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## Expecting to heal through self-expression: a perceived control theory of writing and health

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Writing improves physical and psychological health when done expressively, or in a way characterized by cognitive-emotional engagement (Pennebaker, 1997). While numerous theories attempt to explain the relationship between expressive writing and health, no singular mechanism emerges as conclusive or dominant. This theoretical dilemma is likely due to the paradigm's vast and thus self-fulfilling directions, which place a premium on the participant's biases and positive expectations (Langens & Schüler, 2007). Accordingly, the current review builds a theory of perceived control, which makes three propositions: (1) Perceived control promotes health; (2) Traumatic and stressful events lead to loss of perceived control and therefore decrements in health; and (3) Expressive writing restores perceptions of control, thereby improving health. Indeed, perceived control is associated with the very process of expressive writing and has extensive ties to both physical and psychological well-being. Unlike other proposed models, a theory of perceived control identifies which individuals should benefit from writing and explains why health benefits are often short-term. Expressive writing, due to its appeal as a healing ritual, is likely to build up confidence in one's health and prospects, without taking into account the uncertainties of day-to-day events and circumstances.

**Keywords:** self-disclosure; expressive writing; trauma; stress; self-regulation; perceived control

Writing has been shown to improve well-being when done expressively, or in a manner that calls for both cognitive and emotional processing (for reviews, see Frattaroli, 2006; Pennebaker, 1997; Sloan & Marx, 2004b; Smyth, 1998; Smyth, Nazarian, & Arigo, 2008). In general, expressive writing studies ask participants to disclose their "very deepest thoughts and feelings" surrounding major life events and stressors (Pennebaker, 1997, p. 162), with control participants writing on factual topics such as time management (e.g., Smyth, Stone, Hurewitz, & Kaell, 1999). Many of the narratives deal with distressing events such as deaths in the family, instances of sexual abuse, failed relationships, and motor vehicle accidents (Pennebaker, 1993). Ever since Pennebaker and Beall (1986) showed that undergraduates can improve in physical health after writing about distressing events from their own lives, researchers have employed the intervention across a variety of populations and contexts. As a result, expressive writing has been linked to improvements

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in physical health, psychological well-being, working memory, job attendance, social functioning, and academic performance, among a variety of other outcomes.

Still, the pathway connecting expressive writing to well-being remains unclear (Sloan & Marx, 2004b; Smyth, Nazarian, et al., 2008). Currently, earlier models of disinhibition and cognitive change are giving way to theories of habituation, social integration, and self-regulation. Aside from their considerable promise, however, these latter models are dubious, both in terms of the claims they make and in terms of corresponding evidence. Given unrefined theory, it is difficult to evaluate findings and to devise further experiments. Perhaps as a result, several studies and meta-analyses report small, insignificant, or even negative effects of writing on health (Frisina, Lepore, & Borod, 2005; Meads & Nouwen, 2005; Solano, Bonadies, & Di Trani, 2008). Moreover, at this point, it is not clear which types of individuals may benefit from expressive writing (Sloan & Marx, 2004b; Solano et al., 2008). In turn, researchers continue to mix and match populations, contexts, measures, and writing paradigms, leading to a muddled empirical literature (Nazarian & Smyth, 2007).

The current review takes up the need for an explanation by identifying weaknesses in extant theories and within the traditional paradigm itself. Then, it proposes and explains a model of perceived control that elucidates the link between expressive writing and health. Because writing has been shown to enhance health across cultural and situational contexts (Smyth, Nazarian, et al., 2008), we argue for a mediator that is independent of any one language, society, level of education, age group, or system of values. In particular, writing should tap a pathway that exists outside of the cognitive-emotional narrative while still being affected by it.

The current article attempts to establish that perceived control is this fitting mediational construct, and in particular, that: (1) perceived control promotes physical and psychological health, (2) traumatic/stressful events induce a loss of perceived control, and thereby impair health, in their victims, and (3) expressive writing on various topics restores perceptions of control and, in turn, improves health (see Figure 1). Indeed, writing is helpful only to the extent that one expects or perceives it to be, as expectancies are linked

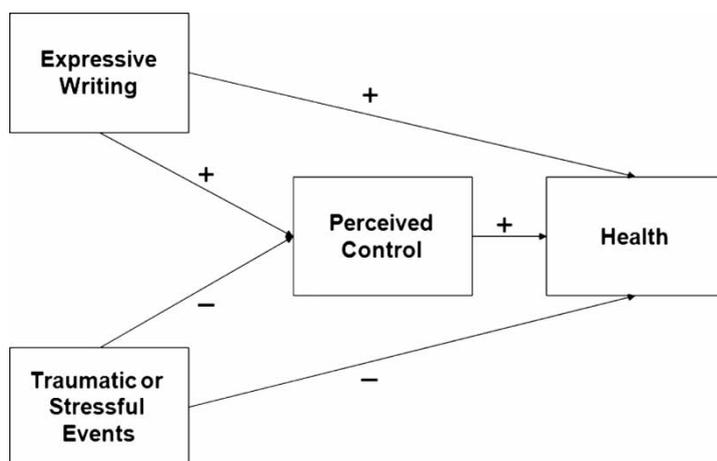


Figure 1. The positive association between expressive writing and health, and the negative association between trauma/stress and health, are both mediated by perceived control (which has a positive association with health).

to gains in both emotional and physical well-being (Frattaroli, 2006; Langens & Schüler, 2007).

### **Expressive writing and health: review and critique**

In this section, we review and critique a few notable theories of expressive writing and health. In turn, this broadens to a discussion of methodological issues in emotional self-disclosure research. What results is a realistic understanding of how the traditional writing paradigm, given its vast complexity, could well be producing positive health outcomes that are driven largely by participants' expectations. As a result, then, the literature holds mixed (or even chance) evidence for theories that make rather elaborate assumptions about what expressive writing entails (e.g., disinhibition, cognitive change, habituation), or is unable to confirm or reject certain theories due to their wide-reaching, unclear claims (e.g., social integration, self-regulation).

