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EFFECTS OF WRITING ABOUT TRAUMATIC EXPERIENCES: THE NECESSITY FOR NARRATIVE STRUCTURING

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Although writing about traumatic events has been shown to produce a variety of health benefits, little is known about how writing produces benefits. The degree to which individuals form narrative structure when writing may predict health improvements. This study manipulated narrative formation during writing to test if narrative structure is necessary for writing to be beneficial. A total of 116 healthy students were randomly assigned to write about control topics or about their thoughts and feelings regarding the most traumatic event of their life in one of two ways: list in an fragmented format or construct a narrative. Individuals asked to form a narrative reported less restriction of activity because of illness and showed higher avoidant thinking than the other groups. The fragmented writing group did not differ from controls on any measure. These data (a) demonstrate that instructions to form a narrative produce a different response to writing than instructions to form fragmented and control writing and (b) suggest narrative formation may be required to achieve health benefits.

Writing about traumatic events produces a variety of health benefits, including improvements in physical health, psychological well-being, and measures of physiological function (Pennebaker, 1993; Smyth, 1998). Writing has recently been shown to lead to symptom reduction in patients with chronic illness (Smyth, Stone, Hurewitz, & Kaell, 1999). Less is known, however, about how writing produces these benefits. Early theories suggested that the cumulative strain of inhibiting disclosure about traumatic experiences was deleterious, and could be reduced

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via writing, although this explanation is not well supported (for discussion see Smyth & Pennebaker, 1999). One broad explanation for the effects of writing is that the act of converting emotions and images into words changes the way the person organizes and thinks about the trauma. By integrating thoughts and feelings, the person can more easily construct a coherent narrative of the experience. Once in narrative formation, the event can be summarized, stored, and assimilated more efficiently, thereby reducing the distress associated with the traumatic experience. This cognitive processing is thought to be reflected in alterations in intrusive and avoidant thoughts associated with the trauma (Greenberg, 1995).

It is believed that if an individual is upset about a traumatic event, memories are not integrated into a personal narrative, possibly resulting in the memory being stored as sensory perceptions, obsessional ruminations, or behavioral reenactments (Janet, 1909; van der Kolk & van der Hart, 1991). In severe cases, such as posttraumatic stress disorder, treatment of individuals often focuses on the processing of the memory (Foa, Roghbaum, & Molnar, 1995). Traumatic memories are more disorganized than other memories and it is argued that treatments aimed at organizing memory should be particularly effective (since more organized memories are easier to integrate into existing memory (Foa & Riggs, 1993). Narrative formation may be a particularly important strategy for imposing organization. Decreasing disorganization over time has been associated with improvement in narratives from victims of personal trauma during exposure treatment (DeSavino et al., 1993). This suggests that the organization of stressful memories, particularly with narrative structure, may be a critical factor in the beneficial effects of writing about stressful events.

One problem with processing, organizing, and integrating traumatic memories seems to be that they lack linguistic components and therefore cannot be effectively communicated or organized (Smyth & Pennebaker, 1999). Emotional writing about traumatic or stressful events may be beneficial because it is effective at forcing the re-coding of the traumatic memory into narrative language. Although this theoretical explanation that writing produces a restructuring of memories through narrative formation seems plausible, it needs to be explored in the context of writing about traumatic experiences. Pennebaker and colleagues developed a computer program (the Linguistic Inquiry and Word Count) to measure emotional and cognitive categories of word usage in the essays. Using this approach, a re-analysis of essays produced in six writing studies found that improvement was predicted by changes in insight and causal words over the course of writing (Pennebaker, Mayne, & Francis, 1997). Specifically, people whose

health improved, who got higher grades, and who found jobs after writing went from using relatively few causal and insight words to using a high rate of them by the last day of writing. The authors note that the essays of people who showed this pattern of language use appeared to be constructing a story over time (Pennebaker, Mayne, & Francis, 1996). This suggests that building a narrative is a critical factor in the beneficial effects of writing, although the research support is correlational.

