681$] = 182.89, *n.s.*; CFI = 1.00; TLI = 1.01; RMSEA = .000, 90% CI [.00, .02]; SRMR

= .05; Figure 3). The model with all paths constrained to be equal across the two groups also fit well, according to the fit statistics ([MLM $\chi^2(190)$, $N$ = 681] = 194.19, *n.s.*; CFI = .997; TLI = .996; RMSEA = .008, 90% CI [.00, .03]; SRMR = .064), however, the chi-square difference test, $\Delta\chi^2(2) = 9.06$, $p < .025$, indicated that constraining all parameters to be equal between groups (boys and girls) significantly worsened the model fit.

Two structural paths were estimated separately for boys and girls to achieve the best model fit. Overall results are consistent with those from the full sample model; however, the analyses revealed two gender differences. More favorable attitudes about violence predicted higher levels of violent behavior at age 22 for boys, but not for girls. Future expectations indirectly predicted violent behavior at age 22 for boys, but not for girls. Similar to the results from the full sample, future educational aspirations predicted attitudes toward violence for boys and girls. For both boys and girls, exposure to community violence predicted attitudes toward violence via future educational aspirations, albeit marginally (p = .059 and p = .06, respectively). In addition, future educational aspirations predicated violent behavior in $12^{th}$ grade via attitudes toward violence for boys and girls.

## Discussion

Our results suggest that one mechanism whereby exposure to community violence may result in more violent attitudes and behaviors over time is through the negative effects it has on educational aspirations. This adds to our understanding about the deleterious effects of exposure by

including a longitudinal analysis and focusing on educational effects. Researchers have found that adolescents who were exposed to higher levels of community violence also engaged in more violence perpetration and had attitudes that more strongly favored the use of aggression (Halliday-Boykins & Graham, 2001). Witnessing community violence might provide youths with a clear incentive to commit violence (i.e., achieving instrumental goals). A study of ethnically diverse urban school-age children indicated that witnessing violence contributed to aggressive behavior, but in older children ages 9 to 12, these effects were partially mediated by their aggressive fantasies and normative beliefs supporting aggression (Guerra et al., 2003). The present study extends these findings to African American adolescents and demonstrates that witnessing violence contributes to higher levels of violent behavior in adolescence and young adulthood through more attitudes favoring violence (Huesmann & Guerra, 1997). This is consistent with the social learning theory of aggression (Bandura, 1978; Huesmann & Guerra, 1997), which posits that adolescents who witness more community violence are more likely to report attitudes favoring the use of violence to solve interpersonal problems and, not surprisingly, more violent behavior compared to adolescents who witness less community violence.

Our results regarding the negative correlation between exposure to violence and educational aspirations are similar to previous findings on the association between violence victimization and poor future expectations. For example, in a diverse sample of urban youth, those who were victims of

violence reported lower levels of future expectations (O'Donnell, Schwab-Stone & Muyeed, 2002). Howard, Feigelman, Cross, and Rachuba (2002), however, found that victimization, but not witnessing violence was associated with despondency about the future (i.e., lack of hope for a long or happy life). Yet, our focus was on educational aspirations, which may be a particularly critical aspect of future orientation for lower income African-American youth, especially boys, who may disengage from school at higher rates than their White counterparts (National Center for Education Statistics, 2014; Roderick, 2003). It is also notable that educational aspirations are related to less violent attitudes, and that these effects may be long lasting. Thus, factors that decrease education aspirations may also have effects on subsequent violent attitudes and ultimately behavior well past the exposure.

We found significant gender differences on the variables of interest. Boys were exposed to more community violence in the 12 months prior to 9$^{th}$ grade, had more favorable attitudes about violence, and engaged in more violent behavior in both 12$^{th}$ grade and at age 22 compared to girls. This is consistent with previous research, which finds boys are generally higher than girls in violence exposure, attitudes and behavior (Buka et al., 2001; Durant et al., 1994; Herrenkohl et al., 2000; Huesmann & Guerra, 1997; Stein et al., 2003). We also found girls expressed higher future educational aspirations compared to boys. This similarly corroborates past research, which suggests that girls report higher educational expectations and less uncertainty

regarding their future academic goals compared to boys (Gutman et al., 2012; Mello, 2008).

