Social contagion, violence, and suicide among adolescents

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Purpose of review
Social Contagion is defined as the spread of behaviors, attitudes, and affect through crowds and other types of social aggregates from one member to another. Adolescents are prone to social contagion because they may be especially susceptible to peer influence and social media.
In this article, we provide a brief review of the most recent findings on social contagion, violence, and suicide among adolescents.

Recent findings
Recent evidence support social contagion in gun violence, bullying, cyberbullying, violent offending, and suicide, but is inconclusive on the role of violent video game exposure on aggressive behavior.

Summary
The mechanisms underlying the contagion effect of violence and suicide are currently unclear. It has been argued that social learning, identification with significant others, and the normalization of specific norms play a role. All these mechanisms require understanding social contagion as a complex interaction between individual, relational and social factors. This is key if the social contagion perspective is to be used not only to investigate negative outcomes, but also as a framework for promoting prosocial attitudes and behaviors. Additionally, more research is needed on psychosocial interventions and public policies to minimize the potential spillover effect of violence and suicide.

Keywords
adolescents, social contagion, social media, suicide, violence

INTRODUCTION

The American Psychological Association (APA) Dictionary of Psychology defines 'Social Contagion' as ''the spread of behaviors, attitudes, and affect through crowds and other types of social aggregates from one member to another'' [1].

The phenomenon has been compared to the spread of infectious diseases and has been claimed to be caused by the increased suggestibility of community members [1]. In line with this metaphor, research on social contagion has focused mainly on its negative consequences such as violence and self-harm behaviors [2], and on its relationship with mental disorders [3,4]. Subsequent research began to examine neutral and positive consequences, taking as an example the contagion of happiness through a social network [5].

The concept of social contagion has not been without controversy. For example, there is no clarity regarding its explanatory mechanisms, arguing that it is maintained through interpersonal behaviors as varied as imitation, conformity, universality and mimicry [1]. Furthermore, there are studies that contradict the possibility that mental health

problems and happiness can be socially contagious to an appreciable extent [6]. Despite this, there is no doubt that social media and social networks play a role in the diffusion and amplification of certain behaviors, which is related to social contagion [7,8].

Given their developmental stage, adolescents are a population prone to social contagion not only because they may be especially susceptible to the

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KEY POINTS

- Recent evidence support social contagion in gun violence, bullying, cyberbullying, violent offending, and suicide.

- Recent evidence is inconclusive on the role of violent video game exposure on aggressive behavior.

- The mechanisms underlying the contagion effect of violence and suicide are currently unclear.

- More research is needed on psychosocial interventions and public policies to minimize the potential spillover effect of violence and suicide.

influence of social media [9], but also to that of their peers [10]. Violence and mental health represent two areas where this issue has been particularly researched in this age group. Three dimensions have been identified for which social contagion appears to be a relevant explanatory framework in adolescent violence: the role of violent video games in aggressive behavior [11■■,12■■,13■], the contagion of gun violence [14■,15], and peer effects on bullying, cyber-bullying and violent offending [16■■,17■■,18■]. Regarding adolescent mental health, although there are some studies that reference social contagion in relation to eating disorders [19■] and alcohol interventions [20■], most recent studies have focused on suicide [21■■,22■,33■■].

In this article, we provide a brief review of the most recent findings on social contagion, violence, and suicide among adolescents.

SOCIAL CONTAGION AND VIOLENCE

Violent video game exposure

One study explored the longitudinal relationship between violent video game exposure (VVGE) and the perpetration of bullying among 774 Chinese early adolescents over the span of 1 year. VVGE had a significant longitudinal effect on bullying over time. This effect was stronger among adolescents with higher traits of aggressiveness and lower moral identity [11■■].

In another study, a longitudinal social network analysis was used to follow 796 adolescents from 34 different classrooms from grade 7 to grade 8. Adolescents were more likely to become friends with peers similar in levels of aggression and VVGE. Unlike what might have been expected, no effect of violent video game playing by friends was found on adolescents' own aggressive behavior [12■■].

The additive and interactive effects of VVGE, personality, and deviant peers on adolescent aggressive behaviors have also been studied. Although cross-sectional analyses found significant effects of VVGE on aggressive behavior, these were no longer significant once other variables were controlled for. The effect of VVGE increased significantly among participants with more deviant peers. However, no significant effect was found when the longitudinal database was considered. The authors conclude that a complex interplay between multiple biopsychosocial variables needs to be considered to understand aggressive behavior [13■].

Taken together, the findings are inconclusive on the role of VVGE on aggressive behavior.

Gun-related violence

A study was conducted on gun carrying contagion among adolescent and young adult men. The study considered a sample of 1216 participants who had been arrested for the first time during adolescence and interviewed on a regular basis until they were around 20 years old. The most relevant predictor of gun carrying was exposure to guns and gun-related violence, as well as engagement in illegal and other antisocial behavior [14■].

