Testing a path model of relationships between gender, age, and bullying victimization and violent behavior, substance abuse, depression, suicidal ideation, and suicide attempts in adolescents

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ARTICLE INFO

ABSTRACT

The goal of this study was to test a path model for the relationships between age, gender, traditional bullying and cyberbullying victimization, and violent behavior, substance abuse, depression, suicidal ideation and suicide attempts in adolescents. A hypothesized path model was fit to data from the 2011 Youth Risk Behavior Surveillance System (YRBSS) on a nationally representative sample of 15,425 high-school students from across the United States. Results suggested that the effects of traditional and cyberbullying victimization on suicidal thinking, suicide planning, and suicide attempts were mediated by violent behavior, substance abuse, and depression. Results also suggested reciprocal paths between substance abuse and violent behavior. There were statistically significant indirect paths from both traditional and cyberbullying victimization to suicide attempts without the involvement of depression, suicidal thinking, or suicide planning, findings suggesting a model for spontaneous, unplanned adolescent suicides. Results suggested that female adolescents who reported cyberbullying victimization also reported higher rates of depression and suicidal behaviors compared to their male counterparts, and that as adolescents got older, depression and substance abuse tended to increase, while violent behavior and suicidal thinking tended to decrease. The implications of these findings for social workers, school counselors, and others who work with adolescents are considered.

1. Introduction

Adolescent suicide has been increasing in recent years. In 2006 suicide was the 3rd leading cause of death among youths 10–19 years old, with an age adjusted suicide rate of 4.16 per 100,000. In 2007, 14.5% of 9th–12th grade students in the U.S. reported suicidal ideation, and 6.9% reported at least one attempt. Between 2000 and 2006 the male suicide rate increased in a nonlinear fashion, from age 12 to age 19, to about 20 per 100,000, while the rate for females increased in a linear manner to about 3–4 per 100,000 (Cash & Bridge, 2009).

Numerous risk factors for adolescent suicide have been identified, including depression, substance abuse, aggressive behavior and fighting, and hopelessness (Bongar, 1991; Fremouw, Perczel, & Ellis, 1990). Depression is a principal predictor of suicidal thinking and attempts. Studies have shown that 40%–80% of adolescent suicide attempters met diagnostic criteria for depression (Cash & Bridge, 2009). Research has suggested that suicidal thinking is strongly associated with depression, with up to 85% of clinically referred depressed adolescents reporting suicidal thoughts (Cash & Bridge, 2009). Lewinsohn, Rohde, and Seeley (1996) concluded that suicidal thinking, more than depression, both lowers the threshold for and potentiates adolescent suicidal behavior.

Bullying victimization has also been identified as a risk factor for suicide (Cash & Bridge, 2009). Bullying, previously reserved for school grounds, can now occur anywhere Internet access is available. Individuals who cyberbully utilize a number of online devices to harass and intimidate others. A recent meta-analysis synthesizing the results of 80 studies estimated the prevalence of traditional bullying victimization of adolescents to be about 36%, while in contrast the estimated prevalence of cyberbullying victimization was about 15% (Modecki, Minchin, Harbaugh, Guerra, & Runions, 2014).

Recent studies have found significant univariate relationships between being a victim of either traditional or cyberbullying and depression in U.S. adolescents (Kowalski & Limber, 2013; Schneider, O'Donnell, Stueve, & Coulter, 2012); internet users (Ybarra & Mitchell, 2004); Israeli students (Olenik-Shemesh, Heiman, & Eden, 2012); and Swiss and Australian students (Perren, Dooley, Shaw, & Cross, 2010). Univariate relationships have also been found between both traditional and cyberbullying victimization and suicidal thinking and behaviors in U.S. adolescents (Hinduja & Patchin, 2010; Schneider et al., 2012).

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These relationships, as well as research findings considered below, can be conceptualized within a framework integrating Agnew's (1992) general strain theory (GST), Lewinsohn's behavioral theory of depression (Lewinsohn, Hoberman, Teri, & Hautzinger, 1985), and cognitive–behavioral models of depression and suicide (Beck, 2011). Briefly sketched, GST posits that adolescents experience strain, which refers to relationships in which other persons do not treat the individual as he or she would like to be treated (Agnew, 1992, p. 48; Wallace, Patchin, & May, 2005). Being a victim of bullying is an example of potential strain (Hay & Meldrum, 2010). According to cognitive–behavioral models of depression, this victimization may be negatively interpreted by the adolescent (Beck, 2011). General strain theory posits that if the victimization is appraised as (a) unjust, (b) high in magnitude, and (c) associated with low social control, then, consistent with cognitive–behavioral models, this deleterious appraisal can lead to negative emotional states, such as anger and shame (Agnew, 2001; Beck, 2011). Gender differences in emotional reactions can lead to gender differences in behavioral response. For example, female anger can be accompanied by guilt and anxiety, leading to female behavioral responses that differ from that of males (Agnew, 2001). The stress and negative emotional states disrupt normal behavioral patterns resulting in a low rate of response-contingent positive reinforcement (Lewinsohn et al., 1985).