We also found that the mechanism by which exposure may affect violent outcomes may differ for boys and girls. Although there were no gender differences in the relationship between attitudes about violence and violent behavior in 12th grade, differences did exist in the relationship between attitudes about violence in 12th grade and violent behavior at age 22. For boys, more favorable attitudes about violence predicted higher levels of violent behavior at age 22. This relationship was not found for girls. Therefore, it appears that in later adolescence, attitudes about violence had a longer lasting effect for boys, but not for girls. This is consistent with previous research that beliefs and attitudes about violence can produce aggressive tendencies across an individual's life span (Huesmann & Guerra 1997; Anderson & Bushman,_2002; Bushman & Huesmann, 2010). Additionally, future expectations were indirectly associated with violent behavior at age 22 for boys, but not for girls. This is important as boys typically obtain lower grades and exhibit more problem behavior in the classroom compared to girls (Buchmann, DiPrete, & McDaniel, 2008). Furthermore, compared to African American girls, teacher assessments suggest sharper declines in African American boys' school performance across the transition from middle school to high school and boys are more likely to drop out of high school (Roderick, 2003). Thus, identifying strategies to promote educational aspirations in boys may be an integral

component of preventing the acceptance of violence as well as violent behavior, particularly among African American adolescents (Roderick, 2003). Indeed, Roderick (2003) suggested that maintaining high educational aspirations among African American boys who had dropped out might be an important coping mechanism when faced with the strains of daily life (e.g., gang activity; Agnew, 1992)._

It is noteworthy that no other paths displayed gender differences. As such, exposure to violence was related similarly to lower educational aspirations for both boys and girls. This highlights the pervasive impact of community violence on goals and aspirations for youth. There were no gender differences in the relationship between future educational aspirations and attitudes about violence. Both boys and girls may see violence as an acceptable way to obtain desirable outcomes (e.g., safety, respect, status) when their future does not include positive outcomes. Adolescents who cannot foresee changing their situation (e.g., living in a violent community) through advancing their education may perceive the use of violence as being normative, acceptable, and expected given their prior experiences and exposure. In contrast, adolescents who anticipate pursuing higher education and attaining positive goals may see violence as detrimental to their future aspirations._

**Limitations and Suggestions for Future Research**

While our findings advance our understanding of exposure to community violence as a risk factor and future educational aspirations as a

promotive factor for lower income African American youth, several study limitations should be noted. First, our sample included urban African American youth with truncated school achievement. Therefore, our findings may not generalize to all African American youth, however, by their senior year in high school the range of GPAs in the sample was more normally distributed (Zimmerman, Caldwell, & Bernat, 2002). Though our sample provides unique insight into this population of youth, caution is also necessary as the results may not generalize to other ethnic groups or more affluent African-Americans. Future research should investigate these relationships in other ethnic groups including multiple non-white samples.

Second, our measure of educational aspirations only included two items that captured expectations about future educational achievements. While future educational aspirations may be a particularly relevant measure of future aspirations during middle adolescence (Nurmi, 1987), a broader, more comprehensive measure of future orientation that incorporates job, career, and family may be useful in future research. Similarly, our measure of violence exposure only included two items focused on witnessing a violent crime where a person was hurt, and did not include witnessing violence within the family or personal victimization. Future research that includes more comprehensive measures of exposure would expand our understanding of the long term effects of violence exposure.

Our study did not account for childhood exposure to violence, attitudes about violence, or violent behavior prior to 9th grade. In the current study,

our goal was to predict attitudes about violence and violent behavior in later adolescence and early adulthood as a result of violence exposure just prior to high school. Future research that looks at exposure at younger ages and the development of violent behavior during childhood and adolescence would be a useful approach. In addition, it is possible that there are bidirectional relationships among these constructs. Future research is needed to further delineate these relationships.

Finally, we do not account for factors within participants' current social and environmental context. Current contextual factors such as poverty, unemployment, objective measures of community violence, and social support may also explain behavioral choices and contribute to a person's orientation/feelings about their future. Research that accounts for both past violence involvement and current contextual factors may better explain violent behavior in adulthood.

**Conclusions**

This study sought to explore the relationship between exposure to violence and later violent attitudes and behaviors, and to examine how future educational aspirations may influence these relationships in a sample of urban, African American adolescents. Our results largely support our hypotheses and suggest that exposure to community violence in adolescence has persistent effects on young adult violent behavior. Most importantly, however, is the mechanism by which witnessing violence may contribute to future violent attitudes and behaviors–– adolescents' future

educational aspirations. Future education aspirations operated as a promotive factor, directly decreasing the likelihood of positive attitudes toward violence. Efforts to examine how different aspects of future expectations may affect subsequent behavior, especially violence, are warranted and necessary. This program of research may also provide valuable information for focusing our prevention efforts on a factor (i.e., educational aspirations) that is amenable to change.