#### *Theories of writing and health*

There are numerous theories on how expressive writing procures health benefits. In particular, disinhibition, cognitive change, social integration, habituation, and self-regulation all have been examined as possible mechanisms, among others (e.g., Frattaroli, 2006; Sloan & Marx, 2004b; Smyth, Nazarian, et al., 2008). In the final analysis, however, each of these models has considerable flaws and therefore is unable to offer a satisfactory explanation for the observed outcomes.

#### *Disinhibition (“catharsis”) theory*

At its core, disinhibition theory claims that the suppression of a stressful experience leads to compromised health, because inhibition is a “long-term, low-level stressor” (Pennebaker, 1997, p. 164). In turn, emotional expression, because it relieves psychophysiological stress, leads to health benefits (see Pennebaker, 1989; Petrie, Booth, & Pennebaker, 1998). Although the disinhibition model has received some support (Pennebaker & Beall, 1986; also see Frattaroli, 2006; Pennebaker, 1997; Smyth, 1998), it also has encountered many challenges. First, Greenberg and Stone (1992) found that event severity – and not degree of previous disclosure – is predictive of writing-related health benefits. This finding implies that processes other than disinhibition are responsible for health outcomes. Likewise, Francis and Pennebaker (1992) found that people who are relatively unconstrained in terms of their self-disclosure actually benefit more from writing than do constrained participants, which is the exact opposite of what a disinhibition model would predict. Recently, interventions on future-related (Cameron & Nicholls, 1998; King, 2001) and/or self-regulatory (e.g., King, 2002) topics have also elicited positive outcomes, as has writing about imaginary traumatic events (Greenberg, Wortman, & Stone, 1996). A disinhibition theory cannot account for the health benefits of writing on such topics, because it rests upon the notion that writing releases past-focused emotion.

#### *Cognitive change (“insight”) theory*

While some participants do report that writing provides an opportunity to “vent” their feelings, most tend to phrase benefits in terms of gained insight (e.g., Pennebaker, 1997; Pennebaker, Colder, & Sharp, 1990). That is, beyond providing a cathartic outlet for

inhibited memories, expressive writing may initiate cognitive processes that build a clarified narrative of a stressful or traumatic experience (Lutgendorf & Ullrich, 2002). According to cognitive change theory, traumatic memories are inherently disorganized and at odds with the self-narrative, thereby causing large amounts of distress (Christianson, 1992). In turn, positive health outcomes are the end result of working through (i.e., assimilating) a stressful mental representation (Frattaroli, 2006; Pennebaker 1997; Pennebaker & Seagal, 1999). In this vein, expressive writing has been shown to increase working memory capacity (Klein, 2002; Klein & Boals, 2001; Yogo & Fujihara, 2008), implying that the intervention might liberate mental resources that were consumed formerly by stress management.

The cognitive change model is justified mostly by linguistic findings, which are drawn from the writing samples that participants provide. Of course, such an approach rests upon the assumption that what appears on the written page is representative of the writer's mental states and even personality (Chung & Pennebaker, 2008a). Chiefly, studies have found that writers who use insight, causal, and cognitive words (e.g., "therefore," "because," "understand") increasingly across essays also exhibit narrative development and enhanced health outcomes (Pennebaker 1993, 1997; Pennebaker, Mayne, & Francis, 1997; cf. Low, Stanton, & Danoff-Burg, 2006). However, links between cognitive word usage (via Linguistic Inquiry and Word Count, or LIWC; Pennebaker & Francis, 1996; Pennebaker et al., 1997) and health outcomes are to be regarded as correlational (Frattaroli, 2006; Sloan & Marx, 2004b; cf. Smyth, True, & Souto, 2001). Moreover, cognitive change is not always linked to improvements in psychological and/or physical health (e.g., Frattaroli, 2006; Mackenzie, Wiprzycka, Hasher, & Goldstein, 2008; Park & Blumberg, 2002; van Middendorp & Geenen, 2008).

Beyond text-linked evidence of insight, writing may reduce or buffer intrusive thinking about a stressful event (Klein & Boals, 2001; Schoutrop, Lange, Hanewald, Davidovich, & Salomon, 2002; cf. de Moor et al., 2002; Lepore, 1997). However, intrusion is validly measurable only if one has been exposed to a severe event (e.g., Weiss, 2004; cf. Horowitz, Wilner, & Alvarez, 1979). Alas, intrusion frequently has been assessed in situations for which exposure is doubtful, or at least not supported by diagnostic data. In addition, designs that assess intrusion often differ with regard to stressor type and timing of measurement, making between-study comparisons difficult (Lepore, Greenberg, Bruno, & Smyth, 2002).

What is more, insight is unable to explain the findings of a few unique studies. An obvious example is Greenberg and colleagues (1996), which showed that writing about an imaginary trauma leads to health benefits comparable to those derived from writing on one's own life. Similarly, Burton and King (2004) found that writing on intensely positive experiences buffers physical illness. In general, positive health outcomes from any writing that does not involve the disclosure of personal and stressful events are not amenable to cognitive change theory.

### *Social integration theory*

A social integration model of expressive writing and health maintains that stressful events lead to social sharing of one's difficulties (Rimé, 1995), which stimulates an understanding of those same events (Frattaroli, 2006), provided that one has access to a receptive and nonjudgmental social network (Lepore, Silver, Wortman, Wayment, 1996). Social integration theory, then, positions expressive writing as an inductive tool that leads one to seek out others for guidance. Liang, Goodman, Tummala-Narra, and Weintraub (2005)

argue that defining one's problem is the first step in seeking help amid traumatic stress; in this sense, expressive writing may be a suitable tool. As indirect support for the model, linguistic patterns in writing have been associated with social outcomes (Chung & Pennebaker, 2007; Pennebaker & Graybeal, 2001). Likewise, expressive writing has been linked to a heightened likelihood of reuniting or remaining with a romantic partner (Lepore & Greenberg, 2002; Pennebaker & Slatcher, 2006) and to increased receipt of social support in a geriatric population (Heffner, 2002).

