Emotion reactivity, comfort expressing emotions, and future suicidal ideation in emerging adults

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Abstract

Objective—Emotion reactivity and difficulties in expressing emotions have been implicated in risk for suicidal behavior. This study examined comfort in expressing emotions (positive vs. negative) and depressive symptoms as mediators of the prospective relation between emotion reactivity and suicidal ideation.

Design—Emerging adults ($N = 143$; 72% female; 28% White) completed measures of emotion reactivity, comfort expressing emotions, and suicidal ideation at baseline and of depressive symptoms and suicidal ideation 12 months later.

Results—Emotion reactivity predicted suicidal ideation at follow up through depressive symptoms. Difficulty expressing love – but not happiness, sadness, and anger – partially mediated the relationship between emotion reactivity and suicidal ideation at follow-up before but not after adjusting for baseline ideation.

Conclusion—The relation between high emotion reactivity and suicidal ideation may be explained by discomfort in the expression of positive emotions and by depressive symptoms. Promotion of comfort in positive emotion expression may reduce vulnerability to suicidal ideation.

Keywords

emotion reactivity; expressing emotions; depression; suicidal ideation

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Suicide is the 2nd leading cause of death in emerging adulthood (Kochanek, Murphy, Xu, & Tejada-Vera, 2016). Following adolescence, emerging adulthood, or the period of life "from the late teens through the twenties" (Arnett, 2000, *p.* 469), is a particularly vulnerable period for thinking about and attempting suicide (Kessler et al., 2005). Given that depression and suicidal ideation are among the strongest predictors of future suicide attempts (Nock et al., 2008a; Miranda, et al., 2008; Spirito, Valeri, Boergers, & Donaldson, 2003; Wichstrøm, 2000), it is important for suicide prevention and intervention efforts to better understand the factors that might increase risk for depressive symptoms and thoughts of suicide in emerging adults. Emotional processes such as high emotion reactivity and poor emotion regulation have been cited as factors that may impact risk for suicidal thoughts and behavior (Nock, Wedig, Holmberg, & Hooley, 2008b; Rajappa, Gallagher, & Miranda, 2012). Furthermore, these patterns are often evident during adolescence, as the brain undergoes rapid maturation, particularly in the prefrontal cortex (i.e., area of the brain identified to play a significant role in emotional processes), and recent research suggests it may extend through emerging adulthood before stabilizing later in life (Zimmermann & Iwanski, 2014). Thus, a better understanding of the relation between emotion reactivity and suicidal ideation may inform prevention and intervention services targeted at reducing risk for suicidal behavior among emerging adults.

Emotion reactivity (i.e., sensitivity to, intensity, and persistence of emotional experiences) is conceptualized as a component of temperament that may impact why and how individuals respond to their emotional experiences (Nock et al., 2008b). Escape models of suicide have proposed that suicidal thoughts and behavior serve as an escape from an unbearable state of mind due, in part, to high levels of emotional distress following an aversive and intolerable event (Baumeister, 1990; see also Williams, 1997). Expanding on these models, Nock and colleagues (2008b) suggest that increased emotion reactivity may interfere with cognitive and behavioral inhibitory control, which may prompt maladaptive responses (e.g., suicidal thoughts and behavior) to escape aversive emotional states (Nock et al., 2008; see also Gross, 2002). They found that heightened emotion reactivity was associated with increased risk of reporting suicidal ideation but not with suicide attempts. Furthermore, psychopathology (i.e., mood, anxiety, and eating disorders) was associated with risk for suicidal ideation to the degree that it was also associated with higher emotion reactivity (Nock et al., 2008b). Thus, emotion reactivity accounted for the relation between psychiatric symptoms and suicidal ideation. There is also neurobiological evidence to support this idea, as imaging studies have found greater sensitivity to emotion-related stimuli among individuals who have attempted suicide (for a review, see Jollant, Lawrence, Olié, Guillaume, & Courtet, 2011). In addition, increased emotion reactivity has been found to prospectively predict increases in depressive symptoms (Cohen, Gunthert, Butler, O'Neill, & Tolpin 2005). Specifically, Cohen and colleagues (2005) found that heightened affective reactivity to daily life stress prospectively predicted increases in depressive symptoms among college students, and that it was also associated with less depressive symptom reduction during cognitive therapy among adults in outpatient treatment. Considering the well-documented link between depression and suicidal thoughts and behavior (Nock et al., 2008a), depression may play a critical role in the relation between emotion reactivity and suicidal thoughts.

