

AN EXAMINATION OF THE EFFECT OF NOSTALGIA ON RISK FACTORS FOR
SUICIDE

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The Examination of the Effect of Nostalgia on Risk Factors for Suicide

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ABSTRACT

In order to investigate the relationship between nostalgic tendencies and risk factors for suicide, two studies were completed. Study 1 examined nostalgic tendencies among individuals with depression symptoms in order to see if those with nostalgic tendencies might have less risk factors for suicide. The Study 2 sought to examine if actually experiencing nostalgia reduced the risk factors for suicide and whether the effect was moderated by dysphoric symptoms. Results of Study 1 indicated that nostalgic tendencies do not have an impact on suicide risk above and beyond other factors like depression. Study 2 found that at medium and high levels of dysphoria, those in a nostalgia condition felt higher levels of perceived burdensomeness. Limitations and implications for future research are explored.

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DEDICATION

This document is dedicated to those who have been affected by mental illness, in wishing that they find the hope and support they need to get through difficult times, and in loving memory of a dear friend, Charles Bolte.

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INTRODUCTION

Nearly 1 million people around the world die by suicide each year (World Health Organization, 2011). Within the United States, suicide is the 11th leading cause of death, taking the lives of approximately 30,000 individuals annually (World Health Organization, 2011). It is estimated that six to twenty-eight loved ones are intimately affected each time a suicide takes place (Knieper, 1999). Suicide is also costly in terms of lost lifetime earnings and productivity, medical expenditures, and legal costs (Yang & Lester, 2007). In 2005, it was estimated that the yearly economic cost of suicide in the United States was 16 billion dollars (Yang & Lester, 2007). Despite the fact that suicide is a significant public health problem, there is little research on effective methods for prevention (Fleischmann et. al, 2008; Motto & Bostrom, 2001).

One obstacle to suicide prevention is that the majority of individuals who die by suicide do not have contact with a mental health practitioner in the last year of their lives (Luoma, Martin, & Pearson, 2002). Therefore, interventions designed for administration by mental health professionals may have limited reach. A prevention tool that can be executed by people who are substantially more likely to have contact with individuals at risk for suicide (e.g., primary care physicians) may be more effective in preventing a greater number of suicide deaths. The purpose of the current thesis is to examine whether engaging in nostalgic thought leads to decreased suicidal desire. The development of a nostalgia-based intervention (which could be administered by those who are not mental health professionals, including primary care physicians), may be warranted if nostalgic thought is found to decrease suicidal ideation and risk factors associated with it.

Interpersonal Theory of Suicide

The interpersonal theory of suicide proposes that people are driven to suicide when they have both the desire and capability to end their lives (Joiner, 2005; Van Orden et al., 2010). The interpersonal theory of suicide posits that the desire to die by suicide is a result of two simultaneous distorted beliefs. These two beliefs are referred to as *thwarted belongingness* and *perceived burdensomeness*. According to the theory, when the need to belong is thwarted, the individual feels lonely, socially isolated, and lacking in meaningful connections with others. Meanwhile, individuals who are high in perceived burdensomeness believe they are not making positive contributions and lack purpose in the world. Furthermore, they believe that the lives of their friends and families members would be improved if they were dead (Van Orden et al., 2010). The theory states that when an individual has the capability to kill themselves (by overcoming the fear of death and lethal self-injury) and has the desire to die (due to thwarted belongingness and perceived burdensomeness), a lethal or nearly lethal suicide attempt is made (see Figure 1; Joiner, 2005; Van Orden et al., 2010).

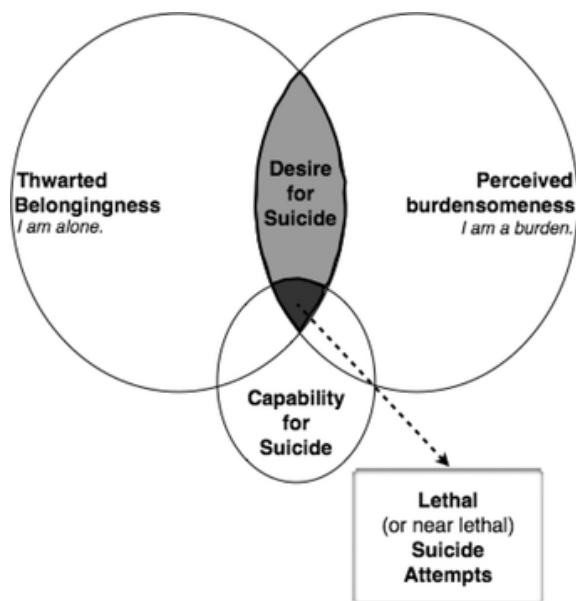
Thwarted Belongingness

Importantly, this theory of suicide is in line with empirical evidence. Studies demonstrate that those that take their own lives suffer from loneliness (Stravynski & Boyer, 2001) and social withdrawal (Trout, 1980) before their deaths (constructs that are highly related to thwarted belongingness). In addition, unmarried individuals tend to have higher rates of suicide than those who are married, supporting the idea that being socially connected through marriage can reduce risk for suicide (Stack, 2000 as reported in Van Orden et al., 2008). Additionally, a study of nearly one million Norwegian women showed that those with more children are at less of a risk for dying by means of suicide (Høyer & Lund, 1993). A study within

college students showed that suicidal ideation is at its highest during the summer months, when enrollment in college classes was down, mitigating feelings of belongingness in a social system (Van Orden et al., 2008). Altogether, such examples of the relationship between suicide and levels of connections with others imply that those who have their needs met for belongingness are more protected from taking their own lives than those without meaningful connections to others.

Figure 1

The Interpersonal Theory of Suicide



Note. Used with permission from Van Orden et al., 2010.