This study investigated in an experimental fashion whether narrative formation during writing about traumatic experiences is necessary for improvement. Previous research has demonstrated that the expression of both thoughts and feelings about a traumatic event are necessary for improvement (Pennebaker & Beall, 1986), although it is not clear to what degree this overlaps with narrative formation. Is the expression of thoughts and feelings in conjunction sufficient for improvement or is it the explicit construction of a narrative that leads to improvement? To examine this issue, we created three writing conditions. The control condition asked individuals to write about neutral topics. The narrative condition asked individuals to write about their thoughts and feelings regarding a traumatic experience and to do so in a narrative way (i.e., to tell a story). The fragmented condition asked individuals to write about their thoughts and feelings regarding a traumatic experience, and to do so in a fragmented way (i.e., listing them in a telegraphic, unintegrated fashion). Although numerous definitions of narrative exist, we chose to focus on the organization and story-telling aspects because these are presumed to be the salutary aspects (Pennebaker, Mayne, & Francis, 1996, Smyth & Pennebaker, 1999).

Our primary hypothesis was that expressing thoughts and feelings in a nonnarrative format would not result in health improvements, whereas writing in a narrative structure about traumatic topics would produce improvements in health reports. A secondary hypothesis was that if narrative formation alters the memory representation of a traumatic experience, intrusions should decrease as narrative structure increases. Writing in a narrative format should produce decreases over time in trauma-relevant intrusions and writing in a nonnarrative format should not produce such reductions.

METHODS

PARTICIPANTS

Participants were 116 undergraduate student volunteers (69% female) ranging in age from 18 to 35 years (mean = 18.8 years). The sample was

59% Caucasian, 17% Asian, 8% Hispanic, 8% African American, and 8% reporting other races. Participation fulfilled a research requirement for the students' psychology course.

MATERIALS

Impact of Events Scale. The Impact of Event Scale (IES) is a scale of commonly reported experiences of intrusion and avoidance to measure subjective distress caused by a traumatic event (Horowitz, Wilner, & Alvarez, 1979) and has been used as a process measure in other trauma disclosure studies (Lutgendorg & Antoni, 1999). Participants identify the most traumatic experience of their life and respond to 15 items assessing the frequency of intrusive thoughts about the event or attempts to avoid thinking about the event over the past 7 days. All items use a four-point response key, "not at all", "rarely", "sometimes", or "often" and the IES has demonstrated adequate psychometric characteristics (Horowitz, Wilner, & Alvarez, 1979).

Symptom Report and Activity Restriction. Symptom report consisted of a self-report measure of common symptoms over the last week taken from previous research on the health effects of writing in a student sample (Greenberg, Wortman, & Stone, 1996). The specific symptoms were fever, dry cough, productive cough, congested nose, sinus pain, sneezing, hoarseness, muscle aches, aching joints or bones, muscle pain or cramps, fainting, diarrhea, rash, constipation, ear ache, vomiting, indigestion, head ache, abdominal or stomach pain, water retention or bloating, endometriosis (cramps), and premenstrual symptoms. Participants indicated whether they had experienced any of the symptoms over the past 7 days (yes/no format). For each symptom participants reported, they also indicated if the symptom had caused them to stay in bed, miss school, or reduce other activities they had planned to do during the previous week. Activity restriction was included to measure the behavioral response to symptoms and was coded as the total number of items checked.

Mood Report. Affect was assessed immediately before and after writing by four adjectives describing positive affect (happy, joyful, enjoyment/fun, pleased) and five adjectives describing negative affect (depressed/blue, unhappy, angry/hostile, frustrated, worried/anxious). The adjectives were rated on a 7-point scale, with scores ranging from 0 (*not at all*) to 6 (*extremely*), and are those used in previous research (Smyth, Hockemeyer, Andersen, & Stone, 1999). The psychometric characteristics of this approach are satisfactory and are reported in detail elsewhere (Diener & Emmons, 1985).

