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Social Support and Positive Events as Suicide Resiliency Factors: Examination of Synergistic Buffering Effects

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This study examines the role of social support and positive events as protective factors in suicide. Participants (n = 379) were administered measures of social support, life events, depressive symptoms, and suicide ideation. Results indicated that (1) social support had a direct protective effect on suicide ideation, (2) social support and positive events acted as individual buffers in the relationship between negative events and suicide ideation, and (3) social support and positive events synergistically buffered the relationship between negative events and suicide ideation. Our results provide evidence that positive events and social support act as protective factors against suicide individually and synergistically when they co-occur.

Keywords life events, protective factors, social support, suicide

Suicide is a significant problem, particularly on college campuses, where it is the second leading cause of death (Wilcox, Arria, Caldeira et al., 2010). Indeed, nearly 10% of college students report suicidal ideation with intent to commit suicide each year (Kisch, Leino, & Silverman, 2005). Given the high rate of suicide, there has been considerable research on risk factors, such as negative life events, that precipitate suicidal thoughts and behaviors (Joiner & Rudd, 2000; Pompili, Innamorati, Szanto et al., 2011). Despite the extensive research on risk factors, there is far less research on protective factors (see Johnson, Wood, Gooding et al., 2011 for a review) and more research on factors that can prevent suicide are needed. To this end, we explore the role of two factors that may reduce the risk of suicide ideation: perceived social support and positive life events.

Perceived Social Support

There are several reasons to expect that perceived social support, a perception that others are available to provide psychological and physical resources (Cohen & Wills, 1985), may be a protective factor against suicide. First, social support has been shown to buffer the relationship between depressogenic risk factors and depression (Cohen & Hoberman, 1983; Cohen, McGowan, Fooskas et al., 1984; Cohen & Wills, 1985), which is highly related to suicide (Charyton, Elliott, Lu, et al. 2009). Moreover, there is evidence that social support prospectively buffers

the relationship between exposure to terrorism and depressive symptoms (Henrich & Shahar, 2008; Shahar, Cohen, Grogen et al., 2009). Across studies, individuals who had higher levels of risk for depression had lower levels of depressive symptoms if they also had high levels of social support. Second, social support may protect individuals from suicide by increasing feelings of belongingness, which are negatively associated with suicide risk in Joiner's (Joiner, 2005) Interpersonal Theory of suicide. According to Joiner's model, a lack of belongingness, along with perceptions of burdensomeness, are necessary pre-conditions or causes of suicide (Joiner, Van Orden, Witte et al., 2009). Hence, perceptions of higher social support may make individuals feel higher belongingness and thus lower risk for suicide. Third, social support may alter negative appraisals of the self after the occurrence of a negative event (Johnson, Gooding, & Tarrier, 2000; Panzarella, Alloy, & Whitehouse, 2006). Such altered appraisals reduce the potential that a negative event would contribute to later suicidal feelings (Johnson, Gooding, Wood et al., 2010). Finally, social support may also function as an "anti-suicidal barrier," such that having social support may imply the presence of individuals who could physically interrupt a suicide attack (e.g., physically removing a weapon). Finally, social support is positively associated with self-esteem (Kleiman & Riskind, 2013), and higher self-esteem is associated with however levels of suicide ideation (Kidd & Shahar, 2008).

Notwithstanding the foregoing reasons for expecting that social support has a protective role, only a few studies have addressed social support as a suicide protective factor. Moreover, the handful of such studies leave several issues unresolved. First, although the studies generally support protective effects, the findings are not entirely consistent. Some find only direct (main) effects for social support (Chioqueta & Stiles, 2007; Kaslow, Thompson, Okun et al., 2002; Kleiman & Liu, 2013). Others find buffering (interaction) effects such that social support moderates the impact of negative events (Clum & Febbraro, 1994; Yang & Clum, 1994) or impulsivity (Kleiman, Riskind, Schaefer et al., 2013). Thus, the conditions under which social support has a protective effect remain unclear, and particularly whether social support primarily has a protective effect for those under high stress (buffer) or for everyone (direct effect).

A second limitation of past research is that several studies (e.g., Clum & Febbraro, 1994; Yang & Clum, 1994) have used the UCLA Loneliness Scale (Russell, Peplau, & Ferguson, 1978), which provides only a "proxy" measure of social support that was originally developed to assess a different theoretical concept. Social support and loneliness may not necessarily be the same construct. For example, some individuals who lack social support may not report loneliness, and others who perceive support may still report loneliness. Furthermore, loneliness measures may confound lack of social support with other constructs (e.g., depression and hopelessness) as well as lack sensitivity to differences in the presence rather than absence of perceived support. Further research using explicitly developed measures of social support is warranted.