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Table 1.

Correlations, means, and standard deviations of study variables for full sample (*n* = 681).

| Variables | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Exposure to community violence in past 12 months (Grade 9) | -- | | | | |
| 2. Future educational aspirations (Grade 9) | -0.14*** | -- | | | |
| 3. Attitudes about violence (Grade 12) | 0.13** | -0.17*** | -- | | |
| 4. Violent behavior (Grade 12) | 0.25*** | -0.14** | 0.42*** | -- | |
| 5. Violent behavior (Age 22) | 0.12** | -0.09* | 0.28*** | 0.31*** | -- |
| M | 2.28 | 4.43 | 1.42 | 1.37 | 1.28 |
| SD | 1.20 | .78 | .56 | .67 | .58 |

Note. * p < .05. **p < .01. ***p < .001.

Table 2.

Correlations, means, and standard deviations comparing boys and girls.

| | | | | | | Boys | | Girls | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variables | **1** | **2** | **3** | **4** | **5** | **Mean** | ***SD*** | **Mean** | ***SD*** | ***t*** |
| 1. Exposure to community violence in past 12 months (Grade 9) | -- | -.04 | .16** | .23*** | .13 | 2.38 | 1.25 | 2.18 | 1.14 | -2.18* |
| 2. Future educational aspirations (Grade 9) | -.21** | -- | -.16** | -.05 | -.02 | 4.37 | .81 | 4.50 | .74 | 2.14* |
| 3. Attitudes about violence (Grade 12) | .09 | -.16** | -- | .33*** | .13* | 1.52 | .59 | 1.33 | .51 | -4.26*** |
| 4. Violent behavior (Grade 12) | .25*** | -.18** | .40*** | -- | .18** | 1.47 | .75 | 1.28 | .57 | -3.46*** |
| 5. Violent behavior (Age 22) | .09 | -.13 | .34*** | .36*** | -- | 1.42 | .69 | 1.17 | .44 | -4.65*** |

Note. Boys are presented below the diagonal ($n$ = 335). Girls are presented above the diagonal ($n$ = 346).
* p < .05. **p < .01. ***p < .001.

Table 3. *Results of the Structural Model examining the relationships between exposure to violence, future orientation, attitudes about violence, and violent behavior in the full sample (n = 681).*

| **Direct, Indirect and Total Effects** | | Standardized Estimates | | |
|---|---|---|---|---|
| | **b (SE)** | **Direct Effect** | **Total Indirect Effects** | **Total Effects** |
| ECV → FEA | -.10 (.03) | -.22 [-.33, | | |
| ECV → AV | .07 (.03) | .15 [.03, .27] | .04 [-.001, .08] | .19 [.08, .30] |
| FEA → AV | -.20 (.07) | -.19 [-.35, | | |
| ECV → VB12 | .10 (.03) | .26 [.13, .38] | .10 [.04, .16 ] | .36 [.24, .48] |
| FEA → VB12 | -.05 (.08) | -.05 [-.21, .10] | -.09 [-.17, -.01] | -.14 [-.28, |
| AV → VB12 | .37 (.08) | .48 [.37, .59] | | |
| ECV → VB22 | .01 (.04) | .02 [-.14, .17] | .16 [.07, .24] | .17 [.04, .31] |
| FEA → VB22 | -.04 (.07) | -.03 [-.16, .09] | -.07 [-.14, -.02] | -.11 |
| AV → VB22 | .17 (.10) | .16 [-.03, .35] | | |
| VB12 → VB22 | .44 (.21) | .33 [.09, .57] | | |
| SES → ECV | .001 (.01) | .01 [-.09, .12] | | |
| SES → FEA | .004 (.002) | .09 [.00, .19] | | |

| **Specific Indirect Effects** | **Indirect Effect** |
|---|---|
| ECV → AV → VB12 | .07 [.02, .13] |
| ECV → FEA → AV → VB12 | .02 [-.001, .04] (p = .064) |
| FEA → AV → VB12 | -.09 [-.17, -.01] |
| ECV → VB12 → VB22 | .08 [.01, .16] |
| ECV → FEA → AV | .04 [-.001, .08 ] (p = .056) |

*Note.* ECV=Exposure to Community Violence in 9th grade. FEA=Future Educational Aspirations in 9th grade. AV=Attitudes about Violence in 12th grade. VB12=Violent Behavior in 12th Grade. VB22=Violent Behavior at Age 22. b indicates unstandardized effect. Effect estimates are standardized values unless otherwise noted. Model fit indicators include SB $\chi^2(80) = 64.96$, *n.s.*; CFI = 1.00; TLI = 1.02; RMSEA = .00, CI [.00, .01], SRMR = .03. Only significant specific indirect effects are included.