Perceived Burdensomeness

The idea that perceived burdensomeness exists in suicides also has been directly empirically tested. A correlation between feeling like a burden on kin and suicide attempts existed when tested in a collegiate population (Brown, Dahlen, Mills, Rick, & Biblarz, 1999, as reported in Joiner, 2005). Additionally, suicide notes by people who died by suicide showed

higher levels of perceived burdensomeness than suicide notes by people who attempted but did not die by suicide (notes were rated for burdensomeness by individuals unaware of the suicide status of the person who wrote the note; Joiner et al., 2002). Looking at specific age populations, elevated feelings of burdensomeness are positively correlated with suicidal ideation in older adults even after accounting for the variance related to other correlates of suicidal ideation in older adults such as depression, hopelessness, and loneliness (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011). Finally, perceived burdensomeness was an even stronger predictor of suicide-related thoughts and behaviors (e.g. attempt status, suicidal ideation) than hopelessness (Van Orden, Lynam, Hollar, & Joiner, 2006), which is an established risk factor for suicide.

In addition to representing individual risk factors, perceived burdensomeness and thwarted belongingness have been shown to interact with one another to predict suicidal desire. For example, an interaction between perceived burdensomeness and thwarted belongingness predicted current suicidal ideation in adult college populations (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Joiner et al. (2009) found similar results in that burdensomeness and belongingness predicted current suicidal ideation and additionally, these two variables were better predictors of suicide than depression.

Thus, it has been established that perceived burdensomeness and thwarted belongingness are robustly related to desire for suicide. Therefore, interventions which decrease these interpersonal risk factors may effectively reduce risk for suicide. The interpersonal theory that proposes that not having one element of the interpersonal model (e.g., acquired capability, perceived burdensomeness, or thwarted belongingness) would reduce the likelihood of death by suicide. According to Van Orden et al. (2010), “interventions that directly or indirectly address perceived burdensomeness and thwarted belongingness should produce the best outcomes among

suicidal individuals.” Van Orden et al. (2010) suggested that thwarted belongingness and perceived burdensomeness are most amenable to intervention because they are posited as malleable beliefs. On the other hand, the acquired capability component is viewed as more trait-like and resistant to change, meaning it is viewed as more difficult to undo the capability for suicide than to alter beliefs about connectedness and burdensomeness. Accordingly, thwarted belongingness and perceived burdensomeness are targeted in the current thesis.

Nostalgia Induction as a Potential Intervention

Engaging in nostalgic thought (defined as a sentimental longing for the past; The New Oxford English Dictionary, 1998) could potentially help to counteract feelings of perceived burdensomeness and thwarted belongingness as it is associated with numerous related social and emotional benefits (Wildschut, Sedikides, Arndt, & Routledge, 2006). Recalling nostalgic memories has been shown to enhance self-esteem, positive affect, feelings of social connectedness, interpersonal competence, and a sense that life is meaningful (Routledge, Arndt, Sedikides, and Wildschut, 2008; Wildschut et al., 2006; Zhou, Sedikides, Wildschut, & Gao, 2008). In particular, Routledge et al. (2011) found that nostalgia inductions increase sense of well-being to those who lack meaning in their lives. Although the participants in Routledge et al. (2011)’s sample were not suicidal or clinically depressed, it is possible that such individuals could make similar gains from nostalgia inductions.

To date, no empirical work has examined potential relationships between perceived burdensomeness and thwarted belongingness and whether nostalgia has the ability to decrease these variables in individuals who are at elevated risk for suicide (e.g., individuals with elevated depression symptoms). However, some past therapeutic intervention research has focused on constructs related to nostalgia. For example, in reminiscence therapy, individuals recall events in

their lives for the purpose of reducing depressive symptoms. Over the course of eight to ten sessions, reminiscence therapy can be used to find meaning in life, use experiences of the past to solve current dilemmas, and to escape the present to think about when times were better (Cappeliez, O'Rourke, & Chaudhury, 2005) as reported in Karirmi et al. (2011).

Existing research suggests that reminiscence therapy has shown a reduction in feelings of depression in older adults living in nursing home facilities (Karimi et al, 2011). Another study found that, in addition to a reduction of depressive symptoms in that population, reminiscence therapy provided social benefits and heightened feelings of accomplishment (cf. low perceived burdensomeness; Chiang et al., 2010). Wu (2011) found that older adults had immediately elevated levels of self-esteem as well as life satisfaction following a 12-week reminiscence intervention. Although distinct from nostalgia (looking sentimentally back on the past compared to simply recalling the past), they are similar in that they both seek to look back on experiences while providing present mood elevations. If reminiscence therapy is able to reduce depressive symptoms, inducing nostalgia may also have positive psychological effects.

However, other contradictory research has shown that dysphoric individuals were not able to repair negative mood with positive memories (Joormann & Siemer, 2004). Researchers hypothesize that these results occurred due to induced self-focus when the individuals were asked to think back upon the event, which lead to rumination, and in turn, allowed the individual to focus more on their depressed state rather than their more positive memory. This demonstrates that dysphoric individuals may have less ability to use mood-incongruence techniques to alleviate depressed states. Despite these results, other data has shown that current and past depressed individuals could experience positive mood states when asked to recall a positive autobiographical memory that originally occurred during high school under certain conditions

(i.e., focusing on concrete rather than abstract aspects of the memory; Werner-Seidler & Moulds, 2012). This suggests that, under some conditions, individuals with depression symptoms may be able to experience psychological benefits after recalling past memories.

The Current Studies

Scientific research that informs both prevention and intervention is desperately needed in order to prevent the suffering and loss of life that accompanies suicide. Over 60% of those who die by suicide suffered from major depressive disorder (American Foundation for Suicide Prevention; 2008). If engaging in nostalgic thought helps to reduce factors related to suicidal desire (e.g., thwarted belongingness and perceived burdensomeness) in people with depression symptoms, there could be a reduction in the amount of suicidal ideation. Although reminiscence therapy for the elderly and autobiographical memories for the non-depressed showed promise in boosting positive affective states, it is not known if nostalgia has the same effect. The current studies seek to explore what benefits a simply administered task like a nostalgic induction could have on people with depression symptoms and suicidal desire.