Because socialization may produce cognitive change (and/or vice versa), it is more accurate to refer to a social-cognitive mediation model, which denotes the duality of the mechanism at work (Roberts, Lepore, & Helgeson, 2006). While a firm pathway among socialization, expressive writing, and cognitive change is yet to be established, Chung and Pennebaker (2008a) have analyzed large collections of self-expressive texts for their validity in predicting personality and behavior. These efforts and others may help to explain how writing prepares its authors for social encounters. Even so, socialization includes a vast number of factors, many of which are not validly and/or reliably measurable within experimental designs. This makes the construction of a social model particularly daunting relative to other theories that concern themselves mostly with intrapsychic processes. Experience sampling methods are promising, as they allow for the noninvasive and detailed recording of real-world data (see Kim, 2008; Mehl, Pennebaker, Crow, Dabbs, & Price, 2001).

#### *Habituation ("exposure") theory*

A habituation theory holds that writing exposes participants to mental representations of stressful events, and that corresponding negative emotionality dissipates as a direct function of exposure (Foa & Kozak, 1986). This reduced negative emotionality, in turn, leads to physical health benefits (e.g., Low et al., 2006). In support of this theory, sadness and distress have been shown to decrease across trauma-writing sessions (Pennebaker, 1997; Smyth, 1998), and writing-related distress is, in many cases, quite responsive to the behavioral variables of intervention duration and scheduling (Frattaroli, 2006). However, health benefits have been derived from extremely short-term writing (Burton & King, 2008), and the length of time between sessions (i.e., spacing) does not always affect health outcomes (Chung & Pennebaker, 2008b). Additionally, a habituation theory does not explain readily the health outcomes of writing on the benefits of a trauma (King & Miner, 2000; Stanton et al., 2002), on an imaginary trauma (Greenberg et al., 1996), or on one's best possible future self (King, 2001), for example.

#### *Self-regulation theory*

Self-regulation theory identifies ways in which expressive writing leads to improved regulation of affect, behavior, and cognition (Lepore et al., 2002). Therefore, it points to the benefits of writing about a variety of meaningful topics, all of which have been shown to improve health (Burton & King, 2004; Cameron & Nicholls, 1998; Greenberg et al., 1996; King, 2002; Lepore & Greenberg, 2002; Pennebaker, Colder, et al., 1990; Stanton et al., 2002). Following these findings and others, expressive writing may ultimately be a self-regulatory exercise that enhances emotion regulation skills, thereby improving one's ability to navigate a variety of life events (Bonanno, 2001).

However, upon closer examination, a self-regulation theory has at least two difficulties. To begin, it proposes an ill-defined, placeholder construct that has an unclear definition

and scope (see Gross, 1998). As a result, only broad measurement is possible. While researchers are utilizing emotion regulation towards this end, it too is not readily defined (Gross, 1998; cf. Lepore et al., 2002). Nonetheless, experimenters have used respiratory sinus arrhythmia (Porges, 1986) as a physiologic means of assessing emotion regulation, as it correlates with vagus nerve activity and parasympathetic activation (Porges, 1995) and has been shown to predict regulatory abilities (e.g., Henderson, Marshall, Fox, & Rubin, 2004). Overall, self-regulation theory, like the social integration model, is currently too vast to explain the health outcomes of writing.

### ***Positive expectations and enhanced well-being***

King (2002) defines self-regulation as the feedback mechanism by which goals are attained; in this way, self-regulation contributes to adaptive functioning. To carry this further, an individual holds expectations about her self-regulation abilities (Langens, 2007; Scheier & Carver, 2003), and so the modulation of emotional responses rests upon a variety of self-efficacy beliefs that may be developed and enriched through writing expressively. If this is the case, then control perceptions are generally relevant to the connection between writing and health, as they dictate what one expects from writing and from one's pursuits in life (for an extended discussion, see Langens & Schöler, 2007), regardless of what is realistic and/or practical. In order to appreciate how perceived control could fit into a model of writing and health, it is first useful to show how the theoretical problems of the writing paradigm are likely a result of its vast and thus self-fulfilling directions.

### ***Methodological issues: the ambiguity of expressive writing***

Seeking to understand how expressive writing works, researchers have conducted several reviews and meta-analyses. First, Smyth's (1998) meta-analysis of 13 studies reported a medium effect size of writing on health, with psychophysiological outcomes (such as mood and immune functioning) being particularly robust. While it explained a theory of cognitive processing and assimilation in some detail, it did not have statistical grounds for endorsing one model over another. More recently, Sloan and Marx (2004b) used a variety of empirical findings to investigate the leading theories of writing and health. Unable to vouch for one mediator over another, they instead discussed how writing studies differ substantially in terms of their methods and outcomes. In a similar vein, Frattaroli (2006) evaluated a random-effects model of health and experimental self-disclosure across 146 studies, finding some support for self-regulation, social integration, and exposure theories, but little to recommend disinhibition or cognitive change theories. In addition to this theoretical ambiguity, other meta-analyses have called expressive writing into question by showing that it does not reliably improve health compared to control writing (e.g., Meads & Nouwen, 2005). While these null effects could be due to the ineffectiveness of expressive writing itself, it is far more likely that they are instead symptomatic of methodological issues and discrepancies (Solano et al., 2008), thus emphasizing the need for a finer grasp of what comprises a writing intervention. Naturally, these efforts should begin by assessing the paradigm and its structure.

In particular, the research field is based upon a face-valid manipulation (see Pennebaker, 1997, p. 162) that is quite complex in its elements, aims, and implications. Because of its directions, the paradigm may be sending mixed, self-fulfilling messages about what expressive writing should entail. In line with classic research (Pennebaker & Beall, 1986), the prompt opens by encouraging a cognitive-emotional stance ("deepest

thoughts and feelings”). Then, despite the ample evidence casting doubt on disinhibition theory, it addresses a repressed participant (Frattaroli, 2006): one who ought to “really let go and explore.” Next, it implies the value of an interpersonal element to writing, by encouraging the writer to explore social relationships. The instructions then mention the past, present, and future, followed by a similar, parallel acknowledgment of possible selves (Markus & Nurius, 1986), and a brief permission to write on one or several topics. Subsequently, the implied speaker assures the confidentiality of the writing sample, and, notwithstanding the possibility that style could be valuable to some writers, tells the participant not to worry about “spelling, sentence structure, or grammar.” Finally, the prompt insists that writing must be continuous once started.