ESSAY EVALUATION

Essays were evaluated on a 7-point scale, with scores ranging from 0 (*not at all*) to 3 (*moderately*) to 6 (*extremely*) for how emotional, how personal, and the degree to which they showed narrative structure (this was defined as showing the organization characteristics of a story, most notably a clear beginning, middle, and end). The length of the essays was coded as the number of words used. Essays were coded by three graduate student raters who were first trained by coding 200 essays from a previous writing experiment. Essay coding was conducted blind to experimental condition. There was considerable agreement between raters overall (interrater reliability = .83) and for each of the three primary rating categories (how emotional = .84, how personal = .79, narrative structure = .87). When differences between raters existed, consensus between raters on the appropriate evaluation was reached and that score was used.

PROCEDURE

After informed consent was obtained, participants completed the IES and the symptom and activity restriction report. Participants were then randomly assigned to one of three experimental groups—control, fragmented, or narrative. Participants were provided with a writing tablet containing an insert with writing instructions for their group assignment and mood assessments. Participants completed the first mood form and wrote on their assigned topic for 20 minutes at which point they were signaled by the experimenter to finish writing and complete the second mood report. Essays were returned into a sealed box. Although most research uses multiple (typically three) writing sessions, it was reasoned that increasing the number of sessions would increase the likelihood that the fragmented experimental group would form a narrative, despite instructions to the contrary. Additionally, investigators have previously produced strong health effects of writing using a single session (Greenberg, et al., 1996).

The control group was given the following instructions:

> We would like you to write about the following assigned topic. You should write about the specific topic in detail without discussing any of your thoughts and feelings surrounding the topic, but rather focus on a factual description. Today we want you to write about your plans for the *previous week*. Again, describe them in detail without referring to your thoughts or feelings associated with them.

The instructions for the fragmented experimental group were as follows:

> You were recently asked to answer some questions about the most traumatic or stressful event of your life. We would now like you to write briefly about that event. The important thing is that you list the deepest thoughts, feelings, emotions, and sensations you experienced as a result of this event. You may choose to write about whichever aspects of the event you want, but whichever you choose, they should be aspects that have affected you very deeply. It is critical that you let yourself go and touch those deepest emotions, thoughts, and sensations that you had.
>
> Some people find listing thoughts, feelings, and sensations about a stressful event upsetting, and may cry, feel sad or depressed afterwards. This is quite normal, and we will allow you as much time as you want when you have finished writing to compose yourself. Examples of each of the three aspects of the event (thoughts, feelings, and sensations) that you must write about, are listed below. You may use this as a rough guideline for how to structure your writing.
>
> Example:
> Event: When I was three, my dog ran away.
> Feelings: I felt sad, alone, frightened, angry.
> Thoughts: I didn't understand why my dog would want to leave me.
> It isn't fair.
> I loved my dog very much.
> Would I ever see him again?
> Sensations: I had a queasy feeling in my stomach and a lump in my throat.

The narrative experimental group were given the following instructions:

> You were recently asked to answer some questions about the most traumatic or stressful event of your life. We would now like you to write briefly about that event. Don't worry about grammar, spelling or sentence structure. The important thing is that you write about your deepest thoughts, feelings, and sensations about the experience. Let yourself go and touch those deepest emotions and thoughts you have. Most importantly, try to form a narrative about the experience. Start by describing the circumstances that led up to the event, then describe what happened during the event. Next, write about the consequences of the event. That is what happened and how it made you think and feel. Finally, try to conclude by de-

TABLE 1. Means and Standard Deviations of Essay Characteristics and Changes in Mood by Group