Study 1

Our first study had two aims. The first aim was to examine whether nostalgic tendencies acted as a moderating variable with regards to suicide risk factors. Specifically, we examined whether nostalgic tendencies among individuals with depression symptoms mitigated levels of thwarted belongingness, perceived burdensomeness, suicidal ideation, and increased reasons for living. We predicted that nostalgic tendencies would be related to healthier levels of all outcome variables, in accordance with previous research (e.g., Routledge et al., 2011). Secondly, we investigated whether nostalgic tendencies predicted suicidal desire above and beyond established

risk factors (i.e., thwarted belongingness and perceived burdensomeness) in exploratory analyses.

Study 2

The second study sought to examine 1) whether experiencing nostalgia effectively reduced thwarted belongingness and perceived burdensomeness and 2) whether this effect was moderated by dysphoric symptoms (i.e., does nostalgia decrease thwarted belongingness and perceived burdensomeness equally among individuals who are dysphoric and individuals who are non-dysphoric?). Based upon previous nostalgia research on related variables (e.g., Routledge et al., 2011), it was predicted that non-dysphoric individuals would experience decreases in thwarted belongingness and perceived burdensomeness. In light of conflicting findings on the effects of recalling the past in individuals with depression symptoms (e.g., Karimi et al., 2011; Werner-Seidler & Moulds, 2012), we did not make a firm prediction about whether nostalgia would decrease thwarted belongingness and perceived burdensomeness among dysphoric individuals. Rather, we treated this analysis as exploratory.

STUDY ONE

Method

Participants

The sample for Study 1 consisted of 637 undergraduate students (44.7% male; $n = 285$) from a university in the Midwestern region of the United States. The majority indicated that they were not Hispanic/Latino (94.2%). The racial composition of the sample was: 81.6% White ($n = 520$), 3.6% African-American/Black ($n = 23$), 7.8% Asian ($n = 50$), 0.3% American Indian/Alaska Native ($n = 2$), 0.2% Native Hawaiian/Pacific Islander ($n = 1$), 2.8% selected more than one race ($n = 18$), and 3.6% ($n = 23$) did not select a race. The mean age of the participants was 19.68 ($SD = 2.63$; range = 18-44).

Procedure

After providing consent, participants completed a variety of questionnaires (listed below) on laboratory computers in exchange for course credit. Participants were not assigned to any particular condition. All procedures were approved by the university's IRB and all participants were fully debriefed following the study.

Materials

Interpersonal Needs Questionnaire (INQ; Van Orden, Cukrowicz, Witte, & Joiner, 2012)

The INQ is a 15-item questionnaire that was designed to assess thwarted belongingness (level of disconnection from others) and perceived burdensomeness (extent to which one feels like a burden to others). The thwarted belongingness scale contains items such as "These days other people care about me," and the perceived burdensomeness subscale includes items such as, "These days I feel like a burden on the people in my life." For each item, participants are asked to what degree each is true for them on a scale of 1 (*not at all true for me*) to 7 (*very true for me*).

Van Orden et al. (2012) demonstrated good construct, concurrent, convergent, criterion, predictive, and discriminant validity for the INQ. Cronbach's alpha for thwarted belongingness in this study was .78 while the alpha for perceived burdensomeness was .88.

Southampton Nostalgia Scale (SNS; Routledge et al., 2008)

This 5-item self-report scale measures how prone individuals are toward nostalgic tendencies with items such as, "How often do you experience nostalgia?" Items are rated on a 5 point-scale of 1 (*very rarely*) to 5 (*very frequently*). The alpha for this scale in the current study was .64.

Beck Depression Inventory-Second Edition (BDI-II; Beck, Steer, & Brown, 1996)

The BDI-II is a 21-item self-report measure of depressive symptoms that have occurred during the past two weeks. Items include response choices that vary with degree of depressive symptomatology. For example, for the 'sadness' item, participants can answer "*I do not feel sad* (0, least severe)," "*I feel sad much of the time* (1)," "*I am sad all the time* (2)" or "*I'm so that I can't stand it*" (3, most severe). At the completion of the inventory, the sums of the 21 items are totaled, giving a single score for the BDI-II. The BDI-II had high internal consistency in the current sample with an alpha level of .91.

Beck Scale for Suicidal Ideation (BSSI; Beck & Steer, 1991)

The BSSI is a 21-item self-report inventory used to assess suicidality. Like the BDI-II, items on the BSSI include response choices that vary with degree of severity. For example, one item consists the following responses "*I have a moderate to strong wish to live*" (0, least severe), "*I have a weak wish to live* (2)," or "*I have no wish to live*" (2, severe). The BSSI scores can range from 0-38, with higher scores indicating higher ideation. The BSSI had an alpha level of

.90 in the current sample, and has been found to have good concurrent, discriminant, construct, and predictive validity (Brown, 2002).

Reasons for Living Inventory (RFL; Linehan, Goodstein, Nielsen, & Chiles, 1983)

The RFL Inventory is a 48-item instrument used to measure reasons for not killing oneself. Respondents use a six-point Likert scale to respond to each measure such as 1 (*not at all important*) to 6 (*extremely important*). The scores are summed at the end, and higher scores reflect more reasons to live and a lower likelihood of dying by suicide. There are six subscales including: Survival and Coping Beliefs, Responsibility to Family, Child-Related Concerns, Fear of Suicide, Fear of Social Disapproval, and Moral Objections. The current study removed the longest scale (Coping Beliefs) in an effort to reduce time burden on participants. The RFL can be scored as subscales or using one total score. In the current study, we utilized a total score. The RFL Inventory was found to be a predictor of suicidal behavior and has adequate reliability and validity (Osman, Jones, & Osman, 1991; Osman et al., 1993). In the current sample, the alpha level was .88.

Results

Preliminary Analyses

Means, standard deviations, and ranges for all measures can be found in Table 1. Zero-order correlations for all variables are displayed in Table 2. In Table 2, it is interesting to note the positive correlation between depression and nostalgic tendencies ($r = .30$), which indicates a greater tendency toward engaging in nostalgic thought among individuals with relatively higher depression symptoms. This suggests that there is a significant relationship between these variables, but does not address whether tendencies towards nostalgic thought are effective in reducing depression symptoms among these individuals.

