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# Physical and Psychological Effects of Written Disclosure Among Sexual Abuse Survivors

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Although numerous studies demonstrate the efficacy of writing about stressful events on measures of participants' health, most studies have included psychologically and physically healthy participants. The purpose of the current study was to determine whether writing about stressful or traumatic events would have the same effect with participants who had experienced a significant trauma. The physical and psychological impact of writing about child sexual abuse (CSA) experiences or time management was examined in 61 women (mean age 35.0) who reported a CSA history. Participants completed biweekly telephone interviews for 12 weeks after writing, as well as 12-week follow-up questionnaires. The results indicate that writing about CSA history alone is not sufficient to provide psychological or physical health benefits. As these results diverge from the extant literature, possible reasons for these findings are discussed, along with implications for writing interventions with survivors of significant traumas.

A substantial literature supports the beneficial effects of writing one's deepest thoughts and feelings about a stressful or traumatic event on physical and psychological functioning (for a review, see Smyth, 1998). However, due

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to sample limitations in many of these studies, the generalizability of these promising results is unknown. The first studies found that undergraduate students who wrote about past traumas subsequently experienced long-term decreases in physical symptoms and health center visits (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990; Pennebaker & Francis, 1996). In addition, writing about stressful events, such as coming to college, resulted in maintained or increased grade point averages (Pennebaker et al., 1990; Pennebaker & Francis). Written disclosure has also been shown to beneficially impact basic physiological and immunological functioning (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994; Pennebaker, Kiecolt-Glaser, & Glaser, 1988; Petrie, Booth, Pennebaker, Davison, & Thomas, 1995). The impact of written disclosure has also been evaluated with white-collar workers, among whom writing about stressful events resulted in significantly healthier liver functioning and fewer days off from work (Francis & Pennebaker, 1992), as well as being rehired more quickly after an unexpected layoff (Spera, Buhrfeind, & Pennebaker, 1994).

Although these findings among relatively healthy samples are intriguing, only recently has the disclosure paradigm been tested using clinical or medical samples. Expansion of this line of research is warranted; results found with college students and other mildly distressed populations cannot always be generalized to more complicated populations, as distress in college students may be more mild and transient (Coyne, 1994). Recently, a handful of studies have begun to examine the impact of disclosure for people with significant medical or psychological problems.

In one important study, written disclosure resulted in higher rates of clinically significant improvement for patients with asthma or rheumatoid arthritis (Smyth, Stone, Hurewitz, & Kaell, 1999). In another study of disclosure in rheumatoid arthritis patients, participants were randomly assigned to talk into a tape recorder about stressful events or trivial topics for 4 consecutive days (Kelley, Lumley, & Leisen, 1997). At follow-up, there was no main effect of disclosure on pain or joint condition. However, within the disclosure condition, those who reported greater immediate increases in negative mood evinced greater improvement in joint condition. The influence of written emotional expression on clinically diagnosed essential hypertension has also been preliminarily investigated (McLaughlin, 2000); while written disclosure did not impact blood pressure, resting heart rate, or number of physical symptoms, it did result in improvements in health behaviors, such as diet, smoking, and exercise, at 3-month follow-up.

A few studies have been conducted that address the potential benefit of the written disclosure paradigm for psychological issues. In one study, written disclosure was effective in reducing illness-related health care visits in sex offenders who were psychiatric prison inmates, although not in the overall prison population (Richards, Beal, Seagal, & Pennebaker, 2000). Furthermore, Segal, Bogaards, Becker, and Chatham (1999) found that vocal expression of emotion in older adults who were distressed over the loss of a spouse

was associated with some improvement in psychological symptoms 5 weeks later, although no comparison group was employed.

In the first published study of written disclosure in trauma survivors, Gidron, Peri, Connolly, and Shalev (1996) found that participants in the experimental condition demonstrated *increases* in health care visits and avoidance symptoms compared to control participants after 5 weeks. However, these results are limited by small sample size ($N = 14$), heterogeneity of traumas, and a relatively short follow-up period. In addition, the standard disclosure protocol was changed to include oral elaboration following writing, a process that may have affected the results of the study. Further research is needed to attempt to replicate these results in larger samples of trauma survivors.

