Media Exposure and Consumption as Risk Factors in the Development of Antisocial Behavior

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Media exposure and consumption have become unprecedentedly intense, ubiquitous, diversified, simultaneous, and interactive in the everyday lives of young people (Brown & Bobkowski, 2011; Rideout, Foehr, & Roberts, 2010; Roberts, Henriksen, & Foehr, 2009). In the last decade, the daily amount of time that 8- to 18-year-olds dedicate to media has risen to a point where it easily rivals with their school activities, community events, and family matters—4:29 h of television, 2:31 h of music, 1:29 h of computer, 1:13 h of video games, 0:38 h of print, 0:25 h of movies, 7:38 h of total use, and 10:45 h of total exposure via 29 % of multitasking (Rideout et al., 2010). In the coming years, students in grade 7 are thereby likely to be exposed to at least 23,000 h of media by the time they complete high school. This estimate is actually modest inasmuch as the recent outburst of portable multitasking devices (e.g., smartphones, tablets) will considerably increase young people's use and exposure to media.

Media—by design and mass—should plausibly have multiple psychological, social, cultural, and even biological influences on people (Dill, 2013). The multifaceted question is not only to better understand the nature and magnitude of these media-related influences but also if we deem those to be adaptive or maladaptive in a given society and at a given time in history. Media comprising prosocial information and stimuli have been credited for promoting many developmental benefits, such as education, health promotion, identity exploration, socialization, and civic engagement (Brown & Bobkowski, 2011; Mares & Pan, 2013; Roberts et al., 2009). Conversely, media involving violent or antisocial information and stimuli have been suspected of being deleterious to development (Anderson & Bushman, 2002a; Bushman & Anderson, 2001; Huesmann, Dubow, & Yang, 2013). In particular, media conveying antisocial contents have been alleged to impact a myriad of serious issues in youth, notably aggressive behaviors but also gender role stereotyping, risky sexual relationships, disturbed body image, obesity, and substance use (Brown & Bobkowski, 2011).

In this chapter, we address the controversial question as to whether media exposure and consumption can represent risk factors in the development of criminal and antisocial behavior (CAB). Many literature reviews have already tackled this complex question (e.g., Anderson & Bushman, 2002a; Anderson et al., 2003; Browne & Hamilton-Giachritsis, 2005; Bushman & Anderson, 2001; Ferguson & Savage, 2012; Gentile, Saleem, & Anderson, 2007; Groves, Prot, & Anderson, in press; Huesmann et al., 2013).

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Indeed, this is a crucial question as media is a fundamental tool in the information age, while CAB remains extremely burdensome to individuals and disproportionately costly for their larger societies. From a scientific standpoint, the evidence about the deleterious effects of antisocial media is increasingly robust, even though the news media and folk wisdom often minimize or even deny its validity (Bushman & Anderson, 2001; Huesmann et al., 2013).

Nonetheless, there are heated debates opposing scholars who assert that media can be serious risk factors (e.g., Anderson et al., 2010) to those who disagree with these claims (e.g., Ferguson, 2010). From an applied/clinical standpoint, however, professional organizations have already endorsed findings indicating that antisocial media can increase risks of antisocial behavior (e.g., *American Psychological Association*, the *American Academy of Pediatrics*, the *American Medical Association*; Brown & Bobkowski, 2011). From a societal viewpoint, there is still a divide between parents, practitioners, policy makers, media producers, and young people. Some of them express concern over and criticism against antisocial media, whereas others opine skepticism about and even sense "moral panic" in current research findings (Ferguson, 2010). That said, from a judicial standpoint, the courts of law have often remained unconvinced by the extant scientific evidence warning against antisocial media (Ferguson, 2013; Gentile et al., 2007). This is in spite of longitudinal research indicating that antisocial media in childhood can represent risk factors of antisocial behavior in adulthood (e.g., Huesmann, Moise-Titus, Podolski, & Eron, 2003). In other words, the game is far from over, especially given the many players, and this is likely to be mediatized by the crowd.

In this chapter, more specifically, we draw on recent empirical findings from meta-analyses and longitudinal studies to evaluate the extent to which television/movies, video games, Internet, music, and media in general may influence aggressive behaviors in children and adolescents. We adopt a pragmatic definition of *media* by considering those that are not only the most popular but also the most controversial in terms of putative deleterious effects: Television, movies, video games, Internet, and music (Brown & Bobkowski, 2011; Rideout et al., 2010). Unfortunately, reviewing the conceptual models underlying the short- and long-term effects of media violence is beyond the scope of this review (for a recent review of conceptual models, see Groves et al., in press). Rather, we selectively review the most robust empirical findings from meta-analyses and longitudinal studies that tested the impact of media violence on aggressive behaviors. These studies consist of the lion's share of compelling empirical findings in the research arena on media as putative risk factors of CAB. As a definition for aggressive behaviors, we consider that "human aggression is any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause harm" (Anderson & Bushman, 2002b, p. 28). Herein, from a developmental perspective, we also make considerations vis-à-vis differential impact and generalized impact of media-related risk factors, certain developmental parameters, and putative developmental processes (e.g., moderation, mediation). We end this chapter by offering specific concluding remarks and by suggesting future research needs that might foster scientific progress at the intersection of media studies, developmental psychology, and developmental criminology.