Table 1*Descriptive Statistics for All Measures for Study 1*

	Depression	Suicide	Burden	Belong	Reasons	Nostalgia
Mean	7.53	0.18	8.5	22.95	100.24	17.89
SD	7.69	1.28	4.4	7.98	21.12	5.57
Range	0-35	0-20	6-30	9-54	25-150	5-31

Note. Suicide = suicidal ideation; Burdensomeness = perceived burdensomeness; Belonging = thwarted belongingness; Reasons = reasons for living; Nostalgia = nostalgia proneness.

Table 2*Zero Order Correlations for Study 1*

	Depression	Suicide	Burden	Belong	Reasons	Nostalgia
Depression	--	.22*	.55*	.51*	-.10	.30*
Suicide	.22*	--	.25*	.25*	-.08	.05
Burden	.55*	.25*	--	.61*	-.07	.11
Belonging	.51*	.25*	.61*	--	-.25*	.13*
Reasons	-.10	-.01	-.07	-.25*	--	.09
Nostalgia	.30*	.05	.12	.13*	.09	--

Note. Suicide = suicidal ideation; Burdensomeness = perceived burdensomeness; Belonging = thwarted belongingness; Reasons = reasons for living; Nostalgia = nostalgia proneness.

* $p < .0001$.

Main Analyses

A hierarchical linear regression was performed for each of the following analyses. It should also be noted that all variables were centered prior to being entered into the regression analyses.

Nostalgic Tendencies x Depression in the Prediction of Thwarted Belongingness

In an effort to test whether nostalgic tendencies and depression interacted to predict thwarted belongingness, nostalgia and depression were entered into the first step of the regression to test for main effects. The interaction term for nostalgic tendencies by depression was entered into the second step. As would be expected, higher levels of depression were associated with higher levels of thwarted belongingness, $\beta = .52$, $t(547) = 13.35$, $p < .0001$ (depression accounted for 25.6% of the variance in thwarted belongingness). However, counter to prediction, nostalgic tendency levels were not significantly associated with thwarted belongingness, $\beta = -.02$, $t(547) = -.63$, $p = .53$. Likewise, the interaction between nostalgic tendencies and depression on thwarted belongingness was not significant, $\beta = -.03$, $t(547) = -.88$, $p = .38$.

Nostalgic Tendencies x Depression in the Prediction of Perceived Burdensomeness

A second regression was conducted that was identical to the first regression, except that perceived burdensomeness was utilized as the dependent variable rather than thwarted belongingness. As in the first regression, higher levels of depression were positively associated with higher levels of perceived burdensomeness, $\beta = .57$, $t(547) = 15.40$, $p < .001$ (depression accounted for 31.0% of the variance in perceived burdensomeness). In this analysis, there was a nonsignificant trend for nostalgic tendencies in the prediction of perceived burdensomeness, $\beta = -.07$, $t(547) = -1.91$, $p = .06$. The interaction between nostalgic tendencies and depression on perceived burdensomeness was also marginally significant, $\beta = -.01$, $t(547) = -1.78$, $p = .08$, (explaining only an additional .3% of the variance after the main effects).

Nostalgic Tendencies x Depression in the Prediction of Suicidal Ideation

We ran a third regression analysis that was the same as the first and second, but suicidal ideation was utilized as the dependent variable. Higher levels of depression were positively associated with more suicidal ideation, $\beta = .23$, $t(566) = 5.38$, $p < .001$ (depression accounted for 4.8% of the variance in suicidal ideation). In this analysis, nostalgic tendencies were not predictive of suicidal ideation levels, $\beta = -.02$, $t(566) = -.46$, $p = .65$. The interaction between nostalgia by depression in the prediction of suicidal ideation was also not significant, $\beta = -.01$, $t(566) = -.15$, $p = .88$.

Thwarted Belongingness, Perceived Burdensomeness, Nostalgic Tendencies in the Prediction of Suicidal Ideation

To test if nostalgic tendencies predicted suicidal ideation after statistically controlling for thwarted belongingness and perceived burdensomeness, the main effects of thwarted belongingness and perceived burdensomeness were entered into the first step of a regression analysis, while nostalgic tendencies was entered into the second step. Higher levels of thwarted belongingness predicted suicidal ideation, $\beta = .17$, $t(557) = 3.21$, $p = .001$. As would be expected, higher levels of perceived burdensomeness were also predictive of higher levels of suicidal ideation, $\beta = .15$, $t(557) = 2.89$, $p = .004$ (together, perceived burdensomeness and thwarted belongingness accounted for 7.5% of the variance in suicidal ideation). However, nostalgic tendencies was not a significant predictor of suicidal ideation in these analyses, $\beta = .01$, $t(557) = .27$, $p = .79$.

Nostalgic Tendencies x Depression in the Prediction of Reasons for Living

In order to test whether nostalgic tendencies and depression interacted to predict reasons for living, nostalgia and depression were entered into the first step, while the interaction term for

the two were entered into the second step. Results indicated that higher levels of nostalgic tendencies predicted higher levels of reasons for living, $\beta = .13$, $t(547) = 2.10$, $p = .003$.

Furthermore, higher levels of depression were associated with less reasons for living, $\beta = -.15$, $t(547) = -3.29$, $p = .001$ (together, depression and nostalgic tendencies accounted for 7.5% of the variance in reasons for living). The interaction between nostalgic tendencies and depression on reasons for living was not significant $\beta = -.02$, $t(547) = -.53$, $p = .60$.

Thwarted Belongingness, Perceived Burdensomeness, Nostalgic Tendencies in the Prediction of Reasons for Living

The final analyses tested whether or not thwarted belongingness, perceived burdensomeness, and nostalgic tendencies predicted reasons for living. Similar to previous regressions, perceived burdensomeness and thwarted belongingness were entered into the first step of the regression, while the variable of nostalgic tendencies was entered into the second step. The results indicated that higher levels of thwarted belongingness predicted less reasons for living, $\beta = -.34$, $t(558) = -6.50$, $p < .001$. Perceived burdensomeness was predictive of reasons for living, $\beta = .15$, $t(558) = 2.91$, $p = .004$, as higher levels of perceived burdensomeness were predictive of less reasons for living. Finally, nostalgic tendencies positively predicted reasons for living, $\beta = .12$, $t(558) = 2.84$, $p = .004$, above and beyond thwarted belongingness and perceived burdensomeness (accounted for 7.0% of variance in reasons for living).

