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Emotional Suppression Mediates the Relation Between Adverse Life Events and Adolescent Suicide: Implications for Prevention

Julie B. Kaplow, Polly Y. Gipson, Adam G. Horwitz, Bianca N. Burch, and Cheryl A. King

Department of Psychiatry, University of Michigan Depression Center, Rachel Upjohn Building, 4250 Plymouth Road, Ann Arbor, MI 48109-5765, USA

Abstract

Suicidal ideation substantially increases the odds of future suicide attempts, and suicide is the second leading cause of death among adolescents. A history of adverse life events has been linked with future suicidal ideation and attempts, although studies examining potential mediating variables have been scarce. One probable mediating mechanism is how the individual copes with adverse life events. For example, certain coping strategies appear to be more problematic than others in increasing future psychopathology, and emotional suppression in particular has been associated with poor mental health outcomes in adults and children. However, no studies to date have examined the potential mediating role of emotional suppression in the relation between adverse life events and suicidal thoughts/behavior in adolescence. The goal of the current study was to examine emotional suppression as a mediator in the relation between childhood adversity and future suicidal thoughts/behaviors in youth. A total of 625 participants, aged 14–19 years, seeking ER services were administered measures assessing adverse life events, coping strategies, suicidal ideation in the last 2 weeks, and suicide attempts in the last month. The results suggest that emotional suppression mediates the relation between adversity and both (1) suicidal thoughts and (2) suicide attempts above and beyond demographic variables and depressive symptoms. This study has important implications for interventions aimed at preventing suicidal thoughts and behavior in adolescents with histories of adversity.

Keywords

Adolescence; Suicidal ideation; Suicide attempts; Adverse life events; Emotional suppression

Suicide is the second leading cause of death among adolescents ages 13–17 years (Centers for Disease Control and Prevention 2011), and 6.3 % of adolescents in the USA attempt suicide each year (Centers for Disease Control and Prevention 2010). A number of studies have linked a history of adverse or traumatic life events with adolescent suicidal ideation and suicide attempts (Borges et al. 2008; De Wilde et al. 1992; Grover et al. 2009), and in fact, experiencing an adverse life event, especially a potentially life-altering event such as abuse or the death of a loved one, has been identified as one of the most robust predictors of future suicidal thoughts and behavior in youth (Dube et al. 2001; Fergusson et al. 2000). Very few studies have examined the potential mediating mechanisms that help explain the relation

between adverse life events and suicide. For example, individual-level variables, such as how one copes in the aftermath of an adverse life event, may be more relevant to psychological adjustment than the extent of the adversity experienced. Growing evidence from studies of adults suggests that coping processes, including emotional suppression and avoidance, play an important mediating role between contextual variables and adaptive/maladaptive outcomes (Taylor and Stanton 2007).

One such coping mechanism, emotional suppression, has been defined as a conscious inhibition of one's own emotional expressive behavior while emotionally aroused (Gross and Levenson 1993). Similarly, experiential avoidance refers to an unwillingness to experience emotions, thoughts, and physical sensations and taking physical steps to avoid them (Hayes et al. 2004). Emerging evidence suggests that avoidance-oriented coping strategies may be, at least in part, genetically determined (Taylor and Stanton 2007). Research also demonstrates that behavioral escape and/or avoidant coping strategies are more common in individuals who were exposed to childhood adversity (e.g., SES, domestic violence, etc.), and these coping strategies and associated psychiatric sequelae may endure over time (Repetti et al. 2002). Both emotional suppression and experiential avoidance have been linked with anxiety, depression, and PTSD in adults (Amir et al. 1999; Hayes et al. 2004; Krause et al. 2008) as well as in children (Kaplow et al. 2005) who have experienced adverse life events. However, no known studies to date have examined the potential mediating role of emotional suppression in the relation between a history of adverse life events and (1) suicidal thoughts or (2) suicide attempts in adolescents.

Research has shown that the act of suppression, whether with regard to thoughts or feelings, has a counteractive rebound effect in which the repressed thought or emotion actually becomes more salient (e.g., Cioffi and Holloway 1993; Wegner et al. 1987). Gross and Levenson (1993) found that individuals attempting to suppress emotions have heightened physiological and behavioral arousal. Similarly, Quartana and Burns (2007) found that those instructed to suppress emotions during a pain induction task had heightened perceptions of pain in comparison to those not instructed to suppress emotions.