Television and Movies

For several decades, screen media (television and movies) have become prime societal and cultural products to inform, educate, and entertain large audiences. Screen media that convey antisocial and aggressive stimuli have at least four characteristics that make them theoretically important to understand the risks associated to the development of CAB. First, television, in particular, is still very popular among children and adolescents, including those who are more at risk. Second, screen media can elegantly (aesthetically and artistically), convincingly, rapidly, and massively convey vivid antisocial and aggressive scenes, scripts, and dialogues that

describe real or imagined social settings, interpersonal relationships, and life events. Third, until recently, screen media viewing had often been considered to involve passive viewers who interacted minimally with the media content or with other viewers. Fourth, screen media have become so traditional in and familiar to many households that it may lead younger and older viewers to lack awareness as to their potential influences. The classic hypothesis is that children and adolescents can observe, emulate, and learn behaviors depicted on screen media (television and movies) and that when these mediatized behaviors are antisocial, they become risk factors of aggressive behaviors. Therefore, screen media seem to have the mechanisms to convey compelling antisocial information—but also prosocial information—to an audience. Consequently, meta-analyses have shown that watching television with antisocial material is related to more antisocial behavior ($r = .31$; Paik & Comstock, 1994) but also that viewing television with prosocial material is also associated with more prosocial behavior ($r = .28$; Mares & Woodard, 2005).

In terms of developmental parameters, can violence on television spur violence in people (i.e., socialization effect) or is it those who are already violent that tune in violence on television (i.e., selection effect)? The long-term impact of violent television viewing seems to have an early onset in childhood. Huesmann et al. (2003) conducted a long-term longitudinal study that followed American children (ages 6–10) during 15 years and thus onto young adulthood. After controlling for baseline aggressive behavior, longitudinal findings revealed that exposure to violence on television (but also identification to TV characters and perceived realism of TV violence) in childhood predicted more aggressive behaviors in men and women during young adulthood. Cross-lagged structural equation modeling (also controlling for IQ and SES) further indicated that childhood exposure to violence on television predicted more aggressive behaviors in young adulthood but that, conversely, childhood aggressive behavior did not predict TV-violence viewing in adulthood. In fact, violent television viewing as early as in preschool (from ages 41 to 53 months) could also predict antisocial symptoms in Canadian (Québécois) second graders (age 97 months), even after controlling for baseline aggressive behavior (Fitzpatrick, Barnett, & Pagani, 2012). Longitudinal media studies in the preschool years, however, are difficult to conduct and thus are particularly rare. Nevertheless, Christakis and Zimmerman (2008) reported evidence from a 5-year longitudinal study indicating that violent television viewing in American male (but not female) preschoolers (ages 24–60 months) predicted subsequent antisocial behavior in elementary school (ages 7–9), despite controlling for baseline problem behavior, age, parental education, maternal depression, as well as cognitive and emotional support. Differential impacts were also observed inasmuch as nonviolent television and educational television viewing were not predictive of antisocial behavior.

The long-term impact of television viewing on aggressive behavior is not necessarily confined to childhood and may also persist throughout adolescence. Johnson, Cohen, Smailes, Kasen, and Brook (2002) reported longitudinal findings among American adolescents who were assessed from early (mean age 14) until middle (mean age 16) and late adolescence (mean age 22). Television viewing in early adolescence predicted aggressive behavior (but not criminal acts against property) later in adolescence, even after controlling for confounders (baseline aggressive behavior, parental neglect, SES/education, neighborhood violence, and psychopathologies). Aggressive behaviors in middle adolescence (but not in early adolescence) predicted more television viewing in late adolescence. These longitudinal findings may tentatively suggest that if television violence and aggressive behaviors share some reciprocal influences, then it might be over shorter periods of time and perhaps later in adolescent development. In a recently published longitudinal study conducted in New Zealand, Robertson, McAnally, and Hancox (2013) also reported that—over and above several confounders (gender, IQ, SES, temperament,

baseline antisocial behavior, and parenting)—excessive television viewing from childhood to adolescence (ages 5 through 15) predicted criminal acts, antisocial personality disorder, and aggressive personality traits by young adulthood (by age 26). Lastly, a 2-year longitudinal study conducted among German early adolescents also found that viewing horror and violence in movies at age 12 was predictive of violence at age 14 (Hopf, Huber, & Weiß, 2008).

