Published in final edited form as:

J Clin Psychol. 2009 September ; 65(9): 971–988. doi:10.1002/jclp.20600.

Mindfulness and Experiential Avoidance as Predictors and Outcomes of the Narrative Emotional Disclosure Task

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Abstract

This randomized study examined whether narrative emotional disclosure improves mindfulness, experiential avoidance, and mental health, and how baseline levels of and changes in mindfulness and experiential avoidance relate to mental health. Participants (N = 233) wrote repeated traumatic (experimental condition) or unemotional daily events narratives (control condition). Regression analyses showed neither condition nor gender effects on mental health or experiential avoidance at a 1-month follow-up, although the control condition significantly increased in one component of mindfulness. Decreased experiential avoidance (across conditions) and increased mindfulness (in the experimental condition) significantly predicted improved mental health. Narrative disclosure thus did not improve outcomes measured here. However, increasing mindfulness when writing narratives with traumatic content, and decreasing experiential avoidance regardless of writing content, was associated with improved mental health.

Keywords

self-disclosure; narratives; mindfulness; experiential avoidance; mental health

The narrative emotional disclosure task, in which individuals write repeated narratives about traumatic experiences, has garnered much attention since Pennebaker and Beall's publication of the paradigm in 1986. Yet questions remain regarding individual difference and process variables that may predict responses to the narrative disclosure task, as well as the impact of the task on specific psychological outcomes such as self-acceptance. This study aims to fill gaps in the literature by investigating whether individual differences in two emotional awareness processes, mindfulness and experiential avoidance, predict the mental health outcomes of depression, general psychological distress, and self-acceptance potentially achieved through narrative disclosure. Moreover, the study investigates how the processes of mindfulness and experiential avoidance shift over time as a result of narrative disclosure, and how these shifts relate to changes in mental health outcomes. Finally, gender is investigated as a moderator of each of these aims.

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Portions of this research were presented at the annual conference of the Association for Women in Psychology in San Francisco, California (2007).

The Narrative Disclosure Paradigm

Pennebaker and others have found that writing repeated narratives about upsetting experiences can result in improved physical and psychological health compared to writing about emotionally neutral experiences, such as how individuals spend their time (e.g., Greenberg & Stone, 1992; Lepore, 1997; Pennebaker, Colder, & Sharp, 1990; Sloan & Marx, 2004a; Stanton & Danoff-Burg, 2002). However, recent meta-analyses of narrative disclosure research have reached conflicting conclusions regarding the strength of task effects on mental and physical outcomes. A meta-analysis of 13 published and unpublished studies found that the task yields positive results with a medium average effect size in healthy participants (Cohen's $d = .47$; Smyth, 1998), whereas a meta-analysis of studies with clinical populations found a small overall effect size ($d = .19$; Frisina, Borod, & Lepore, 2004); of note, the latter analysis suggested more beneficial effects for physical ($d = .21$) than psychological health ($d = .09$). In a broad meta-analysis of 146 published and unpublished narrative disclosure studies, Frattaroli (2006) also reported a small effect size ($d = .15$) and noted the presence of significant improvements in psychological health (e.g., distress, depression, anxiety, anger, and subjective well-being). Meads and Nouwen's (2005) meta-analysis of randomized controlled trials suggested that available evidence does not support the task's effectiveness. The findings of Meads and Nouwen, along with the small effect sizes reported by Frisina et al. and Frattaroli, are in stark contrast to Smyth's findings and they call into question the strength of the disclosure task to produce meaningful change. Inconsistent findings among individual studies may be partially due to methodological shortcomings such as insufficient sample sizes to detect differences between conditions, insufficient number of writing sessions, and differing lengths of follow-up periods, but may also be due to differences in sample characteristics, the actual content of narratives, and the types of outcomes that have been measured.

It is also unclear whether gender differences exist in narrative task outcomes. Smyth (1998) reported that men, on average, obtain greater task benefits than women. However, Epstein, Sloan, and Marx (2005), Sheese, Brown, and Graziano (2004), and Frattaroli (2006) failed to observe a moderating effect for gender. Such inconsistent findings suggest that some third variable (e.g., prewriting emotional regulation or coping styles) may mediate gender differences in disclosure task outcomes.

Experiential Avoidance as a Moderator of Task Outcome

Pennebaker and Beall (1986) suggest that the individuals likely to benefit most from narrative emotional disclosure are those who experience negative affect and yet routinely avoid or inhibit their emotions. Experiential avoidance—described as an unwillingness to accept certain internal experiences and the consequent avoidance of those experiences, even when such avoidant behavior causes harm—is theorized to be at the heart of many psychological symptoms and disorders (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Experiential avoidance has been found to correlate significantly with general psychopathology, depression, and anxiety (Hayes et al., 2004; Plumb, Orsillo, & Luterek, 2004). In studies of childhood sexual abuse survivors, experiential avoidance has been associated with psychological impairment (Polusny, Rosenthal, Aban, & Follette, 2004) and

has mediated the relationship between status as an abuse survivor and psychological distress (Marx & Sloan, 2002; see also Plumb et al., 2004).

Recent research addressing the hypothesis that the narrative disclosure task may be especially beneficial for those who are high in experiential avoidance is inconsistent, however, with some studies suggesting that pretask emotional avoidance is indeed associated with improved adjustment after disclosure (Norman, Lumley, Dooley, & Diamond, 2004; Páez, Velasco, & Gonzáles, 1999; Solano, Valentina, Pecci, Persichetti, & Colaci, 2003), while other work suggests that high levels of avoidance do not predict positive task outcomes (Smyth, Anderson, Hockemeyer, & Stone, 2002; Stanton et al., 2002). Studies testing whether avoidance itself improves in response to narrative disclosure are also inconsistent, and further research in this area is necessary (Sloan & Marx, 2004b).

