

**Effects of repeated exposure to graphic suicide news articles on explicit and implicit  
measures of suicide risk**

by

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## Abstract

Existing observational research suggests that following media portrayal of a suicide, there is an increase in imitative suicidal behaviors (e.g., Gould, 2001; Pirkis & Blood, 2001; Stack, 2005). Despite a plethora of observational research, to date, only two experimental studies have evaluated the effects of exposure to suicide news articles (i.e., Anestis et al., 2015; Williams & Witte, 2017). Both of these experimental studies reported findings inconsistent with observational research, finding no evidence of an imitative effect. However, there were a number of limitations with the previous experimental designs. As such, our goal in the current study was to improve upon existing experimental research in order to develop a more concrete understanding of imitative suicidal behaviors following exposure to suicide news articles. In the current study, we evaluated the effects of exposure to a series of suicide news articles on a variety of outcome variables including explicit measures of suicide risk (i.e., affect, suicidal ideation, depressive symptoms, attitudes toward suicide) and a measure of implicit associations with suicide (i.e., Death/Suicide Implicit Association Task). We also evaluated whether individual vulnerabilities (i.e., lifetime history of suicidal ideation/attempt) moderated these relationships. Data were collected from 420 participants. Of all outcome variables, only changes in affect were affected by exposure to suicide news articles (i.e., positive affect decreased for the suicide condition and negative affect decreased for those in the control condition). We also did not find any moderation effect of individual vulnerabilities, such as lifetime suicidal ideation and behavior. Overall, our study addresses many of the limitations of previous experimental studies

and provides important information about the immediate impact of exposure to suicide news articles on a variety of outcome variables known to be associated with increased risk for suicidal behavior. However, the discrepancy between findings of experimental and observational studies remains. Future research should aim to address this gap and explore additional explanations for the differences between experimental and observational designs.

## Table of Contents

Abstract.....	ii
Introduction.....	1
Review of research on imitative suicidal behavior.....	2
Previous experimental research.....	3
Present Study.....	6
Hypotheses.....	11
Method.....	12
Participants.....	12
Procedure.....	13
Measures.....	15
Data Analysis.....	18
Results.....	19
Main Analyses.....	19
Post Hoc Analyses.....	24
Discussion.....	25
Limitations and future directions.....	32
Implications.....	34
Conclusion.....	36
References.....	37

Tables.....	42
Appendix A.....	51
Appendix B.....	55

## List of Tables

Table 1. Demographics.....	42
Table 2. Prevalence of Lifetime Experiences.....	43
Table 3. Order Effects.....	44
Table 4. Pooled means from Hypotheses 1 through 4.....	45
Table 5. Interactions between lifetime suicidality and condition.....	46
Table 6. Interactions between lifetime NSSI and condition.....	47
Table 7. Interactions between lifetime exposure to suicide and condition.....	48
Table 8. Pooled results without participants previously exposed to the campus article.....	49
Table 9. Lifetime experiences predicting average relate to suicide decedent score.....	50

## List of Appendices

Appendix A. Experimental, Suicide News Articles.....	51
Appendix B. Control, Neutral non-suicide related articles.....	55

# Effects of repeated exposure to graphic suicide news articles on explicit and implicit measures of suicide risk

Existing research suggests that following a news article on suicide, there is an increase in imitative suicidal behaviors (e.g., Gould, 2001; Pirkis & Blood, 2001; Stack, 2005). Although there is some debate on the veracity of the imitative effect (e.g., Cheng, Li, Silenzo, & Caine, 2014; Kessler, Downey, Milavsky, & Stipp, 1988; Stack, 1983; 1988), organizations have taken actions to curb it. For instance, the World Health Organization and the International Association for Suicide Prevention have developed and disseminated guidelines for best reporting practices when covering a suicide news story (World Health Organization, 2008). Additionally, there is some evidence that when the media adhere to the prescribed guidelines, there is a reduction in imitative suicidal behavior (Etzersdorfer & Sonneck, 1998). However, concerns about the veracity of the imitative effect, combined with methodological limitations of existing studies, may contribute to the lack of adherence to the guidelines by the media (Cheng et al., 2014; Williams & Witte, 2017). Specifically, almost all of the existing research on imitative suicidal behaviors following a suicide news article is observational in design (Sisask & Varnik, 2012). To our knowledge, only two studies have employed an experimental design to evaluate the effects of a suicide news article on a variety of outcome variables (Anestis et al., 2015; Williams & Witte, 2017), both of which had findings inconsistent with the notion that exposure to suicide news articles increases suicide risk. Although these two experiments represent important progress in understanding the mechanisms underlying the imitative effect, they have a number of limitations. As such, our understanding of the relationship between suicide news articles and imitative suicidal behaviors is incomplete. In order to address the limitations of our current knowledge

about the immediate impact of suicide news articles, the current study evaluated the effects of exposing individuals to multiple suicide news articles, using an experimental design. Our outcome variables included both explicit, self-report measures known to be associated with suicide risk (e.g., suicidal ideation, depression, attitudes toward suicide), as well as an implicit measure of associations between the self and death/suicide.

### **Review of research on imitative suicidal behavior following a news article on suicide**

Historically, research on imitative suicidal behavior has implemented an observational design. Previous reviews of the existing literature on imitative suicidal behavior as a result of newspaper articles on suicide (e.g., Gould, 2001; Pirakis & Blood, 2001; Sisiak & Varnik, 2012; Stack, 2005) generally suggest that media reporting is associated with an increase in suicide. In addition to these reviews, recent research has attempted to use novel statistical methods to more rigorously investigate this relationship and provide further evidence for an imitative effect (e.g., Gould et al., 2014; Hagihara, Abe, Omagari, Motoi, & Nabeshimia, 2014; Jang, Sung, Park, & Jeon, 2016; John et al., 2016; Niederkrotenthaler et al., 2010; 2012). These studies all identified an imitative effect in response to newspaper reporting on suicide and importantly utilized samples from geographically diverse regions as well as a wide variety of age groups and ethnicities. Existing research has also identified various factors that can contribute to the strength of this association. For instance, celebrity suicides (Jang et al., 2016; Niederkrotenthaler et al., 2012), repeated coverage of a particular suicide (Niederkrotenthaler et al., 2010), description of an explicit method for suicide (Gould et al., 2013; Hagihara et al., 2014), identification with the suicide victim including similar demographic background (Jang et al., 2016; Sisk & Varnik, 2012), use of the word *suicide* in a headline (Gould et al., 2014), and sensationalizing of suicide (John et al., 2016; Niederkrotenthaler et al., 2010) all contribute to an increase in the likelihood

of imitative suicides.

Despite the abundance of research pointing to an imitative effect, there is some concern with the methodological approaches implemented in these studies. For instance, Cheng and colleagues' (2014) recent review draws attention to concerns regarding the standardization of determining imitative suicidal behavior (i.e., suicide contagion). They found a wide range of definitions of contagion. For instance, in their review they identified one definition utilized by researchers, dubbed contagion-as-cluster, in which researchers assert that contagion occurs among individuals within close proximity to one another. Importantly, no specific parameters are designated for determining what level of proximity is necessary for contagion to occur. They also identified an alternative definition of contagion in the existing literature, contagion-as-mechanism, which encompasses principles such as imitation and transmission (similar to person-to-person spread of a disease). The authors concluded that the differences in definitions of contagion make it difficult to draw meaningful conclusions across studies (Cheng et al., 2014). Furthermore, another recent review conducted by Sisask and Varnik (2012) found only a handful of articles that reported non-existent imitative effects. All of these were published prior to 1990, which the authors suggested may indicate a publishing bias, such that only research studies that successfully identify an imitative effect are published. It has been suggested that future researchers should investigate the mechanisms responsible for imitative suicides and utilize more rigorous methods to evaluate the imitative effect (Cheng et al., 2014; Sisask & Varnik, 2012).

### **Previous experimental research on exposure to suicide news articles**

To date, there are only two studies that have evaluated media reporting guidelines using an experimental design (i.e., Anestis et al., 2015; Williams & Witte, 2017). Anestis and colleagues (2015) evaluated the effects of exposure to a news article that discussed a particular

suicide in detail, which violated some media guidelines, and compared this to reading the same article with the guideline violations removed and an article describing a cancer-related death. Overall, the authors demonstrated that the article describing a cancer death resulted in more distress (e.g., negative affect) than exposure to either version of the suicide news article. Additionally, Anestis and colleagues (2015) found no differences between experimental conditions regarding self-reported likelihood of making a future suicide attempt, and this was also true within the sub-sample who had a history of previous suicide attempt. Moreover, individuals with previous suicidal ideation self-reported lower likelihood of a future suicide attempt when exposed to the original suicide article, compared to both the revised and cancer articles. In their sample, previous experience with suicidal ideation therefore appeared to not be a vulnerability as has been suggested in the literature (e.g., Hazel, 1993; Sisak & Varnik, 2012, Stack, 2005), but may have served as a protective factor. Although this study provides preliminary evidence that exposure to suicide news articles and the effects of media guidelines may not have an immediate effect on distress or suicide-related outcomes, it had a number of limitations. Specifically, the authors utilized a feature news story about suicide, which is different from traditional suicide news articles in that it included facts about suicide and suicide prevention and was not about a recent, local suicide. Moreover, the authors did not evaluate the effects of adhering to specific guidelines; rather, they evaluated the guidelines as a complete package.

In order to address some of the limitations of the Anestis et al. (2015) study, members of our research group (Williams & Witte, 2017) conducted an experiment in which we exposed participants to one of three news articles: a suicide news article; the same suicide news article that included psychoeducational resources and preventative information (i.e., one media

guideline promoted by a variety of organizations); and a neutral, non-suicide-related article. The primary objective of this study was to evaluate the immediate effects of reading a suicide news article on explicit measures known to be associated with increased risk for suicide. First, we hypothesized that participants exposed to any suicide news article would experience a decrease in positive affect and an increase in negative affect as well as report higher scores on a measure assessing fearlessness of death. Second, we hypothesized that individuals exposed to the suicide news article with psychoeducational resources and preventative information would express less negative attitudes toward help-seeking and better awareness of suicide warning signs, compared to both other conditions. Finally, we hypothesized that individuals presented with the suicide article without psychoeducational information and resources and preventative information would have higher scores on specific subscales on a measure of attitudes toward suicide, including a stronger belief that there is a right to die by suicide, that death by suicide is understandable, and that death by suicide is inevitable. Overall, we found no impact of exposure to suicide news articles on any relevant variables, nor did we determine any beneficial impact of adhering to the media guideline to include psychoeducational information and preventative resources.

A number of limitations may have inhibited our ability to detect differences across conditions in this previous study. Specifically, we used a measure of attitudes toward suicide that had an unreliable factor structure and limited research supporting its use. Although we took steps to ameliorate this problem, it may have inhibited our ability to detect an impact of exposure to a suicide news article on attitudes toward suicide. Additionally, the single suicide article used in our prior study had several limitations. Specifically, this article may not have been sufficiently visually engaging or relatable for a sample of college students, especially considering that it described the suicide of a high school student. Furthermore, the article did not sensationalize or

glamorize the suicide; thus, it is possible the content of the article was not sufficient to lead to any changes in explicit measures related to suicidality. Finally, we elected to exclude individuals who had previously attempted suicide due to concerns regarding risk for suicide as a result of exposure to suicide news articles. It is possible that these individuals are the most vulnerable, and therefore, most susceptible to the effects of exposure to a suicide news article (e.g., Hazel, 1993; Sisak & Varnik, 2012, Stack, 2005). As such, we may have failed to identify an effect because we elected to exclude these individuals.