The negative appraisal, negative emotions, and loss of positive reinforcers create pressure to take remedial actions, including incentives to respond in antisocial ways, such as various forms of deviant and aggressive behaviors. The remedial actions may be motivated, for example, by thoughts of revenge, which can lead to aggressive and violent behaviors; and/or by desire to lessen the intensity of the negative emotions, which can lead to substance abuse (Agnew, Brezina, Wright, & Frances, 2002). A consequence of the remedial actions can be further negative emotions and further loss of important social reinforcers, which can lead not only to further substance abuse and violent behavior, but also to depression. These circumstances and the accompanying depression can engender both social and general hopelessness (Beck, 2011; Beck, Steer, Beck, & Newman, 1993; Bonanno & Hymel, 2013). The hopelessness can intensify depression and lead to suicidal thinking, which can trigger suicide planning and attempts (Lewinsohn et al., 1996).

1.1. Multivariate studies

Other recent studies have investigated more complex multivariate relationships between traditional and cyberbullying victimization and adolescent depression and suicide behaviors. Hay and Meldrum (2010) found that negative affective states, such as depression, partially mediated the relationship between bullying victimization and both suicidal ideation and self-harm. Sampasa-Kanyinga, Roumeliotis, and Xu (2014) tested the relationships between both traditional and cyberbullying victimization and depression and suicidal thoughts and behaviors in Canadian adolescents. They used a series of logistic regression analyses, following the mediation analysis methodology described by Baron and Kenny (1986), with data from the 2011 Eastern Ontario Youth Risk Behaviour Survey. Results suggested that depression fully mediated the relationship between cyberbullying victimization and (a) suicidal thinking, (b) suicide planning, and (c) suicide attempts. Results further intimated that depression partially mediated the relationship between traditional bullying victimization and both suicide ideation and planning.

Bauman, Toomey, and Walker (2013) tested a path model relating both traditional and cyberbullying victimization with depression and suicide attempts. These researchers found that depression partially mediated the relationship between traditional bullying victimization and suicide attempts for both males and females. They also found that depression mediated the relationship between cyberbullying victimization and suicide attempts, but only for females.

Bonnano (2006) investigated the relationship between bullying victimization and suicidal thinking (see also Bonanno & Hymel, 2013). The results of this study suggested that social hopelessness partially mediated the relationship between bullying victimization and suicidal thinking (see Fig. 4, p. 54), and that social support moderated the relationship between bullying victimization and suicidal thinking.

1.2. Substance abuse and violent behavior

Prior research has suggested that substance abuse (SA) can lead to violent behavior (VB) (e.g., Hoaken & Stewart, 2003), and this relationship may be reciprocal (Xue, Zimmerman, & Cunningham, 2009). Previous research has also identified SA (e.g., Deykin, Levy, & Wells, 1987; Levy & Deykin, 1989) and VB (e.g., Capaldi, 2008) as correlates of depression in adolescents. Previous research has shown that SA is also related to suicide. For example, in one study researchers found alcohol in the systems of half of adolescent suicide victims (Marttunen, Aro, Henriksson, & Lonnqvist, 1991). Rowan (2001) found that males may be more likely to engage in suicidal behavior while intoxicated than females. Violent behavior has also been linked to adolescent suicide (Zhang et al., 2012).

Integrating some of this prior research with that on cyber and traditional bullying victimization, Litwiller and Brausch (2013) used path analytic methods to investigate whether SA and VB mediated the relationships between bullying victimization (both traditional and cyber) and suicidal behaviors. They found that both violent behavior and substance abuse partially mediated the relationship between both traditional and cyberbullying victimization and suicidal behaviors.

1.3. Gender differences

Gender based differences in the sequelae of cyberbullying and traditional bullying victimization may exist. As noted above, Bauman et al. (2013) found that depression mediated the relationship between cyberbullying victimization and suicide attempts but only for female adolescents. Kowalski and Limber (2013) found differential associations for males and females between bullying victimization, both traditional and cyber, and depression and suicidal thinking. Bonanno and Hymel (2013) found that students who reported cyberbullying victimization reported higher levels of both depressive symptoms and suicidal ideation, with female victims reporting higher levels of both depressive symptoms and suicidal ideation than males.

1.4. Age differences

Previous research on the relationships between age and depression, suicidal thinking, and suicidal behaviors in the context of traditional and cyberbullying victimization is more limited. Kowalski and Limber (2013) found that younger adolescents who were the victims of cyberbullying had higher levels of depression than did older adolescents. Bauman et al. (2013), found younger adolescents (9th graders) more likely to report suicide attempts than older adolescents.

1.5. Research synthesis

In synthesis, the results of the research considered above have suggested that:

1. Depression may partially or fully mediate the relationships between both traditional and cyberbullying victimization and suicidal thinking, suicide planning, and suicide attempts; and
2. Violent behavior and substance abuse may partially mediate the relationship between bullying victimization, both traditional and cyber, and suicidal thinking and suicide behaviors.

The results of previous research are unclear as to whether these relationships are the same for male and female adolescents. Also unclear