Expressive Writing Moderates the Relation Between Intrusive Thoughts and Depressive Symptoms

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The author investigated whether expressive writing enhances emotional adaptation to a stressful event (graduate entrance exams) by reducing event-related intrusive thoughts or by desensitizing people to such thoughts. Participants in the experimental group, who were instructed to write their deepest thoughts and feelings about the exam, exhibited a significant decline in depressive symptoms from 1 month (Time 1) to 3 days (Time 2) before the exam. Participants in the control group, who wrote about a trivial topic, maintained a relatively high level of depressive symptoms over the same period. Expressive writing did not affect the frequency of intrusive thoughts, but it moderated the impact of intrusive thoughts on depressive symptoms. Specifically, intrusive thoughts at Time 1 were positively related to depressive symptoms at Time 2 in the control group and were unrelated to symptoms in the expressive writing group.

During aversive events, many people have a strong urge to express their thoughts and feelings related to the events (Rime, 1995). This urge may be motivated by the comfort associated with ventilation or it may reflect an attempt to make sense of a negative event or validate one's feelings through social sharing. Whatever the motive, it appears that disclosure about stressful events is associated with improvements in physical and psychological well-being (see Pennebaker, 1989, 1993; Smyth, 1996, for reviews). Emotional expression, or disinhibition, is also a central feature of many psychotherapeutic interventions (Stiles, 1995). There is suggestive evidence that inhibition in general, which can be defined as the tendency to conceal or not express significant experiences to others, may have dramatic effects on health. For instance, in a study of HIV-seropositive men, HIV infection advanced more rapidly in men who concealed their homosexual identity than in men who were more open about their identity (Cole, Kemeny, Taylor, Visser, & Fabey, 1996). Despite the cumulative evidence that emotional expression may be adaptive when coping with stress, researchers have gained little insight into the mechanisms underlying this phenomenon. Recently, however, there have been attempts to connect expression-based benefits to cognitive processes of adjustment (e.g., Clark, 1993; Gold & Wegner, 1995; Greenberg, Wortman, & Stone, 1996; Lepore, Silver, Wortman, & Waymey, 1996; Pennebaker, 1993, 1995; Tait & Silver, 1989).

Independent of social reactions to disclosures, emotional expression might facilitate cognitive processing of stressful experiences by forcing individuals to confront (i.e., contemplate and evaluate) the stressful stimuli and their responses to it. The present study attempted to evaluate aspects of this theory in people taking graduate and professional school entrance exams. People taking these exams can experience a high degree of emotional distress, because their exam performance can be a critical determinant of their professional training and ultimate career choices. Using an emotional expression paradigm, this study tested whether expressive writing diminishes psychological distress in examinees. In addition, the study investigates the mediating role of intrusive thoughts in this process. As discussed below, intrusive thoughts may reflect incomplete or failed processing of stressful events. Thus, examining the influence of expressive writing on intrusive thoughts may shed some light on whether expressive writing facilitates emotional adjustment by means of its influence on cognitive processing mechanisms.

Intrusive Thoughts in the Context of Cognitive-Processing Theories

People under stress exhibit a great deal of variability in their emotional responses. Even following extremely traumatic events, such as the loss of a loved one or paralyzing accidents, some people may enter a state of intense and prolonged depression, whereas others appear to be emotionally unscathed (Wortman & Silver, 1989). Several investigators have shown a consistent positive relation between repetitive and unbidden thoughts about stressful events and negative mood (e.g., Horowitz, 1975; Lutgarderefer, 1997; Parkinson & Rachman, 1981a, 1981b; Rachman, 1980; Silver, Boon, & Stones, 1983; Tait & Silver, 1989). For example, 6 years after the nuclear accident at Three Mile Island, chronic distress was evident only in those area residents who had intrusive thoughts about the incident (see Baum, 1990). The association between ruminative thought and negative affect appears to be a general one: It has been observed across a variety of nonclinical populations and in a host of stressful situations, including contrived laboratory manipulations (see Horowitz, 1986, 1993). This pattern of associations between intrusive thoughts and negative emotional states sug-

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suggests that intrusive thoughts may have some causal role in the development or maintenance of negative emotions during stress.