Positive Events

Like social support, there are several reasons to expect that positive life events may function as a protective factor against suicide. First, positive events have been shown to function as a protective factor against a variety of other outcomes relevant to suicide such as depression and life stress (Brown, 1993; Cohen et al., 1984; Cohen & Hoberman, 1983; Haeffel & Vargas, 2011; Reich & Zautra, 1981; Shahar & Priel, 2002). Hence, inasmuch as depression and

suicide are highly related, a factor such as positive events that is protective against depression may also be protective against suicide. Second, it is plausible that when positive events occur, they may distract someone from suicidal thoughts until they are no longer feeling suicidal (e.g., going to a party may distract someone from feeling suicidal). Coupled with this, positive events have also been found to increase positive affect (Yamokoski, Scheel, & Rogers, 2011), and high positive affect has been shown to be negatively related to suicidal ideation (Hirsch, Duberstein, Chapman et al., 2007).

Somewhat surprisingly, and despite the evidence that positive events have a protective effect on depression, there has been no previous study to our knowledge that has investigated whether positive events have a protective effect on suicide ideation. In addition, there are several general issues that remain unresolved regarding the impact of positive events. First, some studies that find positive events have no relationship with depression (Davidson et al., 2006; Johnson et al., 1998) or even a negative relationship (Riskind, Kleiman, & Schaefer, in press). Next, like the findings on social support, when protective effects have been found, some studies have found direct (main) effects, and others have found buffering (moderating) effects, such that positive events are only protective under the presence of other factors such as negative events (Cohen & Hoberman, 1983). Thus, more remains to be learned about the conditions under which positive events have beneficial protective effects (direct versus buffering) or whether they have beneficial effects at all.

Are Positive Events and Social Support Related?

There are several reasons for expecting that social support and positive events might influence (or moderate) each other's impact as a protective factor. First, positive events are often more meaningful when they can be shared (Gable, Reis, Impett et al., 2004), and social support may enhance the salience and meaningfulness of positive events once they occur. Conversely, the occurrence of positive events might enhance the salience of sources of perceived social support. For example, spending time with friends and engaging in intimate conversation (a positive event) may make an individual feel more connected to others and perceive higher social support. Further, in times of stress, an individual may recall such positive experiences and seek out the comfort of friends who have provided him with help in previous times. Coupled with this, social support may lead to inclusion in positive activities that provide protective distractions during times of stress. For example, someone with sufficient social support may have friends who would invite him to a party to distract him from negative, possibly suicidal, feelings following a negative event. For all these reasons, social support and positive events may each confer their greatest protective benefits against suicidal thoughts and behaviors when they occur in conjunction with each other, as opposed to separately.

The Present Study

The purpose of the present study is to examine social support and positive events as individual and synergistic protective factors against the impact of negative life events and suicidal ideation. Using a large sample of undergraduate students we first examined the main effects of social support and positive events. Next, we examined social support and positive events as buffers that are only protective under the conditions of a risk factor, in this case, negative life events. Finally, we integrate the findings on social support and positive

events in a three-way interaction to examine the synergistic role both factors play as a buffer to negative events when they co-occur.

METHOD

Participants

Participants were 379 college students (84.6% female) from a large suburban university. Participants' ages ranged from 18–60 years ($M = 22.01$, $SD = 5.71$). The sample was 55% Caucasian, 18% Asian, 11% African American, and the rest were another race. There were no unexpected differences for gender or race on any of the predictor or outcome measures and therefore they were not included in any further analyses.

Procedure

Data collection occurred within the context of a larger, ethics board approved online study. After informed consent, participants completed measures of life events (CLSI), social support (MSPSS), depressive symptoms (CES-D), and suicidal ideation (BSS). A stringent suicide risk assessment procedure supervised by a licensed clinical psychologist was utilized (JHR).

Materials

Depressive Symptoms. The Center for Epidemiology Scale for Depression (CES-D; Radloff, 1977) is a widely used 20-item measure of depressive symptoms. Participants rate the frequency with which a variety of symptoms occur (e.g., *rarely* to *most of the time*). Higher scores equal higher levels of symptoms. The CES-D had excellent internal consistency in the present study (alpha = .91).