Summary of Results

In summary, as would be expected, depression was significantly related to perceived burdensomeness, thwarted belongingness, reasons for living, and suicidal ideation. Additionally, thwarted belongingness and perceived burdensomeness were significantly associated to suicidal ideation. These results are consistent with previous research and theory (e.g., Van Orden et al.,

2010). However, crucial to the current investigation, there were generally no main effects of nostalgic tendencies on risk factors for suicide. Furthermore, nostalgic tendencies did not act as a statistically significant moderator of suicide risk for the majority of analyses (i.e., the interaction terms were not significant). However, the one exception was that nostalgic tendencies did predict higher levels of reasons for living, above and beyond thwarted belongingness and perceived burdensomeness.

Discussion

The previous analyses showed that nostalgic tendencies do not have an impact on suicide risk above and beyond other factors like depression. However, the results of this particular analysis should not be viewed as conclusive for several reasons. First, there was limited power due to very few indicating suicidal ideation, as only 5% of the sample reported any suicidal ideation at all (i.e., scores above 0 on the BSSI). Second, the study was cross-sectional and thus causal relationships and temporal precedence of variables could not be examined for the effects among variables.

It is important to note that nostalgic tendencies did predict above and beyond perceived burdensomeness and thwarted belongingness in the case of reasons for living. While this is suggestive that nostalgic tendencies could have a positive impact on reasons for living, this is a very preliminary examination of such an impact. An experimental study (Study 2) may yield more information about the potential causal impact of nostalgic thought on reasons for living as it allows for examinations of cause and temporal precedence.

STUDY TWO

Method

Participants

The sample for Study 2 consisted of 159 undergraduate students (52.2% male; $n = 83$) from a university in the Midwestern region of the United States. The majority indicated that they were not Hispanic/Latino (98.7%). The racial composition of the sample was: 88.3% White ($n = 142$), 2.5% African-American/Black ($n = 4$), 4.4% Asian ($n = 7$), 1.9% ($n = 3$) selected one or more race and 1.9% ($n = 3$) did not select a race. The mean age of the participants was 19.64 ($SD = 1.76$; range = 18-30).

Procedure

Prior to participating in the main study, the participants were asked to complete the Center for Epidemiological Studies Depression Scale (CES-D) in order to ascertain if participants met criteria for dysphoria. If criteria were met, an invitation was emailed to the participant inviting him or her to participate in the main study in the laboratory. This was done in order to ensure that adequate numbers of those meeting criteria for dysphoria were represented in the study. Once in the lab and after providing consent, participants again completed the CES-D to determine if they met criteria for the dysphoric or non-dysphoric group, as change might have occurred since taking the prescreen. Once classified as dysphoric or non-dysphoric, participants were randomly assigned to the control or nostalgic induction condition. Following this, participants completed outcome measure questionnaires (listed below) on laboratory computers and when finished, received course credit. All procedures were approved by the university's Internal Review Board, and all participants were fully debriefed following the study.

Materials

Pre-Screening: Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977)

Some of the participants who met criteria for dysphoria were recruited using the CES-D, which was the same scale used to measure dysphoria in a study by Joorman and Siemer (2004). The CES-D is a 20-item self-report scale that measures depressed mood, feelings of guilt and worthlessness, helplessness and hopelessness, psychomotor retardation, concentration problems, appetite disturbance, and sleep problems. Participants indicated on a 4-point scale how often during the past week that they experienced each particular symptom with *rarely or none of the time (less than 1 day)*, *some or a little of the time (1-2 days)*, *occasionally or a moderate amount of time (3-4 days)*, and *most or all of the time (5-7 days)*. Questions like “I was bothered by things that don’t usually bother me” and “I felt depressed.” Like Joormann and Siemer (2004) we used a cutoff score of 16 to assign participants to the dysphoric vs. non-dysphoric group. This scale was used to both prescreen individuals into the study and used again in the study to establish current dysphoric symptoms. In the main study, alpha was equal to .71 which is indicative of adequate internal consistency.

Nostalgia Manipulation

After the CES-D, participants were also given a five minute writing task in which they were randomly assigned to write about either a nostalgic or ordinary experience (used in past studies as a control condition; Wildschut et al., 2006; Routledge et al., 2008). In the nostalgia condition, participants were instructed to “bring to mind a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic.” In the control condition, the participants were instructed to “bring to mind an ordinary event in your daily life—an event that took place in the last week.”

Momentary Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008)

The Momentary INQ was the same 15-item questionnaire that was used in Study 1, only in Study 2, it asked about levels of burdensomeness and belongingness in that current moment. The thwarted belongingness scale contained items such as “*Right now* other people care about me,” and the perceived burdensomeness subscale includes items such as, “*Right now* I feel like a burden on the people in my life.” Routledge et al. (2011) similarly altered scales typically used for more trait-like variables (e.g., nostalgia) into more state-like scales (e.g., momentary feelings of nostalgia) to measure the effects of the nostalgia induction. For each item, participants were asked to what degree each was true for them on a scale of 1 (*not at all true for me*) to 7 (*very true for me*). Cronbach’s alpha for the perceived burdensomeness subscale was equal to .92, while the alpha level for thwarted belongingness was equivalent to .87.

International Positive and Negative Affect Schedule (PANAS) Short Form (I-PANAS-SF; Thompson, 2007)

The I-PANAS-SF is a ten item shortened and validated version of the original 20 item PANAS used to measure levels of positive and negative affect. Each item consisted of a word that describes a feeling or emotion (e.g., upset). Participants were asked to what degree each was true for them on a scale of 1 (*very slightly or not at all*) to 5 (*extremely*). According to Thompson (2007) cross-sample stability, internal reliability, temporal stability, cross-cultural factorial invariance, and convergent and criterion-related validities of the measure were found to be psychometrically acceptable. Cronbach’s alpha was .82 in the current sample.