### **Present study**

As previously stated, only two studies to date have employed experimental designs to evaluate the impact of exposure to suicide news articles (i.e., Anestis et al., 2015; Williams & Witte, 2017). Results from both experimental studies suggest that exposure to non-guideline-adhering suicide news articles may not have any effect on explicit (i.e., self-reported) measures of suicidal ideation (Anestis et al. 2015; Williams & Witte, 2017). The lack of evidence for an imitative effect observed in these two experimental studies in contrast to the abundance of observational research consistent with an imitative effect suggests that our understanding of this phenomenon is incomplete. A more thorough understanding may enable researchers to inform public policy in a more meaningful manner in order to curb an imitative effect, should it exist.

Although the experimental designs employed by previous researchers (Anestis et al., 2015; Williams & Witte, 2017) are a promising contribution to this literature, both have a number of limitations. In the present study, we aimed to more accurately mimic what readers may be exposed to in the real world in order to shed light on the discrepancies between the experimental and observational studies. Accordingly, we aimed to improve upon the suicide articles used in both prior experimental studies in a few ways. First, previous research suggests

that the amount of exposure to suicide news articles is likely to have an effect on imitative suicidal behavior; specifically, a dose-response relationship has been suggested such that the greater the instances of exposure, the greater the likelihood of imitative suicidal behavior (e.g., Gould, 2001; Gould et al., 2014; Niederkrotenthaler et al., 2010; Phillips, 1974). In both previous experimental studies, participants were exposed to a single suicide news article. In contrast, in the current study, participants in the experimental condition were exposed to a series of four suicide news articles in order to increase the likelihood of observing an effect.

Second, previous research suggests that the degree of identification between the reader and the deceased individual can impact the likelihood of imitative suicidal behavior (Jang et al., 2016; Sisask & Varnik, 2012; Stack, 2005). Thus, for the current study, we utilized articles that should be perceived as more relevant for our sample of undergraduate students compared to both prior experimental studies. Specifically, all of the suicide articles describe a death of someone similar in age to those in our sample (i.e., 18 to 24 years of age). Moreover, one of these articles described a student who died by suicide on the university campus at which our participants were attending school. Third, previous research suggests that description of a particular method of suicide as well as utilizing the word suicide in the headline can increase the likelihood of imitative suicidal behavior (e.g., Gould et al., 2014; Hagihara et al., 2014). Additionally, research has identified an increased likelihood of imitative suicide when the article sensationalizes suicide (Pirkis & Blood, 2001; Stack, 2001; 2005). In our previous study (Williams & Witte, 2017) the suicide news article was relatively bland (i.e., no photo of the deceased and/or scene of death, no graphic description of method, no use of *suicide* in the headline), which may have accounted for our generally null results. Additionally, Anestis and colleagues (2015) utilized a feature news story, rather than a traditional news story, that adhered to some guidelines for reporting suicide

and disregarded others. Thus, neither experimental study utilized typical, sensationalized suicide news articles that are regularly cited as the root the imitative effect (e.g., Pirkis & Blood, 2001; Stack, 2001; 2005). In the current study, we utilized news articles that include graphic descriptions of the method of suicidal behavior and and/or photos of the scene of the death.

Aside from limitations relevant to the news articles themselves, it is possible that the self-report measures that were used in the prior experimental studies were not sufficiently sensitive to detect an imitative effect. In order to test such a notion, more sensitive assessment measures, such as the Death/Suicide-Implicit Association Task (D/S-IAT; Nock et al., 2010), which utilizes categorization and variability in response time to assess implicit cognitive biases, are needed. The D/S-IAT was designed to reveal implicit cognitive associations between the self and death/suicide. It has been suggested that the D/S-IAT could be used to potentially identify suicide risk that might not be evident in explicit measures of suicide (Nock et al., 2010). At least two studies (Nock et al., 2010; Randall et al., 2013) demonstrated that implicit associations with death/suicide are associated with likelihood of engaging in future self-harm behaviors. Additionally, they determined that stronger implicit associations between the self and death/suicide were associated with a number of suicide risk factors (e.g., depression, non-suicidal self-injury). It is possible that exposure to suicide news articles may amplify implicit cognitive associations between the self and death/suicide, particularly if the individual described in the news article is perceived to be similar to the reader. The D/S-IAT may therefore be able to detect changes in implicit cognitive associations between the self and death/suicide after exposure to a suicide news article, ultimately helping to explain the relationship between suicide news articles and imitative suicidal behaviors. To our knowledge, no prior study has analyzed the relationship between exposure to suicide news articles and implicit associations between the self and

death/suicide.

Additionally, in our previous study, (Williams & Witte, 2017) we proposed that attitudes toward suicide might be impacted by exposure to a suicide news article. Prior research has demonstrated an association between normalizing attitudes toward suicide and increased risk for suicide (McAuliffe et al., 2003; Renberg, Hjelmeland, & Kuposov, 2008), and recent research has highlighted the importance of attitudes toward suicide in contributing to imitative suicidal behaviors, especially among adolescents (Kleinman, 2015). Thus, it remains important to assess whether attitudes toward suicide might be one of the mechanisms responsible for the relationship between suicide news articles and imitative suicidal behavior. Unfortunately, in our prior study, we utilized a measure of attitudes toward suicide that ultimately had inadequate psychometric properties, limiting our ability to draw meaningful conclusions regarding the possible impact of a suicide news article on attitudes toward suicide. Accordingly, in the current study, we utilized a newly developed measure of attitudes toward suicide (i.e., Stigma of Suicide Scale-Short Form; SOSS-SF; Batterham, Calear, Christensen, 2013a) that has recently exhibited sound psychometric properties in a sample of undergraduate students (Williams, Cero, Gauthier, & Witte, 2018).

The SOSS-SF asks participants to rate adjectives in terms of how much they represent a prototypical individual that has died by suicide. Three factors are assessed: Stigma (e.g., *Shallow, Pathetic*), Isolation/Depression (e.g., *Lonely, Disconnected*), and Glorification/Normalization (e.g., *Strong, Brave*). We expected this measure would provide useful information regarding the impact of exposure to suicide news articles on specific attitudes toward suicide. Namely, we predicted that reading news articles that describe individuals who have died by suicide and are similar to the reader would result in reduced ratings of stigma

toward the prototypical individual that dies by suicide. Additionally, we predicted that reading news articles that sensationalize or glorify suicide would result in increased ratings of glorification/normalization of a prototypical individual who has died by suicide. Furthermore, we predicted that articles containing descriptions of the circumstances surrounding the death, including descriptions of the unexpected nature of death, would influence how observers rate a prototypical individual who has died by suicide. Specifically, they might be less likely to attribute the death by suicide to depression or isolation.

Finally, unlike in our previous study (Williams & Witte, 2017), we elected to include individuals with a history of suicide attempts in the current study, given that previous observational research has suggested that the effects of exposure to a suicide news article may only be present among vulnerable individuals (i.e., individuals with a history of suicidal ideation/behavior; Sisak & Varnik, 2012; Stack, 2005). However, in contrast to this notion, Anestis et al. (2015) found no evidence that history of suicide attempt was associated with particularly negative outcomes, and if anything, those with a history of suicidal ideation had a more positive reaction to the suicide news article that did not adhere to media guidelines. Thus, additional research is needed to resolve this discrepancy. Moreover, previous research has demonstrated that vulnerable individuals have differential ratings of attitudes toward suicide (i.e., Batterham et al., 2013b; Williams et al., 2018). Specifically, individuals with a lifetime history of suicidal ideation, suicide attempt, and depressive symptoms report lower scores on the SOSS-SF stigma toward suicide subscale (Batterham et al., 2013b; Williams et al., 2018), whereas individuals with a lifetime history of suicide attempt report higher scores on the SOSS-SF glorification/normalization of suicide subscale (Batterham et al., 2013b, Williams et al., 2018). It is possible that vulnerable individuals might be more likely to report differences in attitudes

toward suicide as a result of exposure to suicide news articles. Thus, we assessed whether lifetime experiences of suicidal ideation or attempts were associated with a stronger effect of the experimental condition on the SOSS-SF subscales as well as our other outcome variables (i.e., served as a moderator).

In sum, the overarching goal of the current study was to resolve the discrepancy between the existing observational studies, which are generally consistent with an imitative effect, and the existing experimental studies, which have not been consistent with an imitative effect. To accomplish this goal, we increased the potency of the experimental manipulation to more closely mimic real-world suicide news articles, used more sensitive and empirically sound outcome measures, and included individuals with a history of suicidal behavior to examine whether the effect can be detected in vulnerable individuals. Based on the assumption that the imitative effect seen in observational research is a true effect, we proposed the following hypotheses:

**Hypotheses:**

1. Participants presented with suicide news articles would experience a greater increase in negative affect and decrease in positive affect compared to participants presented with neutral, non-suicide related articles.
2. Participants presented with suicide news articles would exhibit higher mean scores on self-report measures of suicidal ideation and depression compared to participants presented with neutral, non-suicide related articles.
3. Participants presented with suicide news articles would express stronger implicit cognitive associations between the self and death/suicide, as measured by the D/S-IAT, compared to participants presented with neutral, non-suicide related articles.
4. Participants presented with suicide news articles would demonstrate differences in

attitudes toward suicide as measured by the Stigma of Suicide Scale-Short Form.

Specifically, we anticipated that those presented with suicide news articles would have lower mean scores on the Stigma and Isolation/Depression subscales, and greater mean scores on the Glorification/Normalization subscale.

5. Individual vulnerabilities (i.e., lifetime experiences of suicidal ideation/attempts, lifetime non-suicidal self-injury [NSSI], and exposure to another person's suicide) would moderate the relationship between exposure to suicide news articles and our outcome variables. Specifically, we anticipated that the individual vulnerabilities would increase the magnitude of the effect of exposure to suicide news articles on our outcome variables.

## **Method**

### **Participants**

The study was posted on the psychology department's web-based research system and was broadly described as an investigation of students' attitudes and behaviors. Any student who did not participate in the principal investigator's previous media study (i.e., Williams & Witte, 2017) was eligible to participate in the current study.

We conducted an a priori power analyses using G\*Power version 3.1.2 (Erdfelder, Faul, & Buchner, 2006) to determine how many participants to enroll. In order to test hypotheses one through four, we conducted an a priori power analysis for a two-tailed, independent samples t-test. Assuming a medium effect size of 0.50 (Cohen's  $d$ ), 128 participants (i.e., 64 per condition) were needed to achieve a power of .80 (Cohen, 1992). In order to have sufficient power to detect a significant interaction in our regression analyses (hypothesis five), we conducted an a priori power analysis assuming a small effect ( $f^2$ ) of .03 (Cohen, 1992), which corresponds to an incremental r-square of 3% for the interaction term. With three predictors (i.e., experimental

condition, moderator, and interaction term), a sample size of 264 (i.e., 132 per condition) was necessary to achieve a power of .80. Based on all of the power analyses, we set out to recruit at least 325 participants for our study in order to account for individuals who may be excluded for being inattentive responders.

We ultimately recruited 443 psychology undergraduates age 18 and older. Before data were analyzed, 23 participants were eliminated for inattentive responding (e.g., incorrectly responding to the manipulation check or three or more bogus items, identified as inattentive by the undergraduate research assistant), resulting in a final sample of 420 participants (all of whom were presented with the news articles). The mean age of the sample was 19.48 (SD = 1.76; range: 18-39). Detailed demographic information is provided in Table 1.