Another factor that appears particularly promising in elucidating risk for suicidal ideation and behavior is the expression of emotional experiences as an emotion regulation strategy to produce situationally-appropriate responses (for a review, see Mennin & Fresco, 2009). Gross (2002) suggests that suppression of behavioral and verbal expressions of emotion reactions is maladaptive, as it requires significant cognitive effort and resources, despite its failure to attenuate the physiological experience (Goldin, McRae, Ramel, & Gross, 2008). Furthermore, John and Gross (2004) reported age-related differences in emotion regulation strategies, as they found that emerging adults employed more unhealthy strategies, such as suppression of emotions, compared to older adults. More recently, difficulties with expressing emotions have been identified as a potential risk factor for suicidal thoughts and behavior (Forkmann, et al., 2014; Jacobson, Marrocco, Kleinman, & Gould, 2011; Kaplow, Gipson, Horwitz, Burch, & King, 2015). For instance, Jacobson and colleagues (2011) found that adolescents with more restrictive emotionality, or greater difficulties understanding and expressing their emotions, were more likely to report suicidal ideation and attempts than adolescents with less difficulty, and that restrictive emotionality partially mediated the concurrent relation between depressive symptoms and suicidal ideation. These findings suggest that difficulty expressing emotions may impede effective regulation of emotions, and that it may increase risk for suicidal ideation, particularly among emerging adults.

Unfortunately, there is a dearth of information available on how valence of emotions may impact regulation of emotions. Valence of emotion has been proposed as a basic component of emotional processing, as it represents the valuation of a cue as harmful or helpful (Barrett, 2006). There is empirical evidence to support this notion. For instance, regulation of positive and negative emotions is associated with distinct neural activity in the brain (Kim & Hamann, 2007). A meta-analytic review by Bylsma and colleagues (2008) found that individuals with major depressive disorder demonstrated reduced responding to positive, compared to negative, emotions (Bylsma, Morris, & Rottenberg, 2008). These differences in regulating and responding to emotions may also extend to the expression of emotions. One study found that while written expression of positive and negative emotions were both associated with decreased distress among college students, written expression of positive emotions, in particular, was associated with greater cognitive and emotional processing, compared to written expression of negative emotions (Segal, Tucker, & Coolidge, 2009). Valence of the emotion expressed may thus differentially impact vulnerability to psychopathology, including suicidal ideation. Unfortunately, the literature on the relation between valence of emotional expression and suicidal ideation and behaviors remains scarce.

Researchers have alluded to the relation between emotion reactivity and difficulties expressing emotions by suggesting that emotion reactivity elicits emotion regulation strategies, such as suppression of emotional expression, to attenuate the emotional experience (Gross, 2002), and such strategies impact vulnerability to suicidal thoughts and behavior (Nock et al., 2008b). However, this literature also remains relatively scant, particularly as it relates to suicidal ideation. One study reported that emotion expressivity mediated the relation between emotion reactivity and suicidal ideation in older adult patients with depression, such that greater emotion intensity prospectively predicted greater suicidal

ideation to the degree that it increased emotion inhibition (Lynch, Cheavens, Morse, & Rosenthal, 2004). Similarly, another study with a sample of adolescents reported that the relation between emotion reactivity and suicidal ideation was partially mediated by thought suppression (Najmi, Wegner, & Nock, 2007). These findings support theories of suicide that suggest that people wish to die when they fail to adaptively cope with overwhelming negative affect (Baumeister, 1990; O'Connor, 2011; Williams, 1997). However, it remains unclear whether heightened emotion reactivity might increase risk for suicidal ideation by impeding the generation of more effective and adaptive emotion regulation strategies, such as expressing emotions to others, to attenuate the impact of negative emotional reactions.

The present study thus sought to examine whether comfort in expressing emotions of differing valence (i.e., positive versus negative), along with depressive symptoms, account for the prospective relation between emotion reactivity and suicidal ideation among emerging adults. We hypothesized that emotion reactivity would be negatively related to comfort expressing emotions, but positively related to depressive symptoms and suicidal ideation. We also expected that comfort expressing emotions– whether positively-valenced, such as love and happiness, or negatively-valenced, such as sadness and anger – would be negatively related to suicidal ideation. Finally, we hypothesized that comfort expressing emotions, particularly negatively-valenced emotions, and depressive symptoms would mediate the prospective relation between emotion reactivity and suicidal ideation, such that emotion reactivity would yield discomfort expressing emotions, and increase vulnerability to suicidal ideation.

Method

Sample

Participants were 143 emerging adults (72% female), ages 18–28 ($M = 18.71$, $SD = 1.56$) who took part in a larger study examining cognitive and affective predictors of suicidal behavior among undergraduate students at two time points.[1] They were recruited from a large, urban college in the Northeast U.S. through a research participation requirement in introductory psychology courses, flyers distributed on the college campus, and from the surrounding metropolitan area via advertisements on Craigslist, specifically targeting college students. The present sample was selected from a larger study ($N = 1,069$), from which participants who screened positive for suicidal ideation in the previous 6 months or lifetime suicide attempt were invited for a follow-up study. Approximately one-third of the sample had recent suicidal ideation or a lifetime attempt. The remaining two-thirds were randomly selected controls (i.e., no history of suicide attempt or recent suicidal ideation). The attrition rate was 10% (16 out of 160 participants did not complete the follow-up), and one additional participant was excluded due to missing data at follow up. Note that the larger sample from which the present one was selected was described elsewhere (Quinones, Jurska, Fener, & Miranda, 2015), and the present sample only includes individuals who completed measures of emotion reactivity and comfort expressing emotions (described below) and who took part in the study's 12-month follow up.