CAGE Questionnaire (Steinweg & Worth, 1993)

The CAGE is a 4-item questionnaire used to assess alcohol use. The items are scored 0 (*no*) and 1 (*yes*) with a total score of 2 or greater indicating an alcohol problem. A sample item

would include “have you ever felt you should cut down on your drinking?” CAGE has demonstrated high test-retest reliability (.80-.95) and adequate correlations (.48-.70) with other screening instruments (Dhalla & Kopec, 2007).

Results

Preliminary Analyses

Means and standard deviations for each measure are displayed in Table 3. Zero order correlations for all variables can be found in Table 4. A preliminary manipulation check suggested that individuals were more nostalgic in the nostalgia condition as compared to the control condition; $t(157)=5.12$; $p<.0001$, which suggests the manipulation was effective.

Main Analyses

A two-way between group multivariate analyses of covariance (MANCOVA) was performed to investigate effects of nostalgia and depression status on the dependent variables (i.e., thwarted belongingness, perceived burdensomeness, positive affect, negative affect, and reasons for living). The experimental conditions were the between-group factor (two levels: nostalgia and control) and the dysphoria status (two levels: dysphoric and non- dysphoric; referred to as “group” in further discussion of analyses). Alcohol abuse symptoms were utilized as a covariate in order to rule out potential confounding effects. The omnibus test suggested that there was not a significant effect of the interaction between group and condition on any dependent variables: $F(5, 154) = 1.71$, $p = .14$; *Wilk's Lambda* = .95. Significant main effects of the group and experimental condition variables are depicted in Table 5. As is displayed in the table, the dysphoric and non-dysphoric groups were significantly different on all variables (all $ps<.003$), which is to be expected. However, there were no significant effects of condition on any of the dependent variables (all $ps>.12$). Moreover, the interaction between group and condition

was not significant. The results did not conform to prediction, including a failure to replicate previous research that reports an effect of the nostalgia manipulation on non-depressed college students (e.g., Routledge et al. 2011). It is possible that this was due to insufficient statistical power (as the ideal is to have 45 in each cell for the optimal of .80 power; Faul, Erdfelder, Lang, & Buchner, 2007). However, it is worth noting that the cell sizes are comparable with previous research which has found effects. Still, in an effort to increase power and to be consistent with previous work (Juhl, Sand, & Routledge, 2012), we chose to conduct additional analyses within a regression framework that utilized dysphoria symptoms as a continuous variable. Continuous variables yield more statistical power than when they are used as dichotomous variables (Cohen, 1977). These additional regression analyses were not planned a priori and are therefore treated as post-hoc exploratory analyses.

Table 3

Descriptive Statistics for All Measures for Study 2

	Belong	Burden	Pos Affect	Neg Affect	Reasons
Mean	20.03	8.85	28.89	16.23	211.79
SD	9.48	5.05	8.24	6.33	30.78
Range	9-48	6-28	10-48	10-43	112-282

Note. Belong = thwarted belongingness; Burden = perceived burdensomeness; Pos Affect = positive affect; Neg Affect = Negative Affect, Reasons = reasons for living.

Table 4*Zero Order Correlations for Study 2*

	Belong	Burden	Pos Affect	Neg Affect	Reasons
Belong	--	0.56*	-0.42*	0.40*	-0.35*
Burden	0.56*	--	-0.18	0.47*	-0.28*
Pos Affect	-0.42*	-0.18	--	-0.09	0.12
Neg Affect	0.41*	0.47*	-0.09	--	-0.12
Reasons	-0.35*	-0.28*	0.12	-0.12	--

Note. Belong = thwarted belongingness; Burden = perceived burdensomeness; Pos Affect = positive affect; Neg Affect = Negative Affect, Reasons = reasons for living.

* $p < .0001$.

Post-hoc Exploratory Analyses

Means, standard deviations, and ranges for Study 2 can be found in Table 4, while zero-order correlations for all variables can be found in Table 5. A hierarchical linear regression was performed for each of the following analyses, and all variables were centered prior to the analyses. All regression analyses below were identical except for the dependent variable. In the first step, CAGE scores were entered in an effort to control for variance explained by problematic drinking symptoms. In the second step, condition and dysphoria symptoms were entered to test for main effects. Finally, the interaction term for condition by dysphoria symptoms were entered into the third step.

Table 5*Means of All Measures by Group*

Nostalgia	Dysphoric	Non-Dysphoric
Manipcheck	11.77(.70)	12.25(.58)
Belong	27.42(8.30)	17.52(1.10)
Burden	13.08(7.17)	7.31(3.23)
Pos Affect	26.50(9.33)	30.44(8.15)
Neg Affect	19.85(6.85)	14.60(4.57)
RFL	202.19(39.92)	231.83(23.85)
Control	Dysphoric	Non-Dysphoric
Manipcheck	10.48(3.20)	8.17(3.87)
Belong	26.37(10.02)	15.72(7.27)
Burden	11.22(5.85)	7.11(2.79)
Pos Affect	24.67(6.31)	30.67(7.77)
Neg Affect	21.56(8.78)	13.41(2.98)
RFL	200.37(24.87)	220.17(32.15)

Note. Manipcheck = Manipulation Check; Belong = thwarted belongingness; Burden = perceived burdensomeness; Pos Affect = positive affect; Neg Affect = negative affect, Reasons = reasons for living.