In addition to research on emotional suppression in controlled laboratory settings, other studies have focused on links between emotional suppression and various psychiatric symptoms in both general and clinical populations. Avoidance-oriented coping or emotional suppression appears to be associated with increased distress, chronic disease, and mortality in adults (Taylor and Stanton 2007). Spokas et al. (2009) found that socially anxious undergraduates reported greater use of emotional suppression and had more negative beliefs about emotional expression. Hayes et al. (2004) found that experiential avoidance was correlated with self-reported levels of anxiety and depression. A study of adult women also found that the experience of both proximal and distal stressful life events predicted greater use of avoidance, and avoidance mediated their relations with subsequent depressive symptoms (Rayburn et al. 2005).

The relation between emotional suppression and anxiety and/or depression may be explained by some of the social consequences of limiting expression or engagement with others. Butler et al. (2003) instructed female undergraduates to watch an emotion-provoking film in pairs

of two and then discuss it with each other. Participants who were told to suppress their emotions had disrupted communication with their partner, resulting in elevated blood pressure and less success in forming a relationship. Results of a prospective study by Srivastava et al. (2009) demonstrated the stability of emotional suppression and its negative association with social support, closeness to others, and social satisfaction. Further research shows that emotional suppressors are reluctant to share both positive and negative emotions, are more likely to avoid close relationships, have lower levels of self-esteem, are less satisfied with life, and have greater depressive symptoms (Gross and John 2003). In addition, individuals with symptoms of depression engage in less emotional self-disclosure/ expression, which is believed to have curative effects for emotional distress (Kahn and Garrison 2009). Thus, the use of avoidant-oriented coping or emotional suppression appears to preempt more effective coping efforts and/or induce intrusion of stress-related or maladaptive thoughts and emotions (Taylor and Stanton 2007).

While the use of emotional suppression has been linked with depression and anxiety in previous studies, the relation between emotional suppression and suicidal thoughts and/or behavior has not been explicitly researched in adolescent populations. Sampling large numbers of adolescents, particularly males, who are at risk for suicide is challenging because they tend to underutilize primary care or specialized mental health services (Marcell et al. 2002) and are often truant from or drop out of school-based settings (Campbell and Duffy 1998). Consequently, a hospital emergency department (ED) is an ideal setting in which to identify and recruit this particular at-risk group given the considerable number of adolescents who visit the ED annually (i.e., approximately 30 %) for both mental and physical health services (Britto et al. 2001; Wilson and Klein 2000). Moreover, it offers a somewhat enriched sample due to the significant number of adolescents who present with the concern of suicide risk or conditions that have been associated with increased risk (e.g., depression and alcohol abuse; King et al. 2009).

To our knowledge, the current study is the first to examine the potential mediating role of emotional suppression in the relation between adverse life events and (1) suicidal thoughts and (2) suicide attempts in adolescents seeking ED services while controlling for potential confounding variables such as age, gender, and race as well as the effects of depression. Our primary hypothesis is that emotional suppression will indeed act as a mediator in the relation between history of adverse life events and suicidal thoughts/behaviors in youth and young adults. If confirmed, these findings may have important implications for the development of effective preventive interventions aimed at reducing emotional suppression and related suicidal thoughts/behaviors in youth exposed to adverse life events.

Method

Participants

Participants were adolescents, ages 14–19 years, seeking emergency pediatric services for medical and/or psychiatric problems at an urban, Midwestern medical center ED that primarily serves an indigent population. These individuals were invited to participate in a larger study, Teens Options for Change (TOC), designed to identify adolescents at elevated risk for suicide and facilitate their linkage with mental health services. Of the 798 eligible

individuals who were approached, 625 (78.3 %) agreed to complete the study screening. There were no significant differences between those who agreed to participate and those who refused with regard to age or gender. Individuals were excluded from the study if they displayed severe cognitive impairment (unable to provide informed assent/consent) or experienced level 1 trauma (e.g., intubated, unconscious).