Mindfulness

One reason that the narrative disclosure task may reduce experiential avoidance is that writing repeated narratives may involve the process of mindfulness. Mindfulness has been defined as a multicomponent phenomenon comprising elements of self-regulated attention (i.e., maintaining attention on moment-to-moment experiences) and an attitude encompassing curiosity, acceptance, and openness toward one's experiences (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Bishop et al., 2004). Specifically, Baer, Smith, and Allen (2004) provide an operational definition of mindfulness that differentiates among four components: observing internal and external phenomena, describing or labeling those phenomena, acting with awareness (i.e., behaving with undivided attention), and nonjudgmentally accepting present-moment experiences. Often mindfulness is cultivated by techniques such as attending to one's breathing or consciously directing attention to the present surroundings using all five senses (Linehan, 1993).

Brody and Park (2004) theorized that writing repeated narratives—which calls for unrestrictive, free-associative expression—may also involve the process of mindfulness, in that the self-directed attention required in the writing process can heighten awareness of internal states. This heightened awareness may promote psychological health by transforming implicit experiences into explicit ones and by applying language to such experiences, some of which may previously have been nonverbal or preconscious.

Consistent with these ideas, Brown and Ryan (2003) found that more mindful individuals showed greater concordance of implicit and explicit affectivity, which suggests greater self-knowledge and attunement to implicit experiences. Recent research finds mindfulness to be significantly negatively correlated with neuroticism, rumination, physical symptoms, depression, and anxiety (Brown & Ryan, 2003), as well as alexithymia (i.e., the inability to identify and verbalize feelings), experiential avoidance, and general psychological symptomatology (Baer et al., 2004). Mindfulness has been significantly positively related to self-esteem and positive affect (Brown & Ryan, 2003), in addition to emotional intelligence (Baer et al., 2004; Brown & Ryan, 2003). In a study of day-to-day well-being, Brown and Ryan (2003) report that mindfulness successfully predicted lower levels (both intensity and frequency) of unpleasant affect and that increased mindfulness scores over the course of a

mindfulness-based stress reduction intervention predicted posttreatment reductions in mood disturbance and stress.

In summary, although previous research indicates that mindfulness and experiential avoidance are significant predictors of psychological and physical health, there is scant research investigating the constructs of mindfulness and experiential avoidance in relation to narrative disclosure task outcomes. Moreover, existing data on the narrative disclosure task in relation to emotional avoidance and awareness—both as predictors of task outcomes and outcomes themselves—are contradictory and puzzling. Given that much of the disclosure literature has shown greater effect sizes for physical, rather than mental health outcomes, additional research is also required to broaden our understanding of task effects on mental health. The present study investigates not just general psychological distress and depression, which have been previously studied, but also self-acceptance, which is an important component of mindfulness (Baer et al., 2004; Bishop et al., 2004). Self-acceptance has been found to correlate with positive mental health and psychological well-being (Chamberlain & Haaga, 2001; MacInnes, 2006; Ryff, 1989), though it is currently unclear how this construct —characterized by a tolerant, self-forgiving outlook and a lack of criticism toward past behaviors, thoughts, and feelings— relates to narrative disclosure. Thus, the present study adds to the empirical outcome literature on the narrative disclosure paradigm by exploring relationships among disclosure, experiential avoidance, mindfulness, and mental health outcomes, including self-acceptance, in a young adult sample. Further, gender is explored as a moderating variable in light of inconsistent existing research.

Goals and Hypotheses of the Present Study

The primary goals of the present randomized, short-term longitudinal study were threefold. The first goal was to investigate whether the narrative disclosure task improves mental health outcomes, experiential avoidance, and a particular component of mindfulness. Specifically, we hypothesized that 1 month after narrative disclosure the experimental condition—when compared to the control condition—would show decreased experiential avoidance, depression, and general psychological distress; increased self-acceptance; and an increase in the aspect of mindfulness related to acceptance of thoughts and emotions. Further, we hypothesized that the control condition—when compared to the experimental condition—would show increases in aspects of mindfulness related to present-moment awareness, i.e., observing and describing phenomena and acting with awareness, because the control writing task involved a description of daily activities. The second goal was to examine whether individual differences in mindfulness and experiential avoidance would significantly predict mental health outcomes after engaging in narrative disclosure. In accordance with the ideas of Pennebaker and Beall (1986), we hypothesized that individuals higher in experiential avoidance and lower in mindfulness would benefit more from the task as compared to those lower in experiential avoidance and higher in mindfulness. The third goal was to determine whether changes in mindfulness and experiential avoidance from baseline to posttask would predict mental health outcomes. We hypothesized that participants who displayed greater increases in mindfulness from baseline to posttask would show significant improvements in mental health outcomes when compared to participants who increased less or who decreased in mindfulness. Similarly, we hypothesized that individuals who decreased more in

experiential avoidance over the course of the study would show significant improvements in mental health outcomes compared to individuals who decreased less or who increased in experiential avoidance. Gender was explored as a moderator in each of the above hypotheses.

Method

Participants

Students at a large, urban university in New England were recruited for the present study. Recruitment flyers posted in the university's psychology department described the study as one of "narrative writing and feelings" in which participants would be asked to write about personal experiences on three consecutive days. We employed no specific inclusion or exclusion criteria (e.g., participants were not recruited based on having previous traumatic or stressful experiences). Students participated in exchange for course credit (for completion of baseline and writing visits) as well as a modest payment of $15–$30 (for completion of an optional follow-up assessment).

Three hundred twenty-six participants were recruited and completed the initial visit (including baseline questionnaires and the first writing session). Three participants dropped out after the first writing session and an additional four dropped out after the second writing session. Four participants were excluded from analyses due to procedural errors and one was excluded due to incomplete baseline questionnaires. Of the 314 participants who completed the baseline questionnaires and three writing sessions, 32 refused to be contacted for the follow-up assessment. Of the remaining 282 participants, 233 (71% of those recruited) completed the follow-up assessment and comprised the final sample (55% female; 37% ethnic minorities; *M* age 18.88 years, *SD* = 1.17). Demographic data for the present sample appear in Table 1. An analysis of variance (ANOVA) revealed a small but significant gender difference in age ($p<.01$, partial $\eta^2 = .08$) with men ($M = 19.24$, $SD = 1.30$) being somewhat older than women ($M = 18.59$, $SD = .95$). Due to this significant difference, as well as to data indicating that age was significantly related to baseline depression (Pearson $r = -.15$, $p<.02$) and general psychological distress (Pearson $r = -.14$, $p<.03$), age was entered as a covariate in the first step of multiple regression analyses below. However, given that using age as a covariate cannot solve the problem of the confound between age and gender, we also conducted a second set of analyses on a subsample of participants ($n = 199$) who were matched for age across genders (i.e., a sample in which an ANOVA revealed no significant gender differences in age). Results of these parallel analyses mirror those of the original analyses and, as such, we are confident that the results performed below are not confounded by age differences.