Should everyone be careful while approaching a television set? In terms of moderators, identification (identifying with violent TV characters) and perceived realism (perceiving TV violence as realistic) seem to exacerbate the longitudinal effect of childhood exposure to TV violence on aggressive behaviors in young adulthood, but only among males (Huesmann et al., 2003). In general, however, gender does not seem to moderate the long-term predictive relationships between TV violence and aggressive behaviors (Fitzpatrick et al., 2012; Johnson et al., 2002; Robertson et al., 2013). Ferguson and Savage (2012) have recently offered a series of pertinent criticisms that call for more nuance in interpreting this body of research, notably vis-à-vis demand characteristics, operationalization of TV violence, operationalization of aggressive behaviors, choice and computing of confounders, and suboptimal statistical modeling. In terms of differential impact, Ferguson and Savage also underscore the broad range of generally modest meta-analytic effect sizes ($r = .04$ to .31), which seem particularly small for the link between TV violence and violent crime ($r = .02$ to .10). That said, it should be mentioned that even if the direct and additive effect size of TV violence on aggressive behavior could be null ($r = .00$), it would not rule out the possibility that TV violence is a moderator (aggravating factor) in multiplicative effects (risk factors × TV violence) that would increase the likelihood of aggressive behavior. Moreover, what should be added is that three-wave longitudinal models that conceptualize mediators are much needed to better evidence *how* and not only *when* TV violence may impact aggressive behavior in the long term.

Video Games

There are at least five reasons for which video games as risk factors are theoretically important to understand the development of CAB. First, there is a growing and lucrative market for video games, which have become an extremely popular leisure activity in youth. Second, video games involve a virtual world that renders realistic or imaginary social environments. These social environments can replicate existing violent milieus or create new violent worlds. Third, children and adolescents can easily be immersed in and be absorbed by these virtual environments. They may spend several consecutive hours engaging in violent virtual worlds. Fourth, children and adolescents actively learn to interact with these virtual environments. They need to learn and master simulated aggressive behaviors in order to continue exploring, competing, and ultimately winning the game. Fifth and last, whether in person or over the Internet, young people can compete against each other in such a way that their behavior in the multiplayer game setting might be as important as their virtual behavior inside the game. This may create recurrent dynamics of social dominance, competition, and rivalry that may foster aggressive behavior among young multiplayer gamers. The basic postulation is that since violent video games simulate aggressive behavior and require young people to engage in simulated aggressive behavior, young gamers might be at increased risk of developing aggressive behaviors. Indeed, a meta-analysis by Anderson et al. (2010) has found exposure to violent video games to be associated with more aggressive behavior ($r = .24$), aggressive cognition ($r = .18$), and aggressive affect ($r = .12$), but less empathy ($r = -.19$) and even less prosocial behavior ($r = -.11$). These trends remained similar across gender, age, as well as cultures (Eastern and Western). In longitudinal studies, they found that the overall effect size between violent video games and aggressive behavior was significant ($r = .20$), but smaller

when confounders (e.g., gender, baseline aggressive behavior) had been controlled ($r = .08$). Conversely, prosocial video games can also predict more prosocial behavior (Gentile et al., 2009; Greitemeyer, Osswald, & Brauer, 2010). Accordingly, in a recent meta-analysis, Greitemeyer and Mügge (2014) observed that prosocial video gaming was not only associated with less aggressive behavior ($r = -.16$), aggressive cognition ($r = -.30$), and aggressive affect ($r = -.35$) but also with more prosocial behavior ($r = .20$), prosocial cognition ($r = .42$), and prosocial affect ($r = .25$). Nonetheless, they found that violent video gaming was still linked to more aggressive behavior ($r = .19$), aggressive cognition ($r = .25$), and aggressive affect ($r = .17$) as well as less prosocial behavior ($r = -.11$) and prosocial affect ($r = -.16$). Overall, Greitemeyer and Mügge evidenced that the small to medium effect sizes were consistent across research designs and were similar across violent video gaming ($r = .18$) and prosocial video gaming ($r = .22$). Surprisingly, there is also some evidence that violent video games could have an unsuspected positive effect on visuospatial cognition, peer socialization, and learning educational material (Ferguson, 2010).

In terms of differential impact and developmental parameters, is it only the game or also the way one plays it? On the one hand, Willoughby, Adachi, and Good (2012) conducted a 4-wave longitudinal study among Canadian adolescents (from grade 9 through 12), which indicated (through latent growth curve modeling) that sustained violent video gaming predicted greater increase in aggressive behavior during high school over and above numerous confounders (gender, parents' education, computers at home, at-risk background, school marks, depression, delay of gratification, sports activities, peer deviance, friendship quality, parenting, and school culture). Aggressive behavior did not predict more violent video gaming. Findings remained equivalent in adolescent boys and girls. On the other hand, Adachi and Willoughby (2013) reported additional findings from cross-lagged path analyses, which indicated that competitive/nonviolent video gaming predicted more aggressive behavior, while aggressive behavior also predicted competitive/nonviolent video gaming. These results were significant over and above baseline levels of competitive/nonviolent video gaming and baseline aggressive behavior.

