IS THE INFLUENCE OF MEDIA VIOLENCE EXPOSURE ON ADOLESCENT PHYSICAL AGGRESSION MODERATED BY EXPOSURE TO REAL-LIFE VIOLENCE?

by

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DISSERTATION ABSTRACT

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Research illustrates a consistent link between adolescent exposure to media violence and involvement in physical aggression. Less is known, however, about how real-life violence exposure might moderate this link. Guided by Cultivation theory and the Differential Susceptibility hypothesis, the present study analyzed cross-sectional data from 345 middle-schoolers to examine the moderating effect of real-life violence exposure (i.e., in the adolescent's home and community) on the relation between media (i.e., TV/movies, internet, videogames) violence exposure and physical aggression. We also examined if the direct and/or interactive effects of media violence exposure and real-life violence exposure on physical aggression varied across males and females. We found significant direct effects of media violence exposure (for all three media types) on both measures of physical aggression, as well as significant direct effects of real-life violence exposure (family conflict, community violence) on physical aggression. We also found a significant interaction such that the effect of internet violence exposure on involvement in physical fights was contingent on levels of community violence exposure for male adolescents in our sample. The direct effect of videogame violence on involvement in physical fights was significant in case of females only. By examining the moderating effect of real-life violence, especially community violence exposure, the present study

advances our understanding of media effects on adolescent aggression, and helps identify those who might be at greater risk.

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TABLE OF CONTENTS

LIST OF FIGURES

Figure Page

LIST OF TABLES

Table Page

CHAPTER I

INTRODUCTION

Adolescent exposure to media violence is highly prevalent (e.g., Comstock & Scharrer, 2007; Gentile, Saleem, & Anderson, 2007; Kirsh, 2012) and has consistently been linked to aggression (e.g., Anderson et al., 2003; Bushman & Huesmann, 2006; Bushman & Huesmann, 2010; Engelhardt, Bartholow, & Saults, 2011; Krahé, 2014; Paik & Comstock, 1994; Villani, 2001). Media violence is typically defined as visual portrayals of acts of aggression by a human or human-like character against another (Huesmann, 2007), with the intent of causing physical or emotional pain (Berkowitz, 1993). While a large body of research has identified a positive association between media violence exposure and physically aggressive behaviors in cross-sectional (Kuntsche, Pickett, Overpeck, Craig, Boyce, & Gaspar de Matos, 2006; Swing & Anderson, 2014; Ybarra, Diener-West, Markow, Leaf, Hamburger, & Boxer, 2008) and longitudinal studies (Anderson et al., 2008; Bushman & Huesmann, 2012; Gentile & Bushman, 2012; Krahé & Möller, 2011) of adolescents, less is known about how real-life violence exposure can moderate the associations between media violence exposure and physical aggression. This is a critical gap because some adolescents may be at a greater risk for negative effects of media violence exposure due to exposure to violence in other social contexts such as families and communities.

Theoretical Framework

The current study is based on two theoretical models grounded in social learning principles (Bandura, 1977), with the purpose of understanding how media and proximal social contexts can influence adolescent behavior. These two theoretical models are

Cultivation theory (Gerbner, Gross, Morgan, & Signorielli, 1980) and the Differential Susceptibility to Media Effects model (Valkenburg & Peter, 2013). Gerbner and colleagues' (1980) Cultivation theory posits that individuals whose real-life experiences are congruent with what they are exposed to in the media will be more affected by media messages. This theory suggests that repeated doses of media over time results in a shared set of concepts and expectations about reality (Huesmann & Eron, 1986). For example, heavy viewers of television tend to be exposed to more violence and subsequently affected by the Mean World Syndrome, or the belief that the world is a far worse and more dangerous place than it actually is (Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002). The differential susceptibility model proposed by Valkenburg and Peter (2013) postulates that media effects are conditional on individual and social context characteristics, i.e., some adolescents may be more vulnerable to media effects because of the risk and protective factors in their individual or social contexts. Social influences may operate through family, peers, teachers, schools, or other institutions that communicate norms about violence (Jordan, 2004).

Specifically, the use of these two theoretical models is intended to help us identify individuals who may be at greater risk of aggressive behaviors due to exposure to violence in the media and other social contexts. Although overall effects of media violence exposure on aggression may be small-moderate, specific subgroups (e.g., individuals exposed to family conflict) may be more strongly impacted by violent media (Kanz, 2016). This study will examine adolescent exposure to both media violence (TV/movies, internet, and videogames) and real-life violence (family conflict, community violence) and the influence of these interacting effects on involvement in physical fights

and physically aggressive behaviors in the past six months. The study will also examine sex differences for the direct effects of media violence exposure on adolescent aggression, as well as whether the interactions between media violence exposure and real-life violence exposure look different for male and female adolescents.

Developmental Considerations

Adolescents as a group are more vulnerable to the detrimental effects of media violence exposure. Given the protracted maturation of the cognitive control capacities and heightened need for thrilling and rewarding experiences (Casey, Getz, & Galvan, 2008), adolescents are more susceptible to impulsive acts of physical aggression. Additionally, gradual decline in parental monitoring during adolescence coupled with the increasingly mobile nature of media devices makes it more likely for adolescents to be exposed to violent media (Anderson, Gentile, & Buckley, 2007; Davies & Gentile, 2012). Media violence is often glamorized, sanitized, and not associated with any negative consequences, making it more likely for adolescents to emulate violent acts in real life (Strasburger, Wilson, & Jordan, 2014). This is important because early onset of physical aggression and disruptive behaviors during adolescence has been linked to long-term negative outcomes, including delinquency and violent offending (Farrington, 2001; Loeber, Burke, & Pardini, 2009). Notable longitudinal studies have found links between total TV time and violent and antisocial behavior later in life, even when accounting for effects of socioeconomic status (SES), aggressive tendencies, and temperament (Johnson, Cohen, Smailes, Kasen, & Brook, 2002; Robertson, McAnally, & Hancox, 2013). Examining the influence of real-life violence exposure on the association between media

violence exposure and physical aggression during adolescence can help in the prevention of these cascading consequences.

This study will focus on *physical* aggression as the main outcome, which includes hitting, kicking, punching, pushing, and tripping (Dodge, Coie, & Lynam, 2006). From a developmental perspective, the normal course of physical aggression during the life span tends to rapidly increase during infancy, peak around ages 2 – 3, and experience a continuous decrease up to adulthood (Cairns, Cairns, Neckerman, Ferguson, & Gariépy, 1989; Loeber & Stouthamer-Loeber, 1998; Tremblay, 1998; Tremblay et al., 1999). This normative decline is likely attributable to increases in self-regulation and socialization effects, as children learn to use strategies other than aggressive conflict resolution (Shaw, Winslow, Owens, Vondra, Cohn, & Bell, 1998). Given the prominent role of socialization effects, it is important to understand the influences of media violence exposure and real-life violence exposure on adolescent physical aggression.

Reports of physical aggression during adolescence are a risk factor for later physical violence and criminal behavior in adulthood (e.g., Farrington, 2001), and considering the physical nature of these behaviors, they are often easier to detect and copy than more indirect or relational types of aggression (Undheim & Sund, 2010). Because of the serious long-term implications of involvement in physical aggression and the relative ease with which physically aggressive behaviors can be mimicked (as compared to indirect and relational forms of aggression), this study seeks to identify adolescents who may be at greater risk for involvement in physical aggression due to exposure to violence in multiple contexts.