Table 4. *Results of the Structural Model examining the relationships between exposure to violence, future orientation, attitudes about violence, and violent behavior for boys and girls.*

| **Direct, Indirect and Total Effects** | Boys (*n* = 335) | | | | Girls (*n* = 346) | | | |
|---|---|---|---|---|---|---|---|---|
| | **b (SE)** | **Direct Effect** | **Total Indirect Effects** | **Total Effects** | **b (SE)** | **Direct Effect** | **Total Indirect Effects** | **Total Effects** |
| ECV → FEA | -.10 (.03) | -.21 [-.35, | | | -.10 (.03) | -.19 [-.30, | | |
| ECV → AV | 07 (.03) | .14 | .04 | .18 | .07 (.03) | .14[.02, .26] | .04 | .18 |
| FEA → AV | -.20 (.07) | -.19 [-.33, | | | -.20 (.07) | -.20 [-.38, | | |
| ECV → VB12 | .10 (.03) | .23[.11, .35] | .10[.03, .16 | .33[.21, .45 | .10 (.03) | .29[.13, .44] | .07[.02, .13] | .36[.22, .50] |
| FEA → VB12 | -.02 (.07) | -.02[-.15, .1 | -.10[-.18, | -.12[-.23, .0 | -.02 (.06) | .03[-.20, .15] | -.08[-.15, .0 | -.10[-.25, .0 |
| AV → VB12 | .44 (.11) | .53 | | | .26 (.09) | .38[.21, .56] | | |
| ECV → VB22 | .02 (.04) | .04[-.10, .18 | .14[.06, .21 | .17[.04, .30 | .02 (.04) | .05[-.14, .24] | .11[.03, .19] | .16[-.01, .33 |
| FEA → VB22 | -.02 (.07) | -.02[-.12, .0 | -.08[-.15, | -.10[-.21, .0 | -.02 (.07) | -.03[-.18, .13] | -.03[-.08, .0 | -.05[-.21, .1 |
| AV → VB22 | .36 (.15) | .30[.08, .52] | | | .002 (.09) | .002[-.21, .21 | | |
| VB12 → | .34 (.18) | .24 | | | .34 (.18) | .28 [.06, .50] | | |
| SES → ECV | -.001 | -.01[ -.11, .0 | | | -.01 (.01) | -.01[-.11, .09] | | |
| SES → FEA | .004 | .10 | | | .004 | .10[.003, .18] | | |

| **Specific Indirect Effects – Girls** | **Indirect Effect** |
|---|---|
| ECV → AV → VB12 | .05 [.004, .10] |
| ECV → VB12 → VB22 | .08 [.001, .16] |
| ECV → FEA → AV | .04 [-.002, .08]( p = .06) |
| FEA → AV → VB12 | -.08 [-.15, .00] |
| **Specific Indirect Effects – Boys** | |
| ECV → AV → VB12 | .07[.01, .14] |
| ECV → VB12 → VB22 | .06 [-.001, .11] (p = .055) |
| ECV → FEA → AV | .04 [-.001, .08] (p = .059) |

| | |
|---|---|
| FEA → AV → VB12 | -.10 [-.18, -.01] |

*Note.* ECV=Exposure to Community Violence in 9th grade. FEA=Future Educational Aspirations in 9th grade. AV=Attitudes about Violence in 12th grade. VB12=Violent Behavior in 12th Grade. VB22=Violent Behavior at Age 22. SES=family socioeconomic status in 9th grade. b indicates unstandardized effect. Effect estimates are standardized values unless otherwise noted. Model fit indicators include SB $\chi^2(188) = 182.89$, *n.s.*; CFI = 1.00; TLI = 1.01; RMSEA = .00, CI [.00, .02], SRMR = .05. Only significant specific indirect effects are included.