Because of the frequent link between childhood sexual abuse (CSA) and a variety of psychological difficulties and physical health problems in adulthood (Polusny & Follette, 1995; Walker et al., 1995), adult CSA survivors could potentially derive benefit from such an intervention. While no comprehensive, empirically validated treatments have been developed specifically for adult CSA survivors, a number of manualized, cognitive-behavioral therapies that include written disclosure or emotional processing have recently been developed for the treatment of survivors of various traumas, such as adult rape survivors (Foa & Rothbaum, 1998; Resick & Schnicke, 1996), children who have been sexually abused (Deblinger & Heflin, 1996), and motor vehicle accident survivors (Blanchard & Hickling, 1997). However, in each of these interventions, writing is only one component of the treatment packages, so the specific efficacy of this procedure is unknown.

If writing about stressful or traumatic events often leads to improved health, such an intervention might be especially beneficial for people who have experienced multiple or severe traumas. However, it is also possible that such an intervention may operate differently in traumatized populations, impeding the improvements seen in previous studies (e.g., Gidron et al., 1996). Therefore, the primary purpose of the current study was to examine the generalizability of the effects of written disclosure to a community sample of women reporting a history of CSA. It was predicted that individuals assigned to write about their CSA history would demonstrate improvements in medical utilization, physical symptoms, and psychological symptoms, relative to control participants. While many positive results have been found in this field, considerably less attention has been paid to understanding the causal mechanisms that could account for these positive effects. Recent analyses of writing indicate that individuals who use a high number of positive emotion words, a moderate number of negative emotion words, and who increase their use of causal and insight words over the course of writing are more likely to experience improved health (Pennebaker, Mayne, & Francis, 1997). These findings may provide support for theories of memory representation and organization, increased emotional labeling, or meaning making (Esterling, L'Abate, Murray, & Pennebaker, 1999), although much research on potential mediators remains to be done. We also attempted to replicate the findings related to these language patterns in this study.

## Method

### *Recruitment and Retention*

Participants for the current study were recruited with ads in local newspapers, flyers placed on college campuses, and announcements on a local radio station. Flyers and advertisements stated that adult, female survivors of CSA were sought to participate in a confidential study of coping skills and time management. Participants were offered $50 for participation and could not be in therapy at the time they began the study. Participants were recruited over 18 months, during which 114 women called about the study, 106 (93%) of whom agreed to participate after they were given more information. These women were scheduled for participation, and 73 (68.9%) kept their appointment for at least the first day of the study. Of the 73 initial participants, 64 (87.7%) provided either questionnaire or interview follow-up data. No statistically significant ($p > .05$) differences were found between attriters and completers on most demographic variables (ethnicity, marital status, income of family of origin), whether they had previously been in psychotherapy or psychotherapy for their CSA history, psychological distress, or physical symptoms at the initial assessment session. However, attriters were significantly younger ($M = 26.0$; $SD = 4.5$) than completers ($M = 35.00$; $SD = 11.4$; $t = -4.16, p < .05$).

### *Participants*

Sixty-four women entered the study and provided follow-up data. However, 3 participants were later removed from further analysis, as 1 woman responded inconsistently on the self-report questionnaires, making her a multivariate outlier, 1 woman in the control group wrote about her CSA, while a third participant was found to be in ongoing therapy throughout the study, although she had denied this during screening. Therefore, the data from 61 women remained in the final analyses. Pairwise deletion was used for participants missing either questionnaire or interview data, leading to slightly different sample sizes in some statistical analyses. Mean age of the 61 participants was 35.0 years ($SD = 11.4$). Most participants were Caucasian (82.0%), employed (77.0%), and were married (41.0%) or separated/divorced (23.0%). Most participants had been in therapy at some time in the past (90.2%), and 49.2% had been in therapy in the past specifically to deal with their CSA history.