## **Procedure**

Upon signing up to participate in the study, participants completed the consent process in our research laboratory. While participants reviewed the consent form, the undergraduate research assistant explained procedures. In this explanation, the research assistant explicitly stated that he/she would be reviewing some of the participants' measures during the study for the purpose of ensuring their safety. Participants were reminded that they could choose to discontinue the study at any point without the risk of retribution or loss of credit. Participants were provided with a copy of the consent form to keep for their records.

Upon agreeing to participate in the study, participants first completed a pre-manipulation affect check (i.e., Positive and Negative Affect Schedule, PANAS; Watson et al., 1988). Next, they were randomly assigned to read one of two (i.e., Suicide and Control) sets of news articles (four randomly ordered articles per set). All news articles were reproduced from real news sources. The Suicide articles consisted of four suicide news articles, each describing a death by

suicide of a college-aged individual (see Appendix A). One of these four articles was from the school newspaper of the university participants were attending. The Control articles consisted of four non-suicide/death-related news articles (see Appendix B). One of the four articles was also from the school newspaper of the university participants were attending. Participants were informed that after reading each article, they would be asked to write one sentence summarizing the content of the article. This served as a manipulation check. Two participants in the Control condition failed to successfully identify the main topic of the articles they read, whereas all participants in the suicide condition successfully identified suicide content in all the articles they were presented.

Immediately following the manipulation check, all participants were administered the PANAS for a second time as a post-manipulation affect check. Next, all participants completed the Depression Symptom Inventory-Suicide Subscale (DSI-SS; Joiner, Walker, Rudd, & Jobes, 1999) in order to assess for current suicidal ideation. The research assistant immediately collected and scored the DSI-SS, so that if necessary he/she had sufficient time to arrange for additional suicide risk assessment procedures, which were enacted immediately upon the participant's completion of, or withdrawal from, the study.

Then, participants completed a battery of self-report questionnaires (hosted on Qualtrics and presented in a random order) and the Death/Suicide version of the Implicit Association Task (D/S-IAT; Nock et al., 2010). The order of administration of the online battery of self-report questionnaires and the D/S-IAT were counterbalanced such that approximately half of all participants completed the D/S-IAT first and half completed the online self-report questionnaires first.

Upon completion of the study, the research assistant met with each participant in order to

give him/her a debriefing form with local mental health resources as well as answer questions and/or address concerns. At this point, participants requiring additional risk assessment were escorted by the research assistant to an adjacent lab room, where a graduate student conducted a semi-structured suicide risk assessment interview and took appropriate actions to ensure participant safety. Following participation, all participants received one and a half hours of research credit toward any Psychology class they were enrolled in. These procedures were approved by the Auburn University Institutional Review Board.

## Measures

**Positive and Negative Affect Schedule** (PANAS; Watson et al., 1988). The PANAS consists of 20 words describing affect, which are rated on a scale of 1-5, 1 being *very slightly or not at all*, and 5 being *extremely*. Participants completed the PANAS both pre- and post-manipulation. At each timepoint, participants were explicitly instructed by the research assistant to indicate how they were feeling at the current moment. The PANAS has been demonstrated to be internally consistent and have good convergent and discriminant correlations with longer affect measures (Watson et al., 1988). Additionally, the PANAS has been demonstrated to be sensitive enough to detect changes over a relatively short period of time (Watson, et al., 1988). The PANAS demonstrated strong internal consistency in both pre- (Positive:  $\alpha = .86$ ; Negative:  $\alpha = .83$ ) and post-manipulation (Positive:  $\alpha = .89$ ; Negative:  $\alpha = .87$ ) administrations. Changes in positive and negative affect were measured by calculating the difference between post- and pre-manipulation scores (i.e., Changes in positive affect = Post-Manipulation Positive Affect minus Pre-Manipulation Positive Affect; Changes in negative affect = Post-Manipulation Negative Affect minus Pre-Manipulation Negative Affect). Therefore, positive scores on the changes in affect variable indicated increases whereas negative scores indicate decreases.

**Depressive Symptom Inventory Suicidality Subscale (DSI-SS; Joiner, Pfaff, & Acres, 2002).** The DSI-SS is a four-item, self-report instrument designed to measure suicidal ideation. Items are rated on a scale of 0 to 3, with 3 indicating the greater severity. The scale has been demonstrated to have good psychometric properties (Joiner et al., 2002). All participants were administered the DSI-SS immediately following the second administration of the PANAS. The DSI-SS demonstrated strong internal consistency in our sample ( $\alpha = .90$ ).

**Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).** The CES-D is a 20-item, self-report measure designed to measure depressive symptoms for research. Responses are rated on a four-point scale, indicating how often participants have experienced each symptom during the past week: 0 indicating *never or not at all*, 3 indicating *most or all of the time*. The CES-D has been used in a variety of samples and demonstrates good psychometric properties with both good reliability (Radloff, 1977) and validity (Devins, Orne, Costello, & Binik, 1988). The CES-D demonstrated good internal consistency in our sample ( $\alpha = .81$ ).

**Death/Suicide Implicit Association Test (D/S-IAT; Nock et al., 2010).** The D/S-IAT is a brief, computer-based task in which words reflective of the concepts of me, not me, death, and life are presented individually on a computer screen, after which the respondent categorizes each word into one of four paired categories: Death (e.g., *death, die, lifeless, suicide*), Life (e.g., *alive, survive, live, thrive*), Me (e.g., *I, mine, myself, my*), and Not me (e.g., *they, them, other, theirs*). Implicit associations are derived from the participant's response latencies. Faster responding on the death/suicide or me compared to the life/thrive or me trials is considered an implicit association between the self and death/suicide (Nock et al., 2010). The effect is computed by determining a D score, which can range between -2 and +2. Stronger positive implicit associations with death/suicide have been demonstrated to be associated with previous suicide

attempt as well as likelihood of future self-harm behavior (Nock et al., 2010; Randall et al., 2013).

**Stigma of Suicide Scale-Short Form (SOSS-SF;** Batterham et al., 2013a). The SOSS-SF is a 16-item measure that asks participants to rate how much each of the 16 adjectives presented represents a prototypical individual who has died by suicide. The SOSS-SF is a subset of the original 58-item SOSS that have been demonstrated to have the strongest loadings on the individual factors: Stigma, Isolation/Depression, and Glorification/Normalization. Items are rated on a 5-point scale (*strongly disagree* to *strongly agree*) with higher scores indicating greater agreement with each construct. The SOSS-SF has demonstrated good psychometric properties in past research, such as convergent and discriminant validity, reliability, and a stable factor structure (Batterham et al., 2013a; Williams et al., 2018). The SOSS-SF subscales demonstrated moderate to strong internal consistency in our sample (Stigma:  $\alpha = .85$ ; Isolation/Depression:  $\alpha = .76$ ; Glorification/Normalization:  $\alpha = .76$ ).

**Participant Characteristics.** We collected basic demographic information for participants, including age, gender, race, ethnicity, relationship status, academic major, grade point average, and year in school (see Table 1). Additionally, we assessed for lifetime history of suicidal ideation (*Have you ever had any thoughts about suicide in your entire life?*), suicide attempt (*Have you ever done anything to kill yourself [i.e., attempted suicide?]*), NSSI (*Have you ever done anything to hurt yourself without intent to die (e.g., cutting, burning?)*), exposure to a family member/friend's suicide (*Have any of your friends or family members died by suicide?*), and exposure to another's suicide (*Have you ever known anyone who has died by suicide (e.g., acquaintance, neighbor)*). For complete descriptive information regarding lifetime experiences see Table 2.

**Prior exposure to suicide article.** Twenty-one participants indicated prior exposure to the suicide news story reported in the campus newspaper. In order to determine if this impacted our results, we evaluated whether the results were similar with and without the inclusion of these 21 participants in our analyses (see p. 27 for complete findings).

**Bogus items** (Meade & Craig, 2012). When data is collected via computerized surveys, random responding is of particular concern. Including items with clearly correct answers may help to determine if an individual is responding randomly. Should an individual respond incorrectly, it can be assumed that he/she was not paying attention to the item. Individuals who responded incorrectly to three or more of the eight bogus items were excluded from data analysis.

### **Data Analysis**

We utilized a combination of basic descriptive statistics, correlations, t-tests, linear, and logistic regressions to analyze the data. Prior to conducting these analyses, the data were screened for univariate outliers; outliers (i.e., scores falling beyond 3 standard deviations above or below the mean) were identified on the CES-D and two of the scales on the SOSS-SF (i.e., Isolation/Depression and Glorification/Normalization). Thus, those variables were fenced to three standard deviations above the mean. Additionally, outliers were observed on the DSI-SS; however, to preserve the variability of this measure, we elected to leave DSI-SS scores unaltered. Across analyses, the degree of missing data was low: all variables except the D/S-IAT had less than 6% missing data. The D/S-IAT was slightly higher, with 11.4% missing data, likely attributed to technical malfunctions when administering the measure. Missing data were handled using the multiple imputation module in SPSS version 24.0. Based on recommendations from Bodner (2008), we imputed 12 datasets. SPSS computes pooled results across imputed data sets

for independent samples t-test, correlations, and linear regressions. However, SPSS does not report pooled standard deviations for any analysis we conducted; therefore, effect sizes were calculated using the original data rather than from the pooled results.

## **Results**

### **Preliminary Analyses**

In order to test whether the order of administration of the D/S-IAT and self-report questionnaires moderated the effect of the manipulation, a series of linear regressions were conducted with the main effects of order of administration, condition, and their interaction as predictors. Overall, the experimental condition did not have a differential impact based on order (see Table 3); thus, participants were collapsed across order. Although there was no significant interaction between condition and order for any outcome variables, there were two significant main effects of order: participants who completed the D/S-IAT first had weaker implicit associations with suicide than those who completed the questionnaires first, and participants who completed the D/S-IAT first had higher ratings of stigma toward suicide on the SOSS-SF.

### **Main Analyses**

**Hypothesis 1: Participants presented with suicide news articles would experience a greater increase in negative affect and decrease in positive affect compared to participants presented with neutral, non-suicide-related articles.** To test Hypothesis 1, first, we computed the difference between pre- and post-manipulation scores for both positive and negative affect. Then, we conducted two independent samples t-tests, one for changes in positive and one for changes in negative affect. Consistent with our hypothesis, differences were observed between

conditions for change in positive,  $t(19537^1) = 6.22, p < .01$ . and negative affect,  $t(8086) = -7.03, p < .01$ ; mean scores are displayed in Table 4. Specifically, those in the Suicide condition demonstrated significantly greater decreases in positive affect as compared to those in the Control condition. However, those in the Control condition demonstrated greater changes in negative affect than those in the Suicide condition. Specifically, those in the Control condition demonstrated a reduction in negative affect, whereas those in the Suicide condition exhibited essentially no change in negative affect. Effect sizes were medium for both changes in positive ( $d = 0.62$ ) and negative ( $d = -0.71$ ) affect according to guidelines set forth by Cohen (1992).

