

Special Section

WRITING ABOUT EMOTIONAL EXPERIENCES AS A THERAPEUTIC PROCESS

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Abstract—For the past decade, an increasing number of studies have demonstrated that when individuals write about emotional experiences, significant physical and mental health improvements follow. The basic paradigm and findings are summarized along with some boundary conditions. Although a reduction in inhibition may contribute to the disclosure phenomenon, changes in basic cognitive and linguistic processes during writing predict better health. Implications for theory and treatment are discussed.

Virtually all forms of psychotherapy—from psychoanalysis to behavioral and cognitive therapies—have been shown to reduce distress and to promote physical and mental well-being (Mumford, Schlesinger, & Glass, 1983; Smith, Glass, & Miller, 1980). A process common to most therapies is labeling the problem and discussing its causes and consequences. Further, participating in therapy presupposes that the individual acknowledges the existence of a problem and openly discusses it with another person. As discussed in this article, the mere act of disclosure is a powerful therapeutic agent that may account for a substantial percentage of the variance in the healing process.

PARAMETERS OF WRITING AND TALKING ASSOCIATED WITH HEALTH IMPROVEMENTS

Over the past decade, several laboratories have been exploring the value of writing or talking about emotional experiences. Confronting deeply personal issues has been found to promote physical health, subjective well-being, and selected adaptive behaviors. In this section, the general findings of the disclosure paradigm are discussed. Whereas individuals have been asked to disclose personal experiences through talking in a few studies, most studies involve writing.

The Basic Writing Paradigm

The standard laboratory writing technique has involved randomly assigning each participant to one of two or more groups. All writing groups are asked to write about assigned topics for 3 to 5 consecutive days, 15 to 30 min each day. Writing is generally done in the laboratory with no feedback given. Participants assigned to the control conditions are typically asked to write about superficial topics, such as how they use their time. The standard instructions for those assigned to the experimental group are a variation on the following:

For the next 3 days, I would like for you to write about your very deepest thoughts and feeling about an extremely important emotional issue that has affected you and your life. In your writing, I'd like you to really let go and explore your very deepest emotions and thoughts. You might try your topic to

your relationships with others including parents, lovers, friends, or relatives, to your past, your present or your future, or to who you have been, who you would like to be, or who you are now. You may write about the same general issues or experiences on all days of writing or on different topics each day. All of your writing will be completely confidential. Don't worry about spelling, sentence structure, or grammar. The only rule is that once you begin writing, continue to do so until your time is up.

The writing paradigm is exceptionally powerful. Participants—from children to the elderly, from honor students to maximum-security prisoners—disclose a remarkable range and depth of traumatic experiences. Lost loves, deaths, incidents of sexual and physical abuse, and tragic failures are common themes in all of the studies. If nothing else, the paradigm demonstrates that when individuals are given the opportunity to disclose deeply personal aspects of their lives, they readily do so. Even though a large number of participants report crying or being deeply upset by the experience, the overwhelming majority report that the writing experience was valuable and meaningful in their lives.

Effects of Disclosure on Outcome Measures

Researchers have relied on a variety of physical and mental health measures to evaluate the effect of writing. As depicted in Table 1, writing or talking about emotional experiences, relative to writing about superficial control topics, has been found to be associated with significant drops in physician visits from before to after writing among relatively healthy samples. Writing or talking about emotional topics has also been found to have beneficial influences on immune function, including T-helper cell growth (using a blastogenesis procedure with the mitogen phytohemagglutinin), antibody response to Epstein-Barr virus, and antibody response to hepatitis B vaccinations. Disclosure also has produced short-term changes in autonomic activity (e.g., lowered heart rate and electrodermal activity) and muscular activity (i.e., reduced phasic corrugator activity).

Self-reports also suggest that writing about upsetting experiences, although painful in the days of writing, produces long-term improvements in mood and indicators of well-being compared with writing about control topics. Although a number of studies have failed to find consistent effects on mood or self-reported distress, Smyth's (1996) recent meta-analysis on written-disclosure studies indicates that, in general, writing about emotional topics is associated with significant reductions in distress.