Because the manipulation is so layered, it likely taps and alters multiple processes. To carry this further, it is likely a *set* of manipulations, all of which are referenced by the tidy label of expressive writing. As a result, the claim that expressive writing causes improvements in health is too broad to recommend one mediational pathway over another, on par with reporting that a visit to the hospital has cured one’s cancer. Creating a singular name for a heterogeneous process is likely a large source of the inconsistency in findings. Moreover, the classic paradigm is often discarded in favor of ad hoc prompts (e.g., Greenberg et al., 1996; King & Miner, 2000; Lepore, 1997; Range, Kovac, & Marion, 2000), further preventing a clear grasp of how writing improves health.

While one needs to be skeptical about the manipulation in order to understand the actual relationship between writing and health, the current article draws a theory not from any specific element of expressive writing, but rather from the mere act of putting pen to paper about an emotionally significant topic. This seems the only defensible course given the broad range of writing that has been shown to elicit health benefits. Indeed, Langens and Schöler (2007) found that, in general, participants expect writing about stressful events to be meaningful and beneficial for them (relative to writing about trivial events). They suggested that such positive beliefs at baseline could be due to a universal valuation of the link between emotional catharsis and healing, as through confession and/or purification rites. Importantly, they found expectations to predict improvements in physical and psychological well-being regardless of whether participants were given traditional instructions (to explore their deepest thoughts and feelings) or asked simply to “vent” their emotions. In fact, health outcomes in the traditional and venting conditions were comparable and directly related to expectations, thus indicating that mere expectancies indeed may be driving the results of the paradigm, rather than any particular element(s) of its layered instructions. Quite possibly, perceived control operates as a general factor across the intervention, as it is the sum of expectations about what one will gain both immediately and in the long term from writing expressively.

### **Perceived control theory of writing and health**

The current theory demonstrates how perceived control is intertwined with the very process of expressive writing, is required for higher levels of thinking, and has dynamic ties to both physical and psychological health. In addition, it has neurobiological correlates that already have been measured within writing studies. Unlike existing models, a theory of perceived control identifies populations that are likely to benefit from writing, and explains why health benefits following writing are often short-term.

### ***An overview of perceived control***

Notions of effectiveness and perceived control ground numerous theories of health, behavior, and personality (deCharms, 1968; Deci, 1980, 1992; Jacelon, 2007; Kelley, 1971; Langer, 1983, 1989; Syme, 1989; Taylor, 1983; Thompson, 1981; Walker, 2001; Woodworth, 1958), and control perceptions are theorized to anchor self-esteem and personal identity (Bandura, 1977, 1982; Heider, 1958). Quite distinct from actual (veridical) control – though it may coincide – perceived control refers to the subjective state of identifying contingencies between one's actions and subsequent outcomes, irrespective of any desire or need for control (Wallston, Wallston, Smith, & Dobbins, 1989). Perceived control, then, is related to self-efficacy (Bandura, 1986; Bandura & Locke, 2003) but is broader in that it refers to a sense of agency, even to the extent of being naïve or unduly optimistic about one's prospects (Skinner, 1995). Active participation in a process (e.g., rolling a pair of dice) as well as hope for a specific outcome (e.g., aiming to roll a minimum sum) have both been shown to enhance perceptions of control (Wortman, 1975).

Each of the subsequent sections in this review details one part of a theory of perceived control. Following the mediational diagram (Figure 1), expressive writing is associated positively with perceived control and health, whereas stress and trauma possess negative relationships with these same constructs. Therefore, stress and expressive writing affect perceived control processes, which, in turn, affect health.

### ***Perceived control and health***

Well-adjusted individuals exhibit a robust – even exaggerated – sense of control and optimism relative to those who are maladjusted (Regan, Snyder, & Kassin, 1995; Taylor, Lerner, Sherman, Sage, & McDowell, 2003). Generally, feelings about the self are linked to perceived competency and control; that is, emotions are largely informed by one's sense of effectiveness in the world (Carver & Scheier, 1990; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). For example, non-depressed individuals exhibit an inflated sense of control relative to both mildly and severely depressed individuals, who are instead remarkably accurate in their assessments of simple response-outcome contingencies (Taylor & Brown, 1988) and in predicting how others will evaluate them (Lewinsohn, Mischel, Chaplin, & Barton, 1980). Likewise, people generally behave as if they control outcomes that are largely or entirely due to chance (Crocker, 1982; Langer, 1975; Langer & Roth, 1975; Wortman, 1975), and threat of control-related beliefs – often consummating in a state of hopelessness or learned helplessness – predicts the onset of clinical depression (Abramson, Seligman, & Teasdale, 1978; Seligman, 1975) and other psychopathology (Chorpita, Brown, & Barlow, 1998; Dalglish et al., 2001), as well as the maintenance of adverse health behaviors (Ratner, Johnson, & Bortoff, 1995). Conversely, perceived control underlies adaptive functioning (Maier & Seligman, 1976), buffers the onset of depression (Grote, Bledsoe, Larkin, Lemay, & Brown, 2007), and predicts health-protective behaviors (McCaul, Sandgren, O'Neill, & Hinsz, 1993; cf. Allison, 1991). Indeed, beliefs of control enhance task persistence, as people are motivated most when they perceive strong contingencies between their actions and corresponding outcomes (Ruvolo & Markus, 1992).