	— Essay Characteristics —				— Mood Change —	
Group	Emotional	Personal	Narrative	Length	Positive Mood	Negative Mood
Control	0.42 (0.92)[a]	0.74 (1.20)[a]	1.53 (1.64)[a]	297 (110)[a]	1.34 (3.94)[a]	-1.14 (4.37)[a]
Fragmented	4.49 (1.67)[b]	4.85 (1.31)[b]	3.71 (1.51)[b]	406 (125)[b]	-3.50 (3.73)[b]	2.45 (5.93)[b]
Narrative	4.92 (1.18)[b]	5.05 (1.15)[b]	5.15 (1.51)[c]	391 (116)[b]	-2.78 (5.04)[b]	2.92 (7.24)[b]

Note. Standard deviations appear in parentheses. Different superscripts represent significant between-group contrasts ($p < .05$).

> scribing how the event turned out. That is, how did it resolve, or what did you do to deal with the event? In other words, tell a story about what happened and how it made you feel. Some people find writing thoughts, feelings, and sensations about a stressful event upsetting, and may cry, feel sad or depressed afterwards. This is quite normal, and we will allow you as much time as you want when you have finished writing to compose yourself.

All participants were contacted by phone each week for 5 weeks after writing to complete the IES and symptom report.

RESULTS

All participants completed the writing task assigned to them without problems and none reported any difficulty with thoughts or emotions raised by the writing task. We first examined if essay characteristics differed by group using analysis of variance (ANOVA). The overall effect of group was significant for how emotional $F(2,112) = 140.7$, $p < .001$; how personal $F(2,113) = 152.4$, $p < .001$; narrative use $F(2,113) = 74.9$, $p < .001$; and essay length $F(2,113) = 9.6$, $p < .001$. Contrasts were performed to determine, more specifically, how the groups differed (see Table 1). Both experimental groups' essays were more emotional and personal than controls' essays and were also significantly longer. No differences were observed between fragmented and narrative essays for the amount of emotion used, how personal the essays were, or the length of the essays. Both experimental groups' essays were rated as containing significantly more narrative than control groups' essays. Narrative essays were rated as containing significantly more narrative than fragmented essays. Group means and contrasts are summarized in Table 1.

The effects of writing on immediate (i.e., pre- to postwriting) mood for each group was examined next. The change in mood was calculated

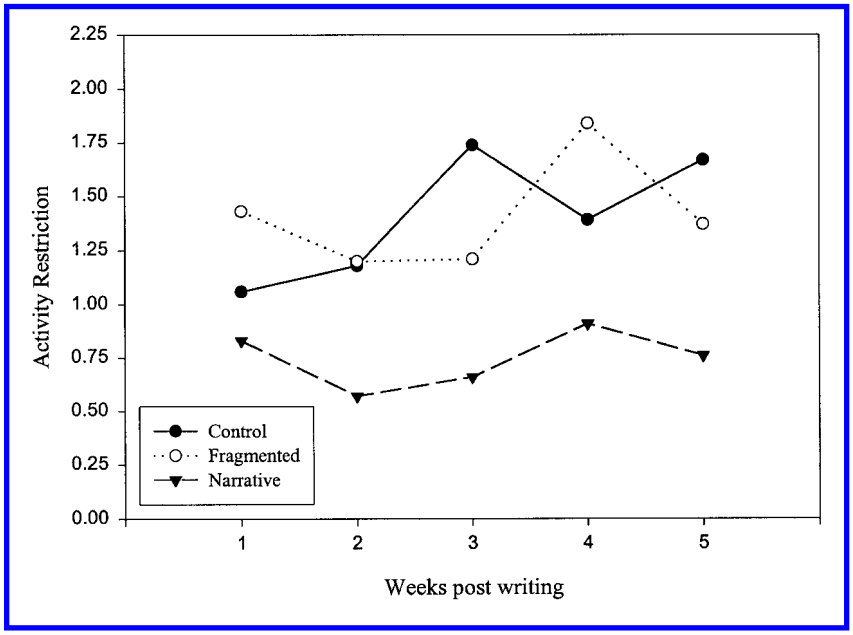

FIGURE 1. The effect of writing group on activity restriction.