The current study sample includes all participants who completed the initial screening for the TOC study [$n=625$; 412 females (66 %) and 213 males; mean age=17.4 years; SD=1.7 years]. Participants identified themselves as Black (60 %), White (44 %), Hispanic/Latino (3 %), American Indian (5 %), Asian (0.5 %), Native Hawaiian (0.3 %), and/or Other (3 %). Participants were able to select multiple races, and 13 % of the sample identified as multiracial. Only 13 % of the primary caregivers in the current sample were college graduates, with approximately 45 % having received a high school degree or equivalent and 30 % having completed at least 1 year of college or technical school. With regard to race and level of education, participants are representative of the region in which they are embedded (U.S. Census Bureau 2010). The recruitment hospital is the only Level 1 Trauma Center and Pediatric ED that services a five-county region (>80,000 ED visits annually). Moreover, one's ability to pay is not a factor for service allowing for individuals at the lower end of the socioeconomic strata to receive care. A recent U.S. Census Bureau report (2010) indicates that 36.6 % of individuals in this region live below the poverty line compared to 14.8 % for the state. Furthermore, the annual unemployment rate in 2010 was 13.7 % (U.S. Department of Labor 2010), which is almost double the national average.

Measures

Demographic information was obtained via in-person interviews. Adolescents also completed self-report measures assessing adverse life events, emotional suppression, and suicidal thoughts/behaviors.

Adverse Life Events—The Social Readjustment Rating Scale (non-adult version; Holmes and Rahe 1967) was used to assess the number and type of adverse life events experienced by adolescents. Items reflecting positive life changes were eliminated (e.g., accepted at college of choice), resulting in a total of 14 adverse life event items. The response choices were modified from life change units to a yes/no response. The scale was also modified to assess events over one's life span as opposed to a 12-month period. Sample items include the death of significant relatives/significant others, teen pregnancy, and jail sentence of parent(s). The most common life events endorsed in the current sample include (1) breaking up with boyfriend/girlfriend (67 %); (2) death of a close friend (51 %); and (3) failure of grade in school (46 %). All items were summed to create a single scale score; higher scores indicate a greater number of adverse life events.

Suicidal Thoughts and Suicide Attempts—The Columbia Suicide-Severity Rating Scale (C-SSRS; Posner et al. 2008) is administered in a clinical interview format. It assesses for frequency, duration, controllability, reasons, and deterrents of suicidal ideation; lethality of actual attempts; interrupted and aborted attempts; and preparatory action taken toward making a suicide attempt. Two items taken from the C-SSRS were used in the current study

to assess the presence of suicidal ideation and suicide attempts: (1) “In the past 2 weeks, have you actually had any thoughts of killing yourself?” and (2) “In the past month, have you made a suicide attempt? Or did you do anything as a way to end your life?” Items were rated as yes (1) or no (0). The C-SSRS has shown good convergent and divergent validity with other multi-informant behavior scales and high sensitivity and specificity for suicidal behavior classifications in adolescents (Posner et al. 2011). Of the current sample, approximately 8 % ($n=52$) endorsed thoughts of killing themselves and 3 % ($n=18$) had made a suicide attempt.

Emotional Suppression—The Active Inhibition Scale (Ayers et al. 1998) is an 11-item measure that assesses levels of emotional suppression in children and adolescents and has been used in other samples of children who have experienced adverse life events. Sample items include, “You've tried to hide any bad feelings that you've had” and “When you've been upset, you've acted like nothing was wrong.” Responses are on a five-point scale ranging from never (1) to a lot (5). All items were summed to create a single scale score; higher scores indicate greater emotional suppression. This scale has demonstrated good reliability (Ayers et al. 1998) as well as concurrent and predictive validity in other studies focused on adolescent populations (Tein et al. 2006). In the current sample, the Active Inhibition Scale had an internal consistency (Cronbach's alpha) of 0.93.

Depression—The Reynolds Adolescent Depression Scale 2nd Edition, Short Form (RADS-2: SF) was used for measuring depression (Reynolds 2002). The RADS-2: SF assesses both the frequency and severity of depressive symptoms (e.g., “I feel I am bad,” “I feel like nothing I do helps anymore”) on a four-point scale ranging from “Almost never” to “Most of the time.” The RADS-2: SF has demonstrated strong reliability and validity, with psychometric properties similar to the full RADS scale (Milfont et al. 2008). In the current sample, the RADS-2: SF had an internal consistency of 0.87.

Procedure

Data were collected after obtaining consent from adolescents by trained screening specialists who completed 16–20 h of training in informed consent and risk management procedures. Institutional review board approval was obtained. Because adolescents ages 14–17 years are able to seek treatment without parental permission, and because a significant percentage of adolescents who seek services from the participating emergency department do not have a parent/guardian present, parent/guardian consent was waived as a requirement for minors in this study. However, if present, the parent/guardian's written informed consent was also obtained.