Intrusive thoughts may be a product of the mental struggle involved in cognitively assimilating stressful events. Events that challenge people's basic expectations and beliefs about themselves and the world can cause intense and prolonged psychological distress (Janoff-Bulman, 1992; Parkes, 1975). Cognitive processing theorists contend that negative emotions may arise when information inherent in external events is discrepant with individuals' established self-views and worldviews (Epstein, 1985, 1990; Marris, 1986; Wilson, 1989) or thwarted valued goals (Mandler, 1984; Martin & Tesser, 1989). The generalized assumptions that people hold about themselves and their world can be referred to as high-order schemata (Janoff-Bulman, 1992). Intrusions may occur as a result of incomplete assimilation of trauma-related information into preexisting schemata or from incomplete accommodation of the preexisting schemata to the new information. Successful assimilation and accommodation of trauma-related information may depend on repeated exposure to traumatic stimuli, including the unresolved thoughts and feelings one has about the stressor. Horowitz (1975, 1986) has argued that emotionally disturbing, intrusive thoughts subside once an individual has successfully assimilated or accommodated stressful information. Others have argued that repeated exposure to stressful material dampens negative emotional responses to the material (Creamer, Burgess, & Pattison, 1990; Rachman, 1980).

Although exposure to stressful material may facilitate long-term emotional adaptation, the interim process of contemplating and evaluating the negative material can be aversive. Thus, it is not uncommon for people experiencing intrusive thoughts about stressors to engage in avoidant thinking and behaviors (Horowitz, Wilner, & Alvarez, 1979). The problem with avoiding stressor-related material, including intrusive thoughts, is that it may impede assimilation processes or, worse yet, prolong intrusive ideation and instigate new intrusions (Gold & Wegner, 1995). It has been suggested that one way to get people to confront rather than to avoid stressor-related thoughts and feelings is to make them engage in tasks that foster emotional expression (e.g., Pennebaker, 1989). However, emotional expression, per se, may facilitate cognitive processing and emotional adjustment only when it occurs in a safe or supportive context. In a study of mothers who had lost a child to sudden infant death syndrome (SIDS), level of intrusive thoughts at 3 weeks postloss was negatively associated with amount of talking about the loss months later in mothers who felt socially constrained (i.e., felt others were uncomfortable, unwilling to listen, or not fully supportive when they talked about the death; Lepore et al., 1996). In contrast, a positive association was found between intrusive thoughts and amount of talking about the loss in mothers who felt relatively unconstrained in talking about the loss. In addition, level of intrusive thoughts in the early bereavement period was positively related to subsequent depressive symptoms only in mothers who felt constrained in talking about the loss. Recently, this same pattern of results was found in research on men with prostate cancer (Lepore & Helgeson, in press), women with breast or colon cancer (Lepore, 1997), and children exposed to inner-city violence (Kliewer, Lepore, Oskin, & Johnson, in press).

Two Explanations of the Mediating Role of Intrusive Thoughts in the Relation Between Emotional Expression and Psychological Adjustment to Stressors

The studies by Lepore and his colleagues on bereaved mothers (Lepore et al., 1996), cancer survivors (Lepore, 1997; Lepore & Helgeson, in press), and violence-exposed children (Kliewer et al., in press) suggest that expressing one's stressor-related thoughts to supportive others can attenuate the negative association between intrusive thoughts and mental health. These studies further suggest that expression in a non-supportive social context may lead trauma survivors to inhibit themselves from talking and thinking about their traumatic experiences. Lepore and colleagues have argued that these inhibitory behaviors may interfere with assimilation and accommodation of traumatic material, resulting in prolonged or increased emotional distress. The interactive effects of intrusive thoughts and social constraints on inhibition and mental health also suggest that intrusive thoughts are more tolerable, or less aversive, when they occur in a supportive context.

A complementary theory has been proposed by Pennebaker (1989; also Harber & Pennebaker, 1992), who argued that providing people with an opportunity to express their stressor-related thoughts and feelings facilitates adjustment by diminishing the frequency of intrusive thoughts. According to Pennebaker, emotional expression, either verbal or written, involves confronting (e.g., contemplating, evaluating) stressor-related thoughts and feelings. This process may help people to assimilate the stressor or to restructure their cognitions about it. Through this assimilation process, people may be able to resolve the discrepancy between preexisting schemas and information inherent in stressful events. By working through, or resolving, the discrepancy, emotional expression should free people of their distressing, intrusive thoughts. Resolution of the stressful thoughts and the concomitant decline in intrusions is believed to account for adjustment following emotional expression.