Behavioral changes have also been found. Students who write about emotional topics show improvements in grades in the months following the study. Senior professionals who have been laid off from their jobs get new jobs more quickly after writing. Consistent with the direct health measures, university staff members who write about emotional topics are subsequently absent from their work at lower rates than control participants. Interestingly, relatively few reliable changes emerge using self-reports of health-related behaviors. That is,

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Table 1 *Effects of disclosure on various outcome parameters*

Outcome	Studies
Physician visits (comparison of number before and after writing)	
Reductions lasting 2 months after writing	Cameron and Nicholls (1996), Greenberg and Stone (1992), Greenberg, Wortman, and Stone (1996), Krantz and Pennebaker (1996), Pennebaker and Francis (1996), Pennebaker, Kiecolt-Glaser, and Glaser (1988), Richards, Pennebaker, and Beal (1995)
Reductions lasting 6 months after writing	Francis and Pennebaker (1992) Pennebaker and Beall (1986), Pennebaker Colder, and Sharp (1990)
Reductions lasting 1 4 years after writing	Pennebaker, Barger, and Tiebout (1989)
Physiological markers	
Long-term immune and other serum measures	
Blastogenesis (t-helper cell response to phytohemagglutinin)	Pennebaker et al (1988)
Epstein-Barr virus antibody titers	Esterling, Antoni, Fletcher, Margulies, and Schneiderman (1994), Lutgendorf, Antoni, Kumar, and Schneiderman (1994)
Hepatitis B antibody levels	Petrie, Booth, Pennebaker, Davison, and Thomas (1995)
Natural killer cell activity	Christensen et al (1996)
CD-4 (t-lymphocyte) levels	Booth, Petrie, and Pennebaker (in press)
Liver enzyme levels (SGOT)	Francis and Pennebaker (1992)
Immediate changes in autonomic and muscular activity	
Skin conductance, heart rate	Dominguez et al (1995), Hughes, Uhlmann, and Pennebaker (1994), Pennebaker, Hughes, and O'Heeron (1987), Petrie et al (1995)
Corrugator activity	Pennebaker et al (1987)
Behavioral markers	
Grade point average	Cameron and Nicholls (1996), Krantz and Pennebaker (1996), Pennebaker et al (1990), Pennebaker and Francis (1996)
Reemployment following job loss	Spera, Buhrfeind, and Pennebaker (1994)
Absenteeism from work	Francis and Pennebaker (1992)
Self-reports	
Physical symptoms	Greenberg and Stone (1992), Pennebaker and Beall (1986), Richards et al (1995) Failure to find effects Pennebaker et al (1988, 1990), Petrie et al (1995)
Distress, negative affect, or depression	Greenberg and Stone (1992), Greenberg et al (1996), Murray and Segal (1994) Rimé (1995), Spera et al (1994) Failure to find effects Pennebaker and Beall (1986), Pennebaker et al (1988), Pennebaker and Francis (1996), Petrie et al (1995)

Note: Only studies published or submitted for publication are included. Several studies found effects that were qualified by a second variable (e.g., stressfulness of topic). See also Smyth (1996) for a detailed account.

after writing, experimental participants do not exercise more or smoke less. The one exception is that the study with laid-off professionals found that writing reduced self-reported alcohol intake.

Procedural Differences That Affect the Disclosure Effects

Writing about emotional experiences clearly influences measures of physical and mental health. In recent years, several investigators have attempted to define the boundary conditions of the disclosure effects. Some of the most important findings are as follows:

- *Writing versus talking about traumas:* Most studies comparing writing versus talking either into a tape recorder (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994) or to a therapist (Donnelly & Murray, 1991; Murray, Lamnun, & Carver, 1989) find comparable biological, mood, and cognitive effects. Talking and writing about emotional experiences are both superior to writing about superficial topics.
- *Topic of disclosure:* Whereas two studies have found that health effects occur only among individuals who write about particularly traumatic experiences (Greenberg & Stone, 1992; Lutgendorf, Antoni, Kumar, & Schneiderman, 1994), most studies have found that

disclosure is more broadly beneficial. Choice of topic, however, may selectively influence the outcome. For beginning college students, for example, writing about emotional issues related to coming to college influences grades more than writing about traumatic experiences (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990).