## Measures

### *Interpersonal Violence*

1. *Stressful Life Events Questionnaire (SLEQ; Polusny, 1998).* The SLEQ is a thorough self-report questionnaire that combines scales from several widely used research instruments, described below in items 1a through 1d. In the current study, the SLEQ was used to determine the presence of a CSA

history involving physical contact (an inclusion criterion for the study) and to assess the prevalence of additional interpersonal violence exposure for sample description purposes.

1a. *Wyatt Sexual History Questionnaire (WSHQ; Wyatt, 1985).* Items from the WSHQ assess potential CSA experiences using behaviorally specific definitions. Participants are asked to indicate if they were touched sexually or were made to touch someone else before age 14, including attempted and completed vaginal, oral, and anal penetration/intercourse experiences. Characteristics of CSA experiences, such as age of onset, duration, frequency, relationship to the perpetrator, use of physical force by the perpetrator, and presence of alcohol during the abusive event are assessed. Within-interview reliability is reported at .88, with test-retest reliability ranging from .79 to 1.00. With respect to construct validity, the WSHQ correlates highly with other measures of sexual behavior.

1b. *Sexual Experiences Survey (SES; Koss & Gidycz, 1985).* The SES is a 10-item questionnaire used in this study to assess sexual victimization experiences in adolescence and adulthood. Participants indicate if, between the ages of 14 and 18, or after the age of 18, they had "given in to sexual intercourse when [they] didn't want to" or had other sexual contact because the other person used pressure, a position of authority, alcohol or drugs, use of force, or threat of harm to make them have sex. The SES has been demonstrated to have good internal consistency (.74), and 1-week test-retest reliability is .93. In addition, the validity of the SES as a measure of sexual behavior, comparable to interview data, has been demonstrated ($r = .73$; Koss, Gidycz, & Wisniewski, 1987).

1c. *Parent-Child Conflict Tactics Scale (PCCTS; Straus & Hamby, 1995).* The PCCTS is designed to assess for a history of the occurrence and severity of physical abuse by parents or caretakers before the age of 18. This study measured physical abuse by the very severe violence index of the PC-CTS. Internal consistency for this subscale ranges from .42 to .62 across studies.

1d. *Conflict Tactics Scale (CTS; Straus, 1996).* The CTS is a self-report measure that assesses partner interactions, such as reasoning, negotiations, psychological aggression, and physical aggression. Physical aggression was measured by the Minor Violence and Severe Violence subscales of the CTS. Internal consistency ratings range from .69 to .96 across studies, with moderate concurrent validity.

*Physical Health*

2. *Pennebaker Inventory of Limbic Languidness (PILL; Pennebaker, 1982).* The PILL is a 54-item self-report measure of a variety of physical symptoms (e.g., coughing, upset stomach, sore muscles, and headaches). Summing the number of items on which the respondent reports experiencing the symptom at least once a month produces one composite score. This measure has been found to have good internal consistency (Cronbach alpha .88) and test-retest reliability over 2 months (.79). Scores on the PILL have been

shown to be associated with number of visits to health care providers, aspirin use, and health-related work absences (Pennebaker).

*Psychological Health*

3. *Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).* The BDI, one of the most widely used measures of negative affect, is a 21-item self-report measure of depressive symptoms. Split-half reliabilities range from .78 to .93, and test-retest reliabilities from .48 to .74. The BDI shows strong concurrent validity with many other measures of depression and clinician ratings of depression.

4. *Symptom Checklist–90–Revised (SCL-90-R; Derogatis, 1983).* The SCL-90-R is a 90-item self-report measure of general psychopathology. Internal consistency of the SCL-90-R ranges from .79 to .90, and 1-week test-retest reliability ranges from .78 to .90. Construct validity is supported by significant correlations with other measures of psychological distress and dysfunction. In the current study, the Global Severity Index was used as a general measure of psychological distress.

5. *Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988).* The PANAS is a 20-item self-report scale that asks respondents to rate the extent to which they have recently experienced 10 positive and 10 negative emotions in the past few weeks. The negative affect scale shows high internal consistency for this time frame (.87) and moderate test-retest reliability (.48), and the positive and negative scales are not highly correlated with each other (−.09). Concurrent validity is supported by high correlations with other measures of distress and psychological dysfunction. The current study examined only the negative affect subscale.