Anderson et al. (2008) conducted a longitudinal/cross-cultural study with three samples that consisted of Japanese early adolescents (aged 12 to 15 years; 4-month follow-up), Japanese adolescents (aged 13 to 18; 3–4-month follow-up), and American children (aged 9 to 12 years; 5–6-month follow-up), respectively. Findings from multigroup structural equation modeling indicated that violent video gaming predicted physical aggression, despite controlling for gender and baseline physical aggression. In Germany, Möller and Krahé (2009) found further evidence of differential impacts for violent video gaming. Their data were collected through a 30-month longitudinal design among early adolescents of about 13 years of age. Their cross-lagged path analyses revealed that violent video gaming predicted more physical aggression, but not relational aggression. Moreover, aggressive behaviors did not predict violent video gaming. That said, not all studies find significant prospective links between violent video gaming and aggressive behavior. Ferguson, Garza, Jerabeck, Ramos, and Galindo (2013) conducted a 1-year longitudinal study among American early adolescents. Prospective results first accounted for several confounders (baseline aggressive behavior/or civic behavior, age, gender, depression, antisocial personality, family attachment, peer delinquency, physical abuse, parenting, parental depression) and then indicated that violent video gaming did not predict aggressive behavior nor civic behavior. Ferguson, San Miguel, Garza, and Jerabeck (2012) further collected 3-year longitudinal data among pre- and early American adolescents (aged 10–14). The research design controlled for baseline aggressive behavior, gender, depression, antisocial personality, family attachment, peer delinquency, and family violence (psychological aggression and physical abuse).

Prospective findings indicated that violent video gaming did not predict serious aggressive behavior or dating violence.

In terms of moderation, Wallenius and Punamäki (2008) conducted an intriguing 2-year longitudinal study among Finnish adolescents of 12 and 15 years of age. Some of their prospective findings revealed that parent–child communication, gender, and age moderated the predictive relationship between violent video gaming and aggressive behavior. More specifically, in older girls, violent video gaming predicted more aggressive behavior when parent–child communication was poor. In boys, surprisingly, violent video gaming predicted more aggressive behavior when parent–child communication was good. In terms of mediation, Möller and Krahé (2009) provided evidence that the predictive relationship between violent video gaming and aggressive behavior might be mediated by normative acceptance of aggression. However, this study did not include 3 waves of data and thereby the mediator and outcome were both assessed at time 2, which warrants more prospective research to confirm the temporal sequence of this mediation model.

Internet

Internet-related information and activities as risk factors are theoretically important to understand the development of CAB, notably because of four of Internet's integrated features. First, it is a multitasking platform that supports the production and diffusion of all forms of media (e.g. television, movies, videos, video games, music). Second, it creates interlocking ecological niches (global and local) for interpersonal relationships to evolve within and across social networks. Third, it is currently connecting (acquainting, bonding, and confronting) most young people living in industrialized societies. Last, Internet users are unprecedentedly free and active in creating, using, and diffusing media but also in choosing when and how to interact with other users. The main assumption is that the Internet is about sharing information with people, and thus, Internet-based antisocial contents might be risk factors of antisocial behavior.

Is it only about the things or also the people on the Internet? Conceptually, antisocial media contents may hypothetically have additive (massive accessibility), epidemic (social contagion via social networks), multiplicative (multitasking), or distinctive (extreme content) influences over the Internet. That said, it is more what people do to one another on the Internet—sometimes anonymously, at times very publicly, and at any given time around the clock—that has been of particular concern lately. Cyberbullying has become a serious instance of antisocial and aggressive behavior on the Internet. In a meta-analysis, Tokunaga (2010) found some potential developmental parameters in that the incidence of cyberbullying victimization (i.e., repeatedly receiving hostile or aggressive messages through digital media) ranged from 20 % to 40 % during childhood and adolescence and peaked in early adolescence.

Unfortunately, longitudinal data on cyberbullying is rather sparse, especially in early adolescence. Recently, however, at least two longitudinal studies have identified differential impacts that antisocial behaviors can have on cyberbullying. Werner, Bumpus, and Rock (2010) conducted a 1-year longitudinal study during early adolescence (grades 6 through 8 in the United States), which indicated that being older, being a victim of online aggression, and endorsing relational aggression predicted future aggressive behavior on the Internet. In their sample, 18 % of adolescents were perpetrators, 17 % were victims, and 9.5 % were both. In a 6-month longitudinal study among Swiss early adolescents in 7th grade, Sticca, Ruggieri, Alsaker, and Perren (2013) found that traditional bullying (but not being victimized), antisocial behavior (but not moral disengagement, empathic concern, nor global self-esteem), and frequent online communication (but not gender) predicted subsequent cyberbullying (over and above baseline cyberbullying and concurrent traditional bullying). These authors interpreted their findings as evidence that the Internet represents another tool or territory for those who would already commit aggressions in traditional

settings. In sum, these longitudinal studies inform about the differential impact of antisocial behavior on cyberbullying. Nonetheless, it remains unclear whether cyberbullying could also represent a risk (or aggravating) factor of further antisocial or aggressive behaviors.