Social Support. The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet et al., 1988) is a 12-item measure that yields scores for perceived support from family, friends, and a significant other, as well as overall social support. Higher scores on the MSPSS indicate higher levels of perceived social support. The MSPSS showed excellent internal consistency in the present study (alpha = .92).

Positive and Negative Events. The College Life Stress Inventory (CLSI; Kohn, Lafreniere, & Gurevich, 1990) is a checklist measure of 18 positive and 36 negative items that is designed to be relevant to a college population (e.g., got in a fight with a roommate, got a good grade on a test). Participants were presented with a list of events and asked to check all of the items that had happened to them in the 6-week period before the study.

Suicidal Ideation. The Beck Suicide Scale (BSS; Beck & Steer, 1991) is a 21-item self-report measure that assesses current suicidal ideation and past suicide attempts. The first 19 items are designed to measure current suicidal ideation and the last two items measure past attempts, thus only the first 19 items were used. Higher BSS scores indicated higher suicidal ideation. The BSS showed acceptable internal consistency in the present study (alpha = .76).

RESULTS

Table 1 presents the means, standard deviations, and intercorrelations among study variables. Depressive symptoms were negatively correlated with social support and positively correlated with suicidal ideation and negative events. Social support was positively correlated with positive events and negatively correlated with suicidal ideation. Negative events were positively correlated with suicidal ideation.

TABLE 1. **Correlations, Means, and Standard Deviations for the Study Variables**

Variables	1	2	3	4	5
1. Depressive Symptoms (CES-D)	–				
2. Social Support (MSPSS)	−.23***	–			
3. Negative Events (CLSI-NEG)	.40***	−.10	–		
4. Positive Events (CLSI-POS)	−.07	.11*	.36***	–	
5. BSS Suicidal Ideation	.31***	−.18***	.24***	−.03	–
Mean	22.73	69.15	5.10	3.40	0.60
SD	10.17	13.61	4.18	2.14	2.32

Note. LES = Life Events Scale; MSPSS = Multidimensional Scale of Perceived Social Support; BSS = Beck Suicide Scale; $^{*}p < .05$, $^{***}p < .001$.

Table 2 presents the results of a hierarchical regression analysis predicting suicidal ideation. All of the main effects and covariates were entered into the first step (main effects of positive and negative events, social support, and depressive symptoms). All of the two-way interactions (Social Support × Negative Events, Positive × Negative Events, Social Support × Positive Events) were entered into the second step, and the three-way interaction was entered into the third step. All main effects were standardized prior to the calculation of the interaction term.[1]

Social Support and Positive Events as Direct Protective Factors

The first step tested the "main-effects" hypothesis, that social support and positive events are protective in suicide regardless of the presence of negative events. The predictors in the first step significant predicted 13% of the variance in suicidal ideation. In this step, depressive symptoms, negative events, and social support were significant predictors. Positive events were not significant. These findings suggest that while social support has a direct protective effect again suicide regardless of risk status, positive events do not.

Social Support and Positive Events as Buffering Factors

The second step of the model tested the "buffering" hypotheses that individuals with high levels of negative events would have lower levels of suicidal ideation if they also had either high social support or high levels of positive events. Over and above the main effects, the set of two-way interaction effects significantly predicted an additional 10% of the variance in suicidal ideation. In this step, both the interaction between negative events and positive events and the interaction between negative events and social support were significant predictors.

Figure 1 shows the association between negative life events and suicidal ideation presented as a function of high vs. low levels of social support. As expected, social support moderated the impact of negative life events, such that individuals with high levels of negative life events (1SD above the mean) showed higher levels of suicidal ideation if they had low levels of social support

[1]Given that suicidal ideation is typically a low base rate occurrence in college samples, a log transformation is appropriate to correct for the skewed data. We conducted analyses with and without log-transformed variables and generally had the same overall results with identical interpretation. Thus, we report results from the non-log transformed for ease of interpretation.