Design and Randomization

The present study utilized both between- and within-condition designs. To maximize potential for detecting within-experimental condition differences, two-thirds of the sample was randomly assigned to the experimental condition and one-third to the control condition. Stratified blocked randomization ensured even gender distribution. Groups of six people, half women, were assigned to conditions. Within each block of six, a random numbers table

was used to assign two of the three men and two of the three women to the experimental condition; the remaining man and woman were assigned to the control condition.

Experimental Procedure

The present study consisted of initial laboratory visits on three consecutive days, during which participants completed baseline questionnaires and the narrative writing task, as well as an online follow-up assessment at 1-month posttask. Participants began on Day 1 by reading and signing an informed consent form; individuals were reminded that their participation was completely voluntary and that they could withdraw from the study or choose not to complete any measure (including the narrative task) at any time. A copy of the informed consent form was given to each participant. Participants were then assigned an identification number, which was the only identification appearing on paper questionnaires and written narratives. Participants completed self-report measures (in random order) assessing mindfulness, experiential avoidance, depression, distress, and self-acceptance, as well as a demographics questionnaire. The experimenter then escorted each participant to a private laboratory office. There participants were seated at a desk and given printed instructions for narrative disclosure, adapted directly from Pennebaker (1994), along with three sheets of blank, lined paper. Participants were left alone to read the instructions, after which the experimenter provided an opportunity to ask questions and confirm that they still wanted to participate. As is typical of Pennebaker and Beall's (1986) narrative disclosure paradigm, participants completed three separate writing sessions and were given 20 minutes to write during each session (Sloan & Marx, 2004b). Participants in the experimental condition were instructed to write about a traumatic or upsetting experience and to address their "very deepest emotions and thoughts" about it. To preserve the unimpeded free-association process of the original writing paradigm, individuals could choose the same or different topics for subsequent writing sessions. Those in the control condition were instructed to write an emotionally neutral, or "objective," account of how they spent their day. The experimenter knocked on the laboratory door (without entering) once the 20-minute writing period had ended to cue the participant to stop writing. Participants returned to the laboratory twice more, on Days 2 and 3, to repeat this writing procedure according to abbreviated instructions. On Day 3, after the conclusion of narrative writing, participants were asked if they would like to receive an invitation to complete the follow-up assessment. Those who agreed to be contacted were e-mailed by the experimenter 1 month later and were asked to complete follow-up questionnaires assessing mindfulness, experiential avoidance, depression, distress, and self-acceptance via a secure Web site. Follow-up measures were modified such that participants were instructed to consider "the last few weeks" when responding. Participants thus were instructed to focus on their lives subsequent to the disclosure task, rather than generalizing their responses to the same period that had been previously assessed on Day 1. Responses to the follow-up assessment request were accepted up to 8 weeks after the last writing session (M duration 32.94 days, SD = 6.43, range = 27–55). Although previous disclosure studies have varied widely in the duration of follow-up periods (Sloan & Marx, 2004b), we conducted the follow-up assessment at 1-month posttask to minimize possible attrition while maximizing the potential to detect task effects. Finally, participants were debriefed as to the purposes of the study and provided with payment. Care was taken that any participant experiencing acute distress during the course

of the study was offered consultation and/or referral to a mental health professional. All procedures were approved by the internal review board within the Boston University Department of Psychology.

Measures

Kentucky Inventory of Mindfulness Skills—The Kentucky Inventory of Mindfulness Skills (KIMS; Baer et al., 2004) is a 39-item self-report inventory that assesses four domains of mindfulness, each corresponding to a different subscale: observing internal and external stimuli, describing observed phenomena, acting with awareness, and accepting one's experiences without judgment. Higher scores indicate a tendency towards greater mindfulness. The inventory has demonstrated adequate test–retest reliability and internal consistency (subscale alpha coefficients range from .76 to .91), as well as adequate content validity (Baer et al., 2004). Standardized scores representing means of total KIMS scores were employed in the analyses below.

Acceptance and Action Questionnaire-Revised—The Acceptance and Action Questionnaire-Revised (AAQ; Bond & Bunce, 2003; Hayes et al., 2004) is a self-report instrument designed to measure individuals' willingness to accept their emotions and thoughts as well as the ability to behave in desired ways even when experiencing intense emotion (termed "action"). On the 16-item version of the AAQ employed in the present study, higher scores correspond to higher acceptance/action (i.e., lower experiential avoidance). To improve clarity and avoid potential confusion for respondents in the present study, negatively worded AAQ items (e.g., "I rarely worry…") were reworded positively (e.g., "I worry…"). Bond and Bunce (2003) report that the AAQ has demonstrated adequate internal consistency (coefficients range from .72 to .79; Bond & Bunce, 2003). Hayes and colleagues (2004) provide support for the AAQ's validity, reporting significant correlations with measures of depression, anxiety, general psychopathology, and tendencies to suppress unwanted thoughts. Analyses below utilized standardized scores derived from mean AAQ scores.

Center for Epidemiologic Studies Depression Scale—The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) is a widely used 20-item self-report measure of depressive symptoms. Respondents are asked to rate the frequency with which they have experienced depressive symptoms within the past week. Radloff (1977) reports that the scale has high internal consistency (coefficient of .85 in a general population sample) and adequate validity (e.g., as supported by correlations with clinician severity ratings). Standardized scores computed from means of total CES-D scores were employed in the analyses below.