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[1] A power analysis indicated that the present sample was sufficient to detect a medium effect ($f^2 = .15$) with more than 80% power. However, it was not sufficient for a small effect size ($f^2 = .02$) (Cohen, 1988).

Chi-square analyses indicated there was no significant difference in demographics (i.e., age, sex, race/ethnicity, U.S.-born) or clinical severity (i.e., lifetime SA, recent SI) between individuals who participated in the follow up and individuals who did not. The racial/ethnic composition of the final sample was 32% Asian, 28% White, 22% Hispanic/Latino/a, 10% Black, 5% Biracial, and 4% who identified as another race or ethnicity. Approximately two-thirds (67%) of the participants were born in the U.S.

Measures

Emotional reactivity—The Emotion Reactivity Scale (ERS; Nock et al., 2008b) is a 21-item self-report inventory that measures emotion sensitivity (e.g., "*Other people tell me I'm overreacting*"), intensity (e.g., "*When I experience emotions, I feel them very strongly/ intensely*"), and persistence (e.g., "*When something happens that upsets me, it's all I can think about for a long time*"). Items are scored on a five-point Likert scale ranging from 0 (not at all like me) to 4 (completely like me). The ERS has been found to have high internal consistency reliability (a = .94), and has demonstrated convergent validity, as it was found to be positively correlated with other measures of emotion reactivity, including the Early Adolescent Temperament Questionnaire (Rothbart, Ahadi, & Evans, 2000), and the behavioral inhibition/behavioral activation scale (Carver & White, 1994). The ERS demonstrated high internal consistency reliability in the present sample (a = .95).

Comfort expressing emotions—The Measure of Verbally Expressed Emotion (MoVEE; Jacobson, Hill, Pettit, & Miranda, 2014) is a 19-item self-report inventory that measures the extent to which people feel comfortable outwardly displaying four distinct emotional states: happiness (e.g., "*It is easy for me to show when I am happy*"), anger (e.g., "*I feel comfortable expressing my anger*"), love (e.g., "*I feel comfortable expressing my feelings of love to someone*"), and sadness (e.g., "*I feel weak when I show sadness*"). Items are scored on a four-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree), with some items reverse-coded. The MoVEE has been found to have moderate-to-high internal consistency reliability for each of the four emotional states (Love: a = .89; Happiness: a = .82; Anger: a = .86; Sadness: a = .69), and it was also positively correlated with another measure of emotion expressivity (i.e., Emotion Expressivity Scale; Kring, Smith, & Neale, 1994). In the present sample, the scale demonstrated moderate to strong internal consistency reliability for most subscales (Love: a = .90, Happiness: a = .84, Anger: a = .84, Sadness: a = .68). Higher scores indicate more comfort expressing emotions. While the scale properties replicate the developers' findings, it should be noted that the internal consistency reliability of the sadness subscale is modest.

Suicidal ideation—The Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991) is a 21-item self-report scale that assesses suicidal ideation in the previous week, including frequency, intensity, lethality of plans, reasons for living, and access to means. Responses to the items are rated on a three-point Likert-type scale ranging from 0 to 2, with greater total scores representing greater suicidal ideation. The scale has been found to have high internal consistency reliability (a = .90), and it did so in the present sample, as well (a = .87).

Depressive symptoms—The Beck Depression Inventory (BDI-II; Beck, Steer & Brown, 1996) is a 21-item self-report inventory that measures the severity of depressive symptoms, such as sadness, anhedonia, guilt, and sleep disturbance, in the past two weeks. Items are scored on a scale of 0 to 3, with higher numbers representing more severe depressive symptoms. The BDI-II has high internal consistency reliability ($a = .91$) and moderate-to-high one-week test-retest reliability ($r = .73 - .96$). In the present sample, there was strong internal consistency reliability ($a = .91$).

Procedure

Participants completed a baseline battery of self-report questionnaires that included the ERS, MoVEE, and BSS. Participants returned 12 months later and completed the BSS, BDI-II along with other measures (i.e., measures of hopelessness-related cognitions, rumination) not included in this study. Participants were either given a research participation credit in their psychology course for the baseline assessment or $25, and they were compensated $30 at the 12-month follow-up. An Institutional Review Board approved the study procedures, and informed consent was obtained from all participants at both time points.