TABLE 2. **Results of Hierarchical Regression Analysis of the Buffering Effect of Co-occurring Positive Life and Social Support Events on the Relationship Between Negative Life Events and Suicidal Ideation**

Variable	*B*	*SE B*	*T*	*p*	ΔR^2
Step 1					.13***
Depressive Symptoms (CES-D)	0.03	0.01	2.82	.005	
Negative Events (CLSI-NEG)	0.39	0.14	2.80	.005	
Positive Events (CLSI-POS)	0.06	0.13	0.48	.631	
Social Support (MSPSS)	−0.43	0.11	−3.78	<.001	
Step 2					.10***
Negative × Positive Events	−0.17	0.08	−2.12	.035	
Neg. Events × Social Support	−0.83	0.12	−6.71	<.001	
Positive Events × Social Support	0.02	0.13	.013	.894	
Step 3					.02**
Neg. Events × Pos. Events × Soc. Support	0.32	0.11	2.83	.005	

Note. CES-D = Center for Epidemiology Scale for Depression, CLSI = College Life Stress Inventory, MSPSS = Multidimensional Scale of Perceived Social Support. $^{**}p < .01$, $^{***}p < .001$.

(standardized simple slope = .29, $p < .001$)[2] and showed lower levels of suicidal ideation if they had high levels of social support (standardized simple slope = −.11, $p = .005$).

Figure 2 shows the association between negative life events and suicidal ideation as a function of high vs. low levels of positive events. As expected, positive events moderated the impact of negative life events, such that individuals with high levels of negative life events (1SD above the mean) showed higher levels of suicidal ideation if they had low levels of positive events (standardized simple slope = .39, $p = .006$). Similar to the effect of social support and negative events, the slope of the line for those with high levels of positive events was non-significant (standardized simple slope = 0.22, $p = .116$). However, the slope was in the correct direction to indicate a protective effect of positive events against suicide.

[2]Simple slope tests reported are from analyses conducted with interactions separately to avoid confounds with the other interaction.

Social Support and Positive Events as Synergistic Protective Factors

The third step tested the hypothesis that positive events and social support augment each other as buffers in the relationship among negative life events and suicidal ideation. In this step, the three-way interaction between social support, positive events, and negative events significantly predicted an additional 2% of the variance in suicidal ideation above and beyond that of the main effects and two-way interaction.

Figure 3 below shows the association between negative life events and suicidal ideation presented as a function of high vs. low levels of social support and high vs. low levels of positive events. Differences between the slopes were conducted using the utility and recommendations provided by Dawson & Richter (2006). Results of this analysis revealed significant differences between 1) the slope for high social support, high positive events and the slope for and low social support, high positive events ($t = -3.15$, $p = .002$), 2) the slope for high social support, high

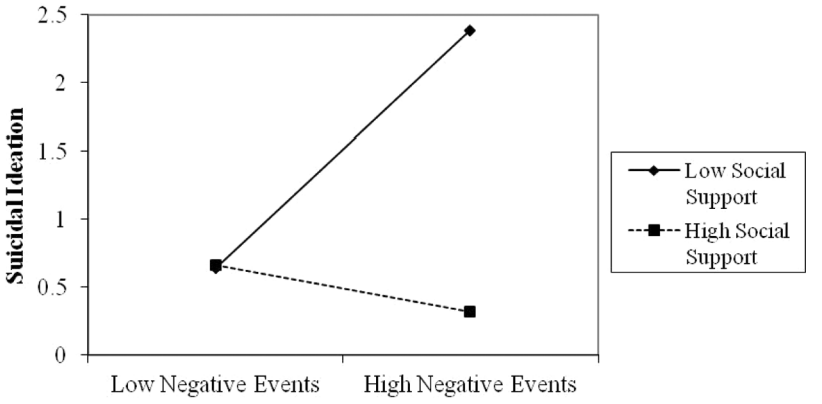

FIGURE 1. *Plot of the relationship between negative events and suicidal ideation shown as a function of high and low levels of social support.*

positive events and the slope for low social support, low positive events ($t = -7.62$, $p < .001$), 3) the slope for high social support, low positive events and the slope for low social support, high positive events ($t = -4.17$, $p < .001$), 4) the slope for high social support, low positive events and the slope for low social support, low positive events ($t = -6.61$, $p < .001$), 5) and the slope for low social support, high positive events and the slope for low social support, low positive events ($t = -3.20$, $p = .002$). Generally speaking, these slope differences indicate that under the presence of high levels of negative events, individuals with high social support have lower levels of suicidal ideation and individuals with low social support have higher levels of suicidal ideation, regardless of levels of positive events. Under the presence of low negative events, having low levels of social support and low levels of positive events somewhat paradoxically predicts the lowest levels of suicidal ideation. The remaining combinations of social support and positive events under the conditions of low negative events