**Hypothesis 2: Participants presented with suicide news articles would exhibit higher mean scores on self-report measures of suicidal ideation and depression.** To test differences in current suicidal ideation (as measured by the DSI-SS), we ran the analyses two different ways. First, we conducted an independent samples  $t$ -test utilizing the raw, continuous DSI-SS score. No differences were observed between conditions on the raw, continuous measure of suicidal ideation,  $t(2930) = -0.40, p = .69$  (mean scores are displayed in Table 4) and the effect size was small ( $d = -0.06$ ). Second, because we were concerned that extreme skew and limited variability may have attenuated our ability to detect an effect with the continuous DSI-SS scores, we created a dichotomous variable for the DSI-SS. Specifically, participants with a score of 0 on the DSI-SS received a 0, and participants with a score greater than 0 received a score of 1. We then ran a logistic regression utilizing this dichotomous variable. Consistent with our first finding, we observed no differences between conditions on the dichotomous current suicidal

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<sup>1</sup> The degrees of freedom in our results are higher (or in other cases lower) than expected because the results are pooled from the 12 imputed datasets. No corrections were applied to our results. Discussion on the application of possible corrections of the degrees of freedom for pooled estimates can be found in Barnard and Rubin (1999) or Van Ginkel (2010). Of note, we additionally ran all analyses with listwise deletion. The same pattern of results was observed utilizing listwise deletion as was with multiple imputation.

ideation variable ( $B = .08$ ,  $SE = .32$ ,  $p = .79$ ,  $OR = 1.09$ ).

To test for differences in current depressive symptoms (as measured by the CES-D) we conducted an independent samples t-tests. Contrary to our hypothesis, no differences were observed between conditions for current depression,  $t(10634) = 0.39$ ,  $p = .67$  (mean scores are displayed in Table 3). The effect size was small ( $d = 0.05$ ). Thus, contrary to hypotheses, there were no differences in current suicidal ideation and depression between conditions. Mean scores are displayed in Table 4.

**Hypothesis 3: Participants exposed to the suicide news articles would express stronger implicit cognitive associations between the self and death/suicide, as measured by the D/S-IAT, compared to participants exposed to neutral, non-suicide-related articles.**

Implicit associations were derived from the participants' response latencies and faster responding on the death/suicide or me trials compared to the life/thrive or me trials is considered an implicit association between the self and death/suicide (Nock et al., 2010). The effect is computed by determining a D score, which can range between -2 (i.e., strong negative association) and +2 (i.e., strong positive association). After calculating the D score, we utilized an independent sample t-test to determine whether exposure to the suicide news articles resulted in stronger implicit associations between the self and suicide. Contrary to our hypothesis, no difference between conditions was observed on the D/S-IAT D score,  $t(300) = -0.24$ ,  $p = .81$  (mean scores displayed in Table 4). Additionally, the effect size was small ( $d = -0.02$ ). Thus, in our sample, exposure to suicide news articles did not have an immediate effect on D/S-IAT D scores.

**Hypothesis 4: Participants presented with suicide news articles would demonstrate differences in attitudes toward suicide as measured by the Stigma of Suicide Scale-Short Form. Specifically, we anticipated that those exposed to the suicide news articles would**

**have lower scores on the Stigma and Isolation/Depression subscales, and greater mean scores on the Glorification/Normalization subscale.** We conducted three independent samples t-tests, one for each subscale of the SOSS-SF. No differences were observed on any of the subscales of the SOSS: Stigma:  $t(2645) = -1.01, p = .33$ , Isolation/Depression:  $t(17256) = 1.13, p = .26$ , and Glorification/Normalization:  $t(7172) = -1.84, p = .07$ . Means for each condition are displayed in Table 4. Effect sizes were small for all subscales (Stigma:  $d = -0.10$ ; Isolation/Depression:  $d = 0.11$ ; Glorification/Normalization:  $d = -0.17$ ).

**Hypothesis 5: Individual vulnerabilities (i.e., lifetime experiences of suicidal ideation/attempt, lifetime NSSI, exposure to another person's suicide) would moderate the effect of exposure to suicide news articles and our outcome variables. Specifically, we anticipated that the individual vulnerabilities would increase the magnitude of the effect of exposure to suicide news articles on our outcome variables.** In order to assess the moderation effect, we conducted a series of linear regressions, testing for an interaction between the lifetime suicidal ideation/attempt and experimental condition to determine the impact on the primary outcome variables (i.e., positive and negative affect, suicide ideation, depression, implicit associations between the self and suicide, attitudes toward suicide). Because all participants with a lifetime history of suicide attempt ( $n = 9$ ), also had a lifetime history of suicidal ideation ( $n = 151$ ), we combined these variables to form one variable (i.e., lifetime suicidality) to test the moderation effect. Overall, we found no statistically significant interactions between condition and lifetime experience with suicidality on any of the outcome variables, although there were some statistically significant main effects for the lifetime suicidality variable. Specifically, as would be expected among people with a history of suicidality, even after accounting for experimental condition, individuals in this group had significantly greater changes in negative

affect (unstandardized  $B = -1.48$ ,  $t = -2.46$ ,  $p = .01$ ) and higher levels of suicide ideation (unstandardized  $B = 0.69$ ,  $t = 5.17$ ,  $p < .01$ ), depression (unstandardized  $B = 3.89$ ,  $t = 5.90$ ,  $p < .01$ ), and SOSS-Glorification/Normalization (unstandardized  $B = 1.02$ ,  $t = 2.21$ ,  $p = .03$ ) compared to those with no history of suicidality. Additionally, those with lifetime suicidality had lower SOSS-Stigma scores than those without (unstandardized  $B = -2.96$ ,  $t = -3.16$ ,  $p < .01$ ). Complete results are displayed in Table 5.

One interaction approached statistical significance (i.e., the interaction between lifetime suicidality and condition on change in negative affect,  $p = .06$ ). We probed this interaction by conducting two follow-up regressions with condition as the predictor: one with only participants with a lifetime history of suicidality ( $n = 151$ ) and one with only participants without a lifetime history of suicidality ( $n = 232$ ). Among those with a lifetime history of suicidality, those in the control condition exhibited a significantly greater change in negative affect compared to those in the suicide condition, with those in the control condition exhibiting a decrease in negative affect and those in the suicide condition exhibiting essentially no change in negative affect,  $F(1, 147) = 27.85$ ,  $p < .01$ ;  $R^2 = .16$ ; Control condition:  $n = 72$ ,  $M = -3.58$ ; Suicide condition:  $n = 79$ ,  $M = 0.20$ ). Among those without a lifetime history of suicidality, those in the control condition also exhibited a significantly greater change in negative affect compared to the suicide condition, although both conditions exhibited a decrease in negative affect,  $F(1, 228) = 19.40$ ,  $p < .01$ ,  $R^2 = .08$ ; Control condition:  $n = 121$ ,  $M = -2.10$ ; Suicide condition:  $n = 111$ ,  $M = 0.04$ .

Additionally, we also evaluated the following as moderators: lifetime NSSI (results displayed in Table 6) and exposure to a suicide by friend, family member, or acquaintance (the latter were combined into one dichotomous variable in order to capture the prevalence of any exposure to suicide; Control  $n = 120$ , 57.97%, Suicide  $n = 120$ , 56.34%; results displayed in

Table 7). Overall, we found no significant interaction between condition and lifetime NSSI or exposure to another's suicide. We observed some significant main effects for lifetime NSSI, which predicted higher suicide ideation (unstandardized  $B = 0.45$ ,  $t = 2.54$ ,  $p = .01$ ) and depression (unstandardized  $B = 3.64$ ,  $t = 4.16$ ,  $p < .01$ ), and lower SOSS-Stigma (unstandardized  $B = -3.20$ ,  $t = -2.61$ ,  $p < .01$ ). Exposure to another's suicide was not a statistically significant moderator or predictor of any of our outcome variables.

### **Post-Hoc Analyses**

**Previous exposure to the Auburn suicide article.** Of the 212 participants in the Suicide condition, 21 (9.90%) indicated previous exposure to the suicide news article from the campus newspaper. Rather than deleting them from our analyses, as initially proposed, we elected to run our analyses twice, once with all participants, and once without these 21 individuals. Overall, only one finding was unique compared to the original analyses. Without the 21 participants who indicated previous exposure to the Auburn suicide news article, the t-test for differences between conditions on the SOSS-SF Glorification/Normalization subscale approached significance ( $t = -1.96$ ,  $p = .05$ ). Excluding individuals with prior exposure to the suicide news article, participants in the Suicide condition ( $n = 191$ ,  $M = 8.16$ ) scored higher than participants in the Control condition ( $n = 207$ ,  $M = 7.52$ ), with higher scores indicative of stronger glorification/normalization of suicide. Although this effect size was small ( $d = -0.19$ ), when we only look at people who had never seen the Auburn suicide news article before, the participants in the Suicide condition were more likely to normalize or glorify suicide. Complete results are displayed in Table 8.

**Relate to decedent in suicide news articles.** Following each article, participants in the Suicide condition were asked to indicate how much they related to the individual described in the

suicide news article on a scale of 1 (*not at all*) to 5 (*a lot*). In order to assess if the degree to which a participant related to the individual in the article impacted the key outcome variables, we computed an average relate score (i.e., the sum of all four relate scores divided by four) to get an overall sense of their perceived identification with the suicide decedents described in the articles. Bivariate correlations were conducted to determine the relationship between average relate score and key outcome variables. Average relate to decedents score was positively associated with suicide ideation ( $r = .63, p < .01$ ), depression ( $r = .46, p < .01$ ), SOSS-Isolation/Depression ( $r = .15, p = .04$ ), and SOSS-Glorification/Normalization ( $r = .21, p < .01$ ). In contrast, average relate to decedents score was negatively associated with the SOSS-Stigma subscale ( $r = -.21, p < .01$ ). Average degree to which the participant related to the suicide decedent described in the suicide news articles was not associated with changes in positive ( $r = -.04, p = .60$ ) or negative affect ( $r = -.08, p = .29$ ) or the D/S-IAT ( $r = -.10, p = .18$ ).

Additionally, we conducted independent samples t-tests to evaluate whether lifetime experiences with suicidal ideation, plan, attempt, NSSI, and exposure to another's suicide (family/friend or acquaintance) was associated with the degree to which participants related to the decedent described in the suicide news articles. Lifetime experience of suicidal ideation, plan, NSSI, and exposure to a friend/family member's suicide were associated with higher average relate to the decedent score (see Table 9).

## **Discussion**

In the present study, we evaluated the effects of repeated exposure to graphic suicide news articles on explicit measures of suicide risk (i.e., affect, suicidal ideation, depressive symptoms, and attitudes toward suicide) and a measure of implicit associations with suicide (i.e., D/S-IAT). We also sought to determine if individual vulnerabilities, such as lifetime experience

of suicidality, moderated these relationships. At present, there are discrepancies in the literature regarding imitative effects following media reporting on suicide. Although much of the existing observational research points to an increase in imitative suicidal behavior following a newspaper article on suicide (e.g., Gould, 2001; Pirkis & Blood, 2001; Stack, 2005), with particularly salient effects for celebrity suicides (e.g., Fink, Santaella-Tenorio, & Keyes, 2018), there is some debate regarding the veracity of the effect, particularly as it pertains to non-celebrity suicides (e.g., Kessler, Downey, Milavsky, & Stipp, 1988; Stack, 1983; 1988). Importantly, most of the existing research to date is observational in design, and to our knowledge, only two studies have utilized an experimental design to evaluate the effects of exposure to suicide news articles (i.e., Anestis et al., 2015; Williams & Witte, 2017), neither of which found any statistically significant effects of exposure to a suicide news article. Limitations aside, their findings are in stark contrast with much of the existing observational research demonstrating an increase in imitative suicidal behaviors following a suicide news article. Thus, in our study, we sought to address this discrepancy by employing an experimental design specifically addressing the limitations of the previous experimental studies and aimed to observe any effect of repeated exposure to suicide news articles. Our study expanded on previous experimental designs by increasing the potency of the experimental manipulation, utilizing more sensitive and empirically sound outcome measures, and examining whether this effect is moderated by individual vulnerabilities, such as lifetime history of suicidality. Although we observed an effect of the suicide articles on changes in positive and negative affect, we did not observe any other expected differences, including evidence of a moderation effect of individual vulnerabilities.