Another study explored the role of gun violence in prime-time U.S. television series on gun homicides between 2000 and 2018. They found that trends in gun violence paralleled violence in television dramas, particularly for young people. The authors concluded that these latter findings provided evidence for the role that entertainment media play in increasing the normative acceptability of gun use [15].

These two studies provide evidence in favor of the contagion effect of gun exposure on gun violence.

Peer effects on bullying, cyber-bullying and violent offending

One study of Japanese social networks examined whether having peers who were perpetrators or victims of cyberbullying could increase the probability of becoming a perpetrator of cyberbullying. This study analyzed 129 164 users of an online chat platform. The results showed that the risk of becoming a cyberbullying perpetrator increased for participants who had both perpetrators and victims of cyberbullying among their peers and among their peers' peers. In addition, greater intimacy with cyberbullying perpetrators further increased the risk of perpetrating cyberbullying [16■■].

In another study, 2830 10th graders in the United States were surveyed. The results showed that both peer support for sexual violence and peer endorsement of rape myths had significant effects

on the perpetration of dating aggression, bullying and cyberbullying [17""].

In a separate study, a sample of 3380 American Indian adolescents was analyzed between the years 2009 and 2013 to explore a social learning perspective on violent offending. They found that having friends who have committed crimes and experience with direct violent victimization had significant effects on self-reported violent offending [18"].

Overall, these studies provide evidence in favor of the role of having peers who incur in or support violence on bullying, cyberbullying, and violent offending.

Explanatory frameworks for violence contagion effects

The aforementioned studies refer to several frameworks to explain the mechanisms underlying the social contagion of violence, although these frameworks are not directly tested. As part of the General Aggression Model (GAM), these studies focus on social-cognitive learning processes that may induce a short-term increase in aggression following exposure to violence [11"",12""]. According to GAM, a social environment where violence is normalized can influence aggressiveness [12""]. More precisely, Social Learning Theory highlights the importance of observing, modeling and imitating other people's behaviors, emotional reactions or attitudes [11"", 12"",13"]. Therefore, adolescents might reproduce the aggressive tactics they have learned during social interactions [18"]. According to Social Influence Hypothesis, youth can be directly or indirectly encouraged by peers to carry guns [14"]. Social Norms might also be at stake [11"",14",16"",17""]. Teng *et al.* [11""] reflect on how people might normalize violence as an acceptable response to problem solving and increase moral disengagement by redefining immoral conduct as serving a greater good. Yokotani and Takano [16""] refer to a Complex Contagion Model as one which understands that social norms can be contagious when people are exposed to others who practice that norm. Thus, exposure to attacks or bullying can become normalized over time. According to Beardslee *et al.* [14"] it might be that violence is normalized through peer influence.

SOCIAL CONTAGION AND SUICIDE

One form of suicide manifestation is through "clusters", which are nonrandom increases in suicidal behaviors in close temporal or geographic proximity, and are more common among young people than among adults [34]. One factor that may

contribute to suicide clustering is the "contagion effect", a process through which suicidal behaviors in one or more individuals promote or increase the likelihood of the occurrence of subsequent suicidal behaviors in others. Contagion can occur directly (interaction with someone who dies by suicide) or indirectly (e.g., exposure to suicide through the media) [34].

In 1974, the sociologist David P. Phillips coined the term "Werther effect" to describe the contagion of suicidal behavior following a highly publicized suicide [35]. The Werther effect may be related to factors such as the extent of the reporting, the simplified or sensationalized nature of the reporting, the normalization of suicidal behavior, and whether coverage of the suicide includes details about the method and location of the suicide. The pervasiveness of the Internet and social media may amplify the extent of this effect. An opposite effect is the "Papageno effect", whereby the media may present constructive coping strategies for suicidal ideation or emphasize messages of hope regarding adverse life circumstances [36].

One study examined the potential contagion effect associated with celebrity suicide reporting between 2005 and 2018 in Korea. The results suggest that the number of suicides increased after the celebrity suicides took place. The effect was found to be greatest 3–4 days after suicide notification and to affect subgroups of women and young people more. People would react more strongly to same-sex celebrity suicide and even mimic the suicide methods used [21""].

Another study identified changes in suicide deaths in the United States following the suicides of Kate Spade and Anthony Bourdain by analyzing the volume of Twitter posts as an indicator of social attention. This study showed that there were more suicides than would be expected [22"].

An online survey estimated differences in emotional involvement and psychological impact following exposure to news coverage of a celebrity suicide in Taiwan. The results showed that distressed individuals were more likely to be at suicidal risk after reading the news [23""].

In the same vein, a study examined associations between social media related to a suicide cluster in Ohio and suicidal behaviors in a sample of 7th to 12th grade students. Results suggest that exposure to social media content was associated with significantly higher odds of suicidal ideation and attempts [24""].

Depictions of suicide in fictional narratives may also produce contagion effects. A study conducted in Ontario, Canada, found that there were changes in emergency department presentations for

self-harm in the 3-month period following the premiere of the Netflix series "13 Reasons Why". This change was observed primarily among females and adolescents [25▪].