Media Violence Exposure

An estimated 90% of movies, 60% of television shows, and 68% of videogames include depictions of violence (Wilson, 2008). Adolescent exposure to violence occurs primarily through screen-based media, specifically television, movies, videogames, and the internet. Substantial increases in exposure to violent media are reported during adolescence (e.g., Chen, Dornbusch, & Liu, 2007; Lenhart, Kahne, Middaugh, MacGill, Evans, & Vitak, 2008). Additionally, new technologies and media (e.g., smartphones, tablets, and social media) allow youth to download, view, play, and listen to graphic material any time of the day and from the privacy of their own rooms (Media Violence Commission, 2012), further increasing their risk of exposure to violent content. Violence exposure through various forms of media including TV/movies (Bushman & Huesmann, 2012; Huesmann & Eron, 1986), videogames (Anderson, 2004; Anderson et al., 2008), and the internet (Holz & Appel, 2011; Ybarra et al., 2008) has been identified as a risk factor for physical aggression in adolescents.

TV/Movie violence exposure. TV violence exposure has been linked to physical aggression outcomes (Eron, Huesmann, Lefkowitz, & Walder, 1972; Huesmann & Miller, 1994; Huesmann, Moise-Titus, Podolski, & Eron, 2003), including one study that found that preference for violent TV programs at age 8 predicted aggressive behavior at age 19 (Eron, Huesmann, Lefkowitz, & Walder, 1972). A more recent longitudinal study found that children who endorsed high exposure to violent TV shows were three times more likely to be convicted of criminal behavior (e.g., domestic violence, use of weapon) in adulthood (Bushman & Huesmann, 2012). Exposure to violence on TV and in the movies is a consistent predictor of physical aggression among youth and will be studied as one of the media types in the current study.

Videogame violence exposure. Several studies report strong and negative causal effects of videogame violence exposure on adolescent physical aggression (e.g., Anderson, 2004; Anderson et al., 2008). Proponents of these strong, negative effects of video game violence exposure, argue that aggressive behaviors are developed because videogames allow the player to actively engage in perpetrating the violence rather than simply observing a violent interaction (Bushman & Huesmann, 2012), as some studies have demonstrated a significantly larger effect on physical aggression for interactive versus passive media (Anderson, Gentile, & Buckley, 2007). Additionally, changes in brain activity have been observed in participants engaging in violent vs. non-violent videogames. Hummer and colleagues (2010) performed an experimental study in which adolescents were randomly assigned to play either a violent or non-violent videogame to measure changes in prefrontal activity. Participants who played the violent videogame demonstrated a lower BOLD response than those with the nonviolent game immediately after playing for 30 mins, suggesting that playing violent videogames can modulate prefrontal activity during cognitive inhibition. The present study will examine and attempt to replicate these findings of videogame violence exposure effects on adolescent physical aggression.

Internet violence exposure. As compared to TV/movie and videogame violence, there is little research examining the effects of internet violence exposure. The studies that have been done suggest that online exposure to violence is associated with increased physical aggression in youth (Holz & Appel, 2011; Ybarra et al., 2008), although this field has yet to be extensively studied given the rapidly-evolving landscape of websites, apps, and social media sites. In one study, Ybarra and colleagues (2008) found that

exposure to violence online among adolescents was associated with elevated odds for reporting seriously violent behavior (e.g., assault), and youths who watched sites that depicted real people engaged in violent behavior were more likely to report violent behavior. The current study aims to address this gap in the literature by studying aggression outcomes associated with internet violence exposure.

Real-life Violence Exposure

The cumulative amount of violence to which youths are exposed is a stronger predictor of poor adjustment outcomes compared to single settings of violence exposure (e.g., Finkelhor, Omrod, & Turner, 2007; Mrug, Loosier, & Windle, 2008). Thus, it is important to study the effects of violence in other social contexts when examining the effects of media violence exposure. A large proportion of adolescents are routinely exposed to violence in real life (Office of the Surgeon General, 2001), with over 50-70% of adolescents witnessing real-life violence by the age of 15 (Cisler et al., 2012; Finkelhor, Turner, Shattuck, & Hamby, 2013). Witnessed violence exposure has been linked with greater physical aggression in cross-sectional (Schwartz & Proctor, 2000) and longitudinal (Farrell & Bruce, 1997) studies. In this study, we will use exposure to community violence and family conflict as indicators of real-life violence exposure.

Community violence exposure. Exposure to community violence is associated with an increased risk for physically aggressive behaviors (e.g., Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Guerra, Huesmann, & Spindler, 2003). Community violence is typically defined as acts of aggression that takes place outside of the home and does not include domestic or media violence exposure (Fowler et al., 2009). The act of *witnessing* community violence is defined as hearing, seeing, or hearing

about an event that involves property loss, threat of physical injury, actual injury, or death (Fowler et al., 2009). Indirect exposure to violence through witnessing has been linked to physically aggressive behavior (e.g., Boxer, Gullan, & Mahoney, 2009; Malik, Sorenson, & Aneshensel, 1997; Song, Singer, & Anglin, 1998). Given this association, there is a need for further study on exposure to community violence as a predictor and moderator of adolescent physical aggression.

Family conflict. Family conflict, defined as openly expressed anger, hostility, and aggression in the home (Moos & Moos, 1994), is related to adolescent physical aggression (e.g., Hussey, Chang, & Kotch, 2006; McCloskey & Lichter, 2003). Exposure to family conflict and violence in the home is not only a predictor of aggressive behavior on its own, but has been found to enhance a youth's aggressive response to violent media (Strasburger, Wilson, & Jordan, 2014). Additionally, although violence exposure at home tends to be reported less frequently compared to violence at school or in the community, it produces the strongest and most significant predictive effects of such negative outcomes as externalizing and internalizing problems (Mrug et al., 2008; Shukla & Weisner, 2015; Slovak, Carlson, & Helm, 2007). Given these pronounced effects, the cultivation theory and differential susceptibility model suggest that adolescents who are exposed to media violence *and* violence in another social context (family conflict, community violence) may be at higher risk for aggression outcomes. Through socialization effects, in which children learn aggression from observing and reenacting these behaviors, exposure to violence in the home and/or community may reinforce violence witnessed in the media and make it more likely that adolescents will view aggressive behaviors as appropriate.

Sex Differences

Boys report playing more violent videogames (Ferguson, 2011; Funk, Buchman, & Germann, 2000), watching more violence and reporting greater enjoyment from it (Weaver, 2011), and identify more strongly with violent characters (Nathanson & Cantor, 2000; Wilson, 2008) than girls. Additionally, boys of all ethnicities generally report higher rates of community violence exposure than girls (Boyd, Cooley, Lambert, & Ialongo, 2003; Goldner, Peters, Richards, & Pearce, 2011; Weist, Acosta, & Youngstrom, 2001). Given differential exposure to violence in media and social contexts, it is important to examine sex differences in our model.

Boys also tend to exhibit more physically aggressive behaviors than do girls (e.g., Archer, 2004; Nolen-Hoeksema, 1994; Pickett et al., 2013). Meta-analyses of several studies have reported a positive correlation between testosterone and aggression (Archer, 1991; Book, Starzyk, & Quinsey, 2001). Given this link and increased testosterone production during puberty in male adolescents (e.g., Nottelman, Susman, & Inoff-Germain, 1987), it is likely that hormonal differences between males and females partially account for higher reports of physical aggression in boys. Despite these differences, however, several studies observing the direct and interactive effects of media violence exposure on aggression have found these effects to operate similarly across sexes (e.g., Fikkers, Piotrowski, Weeda, Vossen, & Valkenburg, 2013; Krahé & Möller, 2011).