In terms of processes, gender does not seem to be a moderator in longitudinal studies on cyberbullying. However, a recent longitudinal/cross-cultural study found that both gender and culture could generate moderation effects in the short-term growth rate of cyberbullying. In a 2-month prospective study among late adolescents and emerging adults, Barlett et al. (2014) observed a greater increase in cyberbullying among American males than among Japanese males, whereas this trend was not significant among both American and Japanese females. Future longitudinal research on cyberbullying should also examine putative mediators as it has yet to test explicative processes. Recently, Runions (2013) developed a conceptual framework of cyber-aggression in adolescence, which one might deem fruitful for theorizing different motivational processes (e.g., aversive/reactive or appetitive aggression) as mediators of different kinds of cyberbullying. Moreover, this framework may also allow considering self-control (or the lack thereof) as a moderator (protective/vulnerability factor) of cyberbullying.

Music

Music behaviors as risk factors are theoretically important to understand the development of CAB for at least three reasons. First, music is a universal, ubiquitous, and versatile (multitasking) cultural product that serves as a recurring soundtrack (people listen to songs repetitively) across most media (e.g., Internet, television, movies, video games). Second, music preferences are relatively stable over time and contribute to identity exploration (e.g., musical subcultures) and peer socialization (e.g., high school peer crowds) during adolescence. Third, songs are complex and multifaceted stimuli that combine both linguistic (e.g., explicit/antisocial lyrics) and musical (e.g., pounding/exciting beats) characteristics pertinent for conceptual models of media and CAB. The general hypothesis is that those music genres exploring more antisocial themes (e.g., violence, hostility, deviance) may represent risk factors of CAB. Hence, the issue primarily concerns the influence of the lyrics rather than that of the music itself. Accordingly, experimental studies show that violent song lyrics can increase hostile feelings and aggressive thoughts (Anderson, Carnagey, & Eubanks, 2003), whereas prosocial song lyrics can increase prosocial thoughts, interpersonal empathy, and helping behavior (Greitemeyer, 2009).

Are antisocial songs precursors of antisocial behavior (i.e., socialization effect), or rather, is it antisocial behavior that begets a taste for antisocial songs (i.e., selection effect)? Selfhout, Delsing, terBogt, and Meeus (2008) conducted a 2-year longitudinal study, in which a robust two-wave/cross-lagged design disentangled this reciprocal relationship. Their findings among Dutch adolescents indicated that two general factors of music preferences (heavy metal and hip-hop) were predictive of more antisocial behaviors (e.g., aggression, theft, vandalism), but that antisocial behaviors were not predictive of music preferences. Multigroup structural equation modeling confirmed that this model fitted among both younger (11- to 14-year-old) and older (15- to 18-year-old) adolescents of different ethnocultural backgrounds and educational levels. However, such longitudinal findings can remain equivocal inasmuch as each general factor of music preference encompasses many distinct music subgenres that can have differential impacts on different antisocial behaviors. For instance, Miranda and Claes (2004) have shown that specific subgenres of hip-hop music (American rap, French rap, hip hop/soul, and gangsta/hardcore rap) may have a differential impact on different kinds of antisocial behaviors (e.g., violence, theft, street gang involvement) among French Canadian adolescents. Among other findings, they found that French rap was associated with more violence and street gang involvement, that gangsta/hardcore rap was linked to more thefts, but that

hip-hop/soul and American rap were both related to less thefts.

Are stable music preferences better at reflecting or predicting antisocial behaviors? In terms of developmental parameters, terBogt, Keijsers, and Meeus (2013) recently proposed a *Music Marker Theory* (MMT), according to which early and strong personal tastes for music that explore antisocial themes may not only directly influence antisocial behaviors through deviant media exposure but also gradually facilitate (through selection and socialization) the social contagion of antisocial behaviors among peers that share a similar taste for such music. In their 4-year longitudinal study conducted in the Netherlands, findings from latent growth curve modeling revealed that early adolescent music preferences (hip-hop, metal, gothic, trance, R&B, rock, punk, techno) at the age of 12 were more predictive of minor delinquency (e.g., shoplifting, theft, vandalism) at the age of 16 than of minor delinquency at the age of 12 (terBogt et al., 2013). The growth rates in most music preferences from ages 12 to 16 were not predictive of minor delinquency at age 16. These results are interesting as they suggest that relatively stable music preferences may play a role (e.g., deviant peer affiliation) not only at the onset but also over the course of minor delinquency in early adolescence. Nevertheless, it should be mentioned that music genres are subject to stereotyping (Rentfrow, McDonald, & Oldmeadow, 2009). Therefore, research that focuses on music preferences as early markers of antisocial behavior needs to be careful not to adopt, maintain, or produce stereotypes vis-à-vis music genres (e.g., hip-hop, metal, techno) that are appreciated by and important to millions of young music fans.