Data Analyses

Independent samples t-tests, chi-square analyses, and one-way ANOVAs with post hoc Bonferroni corrected t-tests were used to examine differences across sex and racial/ethnic groups in the variables of interest. To test the mediation effect of comfort expressing emotions and depressive symptoms on the relation between emotion reactivity and suicidal ideation, multiple hierarchical linear regression analyses were conducted, adjusting for age, sex, and baseline suicidal ideation. As recommended by Preacher and Hayes (2008), a mediation effect is evidenced when a relationship exists between an independent variable (i.e., emotion reactivity) and mediators (i.e., comfort expression emotions, depressive symptoms), independent variable and dependent variable (i.e., follow-up suicidal ideation), and the product of coefficients in those relationships is statistically different from zero. A relationship between the independent and dependent variable may or may not also be present (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Data were analyzed via hierarchical linear regression, with demographics and emotion reactivity entered as independent variables in step 1 of the analysis, the four subscales for comfort expressing emotions (i.e., sadness, happiness, love, anger) entered in step 2, and depressive symptoms entered in step 3. Indirect effects through each of the four MoVEE subscales and depressive symptoms were tested using bootstrapped 95% confidence intervals with 10,000 resamples, using the PROCESS procedure for SPSS (Hayes, 2013). Statistically significant indirect effects were those whose confidence intervals did not include zero.

Results

Descriptive and Bivariate Analyses

Demographic differences (age, sex, race/ethnicity) in study variables were examined to determine the need for covarying in the regression analyses. Age was positively associated with suicidal ideation at baseline, $r(141) = .17$, $p < .05$, and follow up, $r(141) = .29$, $p < .01$, but not with other study variables. Findings also suggested a significant sex difference in

emotion reactivity, $t(141) = 4.12$, $p < .05$, with females ($M = 41.23$; $SD = 18.14$) reporting greater levels than males ($M = 27.45$; $SD = 17.48$). There was also a significant sex difference in comfort expressing sadness, $t(141) = 2.65$, $p < .05$, with females ($M = 7.52$; $SD = 1.36$) reporting more comfort expressing sadness than males ($M = 6.83$; $SD = 1.55$). There were no sex differences in comfort expressing happiness, $t(141) = 1.14$, $p = .26$, comfort expressing love, $t(141) = 0.40$, $p = .69$, comfort expressing anger, $t(141) = 0.69$, $p = .49$, depressive symptoms, $t(141) = 1.58$, $p = .12$, suicidal ideation at baseline, $t(57.08) = 0.80$, $p = .43$, and suicidal ideation at follow up, $t(141) = 0.52$, $p = .61$. There were no racial/ethnic differences in the study variables.

Bivariate analyses were conducted using Pearson correlations to examine the relation across the variables of interest. Specifically, emotion reactivity was negatively associated with comfort expressing happiness, and it was positively associated with depressive symptoms and suicidal ideation (i.e., baseline and follow-up). Comfort expressing happiness was negatively associated with depressive symptoms and suicidal ideation (i.e., baseline and follow-up), while comfort expressing sadness was positively associated with comfort expressing love, happiness, and anger. See Table 1 for more details on correlations.

Direct and Indirect Effects of Emotion Reactivity on Suicidal Ideation at Follow Up via Comfort Expressing Emotions and Depressive Symptoms

Greater emotion reactivity was associated with less comfort expressing love ($b = -0.06$, *95% CI = $-0.11 – -0.003$, $p < .05$*; Overall $R^2 = .03$, $p < .05$), less comfort expressing happiness ($b = -0.03$, *95% CI = $-0.06 – -0.01$, $p < .05$*; Overall $R^2 = .06$, $p < .05$), greater depressive symptoms ($b = 0.24$, *95% CI = $0.15 – 0.32$, $p < .01$*; Overall $R^2 = .21$, $p < .01$), and greater suicidal ideation ($b = 0.05$, *95% CI = $0.02 – 0.07$, $p < .01$*; Overall $R^2 = .18$, $p < .01$), adjusting for age and sex. In contrast, emotion reactivity was not associated with comfort expressing anger ($b = 0.01$, *95% CI = $-0.01 – 0.03$, $p = .34$*; Overall $R^2 = .01$, $p = .70$) or sadness ($b = -0.01$, *95% CI = $-0.02 – 0.01$, $p = .43$*; Overall $R^2 = .07$, $p < .05$). Depressive symptoms were positively associated with suicidal ideation ($b = 0.11$, *95% CI = $0.07 – 0.16$, $p < .01$*). The direct effect of emotion reactivity on suicidal ideation, though reduced, remained statistically significant after comfort expressing love, happiness, anger, and sadness were entered into the model ($b = 0.04$, *95% CI = $0.02 – 0.07$, $p < .01$*; Overall $R^2 = .22$, $p < .01$), but was no longer significant after depressive symptoms were entered in the model ($b = 0.02$, *95% CI = $-0.01 – 0.04$, $p = .14$*; Overall $R^2 = .35$, $p < .01$). In the final model, there was a significant indirect effect of emotion reactivity on suicidal ideation through comfort expressing love, such that greater emotion reactivity was associated with less comfort expressing love, which was associated with greater suicidal ideation ($b = 0.005$, *95% CI = $0.002 – 0.02$, $p < .05$*). There was also a significant indirect effect of emotion reactivity on suicidal ideation through depressive symptoms, such that greater emotion reactivity was associated with greater depressive symptoms, which was associated with greater suicidal ideation ($b = 0.03$, *95% CI = $0.01 – 0.05$, $p < .05$*). The indirect effect of emotion reactivity on suicidal ideation through depressive symptoms was stronger than were the indirect effects through love (Love minus Depression Indirect Effect Contrast = -0.02, 95% CI = $-0.05 – -0.01$), happiness (Happiness minus Depression Indirect Effect Contrast = -0.02, 95% CI = $-0.05 – -0.01$), sadness (Sadness minus Depression Indirect Effect