A meta-analysis concluded that depictions of suicide in entertainment media may increase suicides and suicide attempts in the population [26▪].

Another study investigated the impact of different suicide-related narratives on media reports of subsequent suicides in Toronto, Canada. Longitudinal analyses identified a dose–response relationship in which communication messages characterized by a "Werther narrative" style were associated with an increase in subsequent suicides, while messages characterized by a "Papageno narrative" style were associated with fewer subsequent suicides [27▪▪]. A meta-analysis also showed that media narratives focused on hope and recovery from suicidal crises appear to have a beneficial effect on suicidal ideation among individuals with some vulnerability to suicide, but there is insufficient evidence regarding help-seeking attitudes and intentions [28▪▪]. Both studies suggest that the impact of the story narrative may be of similar or even greater importance than the specific elements of the content included in the stories.

A survey explored the characteristics of Korean adolescents with a recent history of self-harm. This study showed that having friends who self-harm was associated with an increased likelihood of lifetime suicidality [29▪]. Another study showed that adolescents with a suicide attempt who sought outpatient or emergency mental healthcare were more likely to affiliate with suicidal peers compared to their matched controls [30▪], while another study showed that knowing a peer who had attempted suicide was associated with a transition from suicidal ideation to a planned suicide attempt [31▪].

The body of reviewed studies highlights the need to consider the potential spillover effect of suicidal behavior as a key component of suicide prevention strategies for adolescents.

Explanatory frameworks for suicidality contagion

Keyes *et al.* [32▪▪] suggest that suicide shares many properties with a communicable infectious disease and propose a model of transmission through the agent-host-environment triad. However, this explanation seems to be too simplistic. In the literature on suicide, the contagion effect has generally been explained by Social Learning Theory or Social Identification Theory. Social Learning stresses the fact that some vulnerable individuals may learn from the media that personal problems can be solved by suicide. On the other hand, Social Identification Theory stresses that individuals who face similar crises or emotional states as people who died by suicide may develop an inclination to imitate the behavior. This could occur through "vertical" identification (e.g., with an admired celebrity) or "horizontal" identification (e.g., with a person who shares demographic characteristics) [37].

Some of the contagion mechanisms that have been proposed highlight a "transmission" based on proximity (from person-to-person in a specific community), "imitation" (response to an interpersonal or media stimulus), "affiliation" (with others who share similar characteristics or like-minded attitudes) or the influence of "social norms" (e.g., the perception that suicidal behavior is widespread may lead to perceiving it as a potentially acceptable response). These perspectives may be useful to reflect on the social contagion effect in adolescence, because during this developmental period peers play an important role in shaping individuals' social and behavioral norms, which may be associated with a greater impact of suicidal thoughts/behaviors of peers [34].

There are limitations in the studies on the contagion effect of suicidal behavior. Suicide clusters are usually detected using time-series regression models, which cannot demonstrate that people who died by suicide were actually exposed to the same social influences. In addition, studies do not consider the specific characteristics or vulnerabilities of individuals who died by suicide. For example, the contagion effect of suicidal behavior may be greater in already vulnerable adolescents.

Overall, the mechanisms underlying the contagion effect of suicidal thoughts and behavior are currently unclear.

CONCLUSIONS AND RECOMMENDATIONS

The social contagion effect has often been compared to the transmission of infectious diseases [32▪▪]. It is therefore not surprising that most research on social contagion in adolescents has focused on negative outcomes, such as violence and suicide. Overall, recent studies provide evidence supporting social contagion in gun violence [14▪,15], bullying, cyberbullying and violent offending [16▪▪,17▪▪,18▪], and suicide [21▪▪,22▪,33▪▪], but are inconclusive on the role of VVGE on aggressive behavior [11▪▪,12▪▪,13▪].

However, the mechanisms underlying the contagion effect of violence and suicide are currently unclear. It has been argued that social learning, identification with significant others, and the normalization of specific norms play a role [11▪▪,12▪▪,13▪, 14▪,16▪▪,17▪▪,18▪,32▪▪,34,37]. All these mechanisms

require understanding social contagion as a complex interaction between individual, relational and social factors. This is key if the social contagion perspective is to be used not only to investigate negative outcomes, but also as a framework for promoting prosocial attitudes and behaviors. For example, recent studies have suggested the need to shift the focus to other mechanisms for identifying the harms and benefits of exposure to self-harm and suicide [38]. Indeed, many types of content and forms of interaction among adolescents sharing images of self-harm on social networks may have supportive effects through recovery-oriented content.

Additionally, more research is needed on psychosocial interventions and public policies to minimize the potential spillover effect of violence and suicide. For example, research is needed on the protective role that trigger warnings could play in relation to the social contagion of violence or suicidal behavior. In fact, a recent study estimated a significant downward trend in suicide deaths, and no significant increase in suicide rates following celebrity suicides, after the enactment of the suicide prevention law and new media guidelines in South Korea [33■■].

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Conflicts of interest

There are no conflicts of interest.

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- ■ of special interest
- ■■ of outstanding interest

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