Data Analytic Plan

Bivariate relations between continuous variables (age, emotional suppression, and number of adverse life events) were examined using Pearson's correlation coefficients. Chi-square tests were used to test for gender and racial differences with regard to (1) any suicidal ideation in the past 2 weeks and (2) any suicide attempts in the past month. Independent samples *t* tests were used to examine bivariate relations between the number of adverse life events and risk of suicidal ideation in the past 2 weeks (0=no, 1=yes) as well as suicide attempts in the past

month (0=no, 1=yes). *T* tests were also used to examine bivariate relations between levels of emotional suppression and risk of suicidal ideation and suicide attempts.

Using bootstrapping methodology for indirect effects with logistic regression and dichotomous outcomes (Preacher and Hayes 2004, 2008), the potential mediating role of emotional suppression was estimated in the relation between adverse life events and (1) suicidal ideation and (2) suicide attempts. Mediation analysis is an application of associational causal modeling whereby *X* is said to cause *Y* if three conditions are met. First, variation in *X* is associated with variation in *Y*. Second, change in *X* temporally precedes change in *Y* (Judd and Kenny 1981). Third, there are no unmeasured (or omitted) variables that are correlated with *X*, affect *Y*, and are not causally intermediate. In a three-variable mediation model, independent variable *X* is hypothesized to lead to mediator *M*, which, in turn, causes dependent variable *Y*, such that accounting for the effect of *X* on *M* and of *M* on *Y* explains, either in part or in whole, the influence of *X* on *Y* (Gelfand et al. 2009).

Implicit in the specification of a mediation model is a particular temporal order of variables. However, in practice, it is not always possible to know the order in which measured events occurred, especially using a cross-sectional study design. Thus, a temporal order other than the one hypothesized may be plausible (i.e., suicidal thoughts/behaviors may cause emotional suppression). This calls for caution when interpreting the results of mediation models using cross-sectional data given that all evidence of temporal order must come from outside the data and alternative models cannot generally be ruled out (Gelfand et al. 2009; MacKinnon 2008). On the other hand, evidence demonstrating the genetic and early environmental contributions to coping strategies in general (Taylor and Stanton 2007) and the *stability* of emotional suppression in particular (Srivastava et al. 2009) suggests that emotional suppression is likely to *precede* suicidal thoughts/behaviors.

Results

Descriptive Statistics

Means, standard deviations, and ranges associated with the variables of interest are presented in Table 1. There were no significant differences between males and females with regard to emotional suppression, number of stressful life events, depressive symptoms, suicidal ideation, or suicide attempts. In addition, there were no significant relations between race and depressive symptoms, emotional suppression, or suicide attempts. However, White adolescents experienced more adverse life events than Black adolescents [$t(578)=2.96$, $p<0.001$] and were significantly more likely than Black adolescents to endorse suicidal ideation [$\chi^2(1, N=614)=6.98$, $p<0.05$]. Older adolescents experienced more adverse life events ($r=0.17$, $p<0.001$) and demonstrated greater emotional suppression ($r=0.11$, $p<0.05$) than younger adolescents; however, there were no age differences with regard to depressive symptoms, suicidal ideation, or suicide attempts.

Testing the Mediating Role of Emotional Suppression in the Relation Between Adverse Life Events and Suicidal Ideation

Because it was hypothesized that emotional suppression would mediate the relation between adverse life events and suicidal ideation, as a first step, we assessed the relation between adverse life events and suicidal thoughts. Independent samples *t* tests demonstrated a significant positive relation between the number of adverse life events and increased risk for suicidal ideation [$t(55)=4.31, p<0.001$]. Next, a significant relation was found between adverse life events and emotional suppression ($r=0.34, p<0.001$). The relation between emotional suppression and suicidal ideation was also significant, such that greater emotional suppression was associated with increased risk for suicidal ideation [$t(67)=10.19, p<0.001$] (see Table 2).

Finally, to formally test for mediation, we used bootstrapping methodology for indirect effects based on 1,000 bootstrap resamples to describe the confidence intervals of indirect effects (Preacher and Hayes 2004, 2008). Mediation is significant if the 95 % confidence intervals for the indirect effect do not include zero. The results indicated a significant indirect effect of adverse life events on suicidal ideation while controlling for gender, race (i.e., White versus Black), and age, confirming the proposed mediational model. Specifically, the indirect effect of adverse life events on suicidal ideation through emotional suppression was significantly different from zero, with a bootstrap estimate of 0.18 and a percentile bootstrap confidence interval of 0.12–0.26. Approximately 35 % of the effect of adverse events on suicidal ideation was mediated through emotional suppression.