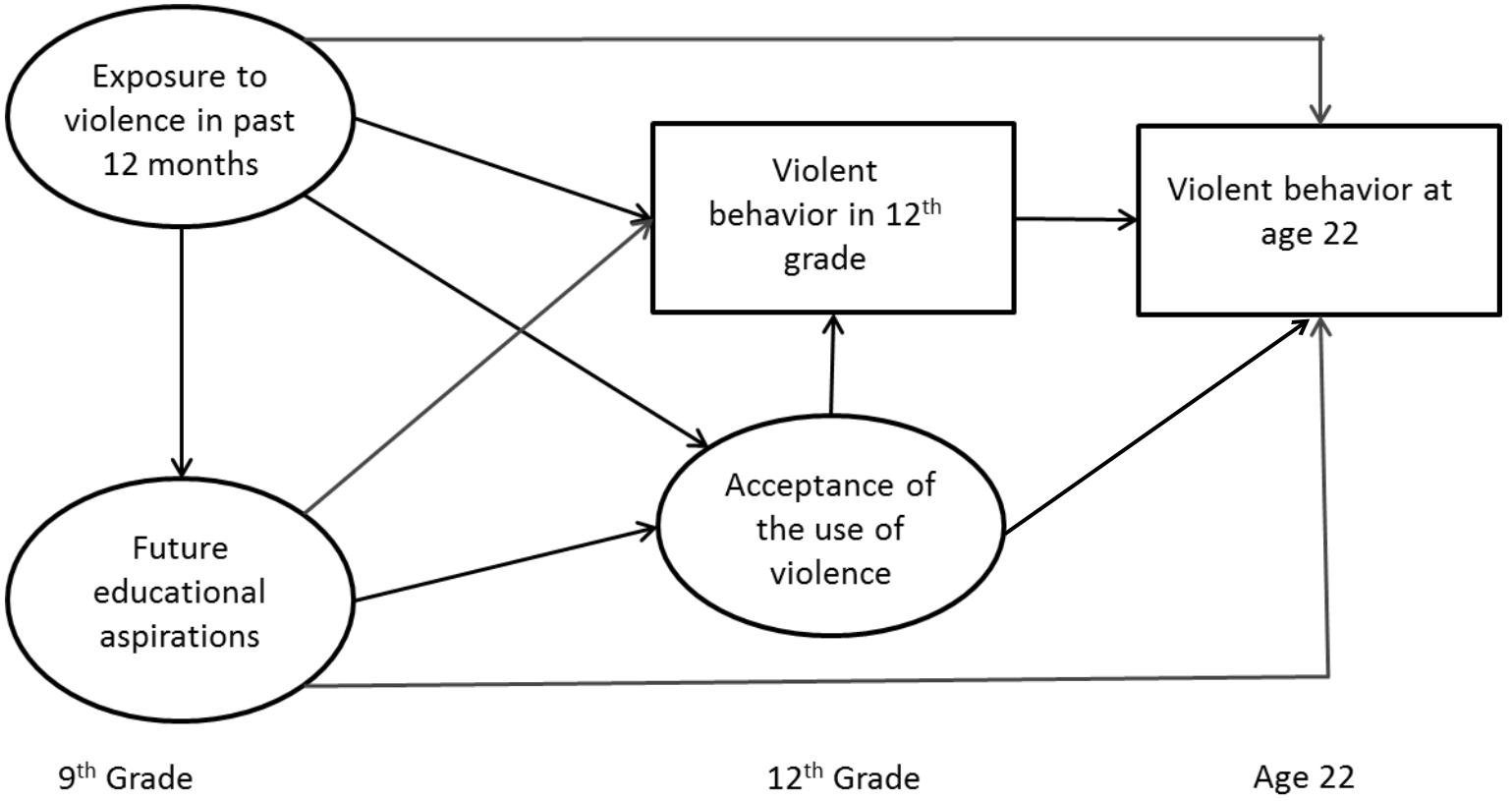



*Figure 1*. Conceptual model. Exposure to violence and future educational aspirations assessed in 9th grade; attitudes about violence and violent behavior assessed in 12th grade; violent behavior assessed at age 22.