Like Lepore, Pennebaker (1989) maintained that emotional expression should occur in a 'safe' context (for a related perspective, see Meichenbaum & Fitzpatrick, 1993). The primary difference between Pennebaker's model and the one proposed by Lepore (1997; Lepore & Helgeson, in press; Lepore et al., 1996) is the role of intrusive thoughts in the link between expression and psychological adjustment. From Pennebaker's perspective, emotional expression facilitates adjustment by diminishing the frequency of intrusive thoughts. Findings from Lepore's research have suggested that emotional expression, in a supportive context, facilitates adjustment by diminishing the impact of intrusive thoughts. From this latter perspective, stressor-related intrusive thoughts lose their emotional sting when individuals are able to express themselves in a supportive context. Of course, it is possible that emotional expression diminishes both the frequency and the impact of intrusive thoughts on mental health. However, to date no studies have tested these two possibilities. In the present study, I examined whether emotional expression about a stressful event diminishes psychological distress by reducing the frequency with which individuals experience intrusive thoughts or by attenuating the effects of intrusive thoughts on psychological distress.
Hypotheses

The first hypothesis is that emotional expression will diminish psychological distress symptoms in people taking stressful examinations. The second hypothesis is more exploratory: Emotional expression will diminish psychological distress by (a) reducing the frequency of intrusive thoughts or (b) emotionally desensitizing people to their intrusive thoughts.

Method

Participants

Seventy-four examinees (44 men, 30 women) were recruited into the study through advertisements on electronic bulletin boards and newspapers at two metropolitan universities. Only 4 recruits did not complete the entire study, of whom 3 refused to continue for undisclosed reasons and 1 could not be reached for his follow-up interview. All participants were paid $10 at the end of the study. The average age of participants was 22 years (SD = 6.48); 57% were Caucasian, 30% were Asian, 12% were African American, and 1% were other races. Most of the participants were enrolled in a 4-yr college degree program (61%); however, a minority of the participants had higher degrees, including bachelor's (24%), master's (8%), and professional degrees (1%).

To be eligible for the study, participants had to be taking either the Medical College Entrance Examination (MCAT; 50%), Graduate Record Examination (GRE; 23%), Law School Admissions Test (LSAT; 10%), or Graduate Management Admissions Test (GMAT; 3%). Two other individuals (3%), who responded to the advertisements were taking the National Council Licensing Exam (NCLEX) for nursing, also were allowed to participate. Most of the participants were first-time test takers (80%), although some were second-time test takers (20%). Many of the participants had prepared for the examinations through a preparatory course (31%) or study guides (45%).

Procedures

Data were collected through three structured telephone interviews conducted approximately 1 month (28.18 ± 5.77 days) before the exam, Time 1 (T1); 3 days (3.11 ± 1.13 days) before the exam, Time 2 (T2); and 1 week (7.32 ± 1.93 days) after the exam, Time 3 (T3). Demographic and background variables were assessed in the first interview; the remaining variables, which are described below, were measured in all three interviews. Between the first and the second measurement, or approximately 10 days before the examination (9.27 ± 3.05), participants came into the laboratory to write an essay for 25 min. Participants were randomly assigned (within gender) to an experimental or a control essay condition, both of which are described below.

Writing Manipulation

The writing manipulation followed the standard protocol established by Pennebaker (1989), except that participants wrote on only one occasion rather than multiple occasions. Although Pennebaker recommended 3 to 4 days of writing, the high level of demands of the study (three interviews and a laboratory visit), as well as the high constraints on participants' time as the exam date approached, precluded more frequent writing sessions. Participants wrote their essays in a private, comfortable laboratory room with a low level of lighting. They were assured of confidentiality and given 25 min to write.

Experimental participants were given the following instructions verbally and in writing:

During today's writing session, I want you to let go and write about your very deepest thoughts and feelings about the exam. In your essay, you may want to write about your thoughts and feelings regarding the exam itself, the effect of the exam on your life in the present, the exam's implications for your future goals, and alternate plans you may have. The important thing is that you dig down into your deepest emotions and explore them in your writing.