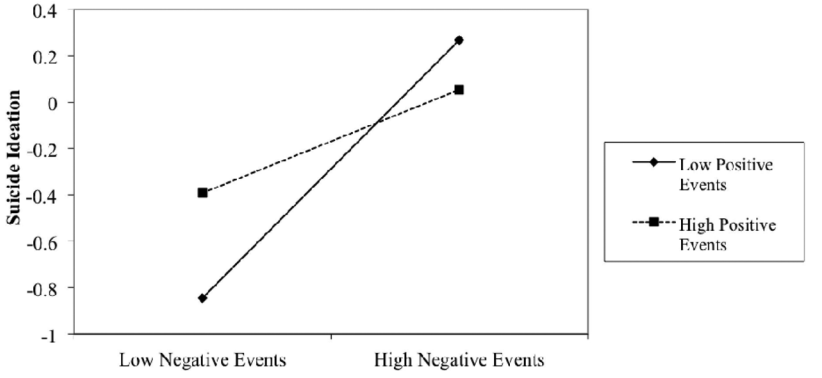

FIGURE 2. *Plot of the relationship between negative events and suicidal ideation shown as a function of high and low levels of positive events.*

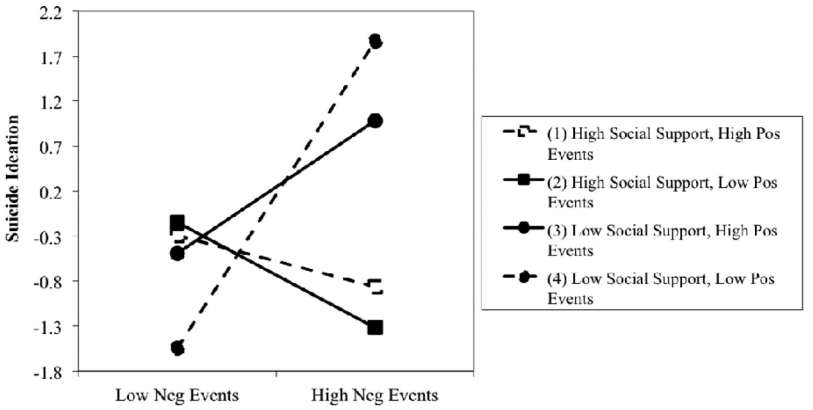

FIGURE 3. *Plot of the three-way interaction between negative events, positive events, and social support. Note: Significantly different slope pairs: 1 and 3, 1 and 4, 2 and 3, 2 and 4, 3 and 4.*

do not significantly differ in their relationship with suicidal ideation.

DISCUSSION

Although there has been considerable research on social support and its protective effects on mood and general health outcomes (e.g., Cohen, 1984; Cohen & Hoberman, 1983; Cohen & Wills, 1985), there has been less research on the role of social suport within the context of suicide. In the case of positive life events, there has surprisingly been no apparent prior study that has reported the impact of positive events on suicidal ideation or behavior. These omissions in the research literature are important to address because of the high cost of suicide on the individual and socieity, and particularly in college student populations. In this context, the present findings contribute to the literature by providing evidence of the potential protective effects of social support and positive events against suicidal ideation.

It was predicted that social support and positive events would both have protective effects, either as direct main effects or as moderating effects that buffer the effects of negative events, and that they might augment each other's effects in buffering inividuals from the impact that negative events had on suicidal ideation. Consistent with expectations, we found a three-way interaction effect that confirmed the hypothesis that social support and positive events synergistically buffered the relationship between negative events and suicidal ideation. Our findings revealed that these factors were beneficial in reducing suicidal ideation primarily under high stress conditions where there would be a need for protective factors (e.g., following a high incidence of negative events). Hence, among individuals who reported a high incidence of negative events, those who reported high social support and high positive events reported the lowest level of suicidal ideation, whereas those who reported low social support and low positive events reported the highest suicidal ideation. In other words, having high levels of *both* putative protective factors—perceived social support *and* positive events—appeared to confer particular protection against negative events and functioned as a strong buffer against the impact that they otherwise had on suicidal ideation.

In addition, the findings also indicated that when considered separately in two way interactions, social support buffered the effects of negative events, but positive events did not. That is, social support moderated the effects of negative events across all levels (high, medium, low) of positive events. Positive events, however, only appeared to contribute to buffering the impact of negative events when social support was high. Thus, the present data seem to particularly highlight the status of perceived social support as a protective factor against high levels of negative events, although positive events contributed in a secondary role when perceived social support was high. In marked contrast, our findings indicated that when negative events were low, perceived social support and positive events had *no* beneficial effect in reducing suicidal ideation, since there would be less need for protective factors. Such findings can be conceptualized within a vulnerability X stress framework (Riskind & Alloy, 2006). Individuals with low social support and low positive events may have the greatest vulnerability to suicidal ideation. However, this vulnerability is only activated by stress (such as negative life events) and individuals without high levels of negative events do not experience the negative effects of the vulnerability.