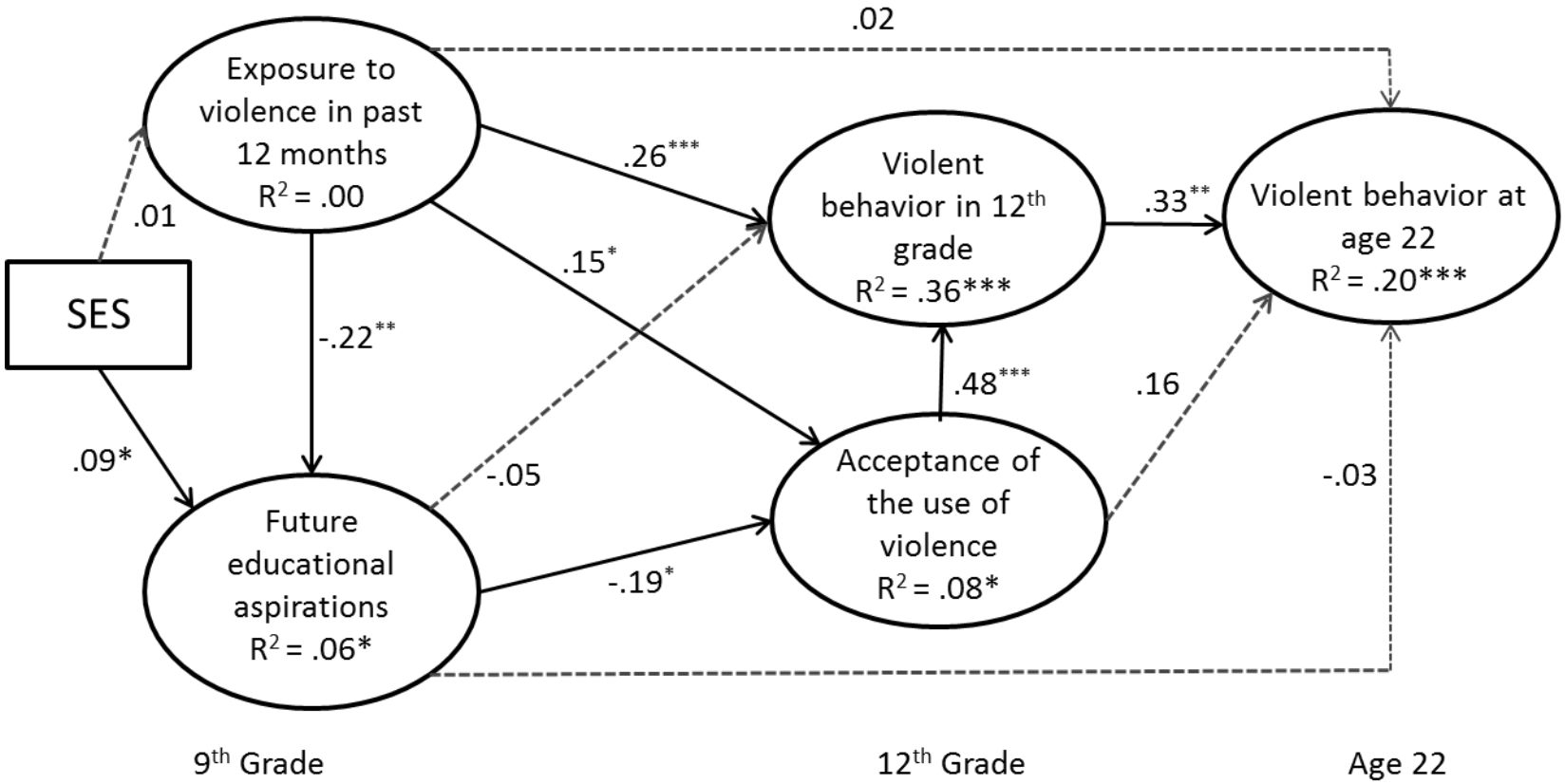
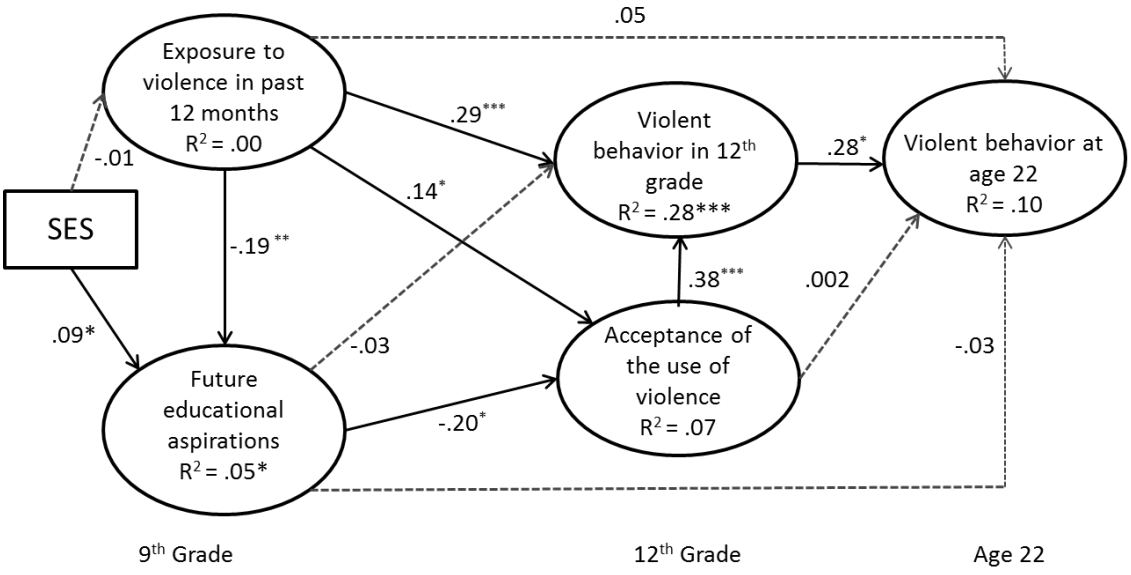