*Responses to Study Participation*

6. *Last Day of Writing Questionnaire (LDWQ; adapted from Pennebaker, personal communication).* The LDWQ is a 17-item self-report questionnaire on which participants rate their evaluations and feelings regarding their writings (1 = *not at all*, 7 = *very much*). No reliability or validity data are available for this instrument.

*Procedures*

Eligibility for the study and presence of CSA history were determined in a phone screen, as callers were asked if they had had "an unwanted sexual experience with someone who was at least 5 years older than you or an experience that involved force or coercion before the age of 18." Callers who met screening criteria were informed that they might be asked to write about their CSA history. If the caller agreed, appointments were set for the four consecutive days of the intervention. Upon arrival to the study, participants completed a consent form and questionnaires 1 through 5 above. Participants were randomly assigned to one of two treatment conditions, referred to as the experimental and control conditions. Writing instructions were given to participants in sealed, opaque envelopes, and research assistants (RAs) were not

informed of participants' condition assignments. In addition, participants were specifically instructed not to tell the RAs what they were writing about. However, although efforts were made to keep the experimenters blind to condition, experimenters were able to correctly classify 84% of participants based on the affect and spontaneous comments expressed by participants by the fourth day of writing.

On the first day, the RA gave a standard overview as used in similar studies and told participants that "this is an extremely important project looking at writing." Each woman was then left alone to write for 20 minutes in a private room. She was asked to open the envelope, read the instructions, and begin writing immediately. The written instructions for the control condition were focused on a time-management framework, and were identical to the control condition instructions used in previous studies (e.g., Spera et al., 1994). As in previous studies, control condition participants were explicitly instructed to write as factually and objectively as possible, rather than expressing emotions or opinions. The instructions for the experimental condition were based on the traditional instructions used in written disclosure studies, but slightly modified to reflect writing assignments given in treatment for rape survivors by including a focus on sensory details on the second day and a focus on the results of the CSA on beliefs about self, others, and the world on the third day (Resick & Schnicke, 1996). At the end of each day of writing, the participant was asked to seal her writing sample in an envelope and place the envelope in a sealed, confidential box. After completing the last day of writing, the participant was asked to fill out the LDWQ. She was then given a referral list for community resources. If the participant completed at least 3 days of writing, she was sent a check for $20. Only two participants who were paid the $20 missed a day of writing.

Participants were followed for 12 weeks after initial participation. Each participant was contacted biweekly and asked to rate her mood and physical health on a scale of 0 to 10 and to report the number of doctor visits in the past 14 days. If the participant had visited a doctor in that time, she was asked the reason for the visit. Visits were divided into three categories: illness, injury, and other. An illness visit was defined as a visit based on a presenting symptom of some kind, and illness visits for the same problem had to be separated by at least 8 days to count as separate visits. Although participants had six phone contacts with undergraduate RAs, calls were very brief and scripted and were unlikely to provide significant support to participants. After 12 weeks, participants were sent a follow-up packet, including measures 2 to 5 above, with a pre-addressed, stamped envelope for return. Upon completion, each participant was sent a $30 check.

## Results

### *Sample Characteristics*

Control and experimental groups did not differ ($p > .05$) at baseline on demographic variables (age, ethnicity, marital status, income of family of ori-

gin), physical symptoms (PILL), psychological symptoms (BDI, SCL-GSI), whether they had been in therapy in the past, or whether they had been in therapy in the past for CSA.

*Childhood Sexual Abuse*

All 61 participants reported a history of CSA, and 92% reported experiencing CSA involving vaginal, anal, or oral penetration. CSA was assessed with questions from the WSHQ (before age 14) and SES (ages 14 to 18) and was defined as any unwanted sexual contact occurring before the age of 18. Mean age of reported onset of CSA was 6.84 years ($SD = 3.22$; range = less than 1 year to 16 years) and the modal age of onset of CSA was 7 years. Eighty-two percent of participants reported that the CSA continued for over 1 year and 67% indicated duration over 2 years. Most participants had multiple CSA perpetrators, with the most frequent initial perpetrators being fathers/stepfathers, other relatives, and neighbors/friends of the family. Fifty-six percent of participants also reported unwanted sexual contact with a boyfriend or date before the age of 18. Only 1 participant endorsed the sexual abuse by a boyfriend as her only CSA experience.