The Present Study

The present study analyzed data from a sample of 345 adolescents recruited from a predominantly low-income middle school in the Pacific Northwest. Students completed

a baseline and 6-month follow-up survey on media use, violence exposure, health risk behaviors including aggression, and parental input variables. The present study analyzed baseline data to (1) examine the associations between different forms of media violence exposure (TV/movies, internet, videogames) and physical aggression, (2) explore moderating effects of real-life violence exposure (family conflict, community violence) on the association between media violence exposure and physical aggression, and (3) evaluate the moderating role of sex on the direct and interactive effects of violence exposure on physical aggression (see Figure 1). The following covariates were included given their potential effect on media violence exposure and/or its relation to physical aggression: age (Finkelhor et al., 2013), race (Johnson, Adams, Hall, & Ashburn, 1997), SES (Comstock & Paik, 1991; Yang & Huesmann, 2013), impulsivity (e.g., Hatfield & Dula, 2014), and average media use time on weekends and weekdays (i.e., amount of time spent on TV, videogame, and internet time; Ostrov, Gentile, & Crick, 2006).

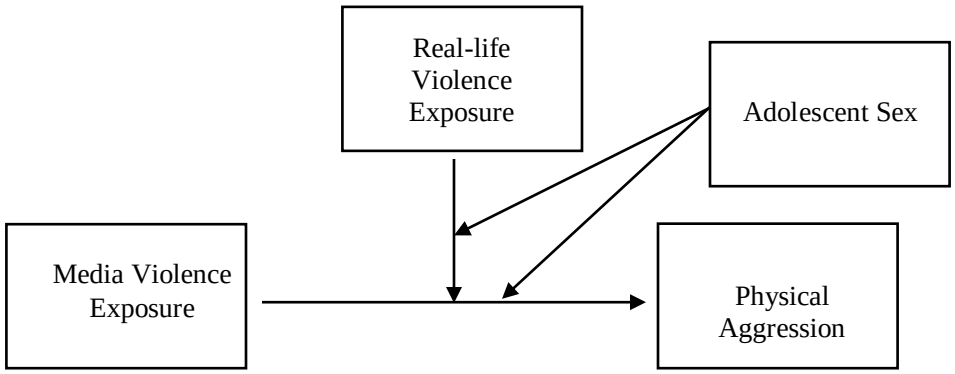

Figure 1. Model examining the moderating effect of real-life violence exposure on the association between media violence exposure and physical aggression in adolescents. Potential sex differences in direct and moderated effects were also examined.

The research questions for the present study are as follows:

Research Question 1: Is media violence exposure positively associated with physical aggression in adolescents?

Hypothesis 1: More exposure to violence on TV/movies, videogames, and the Internet, will be independently associated with more physical aggression in our sample.

Research Question 2: Does exposure to community violence or exposure to family conflict moderate the hypothesized relationship between media violence exposure and physical aggression?

Hypothesis 2: Adolescents who experience exposure to community violence or family conflict will show stronger associations between media violence exposure and physical aggression as compared to their peers who report less or no exposure to real-life violence.

Research Question 3: Do the hypothesized direct and interactive effects described above vary based on adolescent sex?

Hypothesis 3: We do not expect to observe significant differences based on adolescent sex in either the direct or interactive effects of media violence exposure. In other words, the potential effect of media violence exposure, real-world violence exposure, and the interaction between the two is hypothesized to operate similarly for boys and girls.

Although the interaction between media violence exposure and family conflict has been previously studied (Fikkers et al., 2013), the moderating effect of community violence exposure has not yet been tested. This study builds on findings by Fikkers et al.

2013 and also explores the three different forms of media violence exposure as separate predictors, as well as controls for individual differences in impulsivity/self-regulation. Although the study is limited in drawing causal inferences due to its cross-sectional nature, the goal is to inform prevention efforts by identifying adolescents who are at heightened risk for physical aggression due to violence exposure across multiple contexts.

CHAPTER II

METHODS

Participants

Participants included 345 adolescents in grades 7 – 8. The sample was recruited based on classroom membership, with participants ranging from 11 – 14 years of age. Students identified as primarily Non-Hispanic White (58.8%), with 29.3% Hispanic and 11.9% Non-Hispanic Other (i.e., Asian/Pacific Islander, Black, Multiracial, and Native American). Sex distribution was roughly equal, with 52.5% of the school population identifying as male and 47.0% as female. The majority of the students were from low-middle socioeconomic class, with 58% receiving free or reduced lunches. Family income must be less than $15,171, or below 130% of the poverty line, to be eligible for the free lunch program (National Center for Education Statistics, 2017).

Procedures

Participants were recruited based on class membership – all 7th and 8th grade students in the middle school were invited to participate in the study. Parental notification letters were mailed to the students' homes. Student assent was obtained in the classrooms by research staff members. Only those students whose parents *did not* opt out of the study, and who themselves assented to participate in the study were included in the study. Eligibility requirements included being enrolled as a student in 7th or 8th grade at the middle school and being fluent in English. Data were collected using self-report surveys on school computers during designated class times. Research staff members were available to answer questions. Students were compensated for their time and participation

in the study. All study procedures were reviewed and approved by the institutional and school district review boards.

Measures

Demographics. Participants completed questions assessing age (11-14 years), sex (male/female), self-reported race-ethnicity (Hispanic, American Indian/Alaskan Native, Asian, Native American/Other Pacific Islander, Black or African American, White or European American, More than one race), and SES (assessed using participation in free/reduced school lunch program).

Media violence exposure. Exposure to media violence was measured using three items that assess the number of days per week on average participants are exposed to violent media related to TV/movies, videogames, and websites (e.g., "How often do you watch television programs and/or movies that contain violence?"). Items were coded on a 9-point scale from 0 = "Less than 1 day a week" to 8 = "7 days a week." Media violence exposure effect was examined using three separate, continuous predictors – TV/movie (*M* = 3.36; *SD* = 2.70; Range = 0 – 8), videogames (*M* = 3.17; *SD* = 3.23; Range = 0 – 8),, and internet (*M* = 1.44; *SD* = 2.36; Range = 0 – 8) - to be able to measure unique effects of each media type.

Community violence exposure. Lifetime exposure to community violence was assessed using a modified version of the *Things I Have Seen and Heard Scale* (Richters & Martinez, 1993). The modified scale includes 10 items that measure the witnessing of violence in the neighborhood and community (e.g., "Heard gun shots"). Nine items from the original measure were not included because of human subjects concerns around mandatory child abuse reporting policies in the state of Oregon. The *Things I Have Seen*

and Heard Scale has been validated and used with children and adolescents (e.g., Richters & Martinez, 1993), and a similarly modified version of the scale reported a Cronbach's alpha value of .74 (Thompson, Weisbart, English, Proctor, Lewis, Hussey, & Runyan, 2007). Community violence exposure was measured as a continuous variable, with items ranging from 0 = "Never" to 4 = "More than three times" (a = 0.93; M = 0.66; SD = 0.76; Range = 0 – 4).