Contrast = −0.02, 95% CI = −0.06 − −0.01), and anger (Anger minus Depression Indirect Effect Contrast = −0.03, 95% CI = −0.06 − −0.01). See Figure 1 for more information on direct and indirect effects without adjusting for baseline suicidal ideation.

When adjusting for suicidal ideation at baseline, however, there was no significant effect of emotion reactivity on comfort expressing love ($b = −0.03$, *95% CI* = −0.09 − 0.02, $p = .24$; Overall $R^2 = .07$, $p < .05$), happiness ($b = −0.01$, *95% CI* = −0.03 − 0.01, $p = .36$; Overall $R^2 = .21$, $p < .01$), anger ($b = 0.01$, *95% CI* = −0.01 − 0.03, $p = .18$; Overall $R^2 = .02$, $p < .53$), or sadness ($b = −0.005$, *95% CI* = −0.02 − 0.01, $p = .52$; Overall $R^2 = .07$, $p < .05$). However, greater emotion reactivity was associated with greater depressive symptoms ($b = 0.18$, *95% CI* = 0.10 − 0.27, $p < .01$; Overall $R^2 = .28$, $p < .01$), and greater suicidal ideation at follow-up ($b = 0.03$, *95% CI* = 0.01 − 0.05, $p < .05$; Overall $R^2 = .32$, $p < .01$). The direct effect of emotion reactivity on suicidal ideation was no longer statistically significant after comfort expressing love, happiness, sadness, anger, and depressive symptoms were entered in the model ($b = 0.01$, *95% CI* = −0.01 − 0.03, $p = .41$; Overall $R^2 = .43$, $p < .01$). However, depressive symptoms were positively associated with suicidal ideation ($b = 0.09$, *95% CI* = 0.05 − 0.13, $p < .01$). Further, there was a significant indirect effect of emotion reactivity on suicidal ideation through depressive symptoms ($b = 0.02$, *95% CI* = 0.01 − 0.04). See Figure 2 for more information on the analyses after adjusting for baseline suicidal ideation.[2]

Discussion

The present study sought to elucidate the relation between emotion reactivity and suicidal ideation by examining comfort expressing emotions and depressive symptoms as explanatory factors among a diverse group of emerging adults. As hypothesized, and consistent with previous research (Nock et al., 2008b; Cohen et al., 2005), emotion reactivity prospectively predicted depressive symptoms and suicidal ideation at a 12-month follow up, even after accounting for baseline suicide ideation. The present findings are also consistent with previous research demonstrating that greater emotion reactivity was associated with less comfort expressing love and happiness (Jacobson et al., 2014), although this was no longer the case after accounting for baseline suicidal ideation. Unlike previously reported by Jacobson and colleagues (2014), comfort expressing anger and sadness were not associated with emotion reactivity or suicidal ideation at follow-up. Perhaps responses to positive emotions play a more critical role than negative emotions, specifically in the maintenance of depressive symptoms and suicidal thoughts, as prior research has indicated that individuals with major depressive disorder exhibit greater reduction in responding to positive emotional stimuli compared to negative emotional stimuli (Bylsma et al., 2008). Taken together, these findings suggest that comfort expressing emotions does not explain the relation between emotion reactivity and suicidal ideation at follow up after accounting for suicidal ideation at baseline. However, emotion reactivity may increase risk above and beyond prior suicidal ideation. Further, differences in the valence of the emotion expressed emerged, suggesting that the valence of emotion is a critical component in emotional processing (Barrett, 2006),

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[2]Note that there was a strong correlation between suicidal ideation at baseline and follow up, $r = .50$, $p < .01$. Thus, there may have been too much variability in suicidal ideation at follow up accounted for by baseline suicidal ideation to detect the indirect effect of emotion reactivity on ideation at follow-up through comfort expressing emotions after accounting for baseline suicidal ideation.

and merits further examination in relation to suicidal ideation. Future research should further disaggregate how emerging adults may react to and express positively-valenced versus negatively-valenced emotions, as they may differentially impact vulnerability to suicidal ideation.