From a physical health perspective, perceived lack of control is associated with compromised immunological functioning (Kamen-Siegel, Rodin, Seligman, & Dwyer, 1991), as well as heightened illness and morbidity (Bailis, Segall, Mahon, Chipperfield, & Dunn, 2001; Colligan, Offord, Malinchoc, Schulman, & Seligman, 1994; Peterson & Seligman, 1987; Rodin, 1986; Thumboo et al., 2000). For cancer patients, helplessness and

lack of perceived control have been linked to death (Andersen, Kiecolt-Glaser, & Glaser, 1994; Antoni & Goodkin, 1988). In contrast, a sense of control buffers negative effects that genetic diatheses have upon one's health (Johnson & Krueger, 2005). In studies of occupational settings, perceived control has been associated with resistance to exhaustion and psychopathology (Papadatou, Anagnostopoulos, & Monos, 1994), resistance to physical symptoms (Spector, 1986), and buffering of cardiovascular illness (Marmot et al., 1991; Schnall, Allred, Morrison, & Carlson, 1990). More compellingly, experimental research has shown that incapacitated individuals who are given specific caretaking responsibilities exhibit better health outcomes – and live longer – than individuals whose duties are instead delegated to ward supervisors (Langer & Rodin, 1976; Rodin & Langer, 1977). Similarly, elderly patients who are familiarized with different strategies of taking control (including mindfulness and meditation) tend to outlive age-matched controls (Alexander, Langer, Newman, Chandler, & Davies, 1989). In sum, perceptions of control act to buffer illness and even to increase longevity.

### ***Stress, loss of perceived control, and compromised health***

Traumatic stress can result when one's health and control beliefs are threatened (Boscarino, 1997; Felitti et al., 1998; Herman, 1992/1997; Janoff-Bulman, 1992; Solomon, Laror, & McFarlane, 1996/2007). Quite often, though, self-disclosure in expressive writing does not center on stressors that are strictly traumatic (see APA, 2000). While there is ongoing debate as to whether extreme stress and traumatic stress are continuous, it is generally agreed that traumatic stress (as in posttraumatic stress disorder, or PTSD) involves damage to psychobiological structures, which causes a rare syndrome marked by alteration of one's cognitive-emotional, neurological, and social functioning (Buckley, Green, & Schnurr, 2004; Orr, Metzger, Miller, & Kaloupek, 2004; Shalev, 1996/2007). At the same time, sub-threshold stress is a necessary component of the traumatic reaction (Shalev, 1996/2007) and thus a spectral model is quite appropriate, as it points to the pathogenic properties of a range of stressors (Scaer, 2005). Underlying a continuous model of stress, Selye's (1955) General Adaptation Syndrome considers the effects of stress over time. Likewise, stressors can additively disrupt the homeostatic processes involved in maintaining health (Schulkin, Gold, & McEwen, 1998). Naturally, one's current stress load is a function of both chronic and acute stressors (Norris & Uhl, 1993).

As suggested by a spectral theory, a wide array of stressors should affect control perceptions and health. Therefore, non-traumatic or everyday difficulties are suitable topics for an expressive writing intervention. In fact, the majority of study participants disclose topics that are non-traumatic in nature and thus, in a strict sense, should be classified as stressful – not traumatic – events. To this effect, Pennebaker (1997) noted that expressive writing is “broadly beneficial” (p. 164), and the range of topics tested in expressive writing research, including relationship break-ups, major surgery, adjustment to college, bereavement, caregiving, and job loss, bears out this assertion.

### ***Stress and loss of perceived control***

Janoff-Bulman (1992) argues that traumatic events, such as rape or severe injury, disrupt one's beliefs about a predictable and controllable world. After a threatening event, one is confronted by a variety of basic questions and challenges, all of which aim to restore a sense of control and mastery (Taylor, 1983). It follows, then, that changes in perceived control predict one's level of distress after rape (Frazier, 2003) and other, less stressful

events (Baum, Cohen, & Hall, 1993). Indeed, coping reactions stem from a need to assign responsibility for misfortune and thereby determine to what extent one is able to avoid further harm (e.g., Thompson, 1981). One may conclude that some situational mistake (i.e., an oversight) – and not the self – is to blame. Such a distinction constitutes the divide between behavioral and characterological self-blame, respectively. While actual findings are mixed (Frazier, 2003), the adaptation literature has assumed widely that the former promotes health whereas the latter is deleterious (e.g., Janoff-Bulman, 1979, 1992; MacLeod, 1999). This is because behavioral self-blame is a situational attribution, which allows the possibility that one may avoid misfortune in the future, whereas characterological self-blame is a stable attribution based on one's nature and is therefore apt to cause feelings of hopelessness (see Kelley, 1971).

Stressful events also have been shown to increase one's need for self-enhancement (Beauregard & Dunning, 1998). For example, death-relevant cues provoke individuals to affirm their senses of self-esteem (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), and people are particularly motivated to defend their worldviews in light of threatening events (McGregor et al., 1998). Both of these responses are efforts to take control amid adversity. Also, in order to minimize threat-related stress, an observer may embrace her belief in a just world – where good things happen to good people, and bad things happen to bad people – by devaluing the victim (Lerner, 1965; Lerner & Simmons, 1966). Put another way, someone who observes another's misfortune is apt to conclude that something must be fundamentally bad about the victim, thereby allowing the observer to maintain a sense of control over her own fate (Lerner & Simmons, 1966).

Recently, Frazier (2003) distinguished between past-, present- and future-oriented types of perceived control. According to Frazier, the temporal dimension of perceived control is important to consider when predicting posttraumatic health outcomes (see also Skinner, 1996; Zimbardo & Boyd, 1999). In particular, past-oriented perceived control (e.g., behavioral self-blame) increases psychological distress, whereas a present orientation (e.g., a sense of empowerment about the recovery process) is adaptive (Frazier, 2003). Similarly, efforts at retrospective control are associated with worsened adjustment amid chronic illness, as opposed to present-oriented efforts at symptom control, which are instead linked to improved adjustment (Sirois, Davis, & Morgan, 2006). Overall, present-oriented strategies, rather than retrospective methods, are most reliably associated with posttraumatic adjustment (Frazier, Mortensen, & Steward, 2005).