Should youth take violent lyrics with a grain of salt? The extant developmental literature has yet to specify longitudinal processes (moderation and mediation) that may condition or explain how music can predict antisocial behaviors. In one experimental study, humorous lyrics mitigated the effects of violent lyrics on hostility, but this moderation effect does not seem robust (Anderson, Berkowitz et al., 2003; Anderson, Carnagey & Eubanks, 2003). However, gender differences can moderate longitudinal findings, for instance, heavy metal preferences can predict antisocial behaviors in adolescent boys but not in adolescent girls (Selfhout et al., 2008). Unfortunately, mediation models are lacking, and thus, explicative mechanisms linking music and antisocial behaviors have not been tested longitudinally. That said, adolescent studies linking music and antisocial behaviors have nonetheless ruled out a number of confounding mechanisms, including music-induced arousal, importance given to lyrics, violence in other media, baseline levels of antisocial behaviors, antisocial behaviors in peers, personality, age in adolescence, level of education, and school commitment (Anderson, Carnagey & Eubanks, 2003; Miranda & Claes, 2004; Selfhout et al., 2008; terBogt et al., 2013). In sum, the impact that music with antisocial themes has on antisocial behaviors is not necessarily large, but it seems quite robust for many adolescents.

Media in General

Some researchers tackle media as a whole by using a more general assessment of media and by aggregating (or comparing) many forms of media. There are three main reasons for which this generic approach can contribute to theorizing about the development of CAB. First, this approach may increase breadth and reliability but also better account for cumulative effects in media consumption. Second, this approach may partially account for multitasking across different media. Third, when specific usage measures are available, the relative impact of each form of media can be compared. The overarching proviso is that media in general is supposed to influence people to various extents, in different ways, and over short or long periods of time. Overall, the effect size for the link between media violence and aggressive behavior is usually modest (e.g., $r = .19$; Bushman & Huesmann, 2006). Moreover, Ferguson and Kilburn (2009) report an even smaller effect size ($r = .08$) for the positive relationship

between exposure to media violence in general and aggression. Unfortunately, far less is known about the effect size for the few studies that have examined the interface between prosocial media and prosocial behavior in general (Greitemeyer, 2011). That said, meta-analytical estimates specific to television programs support the beneficial impact of educational media on children's social reasoning/attitudes ($d = .19$; Mares & Pan, 2013).

Is it the violence in the media or the media at large? Krahé and Möller (2010) followed a sample of German early adolescents (grades 7 and 8) twice over the course of 12 months. Results from cross-lagged path analyses (controlling for baseline aggression, academic achievement, and nonviolent media usage) revealed that—similarly across boys and girls—media violence usage (movies, TV, and interactive video games) predicted higher levels of physical (but not relational) aggression and lower levels of empathy, but that neither types of aggression (nor empathy) predicted media violence usage. Conversely, similar analyses also indicated that nonviolent media usage did not predict aggression or empathy. In a follow-up to this study, Krahé, Busching, and Möller (2012) tried to disentangle developmental parameters of violent media usage through latent growth mixture modeling based on a 3-wave design over the course of 24 months. Three trajectories were identified: 64.9 % were "Stable Low Users" (37.8 % of boys and 90.6 % of girls); 30.9 % were "Stable High Users" (55.4 % of boys and 7.7 % of girls); and 4.2 % were "Desisters" that decreased in use (6.8 % of boys and 1.7 % of girls). Interestingly, different from Stable High Users but similar to Stable Low Users, Desisters showed a decrease in aggressive behavior over 24 months. That said, across the three waves, Stable High Users remained the most physically aggressive adolescents in the sample. Of particular interest, compared to Desisters, Stable High Users were younger and reported less use of nonviolent media. Overall, it was also found that violent media use predicted more physical aggression over and above several confounders, such as baseline aggression, sociodemographics, academic contexts, nonviolent media use, parenting, aggression norms, and empathy. Moreover, nonviolent media did not predict physical aggression. Lastly, physical aggression did not predict later violent media usage. Krahé and collaborators conclude along the lines that those younger aficionados of violent media who display less interest in nonviolent media are not only more likely to maintain a taste for violent media but also to display more physical aggression in early adolescence. In the United States, Graber, Nichols, Lynne, Brooks-Gunn, and Botvin (2006) followed a sample of early adolescents and performed a set of 1 year of longitudinal analyses. After controlling for gender, ethnocultural background, and outcomes' baseline levels, they found that violent media consumption (television, movies, music, and video games) predicted more delinquency (violence, vandalism, and theft) not only from 6th to 7th grade but also from 7th to 8th grade. Gentile and Bushman (2012) found that American children (grades 3 and 4) who were exposed to more media violence (TV, movies, video games) were more physically aggressive over the course of 6 months in elementary school. This predictive effect remained significant even though gender, physical victimization, hostile attribution bias, parenting, and baseline physical aggression were considered as concurrent predictors.

Can a good thing be bad? There is recent evidence for differential impact of media in terms of educational media predicting more relational aggression but not physical aggression. Ostrov, Gentile, and Mullins (2013) followed a sample of American preschool children (aged 30–58 months) during the course of 4 months. After controlling for confounders (gender, age, SES, and baseline levels of physical and relational aggression), educational media exposure (television/movies and video/computer games) did not predict physical aggression, but instead predicted more relational aggression. The authors posit that preschool children might focus more on the portrayed relational aggression than on the conveyed conflict resolution skills.