*Additional Interpersonal Victimization*

Half (51%) of the study participants also reported a history of severe physical abuse by a family member or caregiver before the age of 18. Almost two-thirds (66%) of the current sample reported an experience of adult sexual victimization after the age of 18 that involved penetration. Some level of physical aggression by a current or past dating partner or spouse had been experienced by 61% of all participants, with 59% having experienced physical aggression by a past partner, and 13% reporting physical aggression by a current partner.

*Last Day of Writing Questionnaire*

Writing groups were compared on answers to the LDWQ to assess feelings about the experiment, writings, and topics written about. Experimental group participants reported their essays were significantly more personal, $t(59) = -5.04, p < .001$, and that they had revealed their emotions more in what they wrote than the control group, $t(59) = -4.96, p < .001$. Experimental group participants found it more difficult to write during the experiment, $t(59) = -5.80, p < .001$, and reported being more sad or depressed during the 4 days of the experiment than control group participants, $t(59) = -3.10, p < .01$. Participants in the experimental condition reported that it was significantly more important to them that their essays were anonymous, $t(59) = -4.24$, $p < .001$, and that they had a greater desire to have other people read their anonymous essays, $t(59) = -2.46, p < .05$. Finally, women who wrote about their CSA history reported their study participation had been significantly more valuable/meaningful to them than women who wrote about time management, $t(59) = -4.05, p < .001$. These findings were all in the expected

directions and serve as a manipulation check, indicating that the experimental condition instructions, compared to the control condition, were effective at promoting emotional reactions.

*Outcomes of Written Disclosure*

*Physical health.* Chi-square analysis was conducted to compare number of illness-related medical visits during follow-up between the experimental and control groups. No significant differences were found, $\chi^2(5, N = 59) = 1.48$, $p = .92$, with approximately two-thirds of all participants reporting no illness visits. Repeated-measures ANCOVA was conducted to compare changes in physical symptoms on the PILL between experimental and control participants, after controlling for initial levels of negative affect on the PANAS. These results show that while there was no significant change for the PILL over time across conditions, there was a significant interaction effect, $F(1, 56) = 4.76, p < .05$, with PILL scores decreasing slightly for the control group and increasing slightly for the experimental group over time (see Table 1).

*Psychological health.* Repeated-measures MANOVA was used to com-

TABLE 1
MEAN PILL, PANAS NEGATIVE AFFECT, BDI, AND GSI SCORES AT INITIAL EVALUATION AND FOLLOW-UP, AND MEAN NUMBER OF ILLNESS VISITS DURING FOLLOW-UP FOR CONTROL AND EXPERIMENTAL CONDITIONS

| Assessment Period | Control Condition ($n$ = 27) | Experimental Condition ($n$ = 32) |
|---|---|---|
| PILL | | |
| Initial evaluation | 17.07 ($SD$ = 9.23) | 21.22 ($SD$ = 9.96) |
| Follow-up | 15.11 ($SD$ = 7.65) | 22.19 ($SD$ = 10.04) |
| PANAS Negative Affect | | |
| Initial evaluation | 23.96 ($SD$ = 7.60) | 26.19 ($SD$ = 8.94) |
| Follow-up | 21.30 ($SD$ = 9.39) | 26.22 ($SD$ = 10.94) |
| BDI | | |
| Initial evaluation | 13.85 ($SD$ = 11.14) | 15.50 ($SD$ = 9.29) |
| Follow-up | 10.48 ($SD$ = 11.43) | 15.38 ($SD$ = 11.30) |
| GSI | | |
| Initial Evaluation | 1.07 ($SD$ = 0.68) | 1.13 ($SD$ = 0.65) |
| Follow-up | 0.82 ($SD$ = 0.65) | 1.16 ($SD$ = 0.81) |
| Illness visits* | 0.71 ($SD$ = 1.33) | 0.65 ($SD$ = 1.14) |