In discussing and researching different levels of stress, psychophysiology is useful, because it provides an objective means of validating self-reported data. For situations that are stressful (but not traumatic; Yehuda, 2001), the body increases its production of cortisol and other glucocorticoid hormones (Friedman, 2004; Marin, Martin, Blackwell, Stetler, & Miller, 2007; Miller, Cohen, & Ritchey, 2002; Pressman et al., 2005; Segerstrom & Miller, 2004). Likewise, self-reported powerlessness predicts adrenal cortex metabolism (Samson et al., 1992), while self-affirmation prior to a challenging task buffers cortisol-linked response (Creswell et al., 2005). Writing-related cortisol levels should offer valuable data for a theory of perceived control, because they point to the ongoing experience of stress and frustration (Segerstrom & Miller, 2004).

### *Stress and loss of physical health*

Although adversity is linked to declines in physical health (Felitti et al., 1998; Sachs-Ericsson, Blazer, Plant, & Arnow, 2005; Thompson, Kingree, & Desai, 2004), this association is largely determined by subjective stress (Boscarino, 1997; Boscarino &

Chang, 1999; see also Friedman & Schnurr, 1995; Schnurr & Jankowski, 1999). Indeed, stress incites sickness behavior, which is marked by activity reduction (in order to conserve energy), depressive mood, and increased pain sensitivity (Maier & Watkins, 1998). In general, chronic stress impairs one's immune functioning (Cohen, Miller, & Rabin, 2001; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Zorrilla et al., 2001), leading to a variety of health complications (Kiecolt-Glaser et al., 2002; Segerstrom & Miller, 2004). Similarly, stressful events increase one's susceptibility to upper respiratory infection (Cohen et al., 1998; Sheridan & Dobbs, 1994; cf. Stone, Porter, & Neale, 1993), asthma (Lehrer, Isenberg, & Hochron, 1993), influenza (Cohen & Williamson, 1991; Stone, Bovbjerg, et al., 1993), inflammatory bowel disease (Solmaz, Kavuk, & Sayar, 2003), autoimmune disorders (Rabin, 1999; Whitacre, Cummings, & Griffin, 1995), and coronary artery disease (Rozanski, Blumenthal, & Kaplan, 1999).

### ***Expressive writing, restoration of perceived control, and improved health***

In her theoretical work on the treatment of traumatic stress, Herman (1992/1997) places great importance on restoring a sense of control and predictability in the victim (see also van der Kolk, McFarlane, & van der Hart, 1996/2007, for a review). The posttraumatic need for reacquisition of control comes from Herman's view that traumatic events, at their core, cause social alienation and loss of security. Furthermore, using a literary analogy, Herman asserts that the victim "must be author and arbiter of her own recovery" (Herman, 1992/1997, p. 133). In a more specific sense, Zilberg, Weiss, and Horowitz (1982) found that patients who are syndromic following trauma exposure exhibit, relative to nonsyndromic controls, a lack of movement towards processing and meaning.

Narrative formation, then, is a broad means of transcending and alleviating distress (Laub & Auerhahn, 1993). Pennebaker and Seagal (1999) postulate that expressive writing "gives individuals a sense of predictability and control over their lives" (p. 1243; see also Lyubomirsky, 2008). Similarly, Meichenbaum and Fong (1993) classify narrative construction as a self-control technique. Agger and Jensen (1990), in their study of political refugees, found that creating a narrative following adversity allows for a beneficial possibility: reframing an event in personal, meaningful terms. Reframing puts the sufferer at the helm of her own life experience, as she builds a narrative step-by-step, in turn regaining a sense of control (see Taylor, 1983). This point has been argued eloquently across disciplines; Olson (1994) draws upon anthropology, linguistics, and psychology to illustrate how writing is, in essence, the paper-based creation of a manageable world.

Study participants report processing a stressful event, deriving a sense of meaning, and alleviating their event-related distress as a result of writing expressively (Pennebaker, 1997). Because narrative construction provides its author with a sense of hope (Harvey, Orbuch, & Fink, 1990), or, in any case, leads to self-reported insight after traumatic events (e.g., Lutgendorf & Antoni, 1999; Pennebaker, 1993, 1997; Pennebaker & Seagal, 1999), expressive writing may well derive its efficacy by restoring present-oriented perceptions of control. This is a possibility that has yet to be investigated adequately.

While stress and loss of perceived control lead to decrements in psychophysiological health, expressive writing, in complementary fashion, elicits numerous physical health benefits. These include, for example, fewer reported physical symptoms (Greenberg & Stone, 1992; Low, Stanton, & Danoff-Burg, 2006; Pennebaker & Beall, 1986), heightened immune functioning (Booth & Petrie, 2002; Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994; Esterling, Antoni, Mahendra, & Schneiderman, 1990; Low et al., 2006; Lutgendorf, Antoni, Kumar, & Schneiderman, 1994; Pennebaker, Kiecolt-Glaser, &

Glaser, 1988; Petrie, Booth, Pennebaker, Davison, & Thomas, 1995), and fewer health center visits (Creswell et al., 2007; Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990; Richards, Beal, Seagal, & Pennebaker, 2000).

### *Expressive writing and restoration of perceived control*

Emotions are informed by one's expectancies (Scheier & Carver, 2003) and general sense of efficacy (e.g., Reis et al., 2000; Taylor & Brown, 1988). Expressive writing elicits both short- and long-term improvements in affect (see Frattaroli, 2006). In particular, expressive writing has been associated with reduced negative affect and depressive symptomatology (Frattaroli, 2006; Greenberg & Stone, 1992; Greenberg et al., 1996; Lepore, 1997; Schoutrop, Lange, Hanewald, Davidovich, & Salomon, 2002; Schoutrop, Lange, Hanewald, Duurland, & Bermond, 1997; Sloan & Marx, 2004a,b; cf. Pennebaker & Beall, 1986; Pennebaker & Francis, 1996). While changes in emotion occur due to a multitude of factors, it is possible that expressive writing causes its emotional outcomes by acting upon perceptions of control. Indeed, expressive writing has been shown to decrease self-reported levels of hopelessness (Segal, Bogaards, Becker, & Chatman, 1999; Segal, Chatman, Bogaards, & Becker, 2001) and to alter salivary cortisol levels (Sloan & Marx, 2004a; Smyth, Hockemeyer, & Tulloch, 2008), both of which suggest that this may be the case.