Can we compare the differential effect of each media, respectively? In a 1-year longitudinal study conducted in Canada, Janssen, Boyce, and Pickett (2012) examined the respective effect of different media (television, video games, and computer) on physical aggression among adolescents in grades 9 and 10. Video gaming predicted physical aggression over and above the respective effects of television and computer. That said, in the United States, Ferguson (2011) examined data from a 1-year longitudinal study among pre- and early adolescents (aged 10–14). The research design controlled for several pertinent confounders, including baseline aggressive/criminal behavior, gender, depression, neighborhood problems, negative relationship with adults, antisocial personality, family attachment, peer delinquency, family conflict, and family violence (psychological aggression and physical abuse). Violent television viewing and violent video gaming did not predict serious aggressive behavior, nonviolent criminal behavior, or violent criminal behavior. Moreover, consistent with most longitudinal research, prior serious aggressive behavior did not predict later violent video gaming.

Baseline levels of aggression might not only act as a confounder but also as a moderator that may suggest differential impacts across different developmental trajectories. For instance, media violence usage was found not to predict physical aggression among early adolescents who were more physically aggressive at baseline, but it predicted more physical aggression among those who were less physically aggressive at the outset (Krahé & Möller, 2010). Hence, these results may hint developmentalists that media violence is not a significant (or potent) risk factor among those adolescents who are already in a high and persistent trajectory of aggressive behavior. Recent meta-analytic estimates for the link between media violence and criminal aggression can only find a small but significant effect size ($r = .07$) among boys (Savage & Yancey, 2008). Twenty years ago, Paik and Comstock (1994) had also found a small effect size ($r = .10$) for the link between violent television viewing and criminal violence. Perhaps violent media has a small effect size in the case of criminal aggression because the latter can be part of a much more serious antisocial trajectory. However, Ferguson (2011) recently reported that in youth who had a less antisocial personality, violent media predicted less criminal behavior (attenuating effect), whereas violent media predicted more criminal behavior among those who had a more antisocial personality (aggravating effect). In all cases, it should be considered that individuals who are in a high and persistent trajectory of antisocial behavior are also known to have multiple genetic and environmental risk factors starting in early infancy (Moffitt, 1993; Tremblay, 2010). Thus far, it is unclear to which extent violent media consumption is associated to more severe trajectories of CAB.

Summary

In this chapter, we addressed the complex question as to whether media exposure and consumption can represent risk factors in the development of CAB. More specifically, we selectively reviewed the most recent and sound empirical findings from meta-analyses and longitudinal studies to evaluate the extent to which television/movies, video games, Internet, music, and media in general may influence aggressive behaviors in children and adolescents. In light of this review of the extant literature, we can offer nine concluding remarks:

- Longitudinal/correlational findings reveal that antisocial, violent and aggressive contents across various forms of media (television, video games, Internet, music, or in general) can predict an increase in aggressive behavior among children and adolescents. Therefore, violent media consumption is a *correlational* risk factor of aggressive behavior in youth. Interestingly, these prospective *socialization effects* have usually been established on short-term follow-ups of a couple of years, though some have actually spanned over many years from childhood to young adulthood.
- Longitudinal/correlational findings clearly indicate that, in turn, aggressive behavior

does not predict an increase in consumption of media with antisocial content during childhood and adolescence. Hence, contrary to a widely held belief among social scientists and laypeople that a *selection effect* would be the main explanation for the link between media violence and violent behavior, it seems that aggressive behavior is not a predictor of violent media consumption in youth.

- Meta-analyses suggest that the significant effect of media violence on aggressive behavior is generally consistent across research designs (experimental, cross-sectional, longitudinal), but usually small to medium in size.
- Meta-analyses suggest, however, that the effect of media violence on severe or criminal aggressive behavior is hitherto small, although it is also understudied.
- In terms of gender differences, longitudinal and meta-analytic findings are usually equivalent among male and female participants throughout childhood and adolescence.
- Many confounders or so-called third variables (e.g., gender, SES, baseline aggressive behavior, known risk factors) do not account for the predictive relationship between media violence and aggressive behavior in childhood and adolescence. Thus, the predictive relationship between media violence and aggressive behavior does not seem to be spurious. Rather, media violence might have a moderate but distinctive impact on youth development.
- Longitudinal and meta-analytic findings also indicate that media with prosocial content can also predict more prosocial behavior in childhood and adolescence. In sum, media is not good or bad in and of itself. The nature of the content (antisocial or prosocial) has a differential impact on youth development.
- Longitudinal data evidence that violent media consumption is relatively stable across a period of a few years among children and adolescents, but this developmental continuity is generally moderate in magnitude. Hence, if violent media are risk factors of CAB, then they may be malleable enough to be susceptible to preventive initiatives in youth.
- Media can probably feed thoughts, emotions, and behaviors in young people. In turn, they choose, feed off, and digest their media regimen in different ways, for better and for worse but also while maintaining homeostasis. On the one hand, scholars are being scientifically curious and conscientious in their scrutiny of the impacts (positive and negative) of media on youth development (e.g., Anderson et al., 2010). One can qualify this as a "toxic diet" approach to media consumption in youth, which might be more compatible with the biomedical model. On the other hand, scholars are also being scientifically sound and reasonable to warn against possible "moral panics" and miscalculation of risks related to media consumption (e.g., Ferguson, 2010). One can qualify that as an "omnivorous diet" approach to media consumption in youth, which may be more compatible with a psychosocial model. In sum, it is perhaps better to balance both scientific approaches toward a better understanding of what is a "sensible diet" approach to different media consumptions for different young persons. This more balanced approach, which would consider both positive and negative aspects of media, might be more in keeping with a biopsychosocial model.