Testing the Mediating Role of Emotional Suppression in the Relation Between Adverse Life Events and Suicide Attempts

We also hypothesized that emotional suppression would mediate the relation between adverse life events and suicide *attempts*. Thus, as a first step, we assessed the relation between adverse life events and suicide attempts. Independent samples *t* tests demonstrated a significant positive relation between the number of adverse life events and increased risk for suicide attempts [$t(585)=4.18, p<0.001$]. As indicated in the previous analysis, Pearson's correlation coefficients revealed a significant bivariate relation between adverse life events and emotional suppression ($r=0.34, p<0.001$). The relation between emotional suppression and suicide attempts was also significant such that higher levels of emotional suppression were associated with increased risk for suicide attempts [$t(22)=10.03, p<0.001$] (see Table 2).

Using the same bootstrapping methodology as described previously, the results indicated a significant indirect effect of adverse life events on suicide attempts, confirming the second proposed mediational model. Specifically, the indirect effect of adverse life events on suicide attempts through emotional suppression was significantly different from zero, with a point estimate of 0.19 and a percentile bootstrap confidence interval of 0.12–0.28. Approximately 28 % of the effect of adverse events on suicide attempts was mediated through emotional suppression.

Both mediation models (suicidal ideation and attempts) were reestimated while controlling for depressive symptoms, and all results remained significant, demonstrating the mediating effect of emotional suppression above and beyond depressive symptoms. In the interest of parsimony, we chose to retain the models excluding depressive symptoms, as presented in Figs. 1 and 2.

Discussion

The results of this study demonstrate that emotional suppression mediates the relation between adverse life events and suicidal thoughts and attempts in adolescents above and beyond the possible confounding effects of gender, age, and race as well as depressive symptoms. Although this is the first study to our knowledge to examine the role of emotional suppression in relation to adolescent suicide risk, these findings are consistent with a growing body of literature outlining the detrimental effects of emotional suppression and avoidance with regard to other mental health problems in youth (Johnson and Kenkel 1991; Kaplow et al. 2005; Spaccarelli 1994).

The escape theory of suicide (Baumeister 1990) may shed some light on these important findings. This theory suggests that the character profile of a pre-suicidal individual is similar to that of an emotional suppressor—one who does not show positive or negative emotion (Gross and John 2003). Specifically, it is theorized that suicidal individuals have a strong desire to escape their own experience of negative affect by entering into a relatively numb, deconstructed state, and it is this state that is thought to immediately precede an increased willingness to attempt suicide (Baumeister 1990). Furthermore, the escape theory stipulates that the negative affect that the individual attempts to avoid is still readily available in spite of the efforts to keep it out of awareness (Baumeister 1990), which is consistent with other research suggesting that the suppression of unwanted thoughts and negative emotions may in fact fuel the very thoughts and feelings one is trying to avoid (Gold and Wegner 1995).

Given the cross-sectional nature of the study (i.e., X , M , and Y variables measured at the same time), any combination of relations among variables may be possible and cannot be distinguished (MacKinnon 2008). In other words, we cannot rule out the possibility that the emotional suppression seen in this sample of adolescents is actually the *result* of having experienced suicidal thoughts or behavior. However, there is a growing body of literature suggesting that coping strategies such as emotional suppression are relatively stable (Srivastava et al. 2009) and are predictive of mental and physical health outcomes (Taylor and Stanton 2007). In addition, it appears that avoidant-oriented coping strategies may have genetic contributions (Taylor and Stanton 2007), but are also influenced by early life events such that harsh family environments or associated stressors (e.g., low SES, neighborhood conflict, exposure to violence) lead to behavioral escape and/or avoidant coping strategies that appear to endure over time (Repetti et al. 2002). Consequently, although alternative mediation models cannot be ruled out, we believe that there is sufficient support for the temporal sequence of the variables in our model.