Brief Symptom Inventory—The Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983) is a 53-item self-report measure that assesses nine domains of psychological symptomatology and provides three global indices of distress. The Global Severity Index (GSI), which assesses general psychological distress by aggregating information on the number of symptoms endorsed and their intensity, was utilized as an

outcome in the present study. Derogatis and Melisaratos (1983) report that the GSI demonstrates adequate validity and high test–retest reliability (coefficient of .90).

Heartland Forgiveness Scale—Self-acceptance was measured with the six-item Self subscale of the Heartland Forgiveness Scale (HFS; Thompson et al., 2005). Sample items include, “It is really hard for me to accept myself once I’ve messed up” and “I don’t stop criticizing myself for negative things I’ve felt, thought, said, or done.” Thompson and colleagues (2005) report that the HFS Self subscale demonstrates acceptable test–retest reliability, sound internal consistency (coefficients of .76 and .75), and the ability to significantly predict aspects of psychological well-being.

Results

Preliminary Analyses

Psychometrics—Internal consistency for all measures at baseline and follow-up were examined by computing Cronbach’s α. Coefficients ranged from .73 to .97 (see Tables 2 and 4), indicating adequate to strong internal consistency for each measure.

Baseline measures—Baseline means and standard deviations for total KIMS, AAQ, CES-D, HFS-Self, and GSI scores are displayed in Table 2. Preliminary ANOVAs confirmed that there were no significant differences between the experimental and control conditions on any measure at Day 1. ANOVAs also confirmed the absence of significant differences in baseline measures between those who completed the study versus those who dropped out. Pearson correlations among baseline measures emerged in expected directions and are displayed in Table 3.

Follow-up Measures

Means and standard deviations of follow-up measures are displayed in Table 4. One participant’s missing AAQ responses were imputed from baseline (i.e., the last observation was carried forward).

Characteristics of Narratives

Experimental narratives included themes such as deaths, illnesses, and relationship difficulties, whereas control narratives described routines of daily life (e.g., waking up to an alarm and getting dressed). Narrative length ranged from 671 to 3,095 words ($M = 1088.22$, $SD = 357.56$). A preliminary ANOVA indicated that there were no significant differences in word count (averaged across all three narratives) by condition. Content was analyzed using Linguistic Inquiry and Word Count software (Pennebaker, Francis, & Booth, 2001), which yields percentages of words (thus controlling for absolute narrative length) that fall into various linguistic categories. In examining data averaged across the three narratives, ANOVAs revealed significant differences by condition in average percentages of emotion words, $F(1,231) = 216.11$, $p<.001$, partial $\eta^2 = .48$; negative emotion words, $F(1,231) = 284.66$, $p<.001$, partial $\eta^2 = .55$; and positive emotion words, $F(1,231) = 35.54$, $p<.001$, partial $\eta^2 = .13$. These analyses confirmed that experimental condition narratives contained

significantly greater emotional content than those of the control condition, suggesting that the writing instructions produced their intended effects.

Primary Analyses

Effects of condition on mindfulness and experiential avoidance—Five hierarchical multiple regressions were performed to test the effect of condition (i.e., experimental vs. control) on four components of mindfulness and on experiential avoidance as measured at the 1-month follow-up. In each regression, the outcome variable represented one of the four KIMS subscales or the AAQ score at follow-up. Age and the selected outcome at baseline were entered simultaneously in the first step. Condition and gender were entered as predictor variables in the second step. A dummy variable coding for the condition × gender interaction was entered in the third step.

Mindfulness—Neither condition, gender, nor the interaction between them significantly predicted the KIMS subscales of observe, describe, or act with awareness at follow-up. A main effect for condition significantly predicted the accept without judgment subscale (β = .13, $p<.01$), with the control condition evidencing higher accept without judgment scores at follow-up compared to the experimental condition. Repeated measures ANOVAs, with time (pre/post) as the repeated measure, conducted separately by condition revealed no significant effect for time in the experimental condition, $F(1,158) = 2.71$, $p<.10$. In contrast, a significant effect for time indicated an increase in accept without judgment scores from baseline to follow-up in the control condition, $F(1,73) = 9.36$, $p<.01$.

Experiential avoidance—Neither condition, gender, nor the interaction between them significantly predicted AAQ scores at follow-up.

In summary, the control condition significantly increased in one aspect of mindfulness—nonjudgmental acceptance of thoughts and emotions—from baseline to follow-up, while the experimental condition did not. Condition did not predict, nor did gender moderate, changes in other aspects of mindfulness or experiential avoidance.

Effects of Condition, Baseline Mindfulness, and Baseline Experiential Avoidance on Mental Health Outcomes

Three hierarchical multiple regressions were performed to test whether condition, baseline mindfulness, and baseline experiential avoidance related to depression, general psychological distress, and self-acceptance outcomes. In each regression, the outcome variable represented the CES-D, GSI, or HFS-Self subscale at follow-up. Age and the selected outcome at baseline were entered simultaneously in the first step. Gender, condition, total baseline KIMS scores, and baseline AAQ scores were entered as predictor variables in the second step. Dummy variables coding for two-way interactions among those variables were entered in the third step; three-way interactions were entered in the fourth step.

Depression—Condition and baseline KIMS scores interacted to predict CES-D scores at follow-up (β = −.15, $p<.02$). Regressions performed separately for experimental and control

conditions indicated that within the control condition, higher baseline mindfulness was related to lower depression at follow-up (β = −.29, p<.01). No significant relationship emerged within the experimental condition.

Distress—Condition and baseline KIMS scores interacted to predict GSI scores at follow-up (β = −.12, p<.03). Follow-up GSI scores were also predicted by a significant interaction among gender, condition, and baseline AAQ scores (β = −.16, p<.01). Regressions performed separately by condition revealed that within the control condition, higher baseline mindfulness was related to lower distress at follow-up (β = −.19, p<.02). Additionally, gender and baseline AAQ scores interacted to predict distress (β = −.22, p<.01); however, further simple regressions did not reveal significant findings among male or female control condition participants. No significant relationships emerged within the experimental condition.