Control participants were given the following instructions verbally and in writing:

Since we are interested in the day-to-day activities of people who are taking the exam, please describe in detail what you have done in the last 24 hours. Please include who you met with, how much time you spent on meals, socializing, studying, etc. It is important that you describe things exactly as they occurred. Do not mention your own emotions, feelings, or opinions. Your descriptions should be as detailed and objective as possible.

Measures

Manipulation check. Immediately after the writing task, participants completed a questionnaire designed to test the manipulation. Using a 7-point scale (1 = not at all, 7 = a great deal), they indicated the extent to which their essay was "meaningful," "personal," and "revealing of your emotions." In addition, objective measures of essay content were derived using the Linguistic Inquiry and Word Count (LIWC; Francis & Pennebaker, 1993; also see Pennebaker, 1993) text analysis program. The program analyzes text on a word-by-word basis and classifies words into several high-level categories, including negative emotionality terms (e.g., sad, hurt, guilty), positive emotionality terms (e.g., happy, joy, peaceful), and terms reflecting cognitive insight or self-reflection (e.g., realize, understand, thought, knew).

Depressive symptoms. Level of depressive symptoms was measured during each of the telephone interviews using the 13-item depressive symptoms subscale of the SCL-90-R (Derogatis, 1983). Participants indicated on a 5-point scale (0 = not at all, 4 = extremely) how distressed they were by different depressive symptoms (e.g., feeling blue, hopeless, worthless) in the prior week. Item scores were summed and averaged; higher scores indicate greater psychological distress. In the present study, internal consistency of the scale was good, with Cronbach's alpha ranging from .87 (T1) to .93 (T2 and T3).

Intrusive thoughts. A 10-item scale was used to assess intrusive thoughts about the examination during each interview. Seven items with high factor loadings were adapted from the Impact of Events Scale (IES; Horowitz, Wilner, & Alvarez, 1979). The IES can apply to any event, referred to in the items as it. In the present study, the exam was substituted for it (e.g., things you saw or heard suddenly reminded you of the exam: images related to the exam popped into your mind; you had bad dreams related to the exam). Three additional items were adapted from Lepore et al.'s (1996) Intrusive Thoughts Scale (difficult to get the exam out of your mind; thoughts about the exam interfered with your ability to concentrate on other things; it was easy to forget about the exam [reverse coded]). Participants indicated on a 5-point scale (0 = never, 4 = very often) how often in the prior week they had these undesirable, unwanted, or uncontrollable thoughts about the exam. The scale has high face validity. Item scores were summed and averaged; higher scores indicate more frequent intrusive thoughts. In the present study, the scale had excellent internal consistency, with Cronbach's alpha ranging from .92 (T1 and T2) to .95 (T3).

Results

Manipulation Check

Comparisons were made between participants in the control (no disclosure) and experimental (disclosure) groups. As shown
in Table 1, participants in the experimental group perceived their essays to be more personal, meaningful, and revealing of their emotions than participants in the control group. Results from the LIWC text analysis also are shown in Table 1. Participants in the experimental group expressed more negative and positive emotionality and cognitive insight in their essays than did control group participants. These results indicate that the expressive writing manipulation was engaging to participants and successful at getting them to contemplate their thoughts and feelings related to this significant event.

Changes in Depressive Symptoms Associated With Writing

Figure 1 shows participants’ mean level of depressive symptoms over the course of the study as a function of writing condition. Change scores (T2 - T1 and T3 - T1) were calculated to analyze the change in depressive symptoms over time as a function of writing condition. The change scores were subjected to a 2 (condition) × 2 (period) repeated measures analysis of variance (ANOVA). There was a significant main effect of time, F(1, 72) = 19.76, p < .001, no significant main effect of condition, F(1, 72) = 1.67, n.s., and a significant Condition × Period interaction, F(1, 72) = 5.22, p < .05. Between-groups simple effect analyses revealed significant group differences in the mean change scores from T1 to T2, F(1, 112) = 5.01, p < .05, but not from T1 to T3, F(1, 112) = .001, n.s. Within-group simple effect analyses revealed a significant difference in the mean change scores over time (T2 - T1 vs. T3 - T1) in the control group, F(1, 72) = 22.64, p < .001, but not in the experimental group, F(1, 72) = 2.33, n.s. These analyses, along with the means shown in Figure 1, indicate that the expressive writing condition attenuated depressive symptoms prior to the exam. In contrast, the control group did not experience a decline in symptoms until after the exam was over.