*Prerequisite levels of perceived control.* While writing on stressful events should cause gains in perceived control, it also is important to note that some pre-existing or prerequisite amount of perceived control is necessary in order for the intervention to be efficacious. Pennebaker, Czajka, and colleagues (1990) examined the effects of control on narrative quality, by manipulating perceived noise controllability. Both groups wrote in a stream-of-consciousness, expressive manner. In the perceived-controllability condition, researchers informed participants that they could cease an aversive noise by pressing a button; in the perceived-uncontrollability condition, researchers told participants that they could do nothing to cease the stimulus. Relative to their baseline writing samples collected before noise administration, perceived-controllability participants exhibited no significant changes in levels of personal and cognitive-emotional in-text engagement, whereas perceived-uncontrollability participants shifted to superficial and unengaged compositional styles. Notably, these differences held despite the fact that none of the participants turned off the noise. Thus, it appears that constructing a narrative about a stressful event requires the input of perceived control, presumably in order to organize, relate, and contextualize one's thoughts and feelings. Indeed, further analyses revealed that perceived-control participants were able to engage in emotional self-disclosure following the aversive stimulus (as evidenced by a significant increase in emotion word usage), whereas perceived-uncontrollability participants refrained from such disclosure.

In terms of the proposed mediational diagram (Figure 1), the link between expressive writing and perceived control is qualified, such that a critical amount of perceived control is necessary in order for writing to provide further, restorative amounts. Analogously, research has shown that predictable environments allow one to engage in proactive, goal-oriented thinking (Pham, Taylor, & Seeman, 2001). Certainly, such thinking is analogous to the insight exhibited by those who later enjoy health gains from writing (Pennebaker & Seagal, 1999).

*Proposing a curvilinear model.* The current theory predicts that populations lacking perceived control are prime candidates for a writing intervention. At the same time, some

pre-existing level of control is necessary. Therefore, moderately discouraged populations should benefit most from expressive writing. Indeed, writing about overwhelming stressors does not usually lead to improved health (e.g., Range et al., 2000; Stroebe, Stroebe, Schut, Zech, & van den Bout, 2002) and may even be contraindicated in the presence of posttraumatic stress (Gidron, Peri, Connolly, & Shalev, 1996; Honos-Webb, Harrick, Stiles, & Park, 2000; cf. Smyth, Hockemeyer, et al., 2008).

Accordingly, we propose a curvilinear relationship between pre-interventional perceived control and health outcomes, such that extremely helpless (e.g., PTSD-prone) and extremely resilient or “in control” individuals typically do not profit from writing, whereas individuals with moderate control deficits enjoy restorative gains in both perceived control and health (see also Solano et al., 2008). In support of a curvilinear model of efficacy, apparently low-control participants, such as high-risk surgery patients (Solano et al., 2007), sufferers of severe traumas (e.g., Batten, Follette, Hall, & Palm, 2002), and patients with a history of psychopathology (Bird, 1992) or suicidality (Kovac & Range, 2002), have demonstrated negative outcomes in response to expressive writing. On the other end of the spectrum, participants with initially coherent and rich narratives do not demonstrate health improvements as a result of writing (Pennebaker & Seagal, 1999), likely because they have already constructed meaningful trauma narratives and thereby regained a sense of control. Indeed, experimental evidence has shown that the *process* of written narrative construction – and not cognitive-emotional content – is directly associated with health benefits (Smyth et al., 2001). Because process is an extra-textual factor, it seems fitting that writing would improve health via an extra-textual mediator, such as perceived control.

#### *Control-compromised writing populations*

Given that one’s outlook about the future is directly influenced by control perceptions (Bandura, 1977, 1982; Pham et al., 2001; Seligman, 1975), the current theory specifies that variables relevant to outlook should factor into the process and outcomes of expressive writing. For instance, pessimism is conceptualized as a form of hopelessness about the future and is related to perceptions of uncontrollability; in contrast, optimism is linked to significant levels of perceived control (Aspinwall, 2005; Aspinwall & Taylor, 1997). Interestingly, then, Mackenzie and colleagues (2008) found that optimistic, future-oriented writing predicts improvements in caregivers’ overall self-reported health. This suggests that an impaired sense of control (in the form of pessimism) is a positive indicator for expressive writing, and also that optimistic writing is a linguistic manifestation of healing and taking control. Indeed, Frattaroli (2006) found that pessimists benefit far more from expressive self-disclosure than do optimists. Those who are optimistic are well equipped to handle psychobiological stress (Aspinwall & Taylor, 1997; Segerstrom, Taylor, Kemeny, & Fahey, 1998), and thus may not benefit from the enhanced sense of mastery that expressive writing could otherwise provide.

In general, individuals who suffer from ongoing stressors, chronic illness, or physical injury profit from writing expressively (Frattaroli, 2006; Pennebaker & Seagal, 1999; Sloan & Marx, 2004b; Smyth, 1998). Chronic illness often is accompanied by clinically relevant levels of intrusion and avoidance (e.g., Butler, Koopman, Classen, & Spiegel, 1999), both of which imply a perceived lack of control over stressful circumstances (van der Kolk & McFarlane, 1996/2007). In chronically stressed, ill, or injured populations, lack of perceived control predicts evaluations of personal health (Simoni & Ng, 2002) as well as depressive symptoms and activity restriction (Chung, Preveza, Papandreou, & Prevezas,

2006a,b; Macleod & Macleod, 1998). A theory of perceived control specifies, then, that diseased individuals should exhibit favorable outcomes in response to writing expressively (Spiegel, 1999), because certain types of perceived control are associated with improved adjustment, even despite chronic disability (Sirois et al., 2006). As support for this prediction, cancer patients (Creswell et al., 2007; Low et al., 2006; Stanton & Danoff-Burg, 2002; Stanton et al., 2002), HIV/AIDS patients (Bower et al., 1998), rheumatoid arthritis patients (Kelley, Lumley, & Leisen, 1997; Smyth et al., 1999), prostate surgery patients (Solano et al., 2007), and asthma patients (Smyth et al., 1999; cf. Harris, Thoresen, Humphreys, & Faul, 2005) have demonstrated improvements in general and specific measures of health after expressive writing. Similarly, patients suffering from fibromyalgia have improved in well-being after emotional self-disclosure (Broderick, Junghaenel, & Schwartz, 2005). These benefits held only in the short term, which is not uncommon for health outcomes within writing studies (Frattaroli, 2006).