Self-acceptance—A trend emerged for the interaction of condition and baseline KIMS scores predicting follow-up HFS-Self scores (β = .11, p<.06). Regressions performed separately by condition revealed no significant findings for the experimental condition. Within the control condition, higher baseline mindfulness was related to higher self-acceptance at follow-up (β = .16, p<.04).

In summary, within the control condition—but not the experimental condition—higher baseline mindfulness was related to reduced depression and distress, and tended to be related to improved self-acceptance at follow-up.

Effects of Changes in Mindfulness and Experiential Avoidance on Mental Health Outcomes

A series of hierarchical multiple regressions tested whether changes in mindfulness and experiential avoidance over the course of the study predicted depression, general distress, or self-acceptance at follow-up. The outcome variable in each regression represented the CES-D, GSI, or HFS-Self subscale at follow-up. Age and the selected outcome at baseline were entered simultaneously in the first step. Condition, gender, and difference scores representing changes in total KIMS and AAQ scores from baseline to follow-up were entered simultaneously in the second step. Two-way interactions among these variables were entered in the third step; three-way interactions were entered in the fourth step. Results that overlap with those described previously are not reported below.

Depression—Change in AAQ scores from baseline to follow-up significantly predicted CES-D scores at follow-up (β = −.26, p<.001), indicating that increased acceptance/action over the course of the study (i.e., decreased experiential avoidance) was associated with decreased depression at follow-up, across conditions. Change in KIMS scores from baseline to follow-up also predicted CES-D scores at follow-up (β = −.14, p<.02); this result was qualified by a significant interaction between condition and change in KIMS scores (β = .11, p<.05). Regressions performed separately by condition revealed that, within the experimental condition, increased mindfulness from baseline to follow-up was associated with reduced depression at follow-up (β = −.29, p<.001). No significant relationship emerged in the control condition.

Distress—Change in AAQ scores from baseline to follow-up significantly predicted GSI scores at follow-up (− = −.31, p<.001), indicating that increased acceptance/action over the course of the study (i.e., decreased experiential avoidance) was associated with decreased distress at follow-up, across conditions. A condition × change in KIMS scores from baseline to follow-up interaction also predicted follow-up GSI scores (β = .09, p<.05). Regressions performed separately by condition revealed that within the experimental condition, increased mindfulness from baseline to follow-up was associated with reduced distress at follow-up (β = −.23, p<.001). No significant relationship emerged in the control condition.

Self-acceptance—HFS-Self scores at follow-up were significantly predicted by change in AAQ scores from baseline to follow-up (β = .32, p<.001), indicating that increased acceptance/action over the course of the study (i.e., decreased experiential avoidance) was associated with increased self-acceptance at follow-up across conditions. HFS-Self scores at follow-up were also significantly predicted by gender (β = −.13, p<.01) and change in KIMS scores from baseline to follow-up (β = .18, p<.001). However, these results were qualified by a significant interaction among gender, change in KIMS scores, and condition (β = .11, p<.02). Regressions performed separately by condition revealed that within the experimental condition, increased mindfulness from baseline to follow-up was related to higher self-acceptance at follow-up (β = .35, p < .001). Within the control condition, significant effects emerged for gender (β = −.16, p<.03) and change in KIMS scores (β = .14, p< .05), which were qualified by a significant interaction between gender and change in KIMS scores (β = .19, p<.01). Further simple regressions performed separately by gender revealed that among female control condition participants, increased mindfulness from baseline to follow-up was related to higher self-acceptance at follow-up (β = .24, p< .02). Change in mindfulness was not a significant predictor of self-acceptance among male control condition participants.

In summary, regardless of condition, decreases in experiential avoidance from baseline to follow-up were associated with improved mental health outcomes (i.e., reduced depression, reduced distress, and increased self-acceptance). However, only within the experimental condition were increases in mindfulness from baseline to follow-up associated with increased self-acceptance, reduced depression, and reduced distress. Within the control condition, increased mindfulness was associated with improved self-acceptance among women only.

Discussion

Narrative Disclosure Task Effects

The present study adds to the growing literature on the narrative disclosure task by examining relationships among mindfulness, experiential avoidance, and mental health outcomes. Results of this investigation did not support our hypothesis that narrative emotional disclosure would have beneficial effects 1 month after participation. That is, the experimental disclosure condition of writing about traumatic experiences did not reduce depression, general psychological distress, or experiential avoidance, nor did it improve self-acceptance or the component of mindfulness associated with acceptance of thoughts and emotions, when compared to the control condition. Unexpectedly, participants in the control

condition, who wrote about events in their daily lives, reported a significant increase in one aspect of mindfulness—nonjudgmental acceptance of thoughts and emotions. Investigations into whether baseline individual differences in mindfulness and experiential avoidance would significantly predict mental health outcomes after narrative disclosure also yielded unexpected results within the control condition, where higher baseline mindfulness was associated with reduced depression, reduced distress, and increased self-acceptance at follow-up. Gender did not influence narrative disclosure outcomes.

Our findings that the experimental condition did not benefit from the narrative disclosure task relative to the control condition occurred despite the fact that the experimental condition wrote narratives with higher levels of emotional content than control condition narratives. Indeed, a number of experimental participants commented that the task provided a welcome opportunity to experience memories and feelings they may have avoided in the past. Within the context of research suggesting limited effects of narrative emotional disclosure (Frattaroli, 2006; Frisina et al., 2004; Meads & Nouwen, 2005), our lack of an experimental effect calls the task's effectiveness into question, such as it was administered here with a student sample.