The current study found higher rates of adverse life events in White adolescents compared to Black adolescents. In contrast, existing epidemiological studies suggest that racial/ethnic

minority groups tend to report more traumatic and stressful life events than non-minority groups (for a thorough review of these findings, see Hatch and Dohrenwend 2007). For example, Felitti et al. (1998) found that Black and Hispanic individuals reported significantly more adverse childhood experiences than White or Asian respondents. The opposite finding in our study may have been a result of the lack of variability of SES as a function of race in this particular sample, and SES is often a confounding variable in studies identifying higher rates of adverse life events in minority populations (Hatch and Dohrenwend 2007). Another confounding variable may be the types of adverse life events assessed. For example, adverse events related to prejudice and discrimination were not assessed in the current study, and research has shown higher rates of such events in Black individuals compared to White individuals (Kessler et al. 1999).

Consistent with other studies focusing on racial differences with regard to suicidal ideation (e.g., Merchant et al. 2009; Vaughn et al. 2008), the current study found higher rates of suicidal ideation in White adolescents compared to Black adolescents. This could be due to the fact that White youth reported more adverse life events than Black youth and may have subsequently experienced more suicidal thoughts. This could also be due to cultural differences with regard to how youth handle problems. Studies have found that Black adolescents, compared to White adolescents, tend to cope with problems by seeking spiritual support (Chapman and Mullis 2000), which often involves a focus on social connectedness as well as religious beliefs and cultural sanctions against suicidal thoughts and/or behaviors in particular.

Implications for Prevention

It is important to note that emotional suppression appears to play an important mediating role in *both* suicidal ideation and actual suicide attempts. Given that suicidal ideation substantially increases the odds of future suicide attempts (Harris and Barraclough 1997), coupled with the high rate of adolescent suicide reported in the USA (Centers for Disease Control and Prevention 2010), these findings, if replicated using a longitudinal design, may have critical mental and public health implications. Specifically, effective preventive intervention efforts may need to include techniques designed to reduce emotional suppression in adolescents who have been exposed to adverse life events. For example, the behaviorally based Acceptance and Commitment Therapy (ACT) was designed to combat experiential avoidance and emotional suppression (Hayes and Wilson 1994). A major component of ACT involves emphasis on the great exertion and minimal benefits involved in efforts to avoid emotions and other private events. Those receiving ACT are encouraged to embrace the emotions that they dread rather than avoiding or suppressing them (Hayes and Wilson 1994). Studies have found that the acceptance of emotions is associated with decreased negative affect and psychophysiological arousal in depressed and/or anxious individuals (e.g., Campbell-Sills et al. 2006), suggesting that this technique may also greatly benefit adolescents exposed to adverse life events.

Similarly, Dialectical Behavior Therapy (DBT) emphasizes the importance of distress tolerance while also aiming to improve emotional regulation and interpersonal effectiveness (Miller et al. 2007). Although randomized controlled clinical trials have not been completed

with adolescents, DBT has shown effectiveness in reducing suicidal behaviors among adults (Linehan et al. 1991, 1993). An adapted version of this DBT has also shown promise in a quasi-experimental trial with adolescents (Katz et al. 2004).

Another evidence-based treatment, Trauma and Grief Component Therapy for Adolescents (TGCT-A; Layne et al. 2008) is a group-based modularized intervention that includes skill-building exercises such as emotional self-regulation skills and the open expression of thoughts and feelings surrounding previous traumatic events. Although studies of its effectiveness have not examined reductions in suicidal ideation/behavior as a specific treatment outcome, TGCT-A may also be especially effective in reducing risk for adolescent suicide, as suggested by our study findings.

Limitations

This study has several strengths, including its relatively large and racially diverse sample as well as the successful recruitment of males at risk for suicidal thoughts and behaviors (a difficult group to obtain). However, the study also contains some limitations. First, the study is cross-sectional, which limits the ability to infer causality. It is possible that suicidal thoughts/behaviors may lead to emotional suppression; however, given the stability of emotional suppression (Srivastava et al. 2009) and its demonstrated predictive utility (Kaplow et al. 2005; Taylor and Stanton 2007), it would be more plausible to assume that emotional suppression precedes suicidal thoughts/behaviors. Longitudinal studies are needed in order to clarify the temporal sequencing of these experiences. Second, there may be other potential confounders of the observed relations examined in this article. Current mediation methods that help address this problem are limited, particularly with regard to categorical data (e.g., Imai et al. 2010). Thus, future work that is able to investigate potential confounds within a nonlinear mediation model is needed. Third, the current sample comprised a relatively underserved, low-income community. Thus, it is unclear whether these findings would apply to the larger population of adolescent youth. Fourth, the relatively small base rates for recent suicide attempts among participating adolescents may result in inflated standard errors and issues of statistical power (Peduzzi et al. 1996). Future replication studies that incorporate larger samples of adolescents are needed. Finally, the study did not assess posttraumatic stress (i.e., PTSD), and there is reason to believe that risk for suicide is greater in those who have PTSD (Amir et al. 1999; Ben-Ya'acov and Amir 2004; Ferrada-Noli et al. 1998). Thus, studies that incorporate both emotional suppression and posttraumatic stress are needed in order to assess their unique contributions to risk for suicide.