*Note.* PILL = Pennebaker Inventory of Limbic Languidness; PANAS = Positive and Negative Affect Scale; BDI = Beck Depression Inventory; GSI = Symptom Checklist–90–R Global Severity Index; Illness visits = mean number of visits to a medical professional for illness during 12-week follow-up.
* For illness visits, control condition $n$ = 28, experimental condition $n$ = 31.

pare changes in levels of psychological distress on the BDI and GSI between groups during the follow-up period. A main effect for time emerged for both the BDI, $F(1, 57) = 4.04, p < .05$, and the GSI, $F(1, 57) = 101.94, p < .001$, with overall scores on both decreasing over time. In addition, there was a trend for an interaction between condition and time for the BDI ($p = .06$), as depression scores decreased by three points for the control group and decreased only marginally for the experimental group (see Table 1).

*Essay content.* Analysis of the essays using the Linguistic Inquiry and Word Count program (LIWC; Pennebaker, Francis, & Booth, 2001) focused on the four categories most often found to be related to outcomes in written disclosure studies (negative emotion, positive emotion, causation, and insight). Level of use of words in all four of these categories was consistent with the standardization sample for both the experimental and control groups (Pennebaker et al., 2001). Likewise, the experimental group showed an overall higher use of both insight and causation words than the control group, with a concomitant increase in such words for the experimental group from Day 1 to Day 4 (see Table 2). Correlations between these LIWC dimensions and changes on the primary outcome measures did not support previous work by Pennebaker and colleagues (see Table 3), as higher levels of positive emotion words across days of writing and increases in insight and causation words were associated with *increases* in both self-reported physical symptoms and

TABLE 2
MEAN SCORES FOR EXPERIMENTAL AND CONTROL CONDITIONS ON LINGUISTIC DIMENSIONS IN CURRENT SAMPLE AND STANDARDIZATION SAMPLE

| Condition | Negative Emotion | Positive Emotion | Causation | Insight |
|---|---|---|---|---|
| Experimental ($n = 32$) | | | | |
| Day 1 | 2.78 ($SD = 1.12$) | 2.13 ($SD = 1.40$) | 1.06 ($SD = 0.66$) | 2.38 ($SD = 1.13$) |
| Day 2 | 2.48 ($SD = 1.19$) | 2.28 ($SD = 1.09$) | 0.91 ($SD = 0.52$) | 2.38 ($SD = 0.92$) |
| Day 3 | 3.26 ($SD = 0.95$) | 2.96 ($SD = 1.16$) | 1.36 ($SD = 0.60$) | 3.36 ($SD = 0.91$) |
| Day 4 | 3.24 ($SD = 1.15$) | 2.83 ($SD = 1.14$) | 1.43 ($SD = 0.60$) | 3.16 ($SD = 1.01$) |
| Standardization sample ($n = 768$) | 2.6 | 2.7 | 1.1 | 2.5 |
| Control ($n = 29$) | | | | |
| Day 1 | 0.77 ($SD = 0.54$) | 1.33 ($SD = 0.67$) | 0.50 ($SD = 0.35$) | 0.98 ($SD = 0.67$) |
| Day 2 | 0.72 ($SD = 0.51$) | 1.20 ($SD = 0.73$) | 0.70 ($SD = 0.52$) | 1.20 ($SD = 0.52$) |
| Day 3 | 0.70 ($SD = 1.13$) | 1.46 ($SD = 0.86$) | 0.49 ($SD = 0.30$) | 0.95 ($SD = 0.56$) |
| Day 4 | 0.46 ($SD = 0.69$) | 1.96 ($SD = 0.97$) | 0.51 ($SD = 0.46$) | 0.78 ($SD = 0.56$) |
| Standardization sample ($n = 469$) | 0.6 | 1.7 | 0.6 | 1.1 |

*Note.* Standard deviations are not available for the standardization sample (Pennebaker, Francis, & Booth, 2001).