As noted, one exception to the general finding that social support and positive events are most beneficial under high levels of negative events was found that should be discussed. Individuals who reported a low incidence of negative events, low social support, and low positive events also reported the lowest suicidal ideation. This can be understood within the context of evidence that social support and positive events provide both resiliency and risk. According to Shahar, Elad-Strenger, and Henrich (2012), positive events may have a resiliency component (good things occur that offset bad things) as well as a risk component (good things often involve life change, which can be stressful). In the face of other risk factors (e.g., high negative events) positive events provide a buffering effect. Conversely, when no risk factor is present (e.g., low negative events), the stress associated with positive events may actually confer risk. Although Shahar's model was mainly in reference to positive events, other studies find a "risky-resilience" or "double-edged sword" component to social support as well (Revenson, Schiaffino, Majerovitz et al., 1991). For example, friends may provide comfort after the occurrence of a negative event, but could provide stress when they are not helping with a negative event (e.g., excessive reassurance seeking or simply causing an argument). Together, the findings indicate that perceived social support and positive events are primarily beneficial under conditions of stress but can have little if any positive effects or even negative effects under conditions of low stress.

It is important to discuss why only social support was directly protective in the present study. It is conceivable that positive events are also directly protective against suicide, but their direct main effect is fully transmitted through social support. For example, positive events might bring about social support (e.g., going to a party and seeing friends or meeting new ones there), which in turn might reduce suicidality. Such indirect effects cannot be examined with the current cross-sectional design, as it does not allow us to ascertain the direction of relationships between positive events and social support. However, it might be fruitful to examine them in future studies with longitudinal designs. In addition, it should also be recognized that positive events were retrospectively reported but are transient experiences compared to ongoing patterns of social support. Thus, it is possible that direct effects of positive events would have been better ascertained with different methodologies such as with daily diaries.

Nevertheless, as a whole, the findings suggest that social support and positive events have protective effects against suicide and can buffer the negative life events/suicide relationship. Moreover, the findings highlight the importance of examining protective (or risk) factors in combination. For example, the effects of social support and positive events, and perhaps other factors as well, are conditioned on the impact of other factors. Ultimately, considering the impact of protective and risk factors in combination may advance a better understanding of the predictors of suicidal ideation and behavior.

Limitations and Future Directions

There are several limitations that should be noted. First, although college students have relatively high rates of suicide and suicidal ideation compared to other groups (Drum, Brownson, Burton et al., 2009), studies are needed to examine the generalizability of the present findings to other populations. Specifically, future studies that use a high suicide risk population are needed. Second, we measured suicidal ideation, rather than suicidal behaviors such as suicide attempts or completed suicide as an outcome variable. Suicidal ideation is one of the key determinants of ultimate suicidal behavior (Nock, Borges, Bromet et al., 2008) and many studies examining protective factors against suicide use suicidal ideation as an outcome variable (see Johnson, Wood, Gooding et al., 2011 for a review). Nonetheless, future studies will be needed that examine actual suicide attempts and completed suicides in order to stringently test the generalizability of our results. Third, we relied on self-report measures of life events, social support, and suicidal ideation. Moreover, the usual limitations of self-report measures may particularly apply to assessing positive life events which are inherently transient experiences. Thus, future studies could use daily diary recording or interview-based methods so as to more accurately assess positive life events, social support, and suicidal thoughts. A fourth limitation is that we used a cross-sectional research design and so we cannot test the actual temporal relationships among the study variables. Therefore, future studies that evaluate the impact of positive life events and social support on suicide ideation are needed that use prospective research designs.

Our findings potentially bear important implications for intervention. For example, social support and positive events are modifiable, and therefore targetable in treatment. Moreover, suicide prevention programs could emphasize building and maintaining a strong social network (e.g., Walker et al., 2009) that would increase social support, or by using behavioral activation, which may increase positive events (Ferster, 1973). In addition, the findings could be taken to suggest that interventions that enhance social support and positive events in combination may produce the greatest beneficial impact compared to interventions that only target one factor.

AUTHOR NOTE

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