Several aspects of the present study's methodology and design may have contributed to the lack of experimental effect. Though our procedure conformed to that described by Pennebaker and Beall (1986), it is possible that participants' freedom to write about different traumas on each day diluted the effects of the task. The number and length of writing sessions may also have been insufficient to effect change in mental health outcomes, particularly if the task's mechanism of action is via exposure (see discussions in Sloan & Marx, 2004b and Frattaroli, 2006). These factors may have prevented participants from being repeatedly exposed to difficult thoughts and feelings, potentially interrupting habituation to negative affect and integration of past painful experiences. It may also be that focusing on past trauma in the absence of a therapist's assistance may be insufficient to produce meaningful changes. Moreover, the present study did not address variables related to the content of narratives themselves that may well have influenced task outcomes, including the degrees of severity and personal relevance of narrative topics chosen as well as the degree to which traumatic memories had been previously disclosed to others (see Bell-Pringle, Jurkovic, & Pate, 2004; Frattaroli, 2006). It is possible that some participants had not experienced, and therefore did not write about, memories containing meaningful and previously inhibited stressors. It is also possible that the length of the follow-up period used to detect change in psychological outcomes (averaging one month) may have been insufficient, although previous research is inconsistent about the length of follow-up that is most effective. Previous disclosure studies have employed follow-up periods ranging from 1 to 32 weeks (Sloan & Marx, 2004b). Recent meta-analytic work suggests that psychological health effects are larger in studies with follow-up periods of *less* than 1 month compared to studies with follow-ups of 1 month or more (Frattaroli, 2006), although studies using multiple follow-up assessments have observed improved physical symptoms several months posttask (Gillis, Lumley, Mosley-Williams, Leisen, & Roehrs, 2006; Smyth, Stone, Hurewitz, & Kaell, 1999). The ideal length for follow-up periods thus remains undetermined. Finally, some unreliability may have been introduced into the study by administering baseline measures that asked about general mood and distress, while

administering follow-up measures that asked about mood and distress over the past few weeks only; additional unreliability may have been introduced by administering baseline measures in the laboratory and follow-up measures over the Internet.

Relationships Among Mindfulness, Experiential Avoidance, and Mental Health Outcomes

In accordance with literature examining the value of self-awareness and emotional acceptance, we hypothesized that participants who increased most in mindfulness and decreased most in experiential avoidance from baseline to follow-up would show significant improvements in mental health outcomes. This hypothesis was partially supported. Regardless of experimental condition, decreased experiential avoidance over the course of the study was associated with reduced depression, reduced distress, and increased self-acceptance. For participants in the experimental condition, increases in mindfulness from baseline to follow-up were associated with improved mental health outcomes. In the control condition, the association between increased mindfulness and increased self-acceptance was observed among women only. Why men in the control condition who increased in mindfulness while recounting the events of their day also did not improve in self-acceptance, as did women, is an open question, and might be due to gender differences in the content of the narratives or the quality and intensity of emotions expressed in the narratives— analyses which were beyond the scope of this investigation.

Although the narrative disclosure task itself did not appear to produce beneficial shifts in mindfulness and experiential avoidance, results showing that increases in these processes are associated with improved mental health provide evidence for the adaptive nature of self-awareness and acceptance of internal experiences. The fact that shifts in mindfulness were related to outcomes especially for the experimental group suggests that participants who become more mindful of their experiences while recounting traumatic experiences are more apt to reap mental health benefits from narrative writing as opposed to those who become more mindful while recounting events of their day. It seems that the effect of mindfulness on the control condition centers around the degree of mindfulness when starting out to do the narrative writing task: for those recounting daily events in their narratives, higher baseline mindfulness, rather than a shift in mindfulness, was related to reduced depression, reduced distress, and increased self-acceptance at follow-up. Thus, those higher in mindfulness at the start of the study—perhaps because of better developed abilities to observe and describe their experiences—may have achieved superior engagement in this type of task and thus benefited most from it.

Together with the significant correlations observed at baseline among mindfulness, experiential avoidance, self-acceptance, depression, and distress, these findings generally support assertions made by Baer et al. (2004) and Hayes et al. (2004) that mindfulness and low experiential avoidance are associated with positive mental health. Techniques that foster these qualities may be valuable means of reducing psychological distress. Researchers would do well to consider whether there are certain individual attributes that predict who becomes more mindful and less avoidant in response to such interventions, in addition to investigating how those changes can be accomplished in various populations.

Emotionally Neutral Task Effects

Unexpected results for the control condition point to the impact of the particular writing instructions employed in the present study, and to the potential usefulness of daily journal writing. Participants in the control condition, who were asked to write detailed, nonemotional accounts of their daily lives over three consecutive days, reported significantly higher levels of one component of mindfulness—the acceptance of moment-to-moment experiences—1 month after the writing task. This unanticipated result suggests that chronicling day-to-day events may effectively increase nonjudgmental attitudes, at least for a period of time. Why the control condition did not also increase in other aspects of mindfulness, including observing and describing phenomena and acting with awareness, is puzzling. Different writing instructions (e.g., asking participants to describe their immediate surroundings, a control task used in some past disclosure studies) may have yielded quite different results. Moreover, given that shifts in mindfulness in the control group significantly related only to self-acceptance for women, and not to other mental health outcomes for either gender, it is not clear how meaningful or predictive the changes in mindfulness as a result of chronicling daily events are.

Conclusions

In summary, narrative emotional disclosure was neither an effective means of improving mental health or mindfulness, nor of reducing experiential avoidance in a nonclinical sample of university students. Decreased experiential avoidance from baseline to follow-up was associated with better mental health outcomes for both experimental and control participants; similarly, increased mindfulness over the course of the study was associated with improved mental health outcomes in the experimental condition. Lastly, control condition participants—who wrote unemotional accounts their daily lives for three consecutive days—reported increases in one component of mindfulness, nonjudgmental acceptance of thoughts and emotions, and also had more positive outcomes on the task when levels of baseline mindfulness were higher. This work adds to the existing outcome literature on narrative disclosure by utilizing psychometrically sound measures of psychopathology, investigating the construct of self-acceptance, and by examining variables of growing interest to psychology researchers—mindfulness and experiential avoidance—that have not previously been studied in relation to narrative disclosure. The unpredicted but important roles played by mindfulness and experiential avoidance in the present study support their status as topics worthy of continued investigation.