A mediational model should be able to explain why long-term benefits are usually not derived from expressive writing, and, conversely, why short-term benefits are common. In this sense, the current theory is on-target, as perceived control is a psychological variable that dynamically responds to and affects one's circumstances, with short- and long-term health consequences. Because control perceptions are dynamic, health benefits following writing, according to the model, must be equally subject to change. Other models – such as disinhibition, cognitive change, and habituation – restrict themselves to event-specific sources of distress, thereby limiting their ability to account for the vast range of paradigms and outcomes.

## Conclusion

In response to theoretical ambiguity and a pressing need for inquiry, this review has argued for a simple and realistic explanation of the health benefits of expressive writing. A theory of perceived control asserts that (1) perceived control is essential for adaptive functioning and health, (2) traumatic and stressful events, as well as daily hassles, disrupt perceived control and health, and (3) expressive writing restores perceived control, thereby improving health. In addition to accounting for improvements in physical and psychological well-being, the model uniquely explains the variable duration of these benefits, by referring to a construct that is dynamic and essential for adaptive functioning, as well as for the higher-level thinking that defines writing expressively. It also predicts which individuals should benefit from the paradigm.

Perceived control encompasses a variety of measurement strategies (Skinner, 1996; Wallston et al., 1989). As a matter of course, in testing the perceived control theory of expressive writing, researchers should furnish a clear operational definition (see Thompson & Collins, 1995; Walker, 2001). To be sure, it is advantageous to have several measures of control within the same study. That is, researchers could obtain neurobiological, behavioral, and/or linguistic data in addition to the standard self-report measures of control. For instance, following Mackenzie and colleagues (2008), it should be possible to assess linguistically a participant's optimism and sense of efficacy within and across writing samples.

While we have shown that research solidly supports each of the three links in the model, no study has assessed the model in its entirety. However, this flaw also exists for other models of writing and health, including social integration and self-regulation. Perhaps the most relevant of all work to date, Langens and Schüler (2007) illustrated that one's expectancies about the virtues and effects of writing override the paradigm structure in

determining health outcomes, begging the case that what one believes about the act of writing is far more important than topic-related, complex factors such as disinhibition, habituation, narrative development, and so forth. For their efforts, they developed an Expectancy Questionnaire, which could prove useful to other researchers, if only as a model for which kinds of efficacy beliefs to assess. Another effort by Solano and colleagues (2007) distinguished between lower- and higher-distress surgical patients, finding, in accord with a curvilinear model of control, that lower-distress patients benefitted from writing, whereas higher-distress participants had null or negative health effects.

One basic test of a perceived control theory would involve correlating perceived control and some measure of health at baseline, then using an experimental manipulation to alter one's perceptions of control (e.g., Pennebaker, Czajka, et al., 1990; Pham et al., 2001), and, finally, determining whether expressive writing leads to restoration of perceived control and health (relative to the manipulation step). Preferably, baseline and follow-up measures would be allocated such that short- and long-term health effects could be assessed. Statistically, it would be vital to show that changes in perceived control mediate changes in health from baseline to follow-up point(s), and, of course, that this finding is unique to the experimental group. For instance, Pennebaker, Czajka, and colleagues (1990) performed an environmental manipulation of perceived control, finding a valuable link between perceived control and compositional quality. One could build on this methodology by adding in baseline and follow-up measures of health and perceived control, and then testing for mediation.

The conditions in which expressive writing is beneficial are still under investigation (Smyth & Pennebaker, 2008). In a larger sense, Shalev (1996/2007) points out that the nature of the stressor being dealt with (its intensity, for instance) determines which coping methods are most appropriate. Thus, while writing is suitable for processing some events, it may not be for others. Moreover, if one's expectations of control and healing are unreasonably high, efforts at writing are likely to be discouraging.

Recently, the expressive writing literature has grown to include a variety of interventions, leading to a new set of theoretical questions. For example, how does expressive writing focused on positive experiences (e.g., Burton & King, 2004; King, 2001) lead to health benefits (cf. Lyubomirsky, Sousa, & Dickerhoof, 2006)? Positive emotions are associated with broad courses of thought and action, whereas negative emotions tend to constrict this repertoire (Fredrickson & Joiner, 2002). As with Mackenzie and colleagues (2008), high-valence writing may be salutary because it leads a participant to write in future-oriented, positive terms. In other words, it could foster a sense of control by highlighting one's prospects and good fortune, thus mitigating one's pessimism and allowing one to capitalize on ("broaden-and-build"; Fredrickson, 2001, p. 218) positive feelings. Naturally, more research is needed to determine whether this is the case. In any event, it is clear that the expression of high amounts of positive emotion within writing samples, along with moderate amounts of negative emotion, is predictive of health benefits (Pennebaker et al., 1997). This could be because positive emotions signify favorable expectations about one's health and one's future.

Overall, expressive writing's vast, layered directions have likely led to theoretical perplexity, and, moreover, to a sizable emphasis on the participant's biases and positive expectations. Fittingly, then, perceived control is a directly measurable construct that unites health, trauma, and writing, thereby providing guidance for future empirical efforts. Because of its relevance to general functioning, the model moves towards a principal mechanism for when, why, and how writing heals – for the college student, prisoner, cancer patient, and novelist alike.

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