for both positive and negative mood by subtracting prewriting mood from postwriting mood. This change score was used in subsequent analyses.[1] The overall ANOVA test for group was significant for both positive mood, $F(2,113) = 13.4$, $p < .001$ and negative mood, $F(2,113) = 4.9$, $p < .01$). Contrast tests revealed that writing produced significantly greater positive mood reductions and negative mood increases in both experimental groups, compared with controls (see Table 1). The short-term effects of writing on mood did not differ between the fragmented and narrative experimental groups (see Table 1). This finding suggests participants are emotionally engaged in the task (i.e., taking the writing seriously). The immediate effect of writing about traumatic experiences on mood has been shown previously to be negative (Smyth, 1998) and may represent a necessary condition for improvement (Smyth & Pennebaker, 1999).

1. There is disagreement about the appropriateness of Δ (change) scores (versus a covariance analysis), although support for Δ scores can be found (e.g., Llabre, Spitzer, Saab, Ironson, & Schneiderman, 1991). We chose to use Δ scores for ease in interpretation and comparison to other work in this area (Lutgendorf & Antoni, 1999; Smyth et al., 1999), although we also conducted the covariance analysis and found that the pattern of results was unchanged.

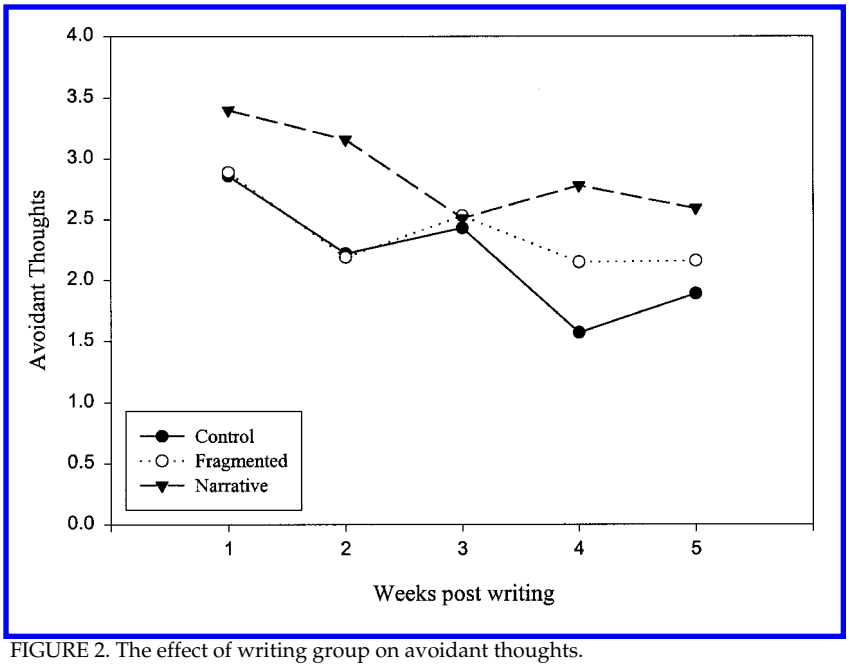

FIGURE 2. The effect of writing group on avoidant thoughts.

Multilevel random effects models (PROC MIXED in SAS) were used to test effects of group, time, and the interaction of group and time (group*time) on symptoms, activity restriction, intrusive thoughts, and avoidant thoughts. Time was coded as number of weeks postwriting (1 to 5), and baseline scores of each dependent variable were used as covariates. Composite symptom and activity restriction measures were computed by summing all reports of symptoms or restriction at each time point. Group (control, fragmented, and narrative) was unrelated to symptom report, all $F(2,107) < 1.0$).[2] Individuals asked to form a narrative reported less restriction of activity because of illness $F(2,107) = 8.17$, $p < .01$ (see Figure 1) and showed higher avoidant thinking than the other groups $F(2,107) = 3.70$, $p < .05$; see Figure 2). Group was unrelated to intrusive thoughts, $F(2,107) < 1.0$, not significant). No group*time effects were significant, all $F(2,107) < 1.75$, not significant).