Family conflict. Family conflict was measured using five items from the *Family Environment Scale* (Moos & Moos, 1994), which indicate how often family members engage in the following behaviors at home: (1) criticize each other, (2) hit each other, (3) argue, (4) curse, (5) become so angry they start throwing things. Responses were coded on a 4-point scale, from 0 = "Never" to 3 = "Often." Family conflict scores were explored as a continuous variable (a = 0.88; M = 0.96; SD = 0.62; Range = 0 – 3). Cronbach's alpha for this scale is reported to be .75 in sample of 499 Dutch adolescents (Fikkers et al., 2013).

Physical aggression. Physical aggression was assessed using four items: three items adapted from the Direct and Indirect Aggression Scale (DIAS; Björkqvist, Lagerspetz, & Kaukiainen, 1992), and one item from the Youth Risk Behavior Survey (YRBS; Centers for Disease Control and Prevention, 2015): "During the past 6 months, how many times were you in a physical fight?" Responses to the physical fight item were coded from 0 = "Never" to 3 = "4 or more times" (M = 0.58; SD = 0.92; Range = 0 – 3). Physical aggression assessed using the DIAS measured how often in the past six months adolescents had done the following things to another adolescent: (1) pushed in a rough way, (2) kicked or hit, and (3) tripped on purpose (a = 0.88). Two items from the DIAS

("called names", "threatened to beat up") were excluded because of the study's focus on physical aggression, and one item ("fought with") was excluded because of its similarity to the YRBS item. These items were assessed on a 6-point scale (0 = "Never," 5 = "About every day"; *M* = 0.62; *SD* = 0.95; Range = 0 – 4.33). Involvement in physical fight (YRBS) and reports of other forms of physically aggressive behaviors (DIAS) were examined as separate outcomes. Previous reports of Cronbach's alpha for the adapted DIAS ranges from .83 to .85 (Fikkers et al., 2013).

Control variables. Besides demographic variables, the following control variables were included given their association with media violence exposure and aggressive outcomes.

Impulsivity. Impulsivity was assessed using nine items from the *Junior Eysenck Impulsivity Scale* (Eysenck, Eysenck, & Barrett, 1985). Item responses are binary ("yes/no") and were coded as "0 = No" and "1 = Yes" (e.g., "Do you usually think carefully before doing something?"; *M* = 0.47; *SD* = 0.23; Range = 0 – 0.89). A composite score of impulsivity averaging across 9 items was used *(a* = 0.58). These items have been used and normed with children ages 8 to 15 years (e.g., Eysenck, Easting, & Pearson, 1984), and have demonstrated adequate internal consistency (e.g., Eysenck et al., 1984; White, Moffitt, Caspi, Bartusch, Needles, & Southamer-Loeber, 1994).

Average media use. Amount of time spent using media (i.e., TV/movies, videogames, and internet) was assessed using six items that assess time (minutes/hours) spent last week on a typical weekday and weekend day (e.g., "Thinking about last week, on a typical weekday, for example last Tuesday, please tell us about how much time you spent watching television and/or movies"). Scores were summed and averaged to create a

continuous variable for each media type. Responses were coded on a scale of 0 = "0 minutes" to 31 = "15 hours or more" for TV/movie use (*M* = 5.60; *SD* = 4.99; Range = 0 – 31), videogame use (*M* = 4.65; *SD* = 6.24; Range = 0 – 31), and internet use (*M* = 7.99; *SD* = 7.14; Range = 0 – 31). These items have been used in previous national studies and have demonstrated strong psychometric properties (Bleakley, Vaala, Jordan, & Romer, 2014).

Analytic Plan

The goals of this study were to (a) examine associations between media violence exposure (i.e., TV/movies, videogames, internet) and physical aggression, (b) test whether exposure to real-life violence (i.e., community violence, family conflict) moderates the hypothesized relationships between media violence exposure and physical aggression, and (c) examine the moderating role of sex on the direct and moderated effects of media violence exposure on physical aggression.

Bivariate correlations and t-tests were conducted in IBM SPSS version 21.0 for Windows (IBM, 2012). Path analysis and multigroup analysis for moderation effects were conducted using Mplus v7 (Muthén & Muthén, 1998–2012). Specifically, we conducted multigroup analyses for statistically significant moderated effects, such that key pathways were constrained to be equal for male and female participants in order to test for differences across sex. We also tested models with significant interaction effects for average marginal effects to determine at which point(s) the interaction effect was statistically significant on the outcome variable. All analyses accounted for clustering resulting from participants nested within classrooms, and used robust estimation procedures to account for any violations of normality.

Missing data. Variables with missing data at baseline included TV/movie violence (12.2%), internet violence (7.0%), videogame violence (7.2%), family conflict (1.7%), community violence (1.2%), physically aggressive behaviors (2.3%), age (0.3%), sex (0.6%), ethnicity (25.5%), free/reduced lunch status (9.9%), average TV/Movie hours a week (5.2%), average internet hours a week (7.5%), and average videogame hours a week (3.5%). Little's (1988) missing completely at random (MCAR) test demonstrated that missingness on these variables was completely at random, $\chi^2(248) = 281.26$, $p = .07$. Because two students in the sample identified as "Other" or "I don't know" on the sex variable, we excluded these two cases for the multi-group analyses. We used full information maximum likelihood and robust maximum likelihood in Mplus to account for all other missing data.

CHAPTER III

RESULTS

A correlation matrix of the key study variables is included in Table 1. TV/movie violence exposure was positively associated with physical fights, physically aggressive behaviors, internet violence exposure, videogame violence exposure, family conflict, and community violence exposure. Internet violence exposure was also positively associated with physical fights, physically aggressive behaviors, videogame violence exposure, family conflict, and community violence exposure. Videogame violence exposure was positively associated with physical fights, physically aggressive behaviors, family conflict, and community violence exposure. Significant bivariate associations were observed between family conflict and community violence exposure. Because exposure to violence in the three types of media was not highly correlated (r range = .42 - .52), we tested the effect of each media type separately.

Independent samples t-tests were conducted to compare mean scores of the different types of violence exposure across adolescent sex. Males reported significantly greater TV/movie violence exposure [M = 4.03, SD = 2.77; $t(300) = 4.74$, $p < .001$], internet violence exposure [M = 1.99, SD = 2.64; $t(318) = 4.48$, $p < .001$], and videogame violence exposure [M = 5.02, SD = 3.01; $t(316) = 13.56$, $p < .001$] than females (M = 2.60, SD = 2.39; M = 0.84, SD = 1.85; and M = 1.10, SD = 1.97, respectively). Males (M = 0.79, SD = 0.85) also reported significantly higher exposure to community violence than females (M = 0.49, SD = 0.57), $t(337) = 3.76$, $p < .001$. There was no significant difference in exposure to family conflict across males and females (see Table 1 for sample means). Finally, males (M = 0.72, SD = 0.97) reported significantly greater