Role of Intrusive Thoughts

The writing manipulation was hypothesized to moderate depressive symptoms in one of two ways: (a) by lowering the level of exam-related intrusive thoughts or (b) by mitigating the distress associated with exam-related intrusive thoughts. If the first hypothesis is correct, the level of intrusive thoughts over time should depend on the writing condition, as did the level of depressive symptoms. Specifically, participants writing about their exam-related thoughts and feelings would exhibit a decline in intrusive thoughts as the exam approached (T1 to T2), whereas control participants would exhibit no change or an increase in intrusive thoughts as the exam approached. If the second hypothesis is correct, level of intrusive thoughts would not be affected by the writing condition. However, participants in the expressive-writing condition would have less psychological distress associated with their intrusive thoughts than controls.

I tested the first hypothesis by subjecting the intrusive thoughts change scores (T2 – T1 and T3 – T1) to a 2 (condition) × 2 (period) repeated measures ANOVA. There was no significant interaction, F(1, 72) = .01, n.s., indicating that the level of intrusive thoughts did not vary over time as a function of writing condition. There also was no significant main effect of condition, F(1, 72) = 1.24, n.s. However, there was a change in level of intrusive thoughts as a function of time, F(1, 72) = 82.42, p < .001. The mean level of intrusive thoughts for the sample as a whole at T1, T2, and T3, respectively, was 1.32 (SD = 0.77), 1.66 (SD = 0.83), and .95 (SD = 0.74). Thus, participants had an increase (.34) in their level of intrusive thoughts from T1 to T2 but a decrease (.37) in intrusive thoughts from T1 to T3. These analyses suggest that the writing manipulation did not reduce depressive symptoms by reducing level of intrusive thoughts.

I tested the second hypothesis using moderated regression analyses (Aiken & West, 1991). According to the second hypothesis, the positive association between intrusive thoughts and depressive symptoms should be attenuated in the group writing about the exam, but not in the control group. The simple zero-order correlations between intrusive thoughts and depressive symptoms are shown in Table 2. The regression analyses focused on the change in depressive symptoms from T1 to T2, which was the period prior to the exam and when individuals had the highest level of intrusive thoughts and depressive symptoms. Depressive symptoms scores at T2 were first regressed onto depressive symptoms scores at T1, resulting in a residualized depressive symptoms scores as the outcome. The residualized score can be conceived of as change in depressive symptoms.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SE</td>
</tr>
<tr>
<td>Rating of essay as personal*</td>
<td>4.11</td>
<td>0.27</td>
</tr>
<tr>
<td>Rating of essay as revealing of emotions*</td>
<td>2.91</td>
<td>0.25</td>
</tr>
<tr>
<td>Rating of essay as meaningful*</td>
<td>3.73</td>
<td>0.26</td>
</tr>
<tr>
<td>Number of words in essay</td>
<td>473.65</td>
<td>22.09</td>
</tr>
<tr>
<td>Number of negative emotion terms</td>
<td>5.68</td>
<td>0.75</td>
</tr>
<tr>
<td>Number of positive emotion terms</td>
<td>7.00</td>
<td>0.82</td>
</tr>
<tr>
<td>Number of cognitive insight terms</td>
<td>42.38</td>
<td>3.74</td>
</tr>
</tbody>
</table>

* Rating scales ranged from 1 (not at all) to 7 (a great deal).

**p < .01, ***p < .001.
This procedure also controls for spurious associations between T1 intrusive thoughts and T2 depressive symptoms that could be driven by T1 depressive symptoms. Next, the centered predictor variables, condition and intrusive thoughts, were entered into the regression equation, followed by their cross-product, Condition × Intrusive Thoughts.