2. The symptom checklist has also been used to construct three subscales: upper respiratory symptoms, musculoskeletal symptoms, and miscellaneous symptoms (Greenberg et al., 1996). This strategy was evaluated and does not alter the results (no subscale was related to group) so the simpler method of cumulating symptoms is presented. It also must be noted that symptom levels were examined both in raw form and adjusted for gender specific content with no differences in results.

DISCUSSION

This study examined the role of narrative formation in written disclosure interventions by attempting to experimentally manipulate narrative use in writing. These data are the first demonstration that instructions to form a narrative during written disclosure produce a different response to writing than does fragmented or control writing. Participants were willing and able to follow the instructions given in this study and the experimental manipulation (manipulating narrative use without compromising the expression of thoughts and feelings) appears to have been successful. Participants given the fragmented expression instructions disclosed similar amounts of emotion and personal topics, differing from the narrative group only in the degree of narrative use when writing. Although both experimental groups expressed their deepest thoughts and feelings about the most traumatic experience of their life, the fragmented writing group was not distinguishable from the control group on any measure. In contrast, the narrative writing group showed some indication of health improvements and, albeit in an unexpected fashion, alteration of avoidant thoughts. This preliminary finding suggests that the mere expression of thoughts and feelings surrounding a traumatic experience may not be sufficient for improvement and that narrative formation is necessary.

Our hypothesis that intrusions would be reduced by narrative writing was not supported (Lutgendorf & Antoni, 1999). This may reflect the need for increases or improvements in narrative formation, as suggested by Pennebaker, Mayne, and Francis (1997). One session of writing may not be sufficient to produce such changes. The fact that we found evidence for some health improvement, however, makes this interpretation less likely because alterations in narrative are presumed to underlie both cognitive (i.e., intrusions) and physical (i.e., health) benefits (Pennebaker, Mayne, & Francis, 1997). The persistent elevation of avoidant thinking was unexpected and not consistent with speculation that avoidant thinking increases after writing, then rapidly returns back to or below baseline levels (Smyth & Pennebaker, 1999). It is interesting to note, however, that another study using a single writing session (Greenberg et al., 1996) reported increases in avoidant thinking after writing, although health benefits were observed. It is possible that a single writing session, despite producing health benefits, serves a sensitizing function. In response, participants may actively try to avoid thinking of the traumatic content. Multiple writing sessions may not produce this avoidance response as participants have the opportunity to habituate to the traumatic memory over several days (Smyth et al., 1999). At this point, however, the role of intrusive and avoidant thinking in written

disclosure is not clear and needs clarification through additional research.

Although no differences in symptom report existed, this must be interpreted in light of the overall low level of symptoms reported in this sample (i.e., a "floor" effect). Future research needs to replicate these preliminary findings in a sample experiencing higher rates of illness symptoms or clinical illness. An alternative explanation is that participants were unwilling to express physical symptoms over the phone. This study used a minimal intervention (i.e., a single writing session). It is currently unclear if increasing the number of sessions would serve to enhance group differences (e.g., a "dose" effect) or eliminate them since both groups, regardless of instruction, imposed organization or narrative structure. This study did not examine how an experimental group given typical instructions (i.e., no attempt to interfere with or maximize narrative) would respond. Are instructions to form a narrative beneficial while instructions to form a fragmented style detrimental? Overall, this preliminary study suggests that the organization aspects of narrative play a critical role in the health benefits of writing about traumatic events and that written disclosure lacking narrative formation may not be beneficial.

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