TABLE 3
CORRELATIONS BETWEEN LIWC DIMENSIONS AND PRIMARY OUTCOME MEASURES ($N = 59$)

| Dependent Measure | Positive Emotion | Negative Emotion | Insight Words | Causation Words | Cognitive Change |
|---|---|---|---|---|---|
| Physical symptoms | .26* | .16 | .22 | .22 | .43** |
| General psychological distress | .42** | .25 | .25 | .19 | .33* |
| Depression | .20 | .18 | .19 | .16 | .18 |
| Illness visits | −.01 | .02 | −.11 | −.12 | .18 |

*Note.* The dependent measures of physical symptoms (PILL), general psychological distress (GSI), and depression (BDI) were standardized residual scores controlling for pre-intervention levels. The illness visit variable refers to number of times participants visited a medical professional for an illness during the 12-week follow-up period. The positive emotion, negative emotion, insight words, and causation words variables were based on the mean levels of the words comprising those dimensions in the LIWC coding system across the four days of writing. The cognitive change variable is based on the difference of the third and fourth days of writing minus the first and second days of writing on the insight and causation indices; hence, a positive correlation would indicate relatively greater use of insight and causation words on the last two days relative to the first two days of writing. LIWC = Linguistic Inquiry and Word Count.
* $p < .05$. ** $p < .01$.

general psychological distress, and levels of negative emotion words were not significantly associated with outcome.

## Discussion

The current study reflects an advance in the literature on written disclosure of traumatic events by testing the efficacy of such a task in CSA survivors. However, divergent from much of the extant written disclosure literature, writing about traumatic events was not associated with lower health care utilization, physical symptoms, or psychological distress in this sample. Contrary to hypotheses, no differential effects between the experimental and control group were found on medical utilization during the 12-week follow-up period. In addition, there was a significant interaction between time and condition for physical symptomatology, with the control participants reporting slightly *fewer* physical symptoms and the experimental participants reporting slightly *more* physical symptoms at follow-up than they had at the initial evaluation. Likewise, the experimental group's levels of psychological distress and depressive symptoms remained virtually the same over the course of the study, while the control group's symptoms decreased.

Previous studies have found an increase in words indicating insight and causation across days of writing to be most predictive of health improvement. However, these findings were not replicated in the current study. Interestingly, although the experimental group showed the usual frequency and pat-

tern of such words used, an increase in cognitive words was actually associated with an increase in physical and psychological symptoms. Guilt, shame, and anger have been found to be related to reduced benefit from exposure-based treatment (e.g., Pitman et al., 1991), and such themes may be more prevalent in a sample of sexually abused women; thus, insight and causation words connected to these themes may have functioned differently in this study.

Some characteristics of the current sample likely influenced the current findings, such as the trauma-specific method of recruitment. This may have primed the participants to think about abuse-related topics throughout the study and also led to some selection bias. In addition, it could be argued that, based on the prevalent therapy experience and the somewhat mild level of distress in these participants, the women studied were those who had responded to treatment in the past or who were resilient to the effects of trauma. Because we did not include women who were currently in therapy, we may have excluded some potential participants who would have started with higher baseline levels of distress and responded differently. However, as this study was using a new population, we wished to exert as much experimental control as possible to increase internal validity. The impact of using less stringent exclusion criteria is unknown and would be an important area for future study. Participants in this study reported high levels of traumatization and retraumatization, both with respect to the severe CSA characteristics reported and the high prevalence of other types of interpersonal violence, compared to other CSA samples (Beitchman et al., 1992; Finkelhor, 1984; Polusny & Follette, 1995). Therefore, these findings may not be generalizable to all trauma survivors, or even to most CSA survivors, although they are in line with the results of Gidron et al. (1996). In addition, stressful events occurring during the 12 weeks of the study cannot be ruled out as potentially affecting the current results.