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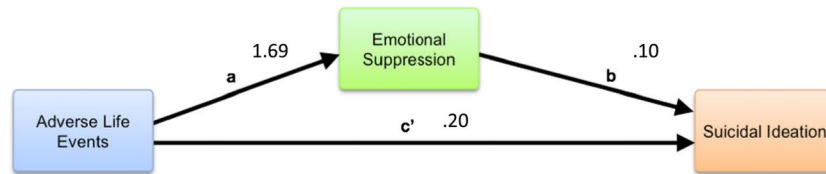


Fig. 1. Emotional suppression as a mediator of the relation between adverse life events and any suicidal ideation in the last 2 weeks. $N = 574$. Numbers represent standardized regression coefficients. All paths were significant at $p < .01$

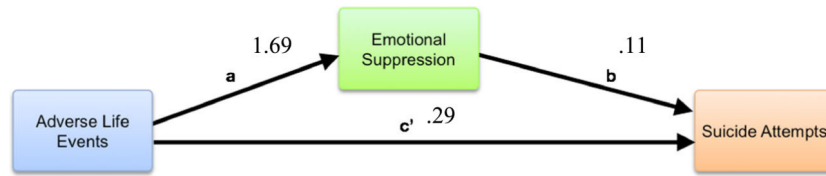


Fig. 2. Emotional suppression as a mediator of the relation between adverse life events and any suicide attempts in the last month. $N = 574$. Numbers represent standardized regression coefficients. All paths were significant at $p < .01$

Table 1

Descriptive statistics

Variable	N	Mean	Standard deviation	Range
Age	625	17.37	1.72	14–20
Gender	625			
Female	412	66 %		
Male	213	34 %		
Race	617			
White	271	44 %		
Black	371	60 %		
Hispanic or Latino	18	3 %		
American Indian or Alaskan Native	32	5 %		
Asian	3	0.5 %		
Native Hawaiian or Pacific Islander	2	0.3 %		
Other	19	3 %		
Primary caregiver level of education	617			
No school	1	0.2 %		
Junior high school	10	2 %		
Some high school	75	12 %		
High school graduate	193	31 %		
Some college or technical school	185	30 %		
College graduate	80	13 %		
Graduate or professional training	13	2 %		
Unknown	60	10 %		
Suicidal thoughts/behaviors	622			
Suicidal ideation, past 2 weeks	52	8 %		
Suicide attempts, past month	18	3 %		

Means, standard deviations, and ranges are provided for continuous variables; percentages are provided for dichotomous variables. Sample sizes vary due to missing data on certain measures

Table 2

Mean differences in adverse life events and emotional suppression as a function of suicidal ideation/attempts

Variables	Suicidal Ideation		Test statistic
	Yes	No	
Adverse life events	5.55 (<i>n</i> =49)	3.92 (<i>n</i> =538)	<i>t</i> (55)=4.31* <i>d</i> =.68
Emotional suppression	43.25 (<i>n</i> =51)	30.59 (<i>n</i> =557)	<i>t</i> (67) = 10.19* <i>d</i> =1.31
	Suicide attempts		Test statistic
	Yes	No	
Adverse life events	6.22 (<i>n</i> =18)	3.99 (<i>n</i> =569)	<i>t</i> (585)=4.18* <i>d</i> =.91
Emotional suppression	44.89 (<i>n</i> =18)	31.25 (<i>n</i> =590)	<i>t</i> (22)=10.03* <i>d</i> =1.56

Suicidal ideation is assessed within the past 2 weeks; suicide attempts are assessed within the past month. Degrees of freedom vary due to the inequality of variances, as indicated by Levene's test for equality of variances

**p*<0.001