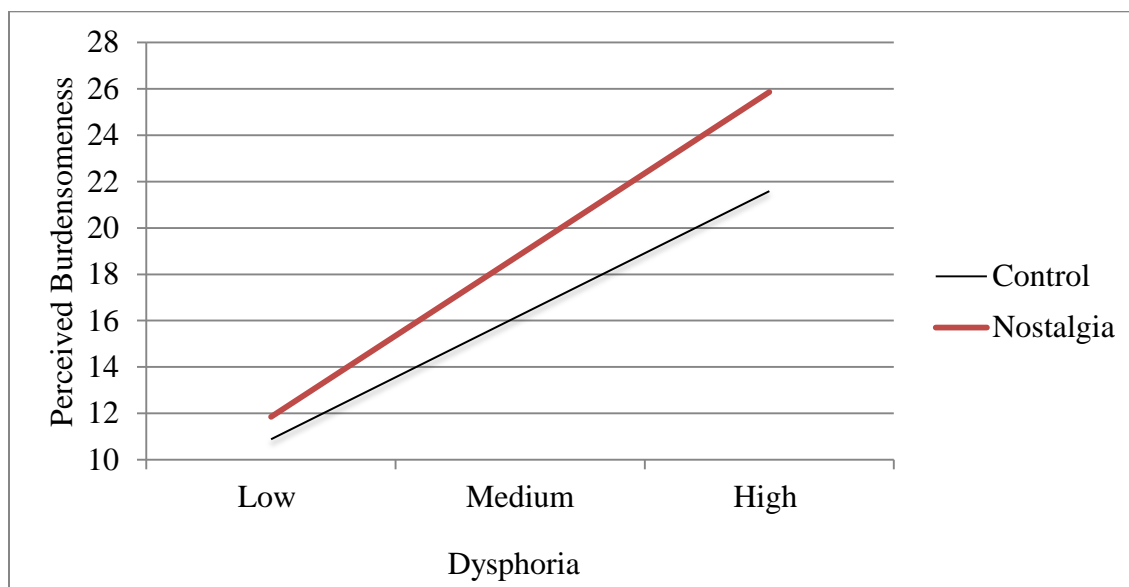
Condition x Group in the Prediction of Perceived Burdensomeness

Problematic drinking symptoms were significantly associated with perceived burdensomeness, $\beta = .16$, $t(150) = 1.99$, $p = .048$, such that higher scores on the CAGE were related to higher perceived burdensomeness levels. The condition was not associated with

perceived burdensomeness, $\beta = .06$, $t(150) = .95$, $p = .34$. However, higher levels of dysphoria were associated with perceived burdensomeness, $\beta = .64$, $t(150) = 10.14$, $p < .0001$. Finally, the interaction between condition and mood group on perceived burdensomeness was significant, $\beta = .24$, $t(150) = 2.73$, $p = .01$. In order to interpret this interaction, a simple slopes test for condition were calculated at low (-1 SD), moderate (0 SD), and high (+SD) levels of dysphoria in the mood group (Preacher, Curran, & Bauer, 2006). At higher levels of dysphoria, the relationship between perceived burdensomeness and condition became stronger, (low level of dysphoria: $\beta = .66$, $t(159) = 1.48$, $p = .14$; moderate level of dysphoria: $\beta = 1.06$, $t(159) = 2.48$, $p = .01$; high level of dysphoria $\beta = 1.60$, $t(159) = 2.68$, $p = .01$). Thus, as displayed in Figure 2, moderate and higher levels of dysphoria were associated with higher levels of perceived burdensomeness and this effect was heightened when participants were in the nostalgia condition.

Figure 2

Interaction of Mood by Condition in the Prediction of Burdensomeness



Condition x Mood in the Prediction of Thwarted Belongingness

An identical analysis to the one above was conducted except that thwarted belongingness was utilized as the dependent variable. Here, problematic drinking was not associated with thwarted belongingness, $\beta = .08$, $t(150) = .99$, $p = .33$. Once again, there was not an association between condition with thwarted belongingness, $\beta = .06$, $t(150) = .99$, $p = .32$. However like the previous analyses, higher levels of dysphoria were associated with higher levels of thwarted belongingness, $\beta = .64$, $t(150) = 9.78$, $p < .0001$. The interaction between condition and mood on thwarted belongingness was not found to be significant, $\beta = -.05$, $t(150) = -.59$, $p = .56$.

Condition x Mood in the Prediction of Negative Affect

Again, the same analyses were conducted on the data, this time using negative affect as the dependent variable. Problematic drinking was associated with thwarted belongingness, $\beta = .25$, $t(148) = 3.312$, $p = .002$, in that higher levels of problematic drinking were predictive of higher negative affect. Again, condition was not associated with negative affect, $\beta = .03$, $t(148) = .46$, $p = .65$. Higher dysphoric symptoms were associated with more negative affect, $\beta = .60$, $t(148) = 9.14$, $p < .0001$. Lastly, the interaction between condition and mood on negative affect was found to be not significant, $\beta = -.10$, $t(148) = -1.16$, $p = .25$.

Condition x Mood in the Prediction of Positive Affect

Next, we examined positive affect. Problematic drinking was not associated with thwarted belongingness, $\beta = -.02$, $t(150) = -.22$, $p = .82$. Condition was not associated with positive affect, $\beta = .03$, $t(150) = .36$, $p = .72$. Next, it was found that less dysphoric symptoms were associated with more positive affect $\beta = -.29$, $t(150) = -3.54$, $p = .001$, as would be expected. In regards to the interaction between condition and mood on positive affect, results showed that this was not significant, $\beta = .10$, $t(150) = .91$, $p = .37$.

Condition x Mood in the Prediction of Reasons for Living

The final analyses looked at reasons for living as the dependent variable. Problematic drinking was once again not associated with thwarted belongingness, $\beta = -.07$, $t(150) = -.87$, $p = .39$. Condition was not associated with reasons for living, $\beta = -.05$, $t(150) = -.69$, $p = .49$. Lower levels of dysphoria (mood) were associated with more reasons for living, $\beta = -.25$, $t(150) = -3.11$, $p = .002$, as would be predicted. The interaction between condition and mood on reasons for living was not significant, $\beta = .12$, $t(150) = 1.08$, $p = .28$.