There were significant sex differences, as females reported greater emotion reactivity and comfort expressing sadness compared to males, which supports previous research demonstrating sex differences in the processing and regulation of emotional experiences (Domes et al., 2010). Perhaps the difference may be accounted for by self-report bias arising from gender norms. Given that it is considered more normative for women to express their emotions than men (Brody, 2000; Fischer, Rodriguez Mosquera, Van Vianen, & Manstead, 2004; Simon & Nath, 2004), men may minimize their self-reported comfort expressing emotions in order to be consistent with social norms. More recently, Kleiman and colleagues (2014) found that emotion reactivity mediated the relation between depressive symptoms and suicide attempts among females, but not among males (Kleiman, Ammerman, Look, Berman, & McCloskey, 2014). Furthermore, Chentsova-Dutton and colleagues (2007) found that European-American individuals with depression exhibited reduced emotion reactivity (assessed with subjective emotional experience and physiological responses) to a sad film compared to Asian-American individuals with depression (Chentsova-Dutton et al., 2007). These findings suggest that social and environmental factors may impact the reaction to, and subsequently, the expression of emotions, which may differentially impact risk for suicidal thoughts and behavior.

It was further hypothesized that comfort expressing emotions and depressive symptoms would mediate the relation between emotion reactivity and suicidal ideation. This hypothesis was partially supported, as less comfort expressing positive emotions (i.e., love, in particular) – but not negative emotions (i.e., sadness, anger) – mediated the relation between emotion reactivity and suicidal ideation, but not after accounting for suicidal ideation at baseline. Furthermore, depressive symptoms mediated the relation between emotion reactivity and suicidal ideation at follow up, even after adjusting for suicidal ideation at baseline. The present findings are not consistent with previous research suggesting that emotion inhibition mediates the relation between affect intensity and suicidal ideation among depressed older adults (Lynch et al., 2004). Perhaps clinical severity and age-related differences may account for the discrepancy, considering that the present sample consisted of a nonclinical group of emerging adults. Taken together, the findings support Nock and colleagues' (2008b) notion that increased emotion reactivity may elicit maladaptive responses, which may exacerbate the negative effects of the aversive emotional state, thus increasing risk for suicidal thoughts. Although previous research has suggested that emotion reactivity results from, instead of causes, psychopathology, including depressive symptoms, to promote suicidal thoughts and behaviors (Nock et al., 2008b; Kleiman et al. 2014), these studies have relied on cross-sectional data; therefore, the direction of the relation remains unclear. However, using prospective clinical and non-clinical data, Cohen and colleagues (2005) found that heightened emotion reactivity to daily stress was associated with increases in depressive symptoms and less responsiveness to cognitive therapy.

Comfort expressing positive emotions (i.e., love) mediated the relation between emotion reactivity and suicidal ideation at follow-up, but not when accounting for baseline suicidal ideation. Comfort expressing love may thus not help explain the prospective relation between emotion reactivity and suicidal ideation after adjusting for baseline ideation, because baseline ideation is a much stronger predictor of ideation at follow up.[2] It is also possible that other factors may contribute to this relation. For instance, Jacobson and colleagues (2014) reported that comfort expressing positive emotions was more strongly related to perceived social support compared to comfort expressing negative emotions. This may explain why comfort expressing positively-valenced emotion (i.e., love) mediated the relation between emotion reactivity and suicidal ideation (before adjusting for baseline ideation), but comfort expressing negatively-valenced emotions (i.e., sadness and anger) did not. More recently, Jacobson et al. (2015) found that comfort expressing love was more strongly and negatively associated with meeting criteria for Non-Suicidal Self-Injury Disorder than was comfort expressing other emotions. Future research should further explore how other factors, such as social support, may help explain the relation between comfort expressing positive emotions and risk for suicidal ideation, as well as other types of self-harm behaviors such as non-suicidal self-injury, particularly since social support is a well-documented protective factor against suicidal behaviors (Nock et al., 2008a).

Additionally, models derived from positive psychology (Seligman & Csikszentmihalyi, 2000; Fredrickson, 2001), where strengths and resilience are highlighted, as opposed to vulnerability and pathology, suggest that positive emotions serve to build enduring personal resources, including social and psychological resources that foster mental well-being. This idea is in line with neurobiological evidence demonstrating that positive and negative emotions are processed, regulated, and thus function, distinctly (Kim & Hamann, 2007). The expression of positive emotions such as love and happiness may protect against the development of depressive symptoms and suicidal thoughts and behavior. Future research should examine whether comfort in expressing emotions impacts suicidal ideation to the degree that it is also associated with social support.