Affect was assessed pre- and post-manipulation. In contrast to the findings of the two previous experimental studies (i.e., Anestis et al., 2015 and Williams & Witte, 2017), we did

observe changes in affect following exposure to suicide news articles. Consistent with hypotheses, individuals repeatedly exposed to suicide news articles demonstrated greater decreases in positive affect compared to those exposed to the control articles. However, contrary to hypotheses, those in the Suicide condition reported similar levels of negative affect before and after the manipulation, whereas those in the Control condition demonstrated a reduction in negative affect. The difference in this pattern of results compared to prior experimental studies could be in part due to the increase in the graphic nature of our articles (e.g., inclusion of photos, descriptions of the suicide method, sensationalizing) or because of the repeated exposure to suicide news articles. Overall, this pattern suggests that exposure to suicide news articles decreases positive affect without having an appreciable impact on negative affect. It also suggests that our neutral articles may not in fact have been entirely neutral in valence, given that individuals in the Control condition exhibited a decrease in negative affect after reading those articles. Even if this is the case, control articles with a slight positive valence would be expected to enhance differences between conditions, which was not the case for the majority of our outcome variables.

We anticipated that repeated exposure to suicide news articles would lead to increases in self-reported suicidal ideation and depressive symptoms. However, consistent with our previous study (Williams & Witte, 2017) and with Anestis et al. (2015), we did not observe any differences between conditions on either suicidal ideation or depressive symptoms. This finding is inconsistent with existing observational research which suggests exposure to suicide news articles is likely to lead to suicidal behavior which is known to be predicted by things such as current suicidal ideation and depressive symptoms (American Association of Suicidology, 2018; American Foundation for Suicide Prevention, 2018). Our results combined with the findings of

the two previous experimental studies suggest that regardless of the content and extent of exposure to suicide news articles, reading suicide news articles is unlikely to lead to immediate changes in either current suicidal ideation or depressive symptoms.

To account for one of the limitations of our previous experimental study, we utilized a more sensitive measure of suicide risk (i.e., D/S-IAT) as well as a psychometrically sound measure of attitudes toward suicide (i.e., SOSS-SF). We anticipated that by utilizing the more sensitive and empirically sound measures, we would observe an effect that was missed by previous researchers. Contrary to our hypotheses, we did not observe any differences between conditions on either the D/S-IAT or any subscales of the SOSS-SF. Prior to our study, no research had been conducted on the relationship between suicide news articles and implicit associations with suicide; however, our results suggest that even repeated exposure to graphic content is unlikely to affect implicit associations with suicide. The null findings in response to differences in specific attitudes toward suicide is particularly striking as it is inconsistent with speculation by previous researchers (i.e., Gould & Shaffer, 1986; Gould, Shaffer, & Kleinman, 1988) that exposure to suicide news articles might influence attitudes toward suicide, such as permissiveness and acceptability of suicide, as well as glorification of the death. The World Health Organization guidelines (2008) recommend against sensationalizing or normalizing suicide, as it is believed that this type of portrayal and these types of attitudes may be associated with increased risk for suicide. However, our findings suggest that exposure to graphic, sensationalized suicide content does not immediately affect attitudes toward suicide, at least among college-aged adults.

Additionally, we anticipated that individual vulnerabilities (i.e., previous experiences with suicidality) would moderate the relationship between exposure to suicide news articles and

all outcome variables. Overall, with the exception of one marginally significant interaction, we did not observe any moderation effect of individual vulnerabilities. This pattern of results is in contrast with previous observational research which suggested that effects of exposure to suicide news articles may be particularly salient for vulnerable individuals (e.g., Hazel, 1993; Sisak & Varnik, 2012, Stack, 2005). Regarding our marginally significant moderation effect of lifetime suicidality on changes in negative affect, among those in the suicide condition, participants with lifetime history of suicidality exhibited essentially no change negative affect, whereas those without a lifetime history of suicidality exhibited a decrease in negative affect. This finding is inconsistent with the findings of Anestis et al. (2015) who found that those with a lifetime history of suicide ideation/attempt who were exposed to suicide content reported a decrease in negative affect. The disparity in these findings suggests that content of the suicide articles utilized in each study had differential effects on individuals with a lifetime history of ideation/attempt. The findings of Anestis and colleagues (2015) suggest that something about their selected suicide article, a feature news piece, reduced negative affect, indicative of a potentially positive effect of exposure to this particular type of suicide coverage (e.g., inclusion of epidemiological data related to suicide) among vulnerable individuals. On the other hand, our chosen articles (i.e., traditional suicide news articles) did not impact negative affect for vulnerable individuals. Taken together, although not entirely consistent with one another, these findings suggest that exposure to traditional suicide related news content is unlikely to lead to increases in negative affect among vulnerable individuals.

In addition to lifetime suicidality, we also evaluated lifetime NSSI and exposure to another's (friend/family/acquaintance) suicide as moderators and also did not observe any statistically significant results. Although individual vulnerabilities (i.e., lifetime suicidality,

NSSI, and exposure to another's suicide) did not moderate the relationship between exposure to a suicide news article and our chosen outcome variables, it remains possible that individual vulnerabilities do moderate the relationship between exposure to suicide news articles and death by suicide.

In addition to our primary analyses, we re-ran all our analyses without the 21 participants who had been previously exposed to the suicide article from the campus newspaper. Although most of these findings were consistent with the original analyses, we did observe one result that differed from the original analyses. Specifically, when excluding individuals previously exposed to one of the articles, differences between conditions on the SOSS-SF Glorification/Normalization subscale approached significance ( $p = .05$ ). Among the participants who had not previously seen the suicide news article, there was an effect of condition on the Glorification/Normalization subscale for the SOSS-SF (i.e., those in the suicide condition had higher mean scores). This news article particularly sensationalized the suicide, by including a graphic photo of where the individual died on campus as well as a complete description of the method of death. Of note, participants who indicated previously seeing the campus suicide article were slightly older in age ( $M = 20.85$ ;  $t = 2.99$ ,  $p < .05$ ) and year in school ( $M = 3.00$ ;  $t = 5.18$ ,  $p < .01$ ) than those who had not previously seen the article (age:  $M = 19.39$ , year in school:  $M = 1.72$ ). This is unsurprising, as the age is consistent with the fact that they were likely enrolled in college at the time of the campus suicide, which occurred several years prior to data collection. It is possible that the individuals who had previously seen the campus article had a blunted response to the campus news article; therefore, once removed, we were able to observe an effect of the article on ratings of glorification/normalization of suicide. This finding implies the importance of novel sensationalized suicide news content. It suggests that individuals who are

desensitized to suicide content (i.e., previous exposure to the article) may be less likely to exhibit changes in attitudes toward suicide, compared to individuals with no prior exposure are affected.

Finally, we assessed whether the degree to which participants related to the decedents described in the suicide articles was associated with any of the outcome variables. In order to increase the likelihood of an effect, we specifically chose to utilize articles that included decedents similar in age and other characteristics (e.g., college students) to our participants. We did observe some significant associations between the average degree to which participants related to the decedent and a number of outcome variables. Positive associations were observed between identification with the decedent and current suicidal ideation, current depressive symptoms, stronger belief that suicide is attributable to isolation and depression, and stronger glorification and normalization of suicide. On the other hand, negative associations were observed between identification with the decedent and stigma toward suicide. Our results therefore identified a significant association between identification with the decedent and almost all of our outcome variables. Additionally, individuals with a lifetime history of suicidal ideation, plans, NSSI, and having a family/friend die by suicide all more strongly related to the decedent described in the story. Observational research suggests that the relationship between exposure to suicide news articles and suicidal behavior is heightened by the degree of identification with the suicide decedent described in the news article (e.g., Jang et al., 2016; Sisask & Varnik, 2012; Stack, 2005). Our results demonstrate that participants with current higher ratings of suicidality and depression tend to more strongly relate to the victims described in the story. However, because of our methodology, we were unable to compare across conditions. Therefore, we were unable to determine if identification with the victim moderated the relationship between exposure to suicide news articles and any of our outcome variables. Further research is needed to

determine if stronger identification with the decedent moderates the effects of exposure to suicide news articles.

### **Limitations and Future Directions**

Although our study successfully addressed many of the limitations of existing experimental research, it was not without limitations. One of the most important limitations of our study was our choice in outcome variables. Similar to the other experimental designs, we utilized variables that are known to be associated with suicide (e.g., depression, suicidal ideation, implicit associations with suicide), whereas observational research only evaluates death by suicide as an outcome. Thus, it is possible that the different pattern of findings between observational and experimental studies are attributable to the differences in outcome variables. Additionally, we only assessed our outcomes immediately following exposure to suicide news articles, leaving open the possibility of a lagged effect. However, based on the findings of Anestis et al. (2015) who found no lagged effect of exposure to suicide news content in combination with findings of previous observational research (e.g., Phillips, 1974) that suggests the effect is most prominent in the week following a well-publicized suicide, it is unlikely that an effect of exposure to a suicide news article would be observed after an extensive delay.

An additional limitation of our study was our choice in moderator variables. We elected to only utilize lifetime suicidality (i.e., history of ideation or attempt) as a moderator variable, rather than current suicidal ideation. Although approximately one-fourth of our sample indicated lifetime suicidal ideation, it is reasonable to expect that most of our participants were not at high risk for suicide or other mental illness given their current status as college students. Although we did not observe an interaction between lifetime history of suicidality and our outcome variables, our study does not provide a complete understanding of the importance of current

vulnerabilities in the relationship between suicide articles and imitative suicidal behavior. It remains possible that current suicidal ideation (rather than lifetime experience of suicidality) might moderate the relationship between exposure to suicide news articles and our outcome variables. It is therefore suggested that future researchers intentionally recruit currently vulnerable (i.e., suicidal) individuals to evaluate whether these findings hold true for individuals with current vulnerabilities.

We designed our study with realistic parameters in mind, utilizing real suicide news articles and formatting consistent with online newspapers. Despite this, our study is different than what could be expected in a naturalistic setting. For instance, a naturalistic experience might involve exposure to one suicide, from multiple news sources (e.g., newspaper, television), over multiple days. Previous observational research highlighted the importance of repeated exposure to suicide news articles (e.g., Stack, 2005), but, did not define the parameters of repeated exposure. Therefore, we elected to utilize four suicide news articles describing four unique deaths, assuming that repeated exposure to any suicide content would lead to an effect. It is possible that the effect is only observable when a specific suicide is repeatedly covered in news media, rather than inundation with a variety of suicide news content. Another consideration is that much of the widespread coverage of suicides in the news media is focused on celebrity suicides, and indeed, previous researchers have suggested that the effect may only be relevant for celebrity deaths (e.g., Stack, 2003), in part due to the type and nature of celebrity death coverage. For instance, the coverage of Robin Williams's death made the front page of many national newspapers, was pervasive, with different sources providing information over the subsequent days and weeks and provided more information over time regarding the method of suicide and Williams's history with mental and physical illness. This example is fairly typical of how

celebrity suicides are covered by the media and recent research has even demonstrated an increase in suicidal behavior following Williams's death (i.e., Fink, Santaella-Tenorio, & Keyes, 2018). Therefore, it is suggested that future researchers attempt to mimic realistic media portrayal by considering both the type (i.e., repeated exposure to the same suicide news story) and the focus (e.g., celebrity deaths) of coverage.