The regression results are presented in Table 3. There was a significant positive association between T1 intrusive thoughts and T2 depressive symptoms when controlling for T1 depressive symptoms. There was also a significant negative association between condition and depressive symptoms at T2 after controlling for T1 depressive symptoms. This suggests that people who wrote expressive essays had a lower level of symptoms from T1 to T2. More important, there was a significant interaction between T1 intrusive thoughts and condition. The plot of this interaction (Figure 2) shows that an extreme level of intrusive thoughts at T1 was associated with increases in depressive symptoms from T1 to T2 in the control group, but not in the experimental group.1

Discussion

The present findings indicate that expressive writing can reduce psychological distress associated with an impending stressful event. Examinees who wrote expressive essays had a lower level of depressive symptoms as the exam date approached than did examinees who wrote about a trivial control topic. The present analyses suggest that expressive writing reduced depressive symptoms by attenuating the negative emotional effects of intrusive thoughts rather than by reducing the number of intrusive thoughts. There was no effect of expressive writing on the number of intrusive thoughts reported. However, there was a strong association between intrusive thoughts at 1 month before the exam and depressive symptoms 3 days before the exam among examinees in the control group, but not among examinees in the expressive writing group. This interactive effect of intrusions by condition on depressive symptoms was observed even with a statistical control for prior depressive symptoms.

The present results are consistent with the social–cognitive processing model proposed by Lepore and colleagues (Kliewer et al., in press; Lepore, 1997; Lepore et al., 1996; Lepore & Helgeson, in press). Specifically, it appears that being able to express one’s stressor-related thoughts and feelings promotes emotional adaptation to stressors by blunting the emotional impact of intrusive thoughts. Exactly why or how this emotional blunting occurs is not yet clear. It is possible that people become habituated to intrusive thoughts because of the repeated exposure to the stressful stimuli when they write or talk about stressors (cf. Bootzin, 1997). Alternatively, through the process of contemplating one’s thoughts and feelings during expression tasks, people may reappraise intrusive thoughts as nonthreatening entities. Finally, people who engage in thinking about and expressing their stress-related thoughts and feelings may gain some insight into the stressor, which in turn renders any reminders or memories of the stressor comprehensible and nonthreatening.

Data from the present study and previous ones (e.g., Pennebaker, 1993) are not adequate to distinguish between these competing explanations. However, it appears from the present results that expressive tasks do not facilitate emotional recovery simply by resolving and removing intrusive thoughts. Instead, it appears that expression enables people to experience intrusive thoughts with less residual distress. Perhaps among people who are processing traumatic experiences that have already occurred, such as the death of a loved one, emotional expression may facilitate cognitive integration of the experience and reduce the number of intrusive thoughts. In the present study, because the stressor was anticipatory there might have been so many situational cues about the exam that it was virtually impossible for people not to have thoughts about the exam.

1 Per one reviewer’s suggestion, I conducted a number of additional exploratory analyses. To test whether the expressive writing specifically diminished aversive thoughts, I computed two subscales from the original Intrusive Thoughts Scale and examined the effect of the manipulation on these subscales. One subscale included items that were relatively neutral, or affect-free (e.g., thought about the exam when you didn’t want to), and one included items that reflected both intrusive thoughts and distress (e.g., difficulty falling asleep because of images or thoughts related to the exam). Analyses conducted with these subscales produced the same pattern of results found with the original scale. Next, I conducted an internal analysis on the expressive writing group’s data. Specifically, I examined whether the variables generated by the LIWC analysis of the writing (see Table 1, bottom), as well as participants’ ratings of the extent to which their essays were personal, meaningful, and emotionally revealing, would predict changes in depressive symptoms from T1 to T2. The linguistic characteristics of the essays and the extent to which they were revealing of the person’s thoughts and feelings did not significantly predict depressive symptoms at T2 or changes from T1 to T2. It is possible that the small sample size in the internal analysis, as well as the relatively uniform responses of participants, accounted for these null effects.
Table 2
Pearson Product-Moment Correlations Between Intrusive Thoughts and Depressive Symptoms at T1, T2, and T3 (n = 74)

<table>
<thead>
<tr>
<th>Variable</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrusive thoughts</td>
<td>.70***</td>
<td>.50***</td>
<td>.64***</td>
<td>.41***</td>
<td>.44***</td>
<td>.50***</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>.44***</td>
<td>.44***</td>
<td>.44***</td>
<td>.44***</td>
<td>.44***</td>
<td>.44***</td>
</tr>
</tbody>
</table>

Note. T1 = Time 1, 1 month prior to the exam and 20 days prior to the writing manipulation; T2 = Time 2, 3 days prior to the exam and 7 days after the writing manipulation; T3 = Time 3, 1 week after the exam.
*p < .05. **p < .01. ***p < .001.