Summary of Results

In sum, the omnibus test indicated that there were not any significant effects for experimental condition (nostalgia vs. control) as well as no significant interactions between mood group and condition. Post hoc analyses indicated that problematic drinking was predictive of heightened feelings of perceived burdensomeness as well as an elevated level of negative affect. Symptoms of dysphoria were also positively associated with higher levels of perceived burdensomeness, thwarted belongingness, and negative affect. Additionally, lower levels of dysphoria were predictive of more reasons for living and an increase in positive affect. Finally, an interaction of condition and mood were predictive of heightened feelings of perceived burdensomeness as high and moderate levels of dysphoria were associated with higher levels of perceived burdensomeness in the nostalgia condition.

Discussion

Study 2 was the first of its kind to examine the impact of a nostalgic induction on suicide risk factors among individuals with elevated dysphoric symptoms. The results suggest that there were no significant effects of condition on any of the dependent variables, which did not replicate previous findings on the impact of nostalgia (Routledge et al., 2011). This outcome

could have also been caused by insufficient power in the study, as previously mentioned.

However, as noted previously, the cell sizes were comparable to those used in prior studies.

Secondly, there was a significant interaction effect between condition and mood groups on perceived burdensomeness. This indicates that, at low levels of dysphoria, condition did not affect levels of perceived burdensomeness. However, at medium and high levels of dysphoria, individuals in the nostalgia condition had higher levels of perceived burdensomeness. This lends support the idea that those who are dysphoric and engage in nostalgia might have amplified feelings of perceived burdensomeness as a result. Finally, it was found that higher levels of dysphoric symptomology was predictive of higher levels of perceived burdensomeness, thwarted belongingness, negative affect, while lower levels of dysphoric symptoms were associated with higher levels of reasons for living and positive affect, which is consistent with previous results with depression symptoms (Watson, Clark, & Tellegen, 1988; Wang, Lightsey, Pietruszka, Uruk, & Wells, 2007; Davidson, Wingate, Grant, Judah, & Mills, 2011).

GENERAL DISCUSSION

Because preventive measures and interventions are desperately needed in order to prevent future loss of life by suicide, it was hoped that an easy-to-administer task such as a nostalgia induction could reduce the feelings of perceived burdensomeness and thwarted belongingness (risk factors of suicide), among those with dysphoric symptoms. With this in mind, Study 1 explored whether nostalgic tendencies in those that are depressed would decrease levels of perceived burdensomeness, thwarted belongingness, and suicide desire, and increase reasons for living. However, results showed no main effects of nostalgic tendencies on risk factors for suicide nor did nostalgic tendencies act as a significant moderator of risk factors for suicide. Study 2 sought to experimentally induce nostalgia and examine whether nostalgia would reduce risk factors for suicide and whether this effect would be moderated by feelings of dysphoria. Results indicated that there were no significant main effects on the dependent variables for condition (nostalgia vs. control), which did not replicate results of previous research of nostalgia on non-clinical populations.

Despite the fact there were not any statistically significant effects of nostalgia, there was a significant interaction between condition and mood group on perceived burdensomeness, such that, at medium and high levels of dysphoria, individuals in the nostalgia condition had higher levels of perceived burdensomeness. One possible explanation for this could be that those who were more dysphoric may not be able to use the happier memories of the past to boost their mood in the present, as Joorman and Seimer (2004) indicated in past research. Building upon this, many nostalgic memories tend to be social in nature (Wildschut et al., 2006), thus individuals are likely to be recalling times with other people. Since those who experience dysphoria are likely have more dysfunctional social relationships (Alloy, Fedderly, Kennedy-

Moore, & Cohan, 1998), they may be more likely to ruminate on their current troubled social situations where they are feeling like a burden on other people rather than on possible former and less dysfunctional social interactions where they felt less like a burden. Because of the possible current rumination, the process of engaging in nostalgia may boost their feelings of perceived burdensomeness. However, it could be possible that the rumination could be mitigated if the individuals were instructed to think about the experience in very concrete terms instead of abstractly, as previous research has been shown that this technique allows individuals to decrease their levels of rumination and feel less depressed (Werner-Seidler & Mould, 2011).

Although nostalgia has often been viewed as a primarily positive experience, it has also been shown that nostalgia may not be beneficial for all individuals as the results of this study demonstrated. For example, prior research has indicated that those who are high in attachment-related avoidance do not receive increased feelings of social connectedness when asked to think about a nostalgic experience (Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010). In addition, these same individuals experience less desire to be in relationships and gain less satisfaction from their current relationships when they think nostalgically (Juhl et al., 2012). Therefore, the attachment patterns of individuals within nostalgia studies might want to be addressed in future research and could explain why nostalgia did not seem to have a positive effect on those in this particular study.

Exploring the nostalgic passages that the participants wrote about in Study 2 may also provide some insight into why those experiencing medium and high levels of dysphoria and in the nostalgia condition experienced an increase in feelings of perceived burdensomeness. This analysis could also showcase the possible rumination that may be occurring in those that are dysphoric as well as expressions of why one may feel like a burden. Although several attempts

have been made to explain why nostalgia may not have provided significant results in the study, it could also be that the null result is accurate and that nostalgia really does not have many significant effects on risk factors for suicide, and may actually worsen perceived burdensomeness among individuals who are dysphoric..

Study 1 showed that higher levels of nostalgic tendencies had significantly more reasons for living, and that this prediction existed above and beyond variance explained by thwarted belongingness and perceived burdensomeness. This may be due to the idea that nostalgia creates the feelings that life is meaningful and in turn acts as a buffer for existential anxiety (Routledge et al., 2011) which provides reasons to live. However, since Study 2 did not experimentally replicate these results, this idea may not be accurate.

Although several limitations have already been discussed, there were also strengths to our study. For example, this is the first study of its kind to look at the effects of a nostalgia induction on those with elevated depression symptoms. Although there were few significant results of nostalgia, future work may seek to investigate other individual difference factors that could impact the influence of nostalgia. For example, the tendency to ruminate when dysphoric may be associated with negative effects of nostalgia as previously discussed. Secondly, the results indicated that those with higher levels of dysphoria in the nostalgia condition were more likely to have elevated levels of perceived burdensomeness and thus clinicians may be cautioned to avoid having clients use nostalgic memories to repair current negative moods, as the outcome of an increase in perceived burdensomeness is likely to cause harm to the client.

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