Table 1. Means, Standard Deviations, Ranges, and Correlations for Study Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. TVVL	-																			
2. INVL	.52*	-																		
3. VGVL	.50*	.42*	-																	
4. FC	.32*	.20*	.17*	-																
5. CV	.38*	.30*	.20*	.28*	-															
6. Fights	.31*	.20*	.24*	.23*	.43*	-														
7. Phys	.36*	.41*	.27*	.24*	.32*	.47*	-													
8. Sex	-.26*	-.24*	.61*	-.03	-.20*	-.17*	-.15*	-												
9. Age	.13*	.19*	.09	.11*	.24*	-.06	-.03	-.04	-											
10. Ethn	-.01	.06	.09	-.07	-.03	.02	.02	-.06	-.05	-										
11. Native	-.04	.08	.03	-.05	.01	.12*	-.02	-.10	-.19*	-.10	-									
12. Asian	.07	-.05	.01	.15*	.03	.04	.06	.01	-.09	.05	-.03	-								
13. Black	.04	.05	.07	-.07	.08	-.02	-.03	-.06	-.05	-.02	-.06	-.02	-							
14. Multi	.07	.01	.11	.01	-.02	.12*	.16*	.02	-.06	.49*	-.27*	-.07	-.17*	-						
15. Lunch	.10	.02	.07	-.01	.04	.09	.01	-.12*	.09	.22*	-.02	-.02	.03	.08	-					
16. Educ	-.05	.03	-.02	-.07	-.02	.02	-.03	.01	.01	-.29*	-.02	.02	.08	-.16*	-.11	-				
17. Impuls	.30*	.21*	.19*	.25*	.31*	.28*	.33*	-.14*	.10	-.03	.10	.09	-.02	.08	.06	-.10	-			
18. TVHrs	.21*	.11	.17*	.04	.03	.08	.05	-.11*	-.10	-.13*	.02	.06	.18*	-.07	.01	-.07	.13*	-		
19. INHrs	.30*	.28*	.24*	.13*	.09	.07	.10	-.08	.09	-.02	-.04	-.01	.07	.12	.04	.02	.19*	.29*	-	
20. VHrs	.33*	.20*	.64*	.14*	.14*	.19*	.12*	-.47*	.06	-.06	.02	-.04	.06	.07	.09	.08	.15*	.25*	.40*	-
M	3.36	1.44	3.17	0.96	0.66	0.58	0.62	-	12.65	-	-	-	-	-	-	2.24	0.47	5.60	7.99	4.65
SD	2.70	2.36	3.23	0.62	0.76	0.92	0.95	-	0.67	-	-	-	-	-	-	0.81	0.23	4.99	7.14	6.24
Range	0–8	0–8	0-8	0-3	0-4	0-3	0-4	0-1	11-15	0-1	0-1	0-1	0-1	0-1	0-1	1-4	0-0.89	0-31	0-31	0-31

Note. TVVL = TV/movie violence, INVL = internet violence, VGVL = video game violence, FC = family conflict, CV = community violence, Fights = physical fights in past 6 months, Phys = physically aggressive behaviors in past 6 months, Ethn = Ethnicity, Native = American Indian/Alaska Native Asian = Asian/Native Hawaiian/Other Pacific Islander, Black = Black or African American, Multi = More than one race, Lunch = free or reduced price school lunch, Educ = maternal education level, Impuls = impulsivity, TVHrs = average TV hours per week, INHrs = average internet hours per week, VHrs = average video game hours per week.
Mean and standard deviations for sex, ethnicity, race (i.e., Native, Asian, Black, Multi), and lunch were not provided due to the dichotomous nature of the variables.
*$p < .05$.

involvement in physical fights in the last 6 months than females (M = 0.41, SD = 0.82), $t(341) = 3.18$, $p = .002$, as well as significantly more physically aggressive behaviors (M = 0.76, SD = 1.04) than did females (M = 0.46, SD = 0.80), $t(334) = 2.86$, $p = .005$.

Direct Effects of Media Violence Exposure on Physical Aggression

For regression analyses predicting physical fights in the past six months, we found significant direct effects for TV/movie violence exposure [*B(SE)* = 0.08 (0.03), $p = .002$], internet violence exposure [*B(SE)* = 0.06 (0.02), $p < .001$], videogame violence exposure [*B(SE)* = 0.05 (0.02), $p = .02$], community violence exposure [*B(SE)* = 0.50 (0.07), $p < .001$], and family conflict [*B(SE)* = 0.28 (0.08), $p < .001$] when these predictors were tested in separate models and controlled for age, race-ethnicity, socioeconomic status, impulsivity, and the weekly average amount of hours spent using media ("average media use," i.e., TV/movies, internet, videogames). When all predictors were tested in one model, only community violence exposure [*B(SE)* = 0.62 (0.10), $p < .001$] was statistically significant, controlling for age, race-ethnicity, SES, impulsivity, and average media use. The effect of family conflict was significant only when impulsivity was not included as a control [*B(SE)* = 0.18 (0.06), $p = .003$]. Regression coefficients associated with the full model (including all covariates) are reported in Table 2.

For physically aggressive behaviors (i.e., pushed, kicked, hit, tripped), significant direct effects were observed for TV/movie violence exposure [*B(SE)* = 0.10 (0.03), $p < .001$], internet violence exposure [*B(SE)* = 0.16 (0.03), $p < .001$], videogame violence exposure [*B(SE)* = 0.08 (0.02), $p < .001$], community violence exposure [*B(SE)* = 0.33 (0.09), $p < .001$], and family conflict [*B(SE)* = 0.27 (0.08), $p = .001$] when these

predictors were tested in separate models and controlled for age, race-ethnicity, SES, impulsivity, and average media use. When all predictors were tested in one model, only internet violence exposure [*B(SE)* = 0.13 (0.03), $p < .001$] and community violence exposure [*B(SE)* = 0.21 (0.09), $p = .02$] were statistically significant, controlling for age, race-ethnicity, SES, impulsivity, and average media use. Regression coefficients for the full model are reported in Table 3.

Table 2. Regression Coefficients for Full Model Predicting Physical Fights

Predictors	**Regression Estimates**		
	B (SE)	β	*p*
TV/Movie Violence Exposure	0.04 (0.04)	0.08	.39
Internet Violence Exposure	-0.02 (0.03)	-0.05	.46
Video Game Violence Exposure	0.05 (0.03)	0.13	.13
Family Conflict Exposure	0.18 (0.11)	0.09	.11
Community Violence Exposure	**0.62 (0.10)**	**0.39**	**<.001**
Sex	0.11 (0.20)	0.04	.60
Age	**-0.30 (0.15)**	**-0.16**	**.04**
Ethnicity	-0.03 (0.16)	-0.01	.86
Race- American Indian/Alaskan Native	0.33 (0.32)	0.08	.30
Race- Asian/Hawaiian/Other Pacific Islander	-0.30 (0.52)	-0.02	.57
Race- Black or African-American	-0.02 (0.44)	-0.003	.97
Race- More than one race	0.15 (0.19)	0.06	.42
Free or Reduced Price Lunch	0.27 (0.16)	0.11	.09
Maternal Education Level	0.11 (0.09)	0.08	.23
Impulsivity	**0.43 (0.20)**	**0.08**	**.04**
Average TV Hours per Week	0.01 (0.01)	0.03	.62
Average Internet Hours per Week	-0.01 (0.02)	-0.06	.48
Average Video Game Hours per Week	0.00 (0.02)	-0.002	.98

Note. Bolded pathways indicate statistical significance, $p < .05$.