Lepore et al. (1996) have argued that sharing stress-related thoughts and feelings with supportive others also may facilitate cognitive assimilation and emotional adjustment by lowering arousal. This is consistent with Pennebaker’s model (e.g., Pennebaker, 1989). If people have a lower level of arousal following expression, they may be better able to tolerate intrusive thoughts because they will not be overaroused by them. This may allow individuals to confront the thoughts and feelings associated with intrusive thoughts instead of attempting to avoid the thoughts and feelings as a method of reducing arousal. The ability to confront the intrusions may allow people to make sense of, or to accept, their situation, thus regaining a sense of well-being and mastery.

One limitation of the present study is that the stressor was not as grave as those typically associated with chronic and clinically significant levels of distress or posttraumatic-stress disorders. It is unclear whether the present findings would generalize to other samples, such as the bereaved or people facing life-threatening illnesses. It is probable that a single writing session would not moderate the effects of intrusive thoughts on depressive symptoms under such severe stress. However, there is no reason to believe that the same general method would not be beneficial if administered over multiple days and in a safe, controlled environment. Either expressive writing or verbal disclosures in a protected or empathic social context may allow people to successfully confront and adapt to even highly traumatic events.

A final caution in interpreting the present findings is that the effect of the manipulation on exam performance is unknown. Although the writing task was effective in reducing distress around the time of the exam, there is no way of knowing whether this had an impact on exam performance. In test-taking situations, a modest amount of arousal, which could be induced by a moderate amount of distress, can enhance performance, whereas inadequate or excessive levels of arousal can undermine performance. At several days before the exam (T2), the experimental group had less distress than they did 1 month before the exam (T1) and more distress than they did 1 week after the exam (T3), which suggests that their level of distress was neither excessively high nor excessively low. Nevertheless, one can infer nothing about exam performance from these data.

In summary, people taking stressful examinations reported a lower level of depressive symptoms after engaging in an expressive writing task than examinees writing about a control topic. The expressive writing task seemed to reduce depressive symptoms by attenuating the examinees’ negative emotional reactions to exam-related intrusive thoughts. Future research should examine how this emotional blunting occurs and whether this effect is obtained for people confronting major traumas. The pres-

Table 3
Regression of T2 Depressive Symptoms on Intrusions, Condition, and Intrusions × Condition, Controlling for T1 Depressive Symptoms (n = 74)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total $R^2$</th>
<th>Increment in $R^2$</th>
<th>$\beta$ (last in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive symptoms at T1</td>
<td>.36</td>
<td>.36***</td>
<td>0.63</td>
</tr>
<tr>
<td>Intrusive thoughts at T1</td>
<td>.44</td>
<td>.08**</td>
<td>0.23</td>
</tr>
<tr>
<td>Condition</td>
<td>.47</td>
<td>.03*</td>
<td>-0.25</td>
</tr>
<tr>
<td>Intrusive thoughts at T1 × Condition</td>
<td>.50</td>
<td>.03*</td>
<td>-0.31</td>
</tr>
</tbody>
</table>

Note. T1 = Time 1, 1 month prior to the exam and 20 days prior to the writing manipulation; T2 = Time 2, 3 days prior to the exam and 7 days after the writing manipulation. Condition: 0 = control (no disclose); 1 = experimental (disclose). Intrusive Thoughts Scale ranges from 0 (never) to 4 (often).
*p < .05. **p < .01. ***p < .001.
ent findings not only indicate how expressive writing might enhance adjustment to a stressor, but they reveal that intrusive thoughts are not just a by-product of depressive symptoms or confounded with depressive symptoms. If intrusive thoughts and depressive symptoms were confounded, then everyone with intrusive thoughts would have had higher depressive symptoms. Clearly this was not the case. Therefore, the door is wide open for additional research into the causal role of intrusive thoughts in processes of emotional adjustment to stressors.

References


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