It is also possible that our different pattern of results compared to observational research is not a result of flawed methodology on our part; rather, media coverage of suicide may not have a causal impact on suicides that occur afterward. Although observational research points to an increase in suicidal behavior following media coverage of suicide, these studies are typically unable to assess whether those individuals who subsequently died by suicide had actually read the suicide news articles. It remains possible that a third variable is responsible for the increase in suicidal behavior that follows media coverage, such as something occurring in society that could be leading to an increase in suicidal behavior (e.g., financial crisis).

### **Implications**

Overall, observational research seems to point to an increase in suicides following well-publicized suicide news articles; however, none of the existing experimental designs (i.e., Anestis et al., 2015; Williams & Witte, 2017; and the current study) have demonstrated any important effects of exposure to suicide news articles. An abundance of observational research continues to be conducted, seeming to demonstrate the same findings (i.e., an increase in suicidal behavior following news reports of suicide). However, we still do not have direct evidence of a causal relationship between exposure to suicide news articles and subsequent suicidal behavior. In order to address this gap and eliminate redundant observational studies, researchers should consider what types of improvements can be made to both experimental and observational

designs to clarify whether a causal relationship exists. One possible consideration for an experimental design would be to assess the impact of suicide news articles among only actively vulnerable individuals (e.g., currently suicidal, depressed). Should this study demonstrate no effect of exposure to suicide news articles, even among those who are at elevated risk for suicide, it would call into question the veracity of the imitative effect. Regarding future observational studies, researchers should attempt to determine whether those who die by suicide following suicide media reports had actually been exposed to these media reports. Although this was virtually impossible in the early days of this research, the advent of electronic media makes it more feasible to determine exposure (e.g., by examining a decedent's browser history). Should a study fail to find a high likelihood of actual exposure to suicide media reports among suicide decedents, this would also call into question the veracity of the imitative effect and would be more consistent with a spurious relationship between media reporting on suicide and subsequent increases in suicidal behavior.

Although future research is needed to completely illuminate the relationship between suicide news articles and suicidal behavior, it is ultimately plausible that suicide news articles are not actually causing suicidal behavior. Given this possibility, it will be imperative to approach the dialogue with the journalists and the media in a different manner. Specifically, there are other reasons to be mindful when reporting on suicides, aside from the potential for an imitative effect. Namely, insensitive, graphic articles about recent suicides can negatively impact suicide survivors (i.e. people who have lost loved ones to suicide) as well as those with a history of suicidal behavior themselves. For instance, utilization of a graphic photo (e.g., bloody ground, body bags) might be unnecessarily disturbing and have little journalistic value. Additionally, journalists may also be encouraged to highlight prevention resources, such as the National

Suicide Prevention Lifeline number, in order to promote awareness.

## **Conclusion**

The design of our study successfully addressed many of the limitations of the two previous experimental designs, by increasing the potency of the suicide news articles and utilizing empirically sound and sensitive assessment measures. Although we only observed differences in affect following exposure to suicide news articles, our study provided important information about the immediate effects of exposure to suicide news articles among a relatively low-risk population as well as considerations for future experimental designs. Given the abundance of observational research on the impact of suicide news articles on imitative suicidal behavior, it is important to shift focus from observational designs to novel methodologies that can help account for the discrepancy between observational and experimental research and, should an effect be determined, ultimately help guide recommendations for reporting suicide.

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**Table 1. Demographics**

	Control ( <i>n</i> = 193)	Suicide ( <i>n</i> = 191)	Total ( <i>N</i> = 384) <sup>a</sup>
<i>Sex</i>			
Male	22.80% ( <i>n</i> = 44)	27.75% ( <i>n</i> = 53)	27.17% ( <i>n</i> = 97)
Female	76.68% ( <i>n</i> = 148)	71.73% ( <i>n</i> = 137)	72.27% ( <i>n</i> = 285)
Other Sex	0.52% ( <i>n</i> = 1)	0.52% ( <i>n</i> = 1)	0.56% ( <i>n</i> = 2)
<i>Race</i>			
American Indian/ Alaskan native	0.52% ( <i>n</i> = 1)	1.05% ( <i>n</i> = 2)	0.78% ( <i>n</i> = 3)
Asian	4.66% ( <i>n</i> = 9)	3.66% ( <i>n</i> = 7)	4.17% ( <i>n</i> = 16)
Black	9.84% ( <i>n</i> = 19)	7.33% ( <i>n</i> = 14)	8.59% ( <i>n</i> = 33)
White	84.97% ( <i>n</i> = 164)	87.96% ( <i>n</i> = 168)	86.46% ( <i>n</i> = 332)
<i>Ethnicity</i>			
Hispanic/Latino	7.25% ( <i>n</i> = 14)	2.09% ( <i>n</i> = 4)	4.69% ( <i>n</i> = 18)
Non-Hispanic/Latino	92.75% ( <i>n</i> = 179)	97.91% ( <i>n</i> = 187)	95.31% ( <i>n</i> = 366)
<i>Relationship Status</i>			
Single	61.66% ( <i>n</i> = 119)	61.78% ( <i>n</i> = 118)	61.72% ( <i>n</i> = 237)
In a relationship	36.27% ( <i>n</i> = 70)	33.51% ( <i>n</i> = 64)	34.90% ( <i>n</i> = 134)
Living with partner	0.52% ( <i>n</i> = 1)	2.62% ( <i>n</i> = 5)	1.56% ( <i>n</i> = 6)
Engaged	0.00% ( <i>n</i> = 0)	0.52% ( <i>n</i> = 1)	0.26% ( <i>n</i> = 1)
Married	1.04% ( <i>n</i> = 2)	1.57% ( <i>n</i> = 3)	1.30% ( <i>n</i> = 5)
Widowed	0.52% ( <i>n</i> = 1)	0.00% ( <i>n</i> = 0)	0.26% ( <i>n</i> = 1)
<i>Academic Major</i>			
Psychology	10.36% ( <i>n</i> = 20)	12.04% ( <i>n</i> = 23)	11.20% ( <i>n</i> = 43)
Non-Psychology	89.64% ( <i>n</i> = 173)	87.96% ( <i>n</i> = 168)	88.80% ( <i>n</i> = 341)
<i>GPA</i>			
4.00	9.84% ( <i>n</i> = 19)	9.42% ( <i>n</i> = 18)	9.64% ( <i>n</i> = 37)
3.50-3.99	32.12% ( <i>n</i> = 62)	32.98% ( <i>n</i> = 63)	32.55% ( <i>n</i> = 125)
3.00-3.49	37.31% ( <i>n</i> = 72)	35.60% ( <i>n</i> = 68)	36.46% ( <i>n</i> = 140)
2.50-2.99	15.54% ( <i>n</i> = 30)	18.32% ( <i>n</i> = 35)	16.93% ( <i>n</i> = 65)
2.00-2.49	4.66% ( <i>n</i> = 9)	3.14% ( <i>n</i> = 6)	3.91% ( <i>n</i> = 15)
Below 2.00	0.52% ( <i>n</i> = 1)	0.52% ( <i>n</i> = 1)	0.52% ( <i>n</i> = 2)

<sup>a</sup>Note. Demographic data is missing for 36 participants

**Table 2. Prevalence of Lifetime Experiences**

	Control	Suicide	Total
Lifetime Suicidal Ideation	37.37% ( <i>n</i> = 72)	41.58% ( <i>n</i> = 79)	39.43% ( <i>n</i> = 151)
Lifetime Attempt	3.14% ( <i>n</i> = 6)	1.58% ( <i>n</i> = 3)	2.36% ( <i>n</i> = 9)
Lifetime Plan	9.42% ( <i>n</i> = 18)	5.26% ( <i>n</i> = 10)	7.35% ( <i>n</i> = 28)
Lifetime Non-Suicidal Self-Injury	17.28% ( <i>n</i> = 33)	14.14% ( <i>n</i> = 27)	15.71% ( <i>n</i> = 60)
Lifetime exposure to acquaintance suicide	60.94% ( <i>n</i> = 117)	61.78% ( <i>n</i> = 118)	61.36% ( <i>n</i> = 235)
Lifetime exposure to friend/family suicide	19.27% ( <i>n</i> = 37)	16.84% ( <i>n</i> = 32)	18.06% ( <i>n</i> = 69)

**Table 3. Order Effects**

	Unstandardized Beta	<i>t</i>	<i>p</i>
<i>D/S-IAT</i>			
Condition <sup>a</sup>	0.10	0.57	.57
Order	-0.44	-2.53	.01
Condition*Order	-0.07	-0.30	.77
<i>CES-D<sup>b</sup></i>			
Condition <sup>a</sup>	-0.68	-1.00	.31
Order	-0.81	-1.17	.24
Condition*Order	1.12	1.16	.25
<i>SOSS-SF Stigma</i>			
Condition <sup>a</sup>	0.95	1.07	.29
Order	1.92	2.14	.03
Condition*Order	-0.85	-0.68	.50
<i>SOSS-SF Isolation/Depression<sup>b</sup></i>			
Condition <sup>a</sup>	-0.48	-1.35	.18
Order	0.08	0.23	.82
Condition*Order	0.34	0.68	.49
<i>SOSS-SF Glorification/Normalization<sup>b</sup></i>			
Condition <sup>a</sup>	0.90	2.05	.04
Order	0.03	0.07	.94
Condition*Order	-0.61	-0.97	.33

Note. D/S-IAT: Death/Suicide-Implicit Association Task D Score; CES-D: Center for Epidemiological Studies-Depression Subscale; SOSS: Stigma of Suicide Scale-Short Form.

<sup>a</sup>Conditions were coded as Control = 0, Suicide = 1. <sup>b</sup>These variables were fenced to manage outliers.

**Table 4. Pooled means from Hypotheses 1 through 4**

	Control <sup>a</sup> ( <i>n</i> = 207)	Suicide <sup>a</sup> ( <i>n</i> = 213)	<i>d</i> <sub>Control-Suicide</sub> <sup>b</sup>
Change in Positive Affect	-2.65	-5.85	0.62
Change in Negative Affect	-2.83	0.20	-0.71
DSI-SS	0.30	0.34	-0.06
CES-D <sup>b</sup>	7.50	7.31	0.05
D/S-IAT	-0.51	-0.48	-0.02
SOSS-SF Stigma	18.21	18.85	-0.10
SOSS-SF Isolation/Depression <sup>b</sup>	17.06	16.77	0.11
SOSS-SF Glorification/Normalization <sup>b</sup>	7.52	8.10	-0.17

Note. DSI-SS: Depressive Symptom Inventory-Suicide Subscale; CES-D: Center for Epidemiological Studies-Depression Scale; D/S-IAT: Death/Suicide-Implicit Association Task D Score; SOSS-SF: Stigma of Suicide Scale-Short Form. <sup>a</sup>Conditions were coded as Control = 0, Suicide = 1; <sup>b</sup>Effect sizes were calculated from the raw, original data, rather than the pooled results because pooled results do not provide standard deviations. <sup>c</sup>These variables were fenced to manage outliers.