The present findings also offer support for the use of treatments, such as Dialectical Behavior Therapy (Linehan, 1993), that are geared toward regulating emotions to manage heightened emotion reactivity and promote emotion expressivity, particularly positive emotions. Alternatively, Mindfulness-Based Cognitive Therapy has also been found to reduce risk for suicidal thoughts and behavior (Chesin et al., 2015), in part, by reducing emotion reactivity to social stress (Britton, Shahar, Szepsenwol, & Jacobs, 2012) and promoting positive well being instead of just reducing negative emotions (Williams, Duggan, Crane, & Fennell, 2006). Mental health professionals in clinical settings might assess emotion reactivity by inquiring about the sensitivity to, intensity, and persistence of emotional experiences when identifying clients at risk for suicidal thoughts and behavior. Furthermore, clinicians might promote adaptive emotion regulation strategies such as the expression of positive emotions, in particular, to reduce risk.

Strengths, Limitations, and Future Directions

Various limitations should be considered in interpreting these findings. First, the sample was predominantly female, so findings may not generalize to males. Similarly, participants were recruited from a college population, and their responses may not generalize to the larger emerging adult population. Second, the data collection relied exclusively on self-report measures, which may be subject to reporting bias. To reduce self-report bias, researchers have used more objective methods, such as functional Magnetic Resonance Imaging (fMRI) or physiological reactions such as heart rate, respiratory rate, or skin conductance response to assess emotion reactivity (Chentsova-Dutton et al., 2007; Kim & Hamann, 2007). Future research should further explore the relation between emotion reactivity, comfort with expressing emotions, and suicidal ideation using more objective measures of emotion reactivity. Third, since emotion reactivity and comfort with expressing emotions were not measured at the 12-month follow up, and depressive symptoms was not accounted for at baseline, the possibility that suicidal ideation and depressive symptoms may impact emotion reactivity or comfort with expressing emotions cannot be ruled out. Similarly, as noted by Nock and colleagues (2008b), without longitudinal data, it is unclear whether emotion reactivity is more trait-like (i.e., stable over time) or state-like (i.e., situational). Thus, while comfort with expressing emotions may result from emotion reactivity as an emotion regulation strategy, it is possible that individuals' comfort with expressing emotions influences their emotion reactivity, or that the relation is bidirectional, in that both factors mutually influence one another. Finally, suicidal ideation at follow up was assessed with respect to the week preceding data collection, which fails to account for the presence of suicidal ideation within the 12 months between baseline and follow up assessments. Future research should gather more detailed information about the chronicity of suicidal thoughts to better understand how emotion reactivity may impact risk.

Despite these limitations, there are various noteworthy strengths to the study. This is the first study to date, of which we are aware, to examine the prospective relation between emotion reactivity, emotion expressivity, and suicidal ideation among emerging adults. Thus, the present findings elucidate the relation between emotion reactivity and suicidal ideation as explained by comfort with expressing positively-valenced emotions, specifically love and happiness. Another noteworthy strength is the racial and ethnic diversity of the sample, as findings may generalize across various racial and ethnic groups. It should be noted, however, that Gross and John (2003) found cultural differences in suppressing emotions, with racial/ethnic minority individuals reporting less suppression of emotions than White individuals. Furthermore, the deleterious effects of suppressing emotions may be culturally moderated (Butler, Lee & Gross, 2007). Unfortunately, the present sample did not enable an examination of the relation across race/ethnicity due to low power. Future research should further explore whether the relation between emotion reactivity, comfort with expressing emotions, and suicidal ideation differs across racial/ethnic groups. Finally, a strength of the study was its longitudinal design, which allowed for some examination of temporality in the relation between emotion reactivity, comfort with expressing emotions, and suicidal ideation.

Concluding Comments

Although there is growing evidence demonstrating a link between emotion reactivity and suicidal ideation, there is little information available about the nature of this relation. The present study explored comfort with expressing emotions (i.e., sadness, happiness, love, anger) and depressive symptoms as mechanisms to explain the relation between emotion reactivity and suicidal ideation. Findings suggest that emotion reactivity may impact vulnerability to suicidal ideation to the degree that it impacts comfort with expressing love, but more importantly, to the degree that it impacts depressive symptoms among emerging adults. Specifically, greater emotional sensitivity, intensity, and persistence may increase risk for depressive symptoms, which may, in turn, increase vulnerability to thinking about suicide.