Table 3. Regression Coefficients for Full Model Predicting Physically Aggressive Behaviors

Predictors	**Regression Estimates**		
	B (SE)	β	*p*
TV/Movie Violence Exposure	0.02 (0.03)	0.05	.56
Internet Violence Exposure	**0.13 (0.03)**	**0.32**	**<.001**
Video Game Violence Exposure	0.03 (0.02)	0.09	.21
Family Conflict Exposure	0.12 (0.06)	0.08	.05
Community Violence Exposure	**0.21 (0.09)**	**0.17**	**.02**
Sex	-0.03 (0.10)	-0.02	.77
Age	**-0.24 (0.07)**	**-0.17**	**<.001**
Ethnicity	-0.15 (0.13)	-0.08	.24
Race- American Indian/Alaskan Native	-0.23 (0.19)	-0.07	.22
Race- Asian/Hawaiian/Other Pacific Islander	0.31 (0.48)	0.03	.51
Race- Black or African-American	-0.16 (0.18)	-0.03	.40
Race- More than one race	**0.28 (0.14)**	**0.15**	**.04**
Free or Reduced Price Lunch	-0.02 (0.10)	-0.01	.81
Maternal Education Level	0.02 (0.09)	0.02	.82
Impulsivity	**0.83 (0.21)**	**0.21**	**<.001**
Average TV Hours per Week	-0.01 (0.01)	-0.03	.52
Average Internet Hours per Week	-0.01 (0.01)	-0.05	.33
Average Video Game Hours per Week	-0.01 (0.01)	-0.06	.26

Note. Bolded pathways indicate statistical significance, $p < .05$.

Two-Way Moderation Analyses

Next, we examined the interactive effects of family conflict and community violence exposure on the relation between media violence exposure and physical aggression (see Table 4). Interaction effects of family conflict with TV/movie violence exposure [*B(SE)* = -0.009 (0.04), $p = .81$], internet violence exposure [*B(SE)* = -0.04 (0.05), $p = .46$], and videogame violence exposure [*B(SE)* = 0.02 (0.03), $p = .43$] on physical fights were non-significant. Additionally, the interaction effects of community violence exposure with TV/movie violence exposure [*B(SE)* = -0.004 (0.02), $p = .85$] and

videogame violence exposure [*B(SE)* = 0.01 (0.02), *p* = .49] on physical fights were non-significant.

Table 4. Regression Coefficients for Interaction Effects Predicting Physical Fights

Type of Media Violence	**Predictors**	**Regression Estimates**		
		B (SE)	β	*p*
INVL				
	INVL	**0.05 (0.02)**	**0.13**	**.007**
	CV	**0.53 (0.06)**	**0.44**	**<.001**
	INVL*CV	**-0.07 (0.03)**	**-0.17**	**.01**
	INVL*CV*Sex (Males) †	**-0.10 (0.03)**	**-0.25**	**.001**
	INVL*CV*Sex (Females) †	-0.05 (0.04)	0.10	.22
VGVL				
	VGVL	**0.05 (0.02)**	**0.19**	**.02**
	VGVL*Sex (Males) †	0.05 (0.03)	0.15	.09
	VGVL*Sex (Females) †	**0.13 (0.03)**	**0.30**	**<.001**

Note. Bolded pathways indicate statistical significance, $p < .05$. INVL = Internet violence exposure; CV = Community violence exposure; VGVL = Videogame violence. For parsimony, Table 4 does not include regression estimates for control variables, though these were included in the analyses. † Multigroup analyses were tested in separate models.

Community violence exposure was a significant moderator of the relationship between internet violence exposure and physical fights, *B(SE)* = -0.07 (0.03), *p* = .01. Specifically, the effect of internet violence exposure on physical fights was statistically significant when adolescents reported either no exposure or high exposure to community violence (see Figure 2). When adolescents reported no community violence exposure (i.e., 0 on a scale of 0 – 4), there was a positive association between internet violence exposure and physical fights in past 6 months [*B(SE)* = 0.16 (0.04), *p* < .001]. For adolescents who reported high levels of community violence exposure – indicated by lifetime average exposure to three or more violent incidents in the adolescent's community– the relationship between internet violence exposure and physical fights was

negative [*B(SE)* = -0.29 (0.13), *p* = .02]. For adolescents exposed to more than three occurrences of community violence in their lifetime, high reports of internet violence exposure are associated with less involvement in physical fights in the past 6 months.

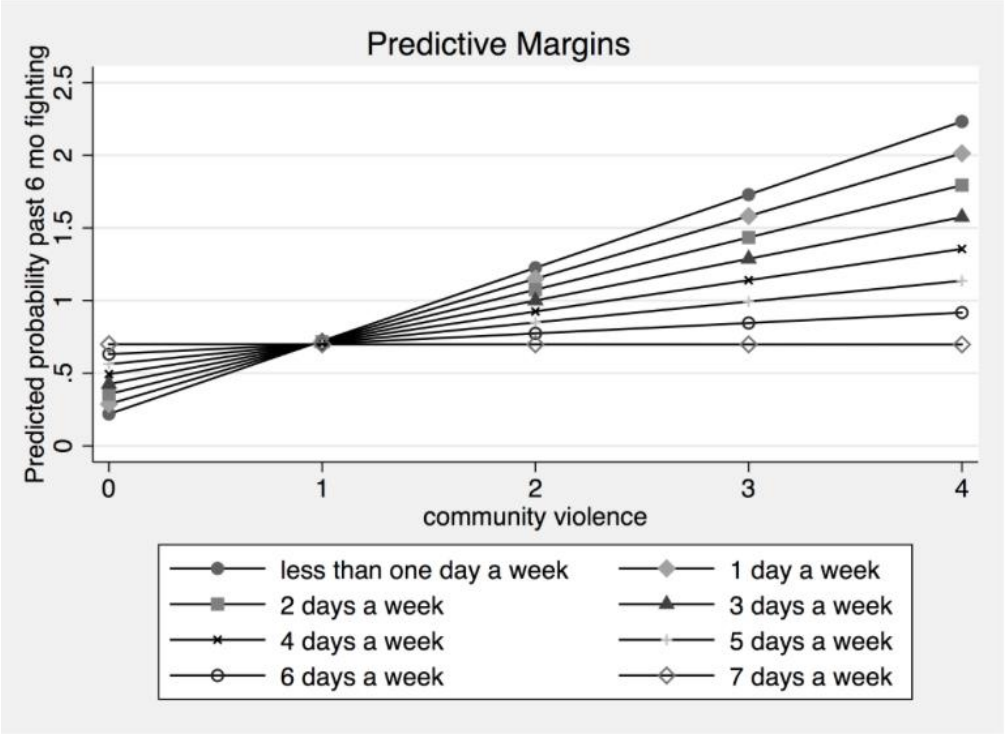

Figure 2. Predictive margins plot illustrating the interactive effect of internet violence exposure and community violence exposure on involvement in physical fights in past 6 months.

Interaction effects between real-life violence exposure and media violence exposure were non-significant in the case of physically aggressive behaviors. Interaction effects of family conflict and TV/movie violence exposure [*B(SE)* = 0.06 (0.06), *p* = .33], internet violence exposure [*B(SE)* = 0.05 (0.04), *p* = .16], and videogame violence exposure [*B(SE)* = 0.03 (0.04), *p* = .44] were all non-significant. Similarly, interaction effects of community violence exposure and TV/movie violence exposure [*B(SE)* = -0.03

(0.02), p = .16], internet violence exposure [*B(SE)* = 0.05 (0.04), p = .11], and videogame violence exposure [*B(SE)* = 0.03 (0.03), p = .33] were non-significant.

Sex Differences

In case of interaction effects, the interaction effects of sex with TV/movie violence exposure [*B(SE)* = 0.03 (0.04), p = .42], and with internet violence exposure [*B(SE)* = 0.12 (0.07), p = .07] on physical fights were non-significant. There was a near-significant interaction between videogame violence exposure and physical fights, *B(SE)* = 0.08 (0.04), p = .05. For physically aggressive behaviors, the interaction effects of sex and TV/movie violence exposure [*B(SE)* = -0.004 (0.05), p = .93], internet violence exposure [*B(SE)* = 0.05 (0.05), p = .38], and videogame violence exposure [*B(SE)* = -0.01 (0.05), p = .89] were non-significant.