**Table 5. Interactions between lifetime suicidality and condition**

	Unstandardized Beta	<i>t</i>	<i>p</i>
<i>Change in Positive Affect</i>			
Condition <sup>a</sup>	-3.39	-3.92	<.01
Lifetime Suicidality <sup>b</sup>	0.20	0.25	.80
Lifetime Suicidality*Condition	0.24	0.22	.83
<i>Change in Negative Affect</i>			
Condition <sup>a</sup>	3.78	5.66	<.01
Lifetime Suicidality <sup>b</sup>	-1.48	-2.46	.01
Lifetime Suicidality*Condition	-1.63	-1.91	.06
<i>DSI-SS</i>			
Condition <sup>a</sup>	-0.07	-0.51	.61
Lifetime Suicidality <sup>b</sup>	0.69	5.17	<.01
Lifetime Suicidality*Condition	0.12	0.63	.53
<i>CES-D<sup>c</sup></i>			
Condition <sup>a</sup>	-0.81	-1.12	.26
Lifetime Suicidality <sup>b</sup>	3.89	5.90	<.01
Lifetime Suicidality*Condition	0.38	0.41	.68
<i>D/S-IAT</i>			
Condition <sup>a</sup>	-0.16	-0.76	.45
Lifetime Suicidality <sup>b</sup>	0.27	1.42	.16
Lifetime Suicidality*Condition	0.26	0.97	.33
<i>SOSS-SF Stigma</i>			
Condition <sup>a</sup>	1.49	1.45	.15
Lifetime Suicidality <sup>b</sup>	-2.96	-3.16	<.01
Lifetime Suicidality*Condition	-1.07	-0.81	.42
<i>SOSS-SF Isolation/Depression<sup>c</sup></i>			
Condition <sup>a</sup>	0.06	0.14	.89
Lifetime Suicidality <sup>b</sup>	0.24	0.65	.52
Lifetime Suicidality*Condition	-0.57	-1.07	.28
<i>SOSS-SF Glorification/Normalization<sup>c</sup></i>			
Condition <sup>a</sup>	0.42	0.84	.40
Lifetime Suicidality <sup>b</sup>	1.02	2.21	.03
Lifetime Suicidality*Condition	-0.13	-0.20	.84

Note. DSI-SS: Depressive Symptom Inventory-Suicide Subscale; CES-D: Center for Epidemiological Studies-Depression Scale; D/S-IAT: Death/Suicide-Implicit Association Task D Score; SOSS-SF: Stigma of Suicide Scale-Short Form. <sup>a</sup>Conditions were coded as Control = 0, Suicide = 1; <sup>b</sup>Lifetime Suicidality was coded as No = 0, Yes =1; <sup>c</sup>These variables were fenced to manage outliers.

**Table 6. Interactions between lifetime NSSI and condition**

	Unstandardized B	<i>t</i>	<i>p</i>
<i>Change in Positive Affect</i>			
Condition <sup>a</sup>	-1.60	-1.18	.24
Lifetime NSSI <sup>b</sup>	-0.73	-0.73	.46
Lifetime NSSI* Condition	-2.03	-1.38	.17
<i>Change in Negative Affect</i>			
Condition <sup>a</sup>	3.67	3.42	<.01
Lifetime NSSI <sup>b</sup>	-1.10	-1.42	.16
Lifetime NSSI* Condition	-1.08	-0.93	.35
<i>DSI-SS</i>			
Condition <sup>a</sup>	0.29	1.20	.23
Lifetime NSSI <sup>b</sup>	0.45	2.54	.01
Lifetime NSSI* Condition	-0.30	-1.13	.26
<i>CES-D<sup>c</sup></i>			
Condition <sup>a</sup>	0.14	0.11	.91
Lifetime NSSI <sup>b</sup>	3.64	4.16	<.01
Lifetime NSSI* Condition	-0.55	-0.43	.67
<i>D/S-IAT</i>			
Condition <sup>a</sup>	-0.08	-0.25	.80
Lifetime NSSI <sup>b</sup>	0.02	0.10	.92
Lifetime NSSI* Condition	0.12	0.33	.75
<i>SOSS-SF Stigma</i>			
Condition <sup>a</sup>	1.87	1.14	.25
Lifetime NSSI <sup>b</sup>	-3.20	-2.61	.01
Lifetime NSSI* Condition	-1.43	-0.80	.42
<i>SOSS-SF Isolation/Depression<sup>c</sup></i>			
Condition <sup>a</sup>	-0.08	-0.12	.91
Lifetime NSSI <sup>b</sup>	0.08	0.16	.88
Lifetime NSSI* Condition	-0.27	-0.37	.71
<i>SOSS-SF Glorification/Normalization<sup>c</sup></i>			
Condition <sup>a</sup>	1.08	1.30	.20
Lifetime NSSI <sup>b</sup>	0.26	0.44	.66
Lifetime NSSI* Condition	-0.79	-0.87	.38

Note. DSI-SS: Depressive Symptom Inventory-Suicide Subscale; CES-D: Center for Epidemiological Studies-Depression Scale; D/S-IAT: Death/Suicide-Implicit Association Task D Score; SOSS-SF: Stigma of Suicide Scale-Short Form. <sup>a</sup>Conditions were coded as Control = 0, Suicide = 1; <sup>b</sup>NSSI: Non-suicidal self-injury, variable was coded as No = 0, Yes = 1; <sup>c</sup>These variables were fenced to manage outliers.

**Table 7. Interactions between lifetime exposure to suicide and condition**

	Unstandardized B	<i>t</i>	<i>p</i>
<i>Change in Positive Affect</i>			
Condition <sup>a</sup>	-2.93	-3.73	<.01
Lifetime exposure <sup>b</sup>	-0.07	-0.09	.93
Lifetime exposure* Condition	-0.49	-0.47	.64
<i>Change in Negative Affect</i>			
Condition <sup>a</sup>	3.46	5.26	<.01
Lifetime exposure <sup>b</sup>	0.25	0.41	.68
Lifetime exposure* Condition	-0.76	-0.88	.38
<i>DSI-SS</i>			
Condition <sup>a</sup>	0.12	0.63	.53
Lifetime exposure <sup>b</sup>	-0.03	-0.18	.86
Lifetime exposure*Condition	-0.13	-0.52	.60
<i>CES-D<sup>c</sup></i>			
Condition <sup>a</sup>	0.56	0.76	.45
Lifetime exposure <sup>b</sup>	1.13	1.63	.10
Lifetime exposure* Condition	-1.30	-1.34	.18
<i>D/S-IAT</i>			
Condition <sup>a</sup>	-0.05	-0.27	.79
Lifetime exposure <sup>b</sup>	-0.13	-0.71	.48
Lifetime exposure* Condition	0.14	0.57	.57
<i>SOSS-SF Stigma</i>			
Condition <sup>a</sup>	0.51	0.52	.60
Lifetime exposure <sup>b</sup>	-1.34	-1.47	.14
Lifetime exposure* Condition	0.20	0.16	.88
<i>SOSS-SF Isolation/Depression<sup>c</sup></i>			
Condition <sup>a</sup>	-0.32	-0.84	.40
Lifetime exposure <sup>b</sup>	0.32	0.90	.37
Lifetime exposure* Condition	0.07	0.14	.89
<i>SOSS-SF Glorification/Normalization<sup>c</sup></i>			
Condition <sup>a</sup>	0.22	0.47	.64
Lifetime exposure <sup>b</sup>	-0.47	-1.06	.29
Lifetime exposure* Condition	0.61	0.97	.33

Note. DSI-SS: Depressive Symptom Inventory-Suicide Subscale; CES-D: Center for Epidemiological Studies-Depression Scale; D/S-IAT: Death/Suicide-Implicit Association Task D Score; SOSS-SF: Stigma of Suicide Scale-Short Form. <sup>a</sup>Conditions were coded as Control = 0, Suicide = 1; <sup>b</sup>NSSI: Non-suicidal self-injury, variable was coded as No = 0, Yes = 1; <sup>c</sup>These variables were fenced to manage outliers.

**Table 8. Pooled results without participants previously exposed to the campus suicide news article (N = 398)**

				<i>Control<sup>b</sup></i>		<i>Suicide<sup>b</sup></i>		<i>d<sub>Control-Suicide</sub></i>
	<i>t<sup>a</sup></i>	<i>df<sup>a</sup></i>	<i>p<sup>a</sup></i>	Mean ( <i>n</i> )	sd	Mean ( <i>n</i> )	sd	
Change in Positive Affect	5.87	15597	<.01	-2.63 ( <i>n</i> = 205)	4.49	-5.77 ( <i>n</i> = 188)	5.84	0.61
Change in Negative Affect	-7.06	7095	<.01	-2.86 ( <i>n</i> = 205)	4.07	0.36 ( <i>n</i> = 188)	4.72	-0.73
DSI-SS	-0.24	2969	0.81	0.27 ( <i>n</i> = 206)	0.94	0.32 ( <i>n</i> = 191)	1.22	-0.05
CES-D <sup>c</sup>	0.32	9518	0.75	7.47 ( <i>n</i> = 196)	4.99	7.27 ( <i>n</i> = 179)	4.59	0.04
D/S-IAT	-0.24	381	0.81	-0.53 ( <i>n</i> = 185)	1.24	-0.51 ( <i>n</i> = 168)	1.27	-0.02
SOSS-SF Stigma	-0.88	4888	0.38	18.22 ( <i>n</i> = 202)	6.28	18.77 ( <i>n</i> = 188)	6.51	-0.09
SOSS-SF Isolation/Depression <sup>c</sup>	0.98	45044	0.33	17.05 ( <i>n</i> = 204)	2.51	16.8 ( <i>n</i> = 187)	2.50	0.10
SOSS-SF Glorification/Normalization <sup>c, d</sup>	-1.96	6666	0.05	7.53 ( <i>n</i> = 204)	3.14	8.15 ( <i>n</i> = 186)	3.23	-0.19

Note. DSI-SS: Depressive Symptom Inventory-Suicide Subscale; CES-D: Center for Epidemiological Studies-Depression Scale; D/S-IAT: Death/Suicide-Implicit Association Task D Score; SOSS-SF: Stigma of Suicide Scale-Short Form. <sup>a</sup>These statistics are derived from pooled data. <sup>b</sup>These statistics are derived from the raw data. <sup>c</sup>These variables were fenced in order to exclude outliers. <sup>d</sup>This variable is the only effect that differs from the original sample.

**Table 9. Lifetime experiences predicting average relate to suicide decedent score among participants in the Suicide condition**

	<i>t</i> <sup>a</sup>	<i>p</i> <sup>a</sup>	Yes <sup>b</sup>		No <sup>b</sup>		<i>d</i> <sub>Yes-No</sub> <sup>b</sup>
			Mean ( <i>n</i> )	sd	Mean ( <i>n</i> )	sd	
Lifetime suicide thoughts	4.87	< .01	1.54 ( <i>n</i> = 71)	0.70	1.16 ( <i>n</i> = 101)	0.31	0.66
Lifetime suicide plan	2.67	< .01	1.78 ( <i>n</i> = 9)	1.13	1.29 ( <i>n</i> = 164)	0.48	0.43
Lifetime suicide attempt	0.81	0.42	1.63 ( <i>n</i> = 2)	0.18	1.31 ( <i>n</i> = 171)	0.54	1.74
Lifetime non-suicidal self-injury	2.39	0.02	1.57 ( <i>n</i> = 23)	0.80	1.28 ( <i>n</i> = 150)	0.48	0.38
Lifetime exposure to acquaintance suicide	1.60	0.11	1.37 ( <i>n</i> = 107)	0.62	1.23 ( <i>n</i> = 66)	0.36	0.29
Lifetime exposure to friend/family suicide	3.22	< .01	1.60 ( <i>n</i> = 30)	0.73	1.26 ( <i>n</i> = 142)	0.48	0.49

<sup>a</sup>These statistics are derived from pooled data. <sup>b</sup>These statistics are derived from the raw data.