Acknowledgments

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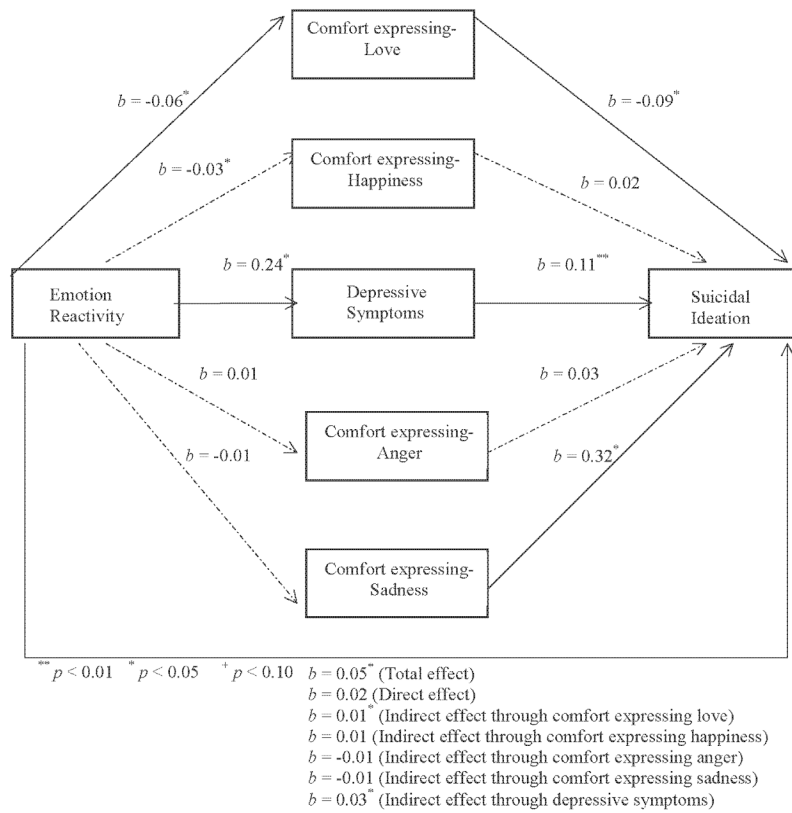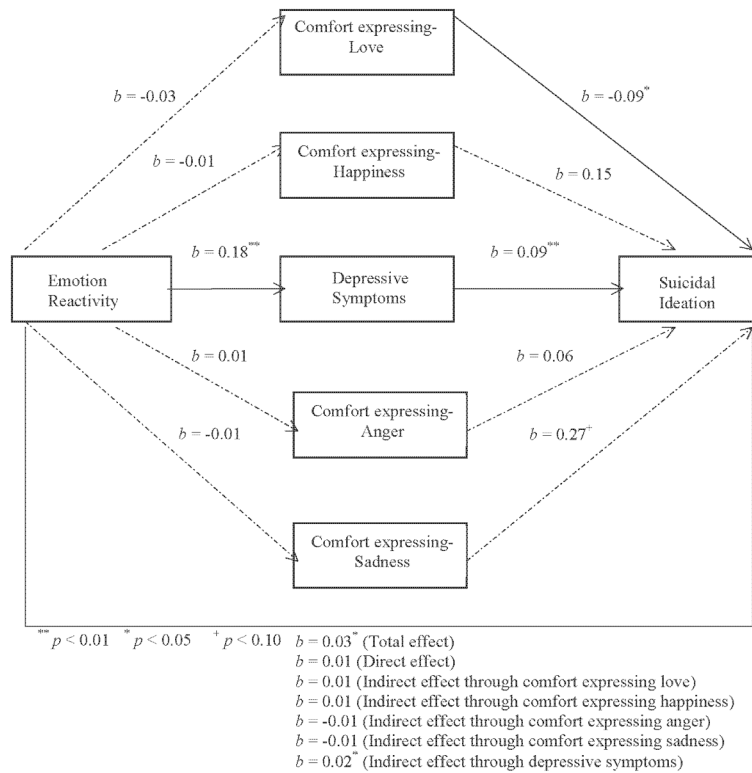
Figure 1.
Comfort expressing love and depressive symptoms mediated the relation between emotion reactivity and suicidal ideation, adjusting for age and sex

Figure 2.
Depressive symptoms, but not comfort expressing emotions, mediated the relation between emotion reactivity and suicidal ideation, adjusting for age, sex, and baseline suicidal ideation

Table 1

Means, Standard Deviations, Range, and Correlations for Variables of Interest

	Mean/%	SD/N	Range	1	2	3	4	5	6	7	8
1. MoVEE -Love	24.10	5.61	10.00–32.00	-							
2. MoVEE -Happiness	16.34	2.72	9.00–20.00	.62 **	-						
3. MoVEE -Sadness	7.33	1.45	3.00–12.00	.21 *	.21 *	-					
4. MoVEE -Anger	7.64	2.02	3.00–12.00	.02	.10	.23 **	-				
5. ERS	37.38	18.94	1.00–82.00	−.16 $^{+}$	−.18 *	−.01	.10	-			
6. BDI-II	12.16	10.22	0.00–48.00	−.13	−.25 **	−.11	−.04	.45 **	-		
7. BSS (Baseline)	2.88	5.29	0.00–22.00	−.26 **	−.44 **	−.08	−.08	.30 **	.40 **	-	
8. BSS (Follow up)	0.88	2.78	0.00–20.00	−.22 **	−.21 **	.03	.04	.32 **	.48 **	.50 **	-

Note. MoVEE = comfort expressing emotions (i.e., love, happiness, sadness, anger); ERS= Emotion Reactivity Scale; BDI = Beck Depression Inventory-II; BSS = Beck Scale for Suicide Ideation.

** $p < .01$;

* $p < .05$;

$^{+}$ $p < .10$.