Multi-group analysis examining sex differences in the moderated pathway of influence (i.e., the interaction between internet violence exposure and community violence exposure on physical fights) revealed a significant drop in model fit ($\Delta\chi^2$ = 27.36, *df* = 3; p < .001), when that pathway was constrained to be equal across males and females. Specifically, the interaction was found to be significant for males [*B(SE)* = -0.10 (0.03), p = .001], but not females [*B(SE)* = 0.05 (0.04), p = .22]. The influence of internet violence exposure on physical fights was significant for males who reported no exposure to community violence, as well as moderate-high levels of community violence exposure (see Figure 3). In the case of no community violence exposure (N = 34), we found a positive association between internet violence and physical fights for males [*B(SE)* = 0.17 (0.04), p < .001], such that more internet violence exposure was linked to more reports of physical fights. For male adolescents who reported two or more incidents of community

violence exposure over their lifetime (N = 21), internet violence exposure was negatively associated with physical fights [*B(SE)* = -0.51 (0.14), $p < .001$].

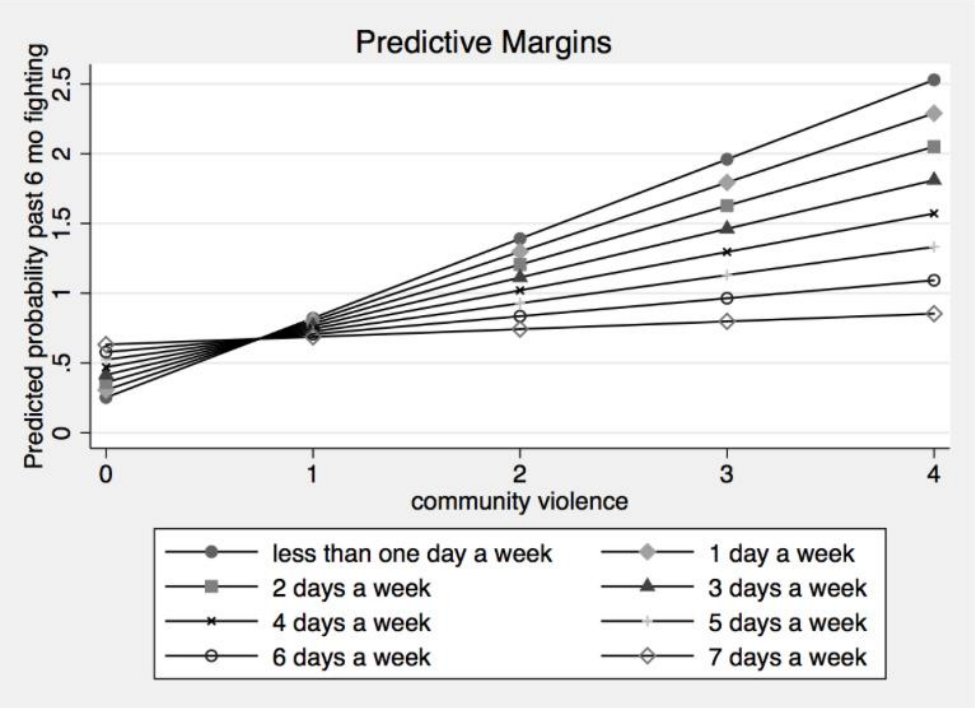

Figure 3. Predictive margins plot for males illustrating the interactive effect of internet violence exposure and community violence exposure on involvement in physical fights in past 6 months.

Multi-group analysis examining sex differences in the association between videogame violence exposure and physical fights also revealed a significant drop in model fit ($\Delta\chi^2 = 5.37$, $df = 1$; $p = .02$) when this path was held constant across males and females. Specifically, this association was significant for females [*B(SE)* = 0.13 (0.03), $p < .001$], but not males [*B(SE)* = 0.05 (0.03), $p = .09$], such that females who were exposed to more videogame violence reported higher rates of involvement in physical fights. It is important to note that only 19.8% of females in our sample reported exposure to violent videogames one day a week or more (72.2% reported less than one day a week).

CHAPTER IV

DISCUSSION

The aims of the present study were to (a) examine the relationships between different types of media violence exposure (i.e., TV/movies, videogames, and internet violence exposure) and physical aggression, (b) test moderating effects of real-life violence exposure (i.e., community violence, family conflict) on the relation between media violence exposure and physical aggression, and (c) examine sex as a moderator of the direct and moderated effects of media violence exposure on physical aggression.

Our analyses revealed statistically significant associations between exposure to all three types of media violence and self-reported physical fights and physically aggressive behaviors. These findings are consistent with previous literature linking TV violence (Eron, Huesmann, Lefkowitz, & Walder, 1972; Huesmann & Miller, 1994; Huesmann, Moise-Titus, Podolski, & Eron, 2003), movie violence (Bushman & Huesmann, 2012; Huesmann & Eron, 1986), online violence (Holz & Appel, 2011; Ybarra et al., 2008), and videogame violence (Anderson, 2004; Anderson et al., 2008) to higher physical aggression in children and adolescents.

Assessment of two-way interaction effects between media violence and real-life violence exposure revealed a significant moderating effect of community violence exposure on the relation between internet violence exposure and physical fights. We also found that this interaction effect was significant only in case of male adolescents. This finding supports the Differential Susceptibility to Media Effects model (Valkenburg & Peter, 2013), which posits that an individual's vulnerability to media effects is influenced by risk factors (i.e., community violence exposure) in their social context. Our study of

social contextual influences – namely, family conflict and community violence – revealed that for male adolescents who had not experienced community violence, exposure to internet violence was positively linked to involvement in physical fights. In contrast, exposure to two or more lifetime incidents of community violence exposure among males was negatively associated with engagement in physical fights.

Male adolescents who report no exposure to community violence appear to be more vulnerable to the effects of violence they are exposed to online. One potential explanation for this effect is the highly realistic nature of online violence exposure coupled with the lack of safeguards in place to prevent exposure. Nowadays, violent incidents are broadcast via sites in which individuals who were not originally exposed to the original incident are met with coverage, oftentimes raw coverage, of such violence. Social media sites such as Facebook and Twitter continue to provide unmonitored and uncensored environments, in which any individual can post or view graphic content and/or violent behaviors (King, Walpole, & Lamon, 2007). Many of these vivid images and videos are unedited and lack disclaimers alluding to the graphic content included. Additionally, with the availability of social media video and streaming outlets such as YouTube or Facebook Live, these graphic images and videos are often indiscriminately posted and liked, shared, or retweeted with the press of a button. Because online violence can be reinforced through like and comment features without connection to the real-life negative consequences of violence (Strasburger, Wilson, & Jordan, 2014), male adolescents who are only exposed to online violence, and exposed to this violence at a high rate, may believe that replication of these violent acts in real life is acceptable. To better understand these significant effects, future studies should replicate and extend this

study by exploring which features and characteristics (e.g., interactive features such as Like button and Comment box) of internet violence exposure distinguish it from other types of media violence exposure, as we failed to observe the same interaction of community violence exposure with TV/movies or videogame violence exposure.