## Auburn student jumps from parking deck, pronounced deceased

01/23/14 6:59pm



Source | The Auburn Plainsman. Police investigate scene involving a young man who jumped off the top story of the North Park Parking Deck.

Barrett "Bear" McCoy Townsend, 22, senior in software engineering and brother in Sigma Phi Epsilon fraternity at Auburn University, died at 5:47 p.m. from a multiple blunt force impact, according to Bill Harris, Lee County coroner.

Thursday, Jan. 23, 2014 at approximately 5:09 p.m. the APD responded to the North Park Public Parking Deck, based on a call that the individual had fallen from the top level of the parking deck and sustained critical injuries.

Harris confirmed the coroner's office does not suspect any foul play. The Coroner's office determined that at this time the act appeared as intentional.

Townsend was transported by ambulance to the EAMC emergency room. Townsend was unable to recover from his injuries.

Police believe there is no indication of foul play, however; the APD is conducting a full investigation into Townsend's death.

Alabama Department of Forensics, the State Medical Examiner's Office and the Lee County Coroner's Office will assist the APD in further investigation.

The young man's body was taken to the Alabama Dept. of Forensic Sciences medical examiner's office in Montgomery for a postmortem examination.

## Friends, family 'floored' by Yale junior's leap off Empire State Building observation deck

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A brainy Yale junior who plunged 86 floors to his death from the Empire State Building left behind a tragic suicide note apologizing for killing himself.

The reason the 21-year-old took his life remains a mystery - especially to his pals on campus and loving family.

"It's absolutely shocking," said the 21-year-old's coach for more than five years. "You couldn't ask for a better, smarter guy. He was a rock star and all the things you'd want in a student. I've had thousands of students,

and this was the one who you thought was going to change the world. There's just no reason I can think of for this. The family is close ... and the parents were wonderfully supportive. Everyone's just floored."

His sad, final apology was found in his residence hall room in New Haven, a police source said Wednesday. He wrote that he was heading to New York to leap from either the George Washington Bridge or the Empire State Building.

There were seven people on the 86th-floor observation deck of the building when he climbed the 10-foot-high spiked safety barrier about 6:15 p.m. Tuesday, police said.

One person tried to talk him down, but moments later, he crashed down onto W. 34th St.

News of his dramatic end rocked the campus - and left his friends asking why.

"Everyone is in shock," said a former roommate. He was joking around. He never mentioned anything about being upset or going to New York. He missed class yesterday, but I didn't think anything of it."

At least 34 people have jumped to their deaths from the Empire State Building since it opened in 1931. The most recent was in April 2007.

### Woman broadcasts herself on Periscope committing suicide

People watching commented: "We're waiting" and "I think it's fun."



Police are investigating the suicide death of a woman who threw herself under a train Tuesday and live-streamed her death on Periscope.

The 19-year-old woman's name has not been released. "This person allegedly sent an SMS to one of her close relations, several minutes before her death, to announce her intentions," a local prosecutor, said in a statement. "Furthermore, she allegedly made statements to Internet users, via the Periscope application, to explain her act."

The woman is said to have named a person she claims had recently raped her before she committed suicide.

The Periscope video, which had an estimated 1,000 viewers, is no longer available. But some excerpts circulated on the Internet. "The video I am doing right now is not made to create the buzz but rather to make people react, to open the minds, and that's it," the woman on the video is overheard saying.

"People watching the video chimed in with remarks—including 'We're waiting,' 'Always a pleasure to see you,' 'Give us a hint' and 'I think it's fun'—that generally did not appear to take the woman's distress seriously," The New York Times said.

Twitter-owned Periscope has served up more than 100 million broadcasts since its launch last year, the large majority of which have not been harmful.

## Woman commits suicide near Lake Waco dam

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**WACO, Texas**  
**(KWTX)** An autopsy was ordered after a 22-year-old woman shot herself to death Monday morning near the Lake Waco Dam.

Officers found the woman's car after responding just after 10:30 p.m. Sunday to a report of gunfire in the

area of the U.S. Army Corps of Engineers headquarters near the intersection of Steinbeck Bend Drive and Zoo Park Drive.

Several patrol units responded to the call.

The woman got out of a white four-door vehicle, walked about 50 yards and then shot herself after she walked down into a ditch, Waco police Sgt. W. Sven Stevens said.

Officers were looking into the car when they heard a gunshot and shortly thereafter found the woman's body in the ditch.

Officers blocked off a section of Steinbeck Bend Drive during the incident.

Further details weren't available Monday.



## Library makes space for extra study room, prepares for construction of Mell Street Classroom Building



In an effort to increase study space in Ralph Brown Draughon Library, an offsite storage facility will be created to house materials that are currently taking up extra room on the third and fourth floors.

"Within the library, there's a great deal of pressure for individual space," King said at the meeting. "Every day, students have to compete for that space. There's not enough to go around."

Bonnie MacEwan, dean of libraries, said most students get their information electronically. However, she understands the need to keep physical copies around.

"We have a lot of materials up here that aren't used very often or, even better, are available electronically," MacEwan said. "We're calling it an archiving facility because, if anything ever happens to the electronic version, we know we have that paper copy."

If someone does want a physical copy of a text, MacEwan said they can ask for it at the circulation desk. Someone from the library will make regular trips to the archiving facility to pick up requested texts.

The change will also help prepare for the new Mell Street Classroom Building, MacEwan said. The building will be attached to the library and will overlap on the third and fourth floors.

The removal of the texts will open up space for improved group study rooms, according to MacEwan.

"We are going to completely redesign and reconfigure those rooms," MacEwan said. "The group study rooms will be scattered among the classrooms, so if you're studying right before a class, you can use one."

"It will take until summer 2017, and that is including the new study spaces for the library," Koontz said.

## Budget Cuts Could Mean Fewer Lifeguards, Maintenance Workers At State Parks



State budget cuts are likely to trigger potentially painful reductions in seasonal staff at many state parks this summer, including fewer lifeguards, environmental police, ticket takers and the maintenance workers who clean toilets, pick up trash, mow lawns and repair facilities.

Visitors likely didn't notice much change at state parks over Memorial Day weekend and shouldn't through the Fourth of July, but park officials say they expect

to be forced to make some serious cutbacks later in July and for the rest of the summer.

"I think this is going to have a significant impact," said Eric Hammerling, executive director of the nonprofit Connecticut Forest and Park Association. "Seasonal workers are critical for maintaining the infrastructure of our parks."

The deficit-reducing \$19.76 billion budget recently approved by the General Assembly and expected to be signed into law by Gov. Dannel P. Malloy will chop nearly \$2 million from the \$18 million the state usually spends on state parks.

There is one bit of good news for park visitors this summer: The state will no longer be charging sales taxes on parking fees. Malloy last week signed legislation eliminating the 6.35 percent sales tax that was imposed on state park parking in 2015. That revenue-making move became a nightmare for ticket takers and visitors trying to make change to pay the fee plus tax.

Officials aren't at this point contemplating closing any parks or forests when the budget cuts hit at the start of the new fiscal year in July.

"We're not talking about an outright closing," said Schain, "but we might go to what [park officials] call a 'lighter touch,' involving fewer staff and less maintenance.

## Howard mobile food market deepens roots as it enters third season



At the line separating Howard and Carroll counties, farmers at Love Dove Farms and Gravel Springs Farms are helping close the farm-to-table gap through the Roving Radish, a local healthy food initiative that delivers kits of pre-chopping produce, meat and other ingredients to seven locations throughout Howard County.

The program, launched by former Howard County Executive Ken Ulman two years ago and continued

under County Executive Allan Kittleman, is entering its third season with new locations and expanded services as it continues to cultivate relationships between local farmers — across and between counties.

"The program is kind of a no-brainer," said Sorenson, whose farm is one of five new local farms joining the program this year. "We get a fair price for our product and a fair price for our customer."

Every week from the beginning of June until late November, Roving Radish sells healthy meal kits to Howard County residents, with discounted prices to those in need. Meal kits, which include two meals for a family of four, are sold for \$28 and at a discounted price of \$12, according to the program's website.

At least 15 farms ranging from Breezy Willow Farm in Sykesville to Triadelphia Lake View Farm in Glenelg have signed on this year, according to James Zoller, the county's Roving Radish manager.

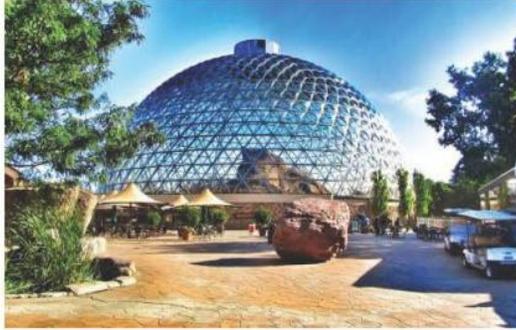
"These smaller to midsize farms are growing produce and protein. It's important that we keep them around," said Zoller. "We've done a good job in preserving farmland, but we haven't really addressed preserving farming as an industry by creating markets that will work for them."

"Every single year, we have sold out the volume we were able to produce each week. If we could produce more kits, we would sell all of them," said James Caldwell, director of the county's Office of Community Sustainability.

Going forward, the goal is to make the program as self-sufficient as possible, said Zoller. The program relies heavily on volunteers who package and prepare kits for distribution, giving the community a "defined stake" in the program, said Zoller.

"Farming is a way of life and it's becoming a hard way of life. It's important for us to keep the heritage that is still there. We have to make that connection stay alive."

## Omaha zoo starting free shuttle service this weekend



The Henry Doorly Zoo & Aquarium is debuting a free shuttle service Saturday after a record-breaking Memorial Day weekend left Interstate 80 backed up for an hour.

Zoogoers will be able to park at the former Southroads Mall, at 1001 Fort Crook Road in Bellevue, and ride a free shuttle to the zoo.

The shuttle will run Saturdays and Sundays through July 24 with 50-passenger buses running every 15 minutes, beginning at Southroads at 8 a.m. and ending with the last departure from the zoo at 6 p.m.

Those who ride the shuttle will receive a \$1 voucher to spend anywhere at the zoo, including on admission, giving people incentive to stay away from the congested parking lot and use the shuttle service instead.

“We were concerned that it might not get utilized to its full potential, so we wanted to offer some incentive to make sure that it is,” said Jeremy Eddie, the zoo’s chief financial officer.

Eddie said the zoo has been planning the shuttle for months and was still finalizing details late this week. More than 60,000 people visited the zoo Memorial Day weekend, crushing a previous record for attendance. This weekend is expected to be another busy one: The Alaskan Adventure splash pad opened Friday morning.

The zoo has made several recent attempts to find more parking spaces.

When Rosenblatt Stadium was razed in 2012, the zoo gained about 900 spots. Recently, construction on 10th Street and Bob Gibson Boulevard freed a few dozen more spaces, bringing the total to about 3,000. When the lot fills up, the zoo often uses overflow lots in the neighborhood to the south — something it’s done for about 10 years, Eddie said — but that probably still won’t be enough.

The zoo expects it will spend \$4,000 to \$5,000 per weekend on the shuttle service.

“We know we have an amazing new exhibit that’s going to be extremely popular. And we want everyone else to be able to enjoy that and try to prevent any frustration that may be caused with the traffic and parking,” Eddie said.