- *Length or days of writing* Different experiments have variously asked participants to write for 1 to 5 days, ranging from consecutive days to sessions separated by a week, writing sessions have ranged from 15 to 30 min in length. In Smyth's (1996) meta-analysis, he found a promising trend suggesting that the more days over which the experiment lapses, the stronger the effects. Although this was a weak trend, it suggests that writing once each week over a month may be more effective than writing four times within a single week. Self-reports of the value of writing do not distinguish shorter from longer writing sessions.
- *Actual or implied social feedback* Unlike psychotherapy, the writing paradigm does not employ feedback to the participant. Rather, after individuals write about their own experiences, they are asked to place their essays into an anonymous-looking box with the promise that their writing will not be linked to their names. In one study comparing the effects of having students either write on paper that would be handed in to the experimenter or write on a "magic pad" (on which the writing disappears when the person lifts the plastic writing cover), no autonomic or self-report differences were found (Czajka, 1987).
- *Individual differences* No consistent personality or individual difference measures have distinguished who does versus who does not benefit from writing. The most commonly examined variables that have not been found to relate to outcomes include sex, age, anxiety (or negative affectivity), and inhibition or constraint. The one study that preselected participants on hostility found that those high in hostility benefited more from writing than those low in hostility (Christensen et al., 1996).
- *Educational, linguistic, or cultural effects* Within the United States, the disclosure paradigm has benefited senior professionals with advanced degrees at rates comparable to those for maximum-security prisoners with sixth-grade educations (Richards, Pennebaker, & Beal, 1995; Spera, Buhrfeind, & Pennebaker, 1994). Among college students, no differences have been found as a function of the students' ethnicity or native language. The disclosure paradigm has produced consistently positive results among French-speaking Belgians (Rimé, 1995), Spanish-speaking residents of Mexico City (Dominguez et al., 1995), and English-speaking New Zealanders (Petrie, Booth, Pennebaker, Davison, & Thomas, 1995).

Summary

When individuals write or talk about personally upsetting experiences in the laboratory, consistent and significant health improvements are found. The effects are found in both subjective and objective markers of health and well-being. The disclosure phenomenon appears to generalize across settings, most individual differences, and many Western cultures, and is independent of social feedback.

WHY DOES WRITING WORK?

Most of the research on disclosure has been devoted to demonstrating its effectiveness rather than on identifying the underlying mechanisms. Two very broad models that have been proposed to explain the value of disclosure invoke inhibitory processes and cognitive processes.

Inhibition and Disclosure

The original theory that motivated the first studies on writing was based on the assumption that not talking about important psychological phenomena is a form of inhibition. Drawing on the animal and psychophysiological literatures, we posited that active inhibition is a form of physiological work. This inhibitory work, which is reflected in autonomic and central nervous system activity, could be viewed as a long-term low-level stressor (cf. Selye, 1976). Such stress, then, could cause or exacerbate psychosomatic processes, thereby increasing the risk of illness and other stress-related disturbances. Just as constraining thoughts, feelings, or behaviors linked to an emotional upheaval is stressful, letting go and talking about these experiences should, in theory, reduce the stress of inhibition (for a full discussion of this theory, see Pennebaker, 1989).

Findings to support the inhibition model of psychosomatics are accumulating. Individuals who conceal their gay status (Cole, Kemeny, Taylor, & Visscher, 1996) conceal traumatic experiences in their past (Pennebaker, 1993a), or are considered inhibited or shy by other people (e.g., Kagan, Reznick, & Snidman, 1988) exhibit more health problems than those who are less inhibited. Whereas inhibition appears to contribute to long-term health problems, the evidence that disclosure reduces inhibition and thereby improves health has not materialized. For example, Greenberg and Stone (1992) found that individuals benefited as much from writing about traumas about which they had told others as from writing about traumas that they had kept secret. Self-reports of inhibition before and after writing have not consistently related to health changes. At this point, then, the precise role of inhibition in promoting health within the writing paradigm is not proven.

Cognitive Changes Associated With Writing

In the past decade, several studies have persuasively demonstrated that writing about a trauma does more than allow for the reduction of inhibitory processes. For example, in a recent study, students were randomly assigned either to express a traumatic experience using bodily movement, to express a traumatic experience first through movement and then in written form, or to exercise in a prescribed manner for 3 days, 10 min per day (Krantz & Pennebaker, 1996). Whereas participants in the two movement-expression groups reported that they felt happier and mentally healthier in the months after the study, only the movement-plus-writing group showed significant improvements in physical health and grade point average. The mere expression of a trauma is not sufficient. Health gains appear to require translating experiences into language.

In recent years, we have begun analyzing the language that individuals use in writing about emotional topics. Our first strategy was to have independent raters evaluate the essays' overall contents to see if it was possible to predict who would benefit most from writing. In-

Interestingly, judges noted that essays of people who benefited from writing appeared to be "smarter," "more thoughtful," and "more emotional" (Pennebaker, 1993b). However, the relatively poor inter-judge reliability led us to develop a computerized text-analysis system.