*Figure 2*. Model displaying standardized direct effects for the full sample. Solid lines indicate significant pathways; dashed lines indicate non-significant pathways. Exposure to violence and future educational aspirations assessed in 9th grade; attitudes about violence and violent behavior assessed in 12th grade; violent behavior assessed at age 22. *$p < .05$; **$p < .01$; *** $p \leq .001$.

A.




B.

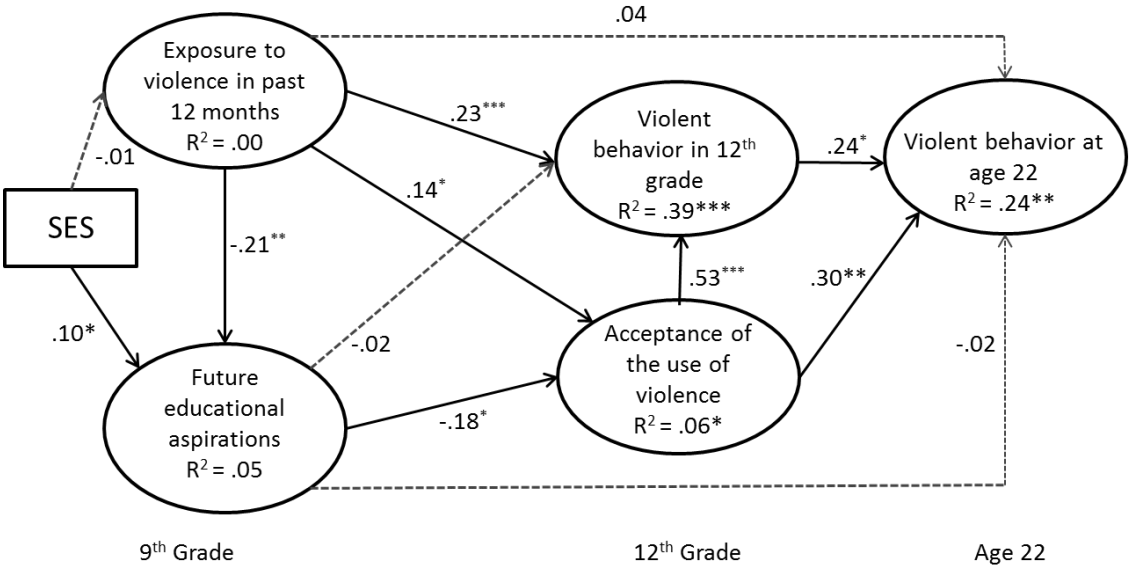



Figure 3. Model displaying direct effects for girls (A) and boys (B). Solid lines indicate significant pathways; dashed lines indicate non-significant pathways. Exposure to violence and future educational aspirations assessed

in 9th grade; attitudes about violence and violent behavior assessed in 12th grade; violent behavior assessed at age 22. *$p < .05$; **$p < .01$; *** $p \leq .001$.

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