Although authors of previous studies have noted that the traumatic events written about by their participants are very emotional, it is likely that the current sample is different in its experience of multiple, significant traumas, and topics reported from previous studies do appear to be somewhat different than the sexual traumas written about by the current sample. In a summary of four large studies (Pennebaker, 1989), the most frequent topics disclosed in the trauma conditions of the studies were death of family member, friend, or pet (22%); interpersonal conflicts (21%); academic stress (17%); and family stress (16%). Unlike the current study, only 6.0% of the topics in the four summarized studies involved a sexual trauma. We did not originally have an empirical basis for concluding that writing about sexual trauma would function differently. However, our clinical impression is that clients presenting with a history of multiple traumas that includes at least one sexual trauma are often more challenging to treat effectively than those dealing with simple bereavement or transient academic stress. Further replication of these results will be necessary to determine the role that overall trauma history plays in the response to a written disclosure paradigm.

Through a meta-analysis of predictors of response to written disclosure, Smyth (1998) identified three variables that may have affected the results of the current study. Use of male participants, writing instructions allowing participants to choose to write about current or past stressors, and writing sessions spaced out over longer periods of time have all been associated with larger effect sizes on various measures. In contrast, in the current study, all participants were female, asked to write about past trauma, and wrote on 4 successive days. Particularly salient to future research with such a sample might be the contrast between writing about distal or proximal stressors. Additionally, longer periods of time between sessions might be important, and future studies with traumatized populations might include participants of both genders.

Results from the literature on exposure therapy (e.g., Foa & Kozak, 1986) may inform the understanding of the current results. In the current study and the study by Gidron et al. (1996), whereas the writing task may have been effective at promoting exposure to difficult thoughts and feelings about the abuse in the experimental group, the participants may not have had enough writing time to allow levels of negative affect to habituate on their own. Thus, it is possible that for people with significant or multiple traumas, writing segments that are limited to 15 to 20 minutes may not be sufficient for resolution of posttraumatic symptomatology.

Specific measurement issues may also have impacted our results. For example, while the follow-up period used in this study is in line with previous research, base rates of medical utilization or general illness rates may be lower than in college students. An adult population is likely not comparable to a college population, because receiving medical care is not as simple as going to the free/low-cost health center. Adult participants may have more stressors in their lives, more limited access to health care, or more avoidance of doctors due to financial or insurance concerns. Also, CSA survivors may actually wait longer than women without such a history before going to the doctor (McLaughlin, Munkirs, Orsillo, & Marx, 1998), so there might have been a floor effect with medical utilization for our sample. While there are limitations to a reliance on self-report, the current measures were chosen because they do successfully measure some of the frequent correlates of a CSA history. In addition, self-reported medical utilization was used rather than actual medical records because adults often have multiple health care providers, unlike undergraduate students who are much more likely to use one student health center, thus making utilization data much more difficult to collect accurately. More complicated measures of physiological indicators or overt, functional behavior were beyond the scope of the first study with this population, but would be interesting to examine in future studies. Finally, although the current sample size would have been sufficient to detect a medium to large effect, given the differences between our sample and those in previous research, the sample size used may not have been sufficient to detect the level of effect more likely to be seen with a more traumatized

group. However, given the pattern of the current results, it is unlikely that a significant beneficial impact of writing was missed.

Although there are many potential directions for future research, a few can be identified as the most promising. First, people with more traumatic histories may need longer writing times, more days of writing, or to have the writing task spread out further over time. This might allow participants to process the content of their writings more between sessions, similar to psychotherapy. Further research might also explore the role of skills training in acceptance or emotion-regulation skills in tandem with the written disclosure to more closely mirror effective therapies that include a writing component. Overall, the research in this area should begin to move toward deeper analysis of the potential mechanisms of change involved in the writing task, such as habituation to emotional responses or reductions in experiential avoidance.

In sum, while a significant literature exists to point to the beneficial effects of written disclosure, and many effective treatments for trauma survivors include a trauma writing component, the current results do not support the generalization of these results to adult CSA survivors, and possibly not to survivors of significant traumas in general. As written disclosure alone does not appear to be sufficient to improve physical and psychological functioning in more traumatized populations, modifications to the task or adjunct interventions may need to be added for such groups. However, we do believe that written disclosure for trauma survivors remains an important area for future research, and there are many potential directions yet to be explored.

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