In 1991, we created a computer program called LIWC (Linguistic Inquiry and Word Count) that analyzed essays in text format. LIWC was developed by having groups of judges evaluate the degree to which about 2,000 words or word stems were related to each of several dozen categories (for a full description, see Pennebaker & Francis, 1996). The categories included negative emotion words (*sad, angry*), positive emotion words (*happy, laugh*), causal words (*because, reason*), and insight words (*understand, realize*). For each essay that a person wrote, we were able to quickly compute the percentage of total words that represented these and other linguistic categories.

Analyzing the experimental subjects' data from six writing studies, we found three linguistic factors reliably predicted improved physical health. First, the more that individuals used positive emotion words, the better their subsequent health. Second, a moderate number of negative emotion words predicted health. Both very high and very low levels of negative emotion words correlated with poorer health. Third, and most important, an increase in both causal and insight words over the course of writing was strongly associated with improved health (Pennebaker, Mayne, & Francis, in press). Indeed, this increase in cognitive words covaried with judges' evaluations of the construction of the narratives. That is, people who benefited from writing began with poorly organized descriptions and progressed to coherent stories by the last day of writing.

The language analyses are particularly promising in that they suggest that certain features of essays predict long-term physical health. Further, these features are congruent with psychologists' current views on narratives. The next issue, which is currently being addressed, is the degree to which cohesive stories or narratives predict changes in real-world cognitive processes. Further, does a coherent story about a trauma produce improvements in health by reducing ruminations or flashbacks? Does a story ultimately result in the assimilation of an unexplained experience, thereby allowing the person to get on with life? These are the theoretical questions that psychologists must address.

IMPLICATIONS FOR TREATMENT

Almost by definition, psychotherapy requires a certain degree of self-disclosure. Over the past 100 years, the nature of the disclosure has changed depending on the prevailing therapeutic winds. Whether the therapy is directive or evocative, insight-oriented or behavioral, the patient and therapist have worked together to derive a coherent story that explains the problem and, directly or indirectly, the cure. As the research summarized here suggests, the mere disclosing of the person's problem may have tremendous therapeutic value in and of itself.

The writing paradigm points to one of several possible active ingredients associated with psychotherapy. Most studies that have been conducted using this technique have not examined individuals with major emotional or physical health problems or substance abuse problems. One obvious question is the degree to which writing can serve as a supplement to—or even a substitute for—some medical and

psychological treatments. Translating important psychological events into words is uniquely human. Therapists and religious leaders have known this intuitively for generations. Psychologists specializing in language, cognition, social processes, and psychotherapy can work together in better understanding the basic mechanisms of this phenomenon.