Conversely, male adolescents who report exposure to more than two incidents of community violence in their lifetime appear to be less vulnerable to the negative effects of internet violence exposure. Having been exposed to community violence acts such as seeing someone beat up another person, stab another person, and be arrested, these adolescents may be more cognizant of the consequences of physical fights. Through observational learning, adolescents may learn that perpetrating aggressive acts in real-life does not result in desirable outcomes (e.g., getting in trouble, arrested) and find other, more socially acceptable outlets through the internet. Subsequently, it may be that adolescents who are exposed to high levels of community violence use certain sites or features of the internet (e.g., the unique interactive feature of the Internet to "like", leave comments, etc.; online gaming and the ability to interact and play against real people) as a coping mechanism and/or a cathartic release of the aggression they experience and instead engage in aggressive acts online that do not feel as "real" or share the same consequences as real-life aggression/violence. Indeed, some adolescents report using violent media to relax, reduce stress, and socialize with others (Kutner & Olson, 2008). Although this finding needs to be replicated in future longitudinal research, the current study extends the field's understanding of the effect of violence exposure by examining the unique effect of community violence exposure as a moderator.

We also find that high levels of exposure to both community violence and online violence are associated with lower reports of physical fights for males. Given that males generally report playing more violent, online games than females (e.g., Ogletree & Drake, 2007; Winn & Heeter, 2009), as well as tend to utilize these violent games as interactive tools that allow for socialization through competition and cooperation (Olson, Kutner, & Warner, 2008), it is likely that males are finding outlets such as online games rather than engaging in physical acts of aggression in real life. It is also worth noting that males generally report higher rates of community violence exposure than females (e.g., Boyd, Cooley, Lambert, & Ialongo, 2003; Goldner, Peters, Richards, & Pearce, 2011; Weist, Acosta, & Youngstrom, 2001), which may result in desensitization effects. In other words, males may become desensitized to violence in general based on their real-life exposure, such that high exposure to community and internet violence does not impact them as much. Based on a lower incidence rate of males who reported two or more lifetime exposures to community violence (N = 21), over-interpretation of this finding is cautioned.

Our multigroup analyses also revealed a significant interaction effect of videogame violence exposure and adolescent sex on physical fights, such that greater videogame violence exposure was associated with more physical fights for females but not for males. This finding was also contrary to our hypothesis and past literature which finds that the effects of media violence exposure on physical aggression operate similarly for males and females (e.g., Fikkers et al., 2013; Krahé & Möller, 2011). Because many studies indicate that males endorse more exposure to violent videogames than females (e.g., Ferguson, 2011; Funk, Buchman, & Germann, 2000) – an assertion supported by

our t-tests results - a non-significant interaction for males may be due to desensitization effects. In other words, exposure to violent videogames does not influence adolescent male behavior once this exposure crosses a certain threshold. Research reports that males in particular are motivated to play video games to compete and win, and suggests that in this context, engagement in violent video games may be similar to rough-house play that males engage in as part of normal development (The MacArthur Foundation, 2008). Because this is not as normalized for females when considering socialization effects, female adolescents may not experience the same messages of acceptance and/or normalcy as their male counterparts, and may therefore be more influenced by violence they encounter in video games.

Contrary to findings by Fikkers and colleagues (2013), family conflict did not moderate the association between media violence exposure and physical aggression. This may be in part due to lower incidence of reported family conflict in our study (M = 0.96, SD = 0.62) than in the Fikkers et al. study (M = 2.10, SD = 0.55). There may also be cultural differences in reporting family conflict between the respective countries of the two samples. It is possible that the sensitivity of some of the questions in this scale (e.g., family members hitting each other) caused adolescents in our sample to under-report incidents of domestic conflict in their households. Our lack of findings may also be attributed to the nature of the family conflict reported in our sample. Specifically, adolescents in our study reported higher levels of family members arguing (M = 1.55, SD = 0.98) and cursing (M = 1.67, SD = 1.03) than other items (e.g., physically hitting each other). It may be that the emotional/psychological aspects of violence (tapped into by the family conflict scale) were less influential in predicting physical aggression outcomes in

our sample. The family conflict scale contains only two items measuring physical acts (i.e., family members hitting each other, family members becoming so angry they start to throw things) and few adolescents reported observing these behaviors in their families, whereas the items measured in our community violence scale tended to be more physical (e.g., "seen somebody beat up/get stabbed/get shot/pull gun/pull knife") and severe (e.g., "seen someone arrested/drug deals/gangs/steal"), and may therefore be more predictive of physical aggression in our sample.

Overall non-significant results for physically aggressive behaviors (as compared to fights) could be attributed to the higher severity associated with engaging in physical fights versus tripping, pushing roughly, and hitting/kicking others. The latter behaviors may also be deemed "normal" to an extent, such as close friends who jokingly might trip each other for fun or athletes who might engage in some of these behaviors in contact sports (e.g., pushing roughly when playing football), whereas it is less socially acceptable even among close friends and athletes to engage in actual physical fights.

Limitations

The following limitations should be noted when interpreting the results. First, informant bias may have been an issue given our use of adolescent self-reports. This may have especially influenced our measurement of media violence exposure. Rather than relying on adolescent self-report only (e.g., "How often do you play violent video games a week?"), future studies should attempt to substantiate these items for purposes of accuracy (e.g., using coding for content analysis, multi-informant reports). Relatedly, social desirability bias may have played a role; for example, participants may have under-reported "bad" or "undesirable" behavior (e.g., physical aggression). Second, the clarity

of certain terms and their definitions may limit our interpretations of the data. Although we defined major terms in the survey, the ways in which respondents interpreted these terms may not have captured the constructs in question (e.g., "heard gun shots" in the context of recreational/hunting sports) Third, there may have been some overlap between exposure to the different types of violent media reported. In the context of video games, various violent games played on consoles (e.g., Xbox, Playstation) such as the Call of Duty game franchise may also be played "online" in multiplayer mode, in which gamers can play other individuals using an online platform. This may have caused confusion among respondents whether to report this type of play as exposure to violence via video games, the internet, or both media types. Similarly, streaming violent movies online may count as exposure via movies and/or the internet. It was also difficult to determine the nature of the violent content exposure via the internet; in other words, knowing the characteristics of the violence viewed online (e.g., simulated/cartoon vs. real-life violence) may have helped us better understand what specific features of online violence differentiate this type of exposure, and why we might have found a significant interaction between community violence and internet violence exposure, but no other media type. Fourth, we recognize that the effect sizes found in our study tended to be small, although this is not uncommon in media research (Bushman & Huesmann, 2006). Fifth, although we accounted for the effect of impulsivity, future studies should consider other potential third variables such as parental monitoring or involvement that have been linked to media violence exposure (e.g., Broll, Crooks, Burns, Hughes, & Jaffe, 2013) and adolescent aggressive tendencies (e.g., Lee & Randolph, 2015). Finally, the composition of our

sample (i.e., largely White, lower SES, school-based) may limit generalizability of our findings.

Conclusion

This study supports previous research indicating direct influences of media violence exposure- namely, TV/movie violence, internet violence, and video game violence - on physical fights and physically aggressive behaviors. Despite the continuing debate on media violence and physical aggression, our findings support a link between violence exposure to all media types and both physical fights and physically aggressive behaviors endorsed by teens. To extend the literature on this topic, our study found a significant interaction effect of internet violence and community violence on physical fights, specifically for male adolescents. These findings highlight the importance of understanding how real-life violence exposure can exacerbate or mitigate the effect of Internet violence exposure on physical aggression. By recognizing that male adolescents may experience desensitization after witnessing a certain level of community violence, prevention and intervention efforts can target these varying needs.

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