Future Research Needs

In our review of the literature on media violence and aggressive behaviors, we were able to identify some caveats that need to be addressed by future research. Some researchers have already started to address these caveats. However, these research issues represent future research needs that most researchers should tackle at some point in their programmatic line of research. Hence, we suggest six of those research needs:

- *Longitudinal Designs.* Unfortunately, most studies only use two waves of data to examine the longitudinal relationships between media violence and aggressive behaviors. Researchers should thus strive to increase the

number of time points in their longitudinal designs. For instance, prospective mediation models necessitate at least three waves of data collection in order to test the developmental sequence among mediating variables. Moreover, adding more waves of longitudinal data through a multilevel design can enable to test within-person processes along with between-person structures over time. It would be particularly interesting to better describe how different trajectories of media consumption are intertwined with different trajectories of antisocial behaviors from childhood to adulthood.

- *Multitasking and Cost/Benefit Ratio*. The vast majority of studies do not consider for the presence of multitasking and do not consider that a given media product can include both antisocial and prosocial contents. First, it would be a great improvement if researchers could operationalize the successive and simultaneous uses of different forms of media during the unfolding of everyday life, perhaps through experience sampling methods. The former may reveal a sequential timing effect of media violence, while the latter a synergistic effect. Second, researchers should disentangle the additive or multiplicative effects of antisocial contents and prosocial contents in the daily media diet of children and adolescents. It could be that there is a cost/benefit ratio or trade-off for each form of media and also for each given media product within each form of media.
- *Testing Theories with Longitudinal Data*. There are many elegant theoretical models that can explain the short-term effects (e.g., priming effects, excitation transfer) and long-term effects (e.g., social cognition, scripts, desensitization, social information processing, general aggression model, model of reinforcing spirals) of media violence on aggressive behaviors (for a review, see Brown & Bobkowski, 2011; Groves et al., in press). That said, correlational longitudinal studies rarely provide a direct test for all these causal models but rather assume that the broad significant longitudinal relationships are interpretable from such fine grained conceptual models. Researchers should therefore strive to better test these causal models through their longitudinal findings, perhaps by resorting to prevention program evaluation with randomized control trials (experimental designs).
- *Research on Media in Early Infancy*. Research advances in developmental psychopathology inform that different children will have different antisocial behavior trajectories across their life span and that many critical risk factors coalesce during early infancy. Researchers should thus conduct more research on the influence of media violence on infants and also on their parents and caregivers.
- *Developmental, Cultural, and Generational Trends*. Developmental research should try to provide more nuances as to how an increase in media violence (e.g., Bushman, Jamieson, Weitz, & Romer, 2013) could still be situated concurrently within a decrease in violent behavior and violent crime in the larger society (e.g., Finkelhor, Shattuck, Turner, & Hamby, 2014). In addition, given that media represents a social and cultural product, there is a need for more research examining media violence across different cultures.
- *Bridging Research and Practice*. Much better bridges should be built between research and practice. Future research should support scientifically based public policies that do not underestimate (or overestimate) the risks of violent media in youth. However, relatively few public policies have been successfully developed, perhaps because some of these policies are judged as infringing on constitutional rights (e.g., First Amendment in the United States; Gentile et al., 2007). For many years, communities have turned to media-rating systems (content- or age-based) as a societal resource to guide parents in the monitoring of their children's media consumption. However, Bushman and Cantor (2003) conclude that many parents use but do not necessarily understand media-rating systems, that they would prefer these media-rating systems

to be based on content rather than age and that such ratings for restricted/controversial content may deter younger children and yet possibly entice older ones. Initiatives that promote autonomy and competence can also strive to better educate youth in their use of mass media. Media literacy interventions can help children and adolescents to develop more knowledge and critical thinking toward mass media and thereby gain more resilience from media with negative influences (Potter, 2010). Recent meta-analytic estimates suggest that media literacy interventions might be beneficial to mitigate the deleterious effects of media ($d = .37$; Jeong, Cho, & Hwang, 2012). Early adolescents who learn principles of media literacy through an intervention might better understand the potentially deleterious effects of media violence (Webb & Martin, 2012). That said, in childhood, media literacy interventions that present salient examples of violent media also bear the risk of producing an iatrogenic effect ("boomerang effect") that increases aggressive behavior intentions as a result of media priming (Byrne, Linz, & Potter, 2009). Hence, media literacy may need to be complemented by other components (e.g., cognitive reasoning activity) so that it does not backfire (Byrne, 2009).

Recommended Readings

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