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REFERENCES

- Booth R.J., Petre K.J. & Pennebaker J.W. (in press) Changes in circulating lymphocyte numbers following emotional disclosure: Evidence of buffering? *Stress Medicine*
- Cameron L.D. & Nicholls G. (1996) *Expression of stressful experiences through writing: A self-regulation approach*. Manuscript submitted for publication
- Christensen A.J., Edwards D.L., Wiebe J.S., Benotch, E.G., McKeivley L., Andrews M. & Lubaroff D.M. (1996) Effect of verbal self-disclosure on natural killer cell activity: Moderation influence on cynical hostility. *Psychosomatic Medicine* 58, 131-135
- Cole S.W., Kemeny M.W., Taylor S.E., & Visscher B.R. (1996) Elevated health risk among gay men who conceal their homosexual identity. *Health Psychology* 15, 243-251
- Czajka J.A. (1987) *Behavioral inhibition and short term physiological responses*. Unpublished master's thesis, Southern Methodist University, Dallas, TX
- Dominguez B., Valderrama P., Meza, M.A., Perez S.L., Silva, A., Martinez G., Mendez V.M. & Olivera Y. (1995) The roles of emotional reversal and disclosure in clinical practice. In J.W. Pennebaker (Ed.) *Emotion disclosure and health* (pp. 255-270). Washington, DC: American Psychological Association
- Donnelly D.A., & Murray E.J. (1991) Cognitive and emotional changes in written essays and therapy interviews. *Journal of Social and Clinical Psychology* 10, 134-150
- Esterling B.A., Antoni M.H., Fletcher M.A., Margulies S., & Schneiderman N. (1994) Emotional disclosure through writing or speaking modulates latent Epstein-Barr virus antibody titers. *Journal of Consulting and Clinical Psychology*, 62, 130-140
- Francis, M.E. & Pennebaker J.W. (1992) Putting stress into words: Writing about personal upheavals and health. *American Journal of Health Promotion*, 6, 280-287
- Greenberg M.A. & Stone A.A. (1992) Writing about disclosed versus undisclosed traumas: Immediate and long term effects on mood and health. *Journal of Personal and Social Psychology*, 63, 75-84
- Greenberg M.A., Wortman C.B. & Stone A.A. (1996) Emotional expression and physical health: Revising traumatic memories or fostering self-regulation. *Journal of Personality and Social Psychology*, 71, 588-602
- Hughes C.F., Uhlmann C. & Pennebaker J.W. (1994) The body's response to psychological defense. *Journal of Personality*, 62, 565-585
- Kagan J., Reznick J.S. & Snidman N. (1988) Biological bases of childhood shyness. *Science* 240, 167-171
- Krantz A. & Pennebaker J.W. (1996) *Body's versus written expression of traumatic experience*. Manuscript submitted for publication
- Laugendoff S.K., Antoni M.H., Kumar M., & Schneiderman, N. (1994) Changes in cognitive coping strategies predict EBV antibody titer change following a stressor disclosure induction. *Journal of Psychosomatic Research*, 38, 63-78
- Mumford E., Schlesinger H.J. & Glass G.V. (1983) Reducing medical costs through mental health treatment: Research problems and recommendations. In A. Broskowski, E. Marks & S.H. Budman (Eds.) *Linking health and mental health* (pp. 257-273). Beverly Hills, CA: Sage
- Murray E.J., Lumin A.D. & Carver C.S. (1989) Emotional expression in written essays and psychotherapy. *Journal of Social and Clinical Psychology* 8, 414-429
- Murray E.J. & Segal D.L. (1994) Emotional processing in vocal and written expression of feelings about traumatic experiences. *Journal of Traumatic Stress* 7, 391-405
- Pennebaker J.W. (1989) *Confession, inhibition, and disease*. In L. Berkowitz (Ed.) *Advances in experimental social psychology* (Vol. 22, pp. 211-244). New York: Academic Press
- Pennebaker J.W. (1993a) Mechanisms of social constraint. In D.M. Wegner & J.W. Pennebaker (Eds.) *Handbook of mental control* (pp. 200-219). Englewood Cliffs, NJ: Prentice Hall
- Pennebaker J.W. (1993b) Putting stress into words: Health, linguistic, and therapeutic implications. *Behaviour Research and Therapy* 31, 539-548
- Pennebaker J.W., Berger S.D. & Tebout, J. (1989) Disclosure of trauma and health among Holocaust survivors. *Psychosomatic Medicine* 51, 577-589

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- Pennebaker J W & Beall S K (1986) Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology* 95 274-281
- Pennebaker J W, Colder M & Sharp L K (1990) Accelerating the coping process. *Journal of Personality and Social Psychology* 58, 528-537
- Pennebaker J W & Francis M E (1996) Cognitive emotional and language processes in disclosure. *Cognition and Emotion*, 10 601-626
- Pennebaker J W, Hughes C F & O'Heeron R C (1987) The psychophysiology of confession: Linking inhibitory and psychosomatic processes. *Journal of Personality and Social Psychology*, 52 781-793
- Pennebaker J W, Kiecolt-Glaser J & Glaser R (1988) Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology*, 56 239-245
- Pennebaker J W, Mayne T J & Francis M E (in press) Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology*
- Petrie K J, Booth R J, Pennebaker J W, Davison K P & Thomas M G (1995) Disclosure of trauma and immune response to a hepatitis B vaccination program. *Journal of Consulting and Clinical Psychology* 63 787-792
- Richards J M, Pennebaker J W & Beal W E (1995 May) *The effects of criminal offense and disclosure of trauma on anxiety and illness in prison inmates*. Paper presented at the annual meeting of the Midwest Psychological Association, Chicago
- Rime B (1995) Mental rumination, social sharing, and the recovery from emotional exposure. In J W Pennebaker (Ed.) *Emotion, disclosure and health* (pp 271-292). Washington DC: American Psychological Association
- Selye H (1976) *The stress of life*. New York: McGraw-Hill
- Smith, M L, Glass G V & Miller R L (1980) *The benefits of psychotherapy*. Baltimore: Johns Hopkins University Press
- Smyth J M (1996) *Written emotional expression: Effect sizes, outcome types and moderating variables*. Manuscript submitted for publication
- Spera, S P, Buhreind E D & Pennebaker J W (1994) Expressive writing and coping with job loss. *Academy of Management Journal* 37 722-733

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