Acknowledgments

This study was funded in part by Clara Mayo Memorial Fellowships from Boston University awarded to Susan D. Moore and Amy E. Dierberger. Susan D. Moore was also supported by Public Health Service Training Grant 5 T32 HL07034 from the National Heart, Lung, and Blood Institute and by a grant from Helpsam.org. The authors thank Sarah Dargouth, Maria Steenkamp, Valerie Wilson, Eva Lambidoni, Maryna Vashchenko, Kelly Wallace, Julie Shulman, Kristine Rivera, and Alyx Schwarz for their indispensable assistance.

References

Baer RA, Smith GT, Allen KB. Assessment of mindfulness by self report: The Kentucky Inventory of Mindfulness Skills. Assessment. 2004; 11:191–206. [PubMed: 15358875]

Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self-report assessment methods to explore facets of mindfulness. Assessment. 2006; 13:27–45. [PubMed: 16443717]

Bell-Pringle VJ, Jurkovic GJ, Pate JL. Writing about upsetting family events: A therapy analog study. Journal of Contemporary Psychotherapy. 2004; 34:341–349.

Bishop SR, Lau M, Shapiro S, Carlson L, Anderson ND, Carmody J, et al. Mindfulness: A proposed operational definition. Clinical Psychology: Science and Practice. 2004; 11:230–241.

Bond FW, Bunce D. The role of acceptance and job control in mental health, job satisfaction, and work performance. Journal of Applied Psychology. 2003; 88:1057–1067. [PubMed: 14640816]

Brody LR, Park SH. Narratives, mindfulness, and the implicit audience. Clinical Psychology: Science and Practice. 2004; 11:147–154.

Brown KW, Ryan RM. The benefits of being present: Mindfulness and its role in psychological well-being. Journal of Personality and Social Psychology. 2003; 84:822–848. [PubMed: 12703651]

Chamberlain JM, Haaga DAF. Unconditional self-acceptance and responses to negative feedback. Journal of Rational-Emotive & Cognitive Behavior Therapy. 2001; 19:177–189.

Derogatis LR, Melisaratos N. The Brief Symptom Inventory: An introductory report. Psychological Medicine. 1983; 13:595–605. [PubMed: 6622612]

Epstein EM, Sloan DM, Marx BP. Getting to the heart of the matter: Written disclosure, gender, and heart rate. Psychosomatic Medicine. 2005; 67:413–419. [PubMed: 15911904]

Frattaroli J. Experimental disclosure and its moderators: A meta-analysis. Psychological Bulletin. 2006; 132:823–865. [PubMed: 17073523]

Frisina PG, Borod JC, Lepore SJ. A meta-analysis of the effects of written emotional disclosure on the health outcomes of clinical populations. Journal of Nervous and Mental Disease. 2004; 192:629–634. [PubMed: 15348980]

Gillis ME, Lumley MA, Mosley-Williams A, Leisen JCC, Roehrs T. The health effects of at-home written emotional disclosure in fibromyalgia: A randomized trial. Annals of Behavioral Medicine. 2006; 32:135–146. [PubMed: 16972811]

Greenberg MA, Stone AA. Emotional disclosure about traumas and its relation to health: Effects of previous disclosure and trauma severity. Journal of Personality and Social Psychology. 1992; 63:75–84. [PubMed: 1494986]

Hayes SC, Strosahl K, Wilson KG, Bissett RT, Pistorello J, Toramino D, et al. Measuring experiential avoidance: A preliminary test of a working model. Psychological Record. 2004; 54:553–578.

Hayes SC, Wilson KG, Gifford EV, Follette VM, Strosahl K. Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. Journal of Consulting and Clinical Psychology. 1996; 64:1152–1168. [PubMed: 8991302]

Lepore SJ. Expressive writing moderates the relation between intrusive thoughts and depressive symptoms. Journal of Personality and Social Psychology. 1997; 73:1030–1037. [PubMed: 9364758]

Linehan, MM. Skills training manual for treating borderline personality disorder. New York: Guilford Press; 1993.

MacInnes DL. Self-esteem and self-acceptance: An examination into their relationship and their effect on psychological health. Journal of Psychiatric and Mental Health Nursing. 2006; 13:483–489. [PubMed: 16965465]

Marx BP, Sloan DM. The role of emotion in the psychological functioning of adult survivors of childhood sexual abuse. Behavior Therapy. 2002; 33:563–577.

Meads C, Nouwen A. Does emotional disclosure have any effects? A systematic review of the literature with meta-analyses. International Journal of Technology Assessment in Health Care. 2005; 21:153–164. [PubMed: 15921054]

Norman SA, Lumley MA, Dooley JA, Diamond MP. For whom does it work? Moderators of the effects of written emotional disclosure in a randomized trial among women with chronic pelvic pain. Psychosomatic Medicine. 2004; 66:174–183. [PubMed: 15039501]

Páez D, Velasco C, Gonzáles JL. Expressive writing and the role of alexythimia as a dispositional deficit in self-disclosure and psychological health. Journal of Personality and Social Psychology. 1999; 77:630–641. [PubMed: 10510512]

Pennebaker, JW. Hints on running a writing experiment. Unpublished manual. 1994. Retrieved from http://homepage.psy.utexas.edu/homepage/faculty/Pennebaker/Reprints/Hints.doc

Pennebaker JW, Beall SK. Confronting a traumatic event: Toward an understanding of inhibition and disease. Journal of Abnormal Psychology. 1986; 95:274–281. [PubMed: 3745650]

Pennebaker JW, Colder M, Sharp LK. Accelerating the coping process. Journal of Personality and Social Psychology. 1990; 58:528–537. [PubMed: 2324942]

Pennebaker, JW.; Francis, ME.; Booth, RJ. Linguistic Inquiry and Word Count (LIWC): A computerized text analysis program. Mahwah, NJ: Erlbaum; 2001.

Plumb JC, Orsillo SM, Luterek JA. A preliminary test of the role of experiential avoidance in post-event functioning. Journal of Behavior Therapy and Experimental Psychiatry. 2004; 35:245–257. [PubMed: 15262220]

Polusny MA, Rosenthal MZ, Aban I, Follette VM. Experiential avoidance as a mediator of the effects of adolescent sexual victimization on negative adult outcomes. Violence and Victims. 2004; 19:1–12.

Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401.

Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. Journal of Personality and Social Psychology. 1989; 57:1069–1081.

Sheese BE, Brown EL, Graziano WG. Emotional expression in cyberspace: Searching for moderators of the Pennebaker disclosure effect via e-mail. Health Psychology. 2004; 23:457–464. [PubMed: 15367065]

Sloan DM, Marx BP. A closer examination of the structured written disclosure procedure. Journal of Consulting and Clinical Psychology. 2004a; 72:165–175. [PubMed: 15065952]

Sloan DM, Marx BP. Taking pen to hand: Evaluating theories underlying the written disclosure paradigm. Clinical Psychology: Science and Practice. 2004b; 11:121–137.

Smyth JM. Written emotional expression: Effect sizes, outcome types, and moderating variables. Journal of Consulting and Clinical Psychology. 1998; 66:174–184. [PubMed: 9489272]

Smyth JM, Anderson CF, Hockemeyer JR, Stone AA. Does emotional non-expressiveness or avoidance interfere with writing about stressful life events? An analysis in patients with chronic illness. Psychology and Health. 2002; 17:561–569.

Smyth JM, Stone AA, Hurewitz A, Kaell A. Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis: A randomized trial. Journal of the American Medical Association. 1999; 281:1304–1309. [PubMed: 10208146]

Solano L, Valentina D, Pecci F, Persichetti S, Colaci A. Postoperative course after papilloma resection: Effects of written disclosure of the experience in subjects with different alexithymia levels. Psychosomatic Medicine. 2003; 65:477–484. [PubMed: 12764222]

Stanton, AL.; Danoff-Burg, S. Emotional expression, expressive writing, and cancer. In: Lepore, SJ.; Smyth, JM., editors. The writing cure: How expressive writing promotes health and emotional well-being. Washington, DC: American Psychological Association; 2002. p. 31-51.

Stanton AL, Danoff-Burg S, Sworowski LA, Collins CA, Branstetter AD, Rodriguez-Hanley A, et al. Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients. Journal of Clinical Oncology. 2002; 20:4160–4168. [PubMed: 12377959]

Thompson LY, Snyder CR, Hoffman L, Michael ST, Rasmussen HN, Billings LS, et al. Dispositional forgiveness of self, others, and situations. Journal of Personality. 2005; 73:313–359. [PubMed: 15745433]

Table 1

Demographic Data for the Present Sample (*N*= 233)

	N	%
Gender		
Male	105	45
Female	128	55
Ethnicity		
White/of European descent	146	63
Asian	36	16
Hispanic/Latino	14	6
Black/of African descent	10	4
Indian	8	3
Middle Eastern	4	2
Native Hawaiian/Pacific Islander	1	<1
Multiethnic	14	6

Table 2

Baseline Means, Standard Deviations, and Alpha Coefficients for Measures in the Present Study

	Total sample (*N* = 233)			Men (*N* = 105)		Women (*N* = 128)	
	M	***SD***	**α**	***M***	***SD***	***M***	***SD***
KIMS	122.42	14.76	.84	123.53	14.79	121.60	14.73
AAQ	73.04	10.02	.73	74.78	9.89	71.61	9.94
CES-D	16.24	9.59	.88	14.04	8.79	18.05	9.88
GSI	.67	.47	.94	.51	.39	.79	.49
HFS-Self	28.56	6.49	.82	29.49	5.56	27.80	7.10

Note. KIMS = Kentucky Inventory of Mindfulness Skills; AAQ = Acceptance and Action Questionnaire-Revised; CES-D = Center for Epidemiologic Studies Depression Scale; GSI = Global Severity Index; HFS-Self = Heartland Forgiveness Scale-Self subscale.

Table 3

Baseline Correlations Among Measures for the Total Sample, Men, and Women

	AAQ			CES-D			GSI			HFS-Self		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
KIMS	.52**	.56**	.47**	−.27**	−.39**	−.18*	−.31**	−.39**	−.25**	.39**	.43**	.36**
AAQ				−.44**	−.47**	−.39**	−.48**	−.43**	−.48**	.57**	.55**	.58**
CES-D							.78**	.75**	.79**	−.42**	−.41**	−.40**
GSI										−.47**	−.41**	−.48**

Note. KIMS = Kentucky Inventory of Mindfulness Skills; AAQ = Acceptance and Action Questionnaire-Revised; CES-D = Center for Epidemiologic Studies Depression Scale; GSI = Global Severity Index; HFS-Self = Heartland Forgiveness Scale-Self subscale.

*Correlation significant at the .05 level (two-tailed).

**Correlation significant at the .01 level (two-tailed).

Table 4

Follow-Up Means, Standard Deviations, and Alpha Coefficients for Measures in the Present Study

	Experimental							Control						
	All (*N* = 159)			Men (*N* = 68)		Women (*N*= 91)		All (*N* = 74)			Men (*N* = 37)		Women (*N*= 37)	
	M	***SD***	**α**	***M***	***SD***	***M***	***SD***	***M***	***SD***	**α**	***M***	***SD***	***M***	***SD***
KIMS	118.89	17.03	.85	120.26	17.24	117.87	16.89	122.41	17.75	.86	124.70	16.17	120.14	19.14
AAQ	72.42	10.95	.76	73.46	11.01	71.65	10.89	72.58	12.19	.79	75.84	11.16	69.32	12.45
CES-D	16.96	11.77	.92	14.78	9.77	18.58	12.89	17.51	10.86	.91	14.29	8.59	20.73	12.01
GSI	.69	.57	.96	.54	.49	.81	.59	.73	.67	.97	.51	.39	.96	.81
HFS-Self	28.53	6.43	.82	29.46	6.09	27.84	6.63	28.78	8.08	.91	31.11	6.33	26.46	9.01

Note. KIMS = Kentucky Inventory of Mindfulness Skills; AAQ = Acceptance and Action Questionnaire-Revised; CES-D = Center for Epidemiologic Studies Depression Scale; GSI = Global Severity Index; HFS-Self = Heartland Forgiveness Scale-Self subscale.