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Enhancing the Benefits of Written Emotional Disclosure Through Response Training

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Writing about a personal stressful event has been found to have psychological and physical health benefits, especially when physiological response increases during writing. Response training was developed to amplify appropriate physiological reactivity in imagery exposure. The present study examined whether response training enhances the benefits of written emotional disclosure. Participants were assigned to either a written emotional disclosure condition (n = 113) or a neutral writing condition (n = 133). Participants in each condition wrote for 20 minutes on 3 occasions and received response training (n = 79), stimulus training (n = 84) or no training (n = 83). Heart rate and skin conductance were recorded throughout a 10-minute baseline, 20-minute writing, and a 10-minute recovery period. Self-reported emotion was assessed in each session. One month after completing the sessions, participants completed follow-up assessments of psychological and physical health outcomes. Emotional disclosure elicited greater physiological reactivity and self-reported emotion than neutral writing. Response training amplified physiological reactivity to emotional disclosure. Greater heart rate during emotional disclosure was associated with the greatest reductions in event-related distress, depression, and physical illness symptoms at follow-up, especially among response trained participants. Results support an exposure explanation of emotional disclosure effects and are the first to demonstrate that response training facilitates emotional processing and may be a beneficial adjunct to written emotional disclosure.

Keywords: written emotional disclosure; expressive writing; heart rate; skin conductance; response training

More than two decades of research indicates that disclosure of stressful experiences through writing has far-reaching physical and mental health benefits (Pennebaker & Beall, 1986 Boals, 2012; Fratttaroli, 2006). Writing's efficacy, efficiency (writing typically takes place in three to seven 15–20 minute sessions), and cost-effectiveness suggest that writing as a medium for disclosing stressful events may be a useful therapeutic technique. Early studies showing the benefits of written emotional disclosure have led it to be used as a component in some treatments for PTSD, including Cognitive Processing Therapy (Resick et al., 2008), and to be evaluated as a standalone treatment for posttraumatic stress (van Emmerik, Reijntjes, & Kamphuis, 2013). Other recent writing research found significant improvements in psychological and physical health at follow-up compared to baseline for emotional disclosure and neutral writers, with no significant group differences observed (Daniels, 2009; Kearns, Edwards, Calhoun, & Gidycz, 2010; Smyth, Hockemeyer, & Tulloch, 2008). Thus, while preliminary research suggests that written emotional disclosure is a form of exposure (Epstein, Sloan, & Marx, 2005; Sloan & Marx, 2004b; Sloan, Marx, Epstein & Lexington, 2007), more empirical research is

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required to investigate this assumption to broaden writing's clinical utility and clarify when and for whom writing may be beneficial.

The bio-informational theory of emotion (Lang, 1979) may help to elucidate the mechanism by which emotional writing is effective, and thus how its clinical utility may be improved. From the perspective of bio-informational theory, emotional imagery and written emotional disclosure are both media through which emotional memory networks can be accessed. An emotional memory network is comprised of mutually connected information units, including descriptive, meaning, and response units, with activation of response units resulting in measurable efferent activity (Lang, 1979). While descriptive and meaning units are typically easily accessed, individuals often have difficulty accessing response units, as evidenced by low physiological reactivity during emotional imagery (Lang, Levin, Miller, & Kozak, 1983). For complete emotional processing to occur, all three types of units (descriptive, meaning, and response) must be fully activated (Foa & Kozak, 1986; Lang et al., 1983). As the theory predicts, people with lower physiological reactivity during exposure therapy have poorer treatment outcomes than people with relatively high physiological reactivity, which reflects response unit activation (Beckham, Vrana, May, Gustafson, & Smith, 1990; Foa & Kozak, 1986; Lang, Melamed, & Hart, 1970; Watson & Marks, 1971). Craske et al. (2008) point out that this effect has been primarily restricted to heart rate reactivity during initial exposure, and has not been found with either skin conductance or self-reported fear. Craske et al. further posit other mechanisms involved in fear reduction, including toleration of fear and facilitating inhibitory learning, processes that also involve initial activation of the fear memory.

The positive association between greater physiological responding during exposure and better therapeutic outcomes has also been found in written emotional disclosure (Epstein et al., 2005; Sloan & Marx, 2004b Sloan, Marx & Epstein, 2005), suggesting that both techniques serve as media through which memory networks are activated and processed. Epstein et al. (2005) found, among college students not prescreened for prior trauma experience or posttraumatic symptoms, greater initial heart rate reactivity to writing about an emotional topic than to writing about a neutral topic. Among those in the emotional disclosure condition, greater heart rate reactivity in the first writing session was associated with reduced depression and self-reported symptoms of physical illness 1 month after writing. In another study (Sloan et al., 2007), college students with at least moderate levels of posttraumatic stress symptoms were randomly assigned to write about either a neutral topic or a personal trauma in one of two conditions: with as much emotional expression as possible, or with a focus on what the event meant to them. Participants in the emotional expression condition evidenced greater HR reactivity to the first session, and greater reductions in posttraumatic stress symptoms, depressive symptoms and physical health symptoms 1 month post-writing, than in the neutral topic or event meaning writing condition. Other studies (Sloan & Marx, 2004b; Sloan et al., 2005) employing female college students with at least moderate posttraumatic stress symptoms found greater initial cortisol reactivity in response to emotional disclosure in the first writing session and was associated with reduced PTSD symptom severity and depressive symptoms (Sloan & Marx, 2004b) at 1 and 2 months post-writing. Case studies have confirmed these findings in patients with moderate levels of PTSD symptoms (Sloan & Marx, 2006). Thus, if a method could be found to increase physiological responding to written emotional disclosure, it may be possible to produce better therapeutic outcomes.

Given the importance of physiological output in emotional processing, Lang and his colleagues (1980) developed a brief response training program to increase efferent output during emotional imagery by amplifying preexisting response dispositions. Compared to stimulus training (which focuses imagery on sensory experiences), response training amplifies situation-appropriate heart rate to fear and action imagery (Lang et al., 1980) and increases heart rate to imagery of one's own fear situations, but not to another group's fear (Lang et al., 1983). Similarly, when participants imagine personally relevant scenes (as opposed to scenes created by the experimenters), response training amplifies efferent output, especially for people with poor imagery ability (Miller et al., 1987). These findings, taken together, indicate that response training does not impose physiological responses on individuals or create a demand effect, but rather facilitates access of already-present perceptual-motor memory networks (Lang, 1984).

According to Lang (1984), the key to activating an emotional memory network is for the eliciting stimulus to match the propositional units in the network, and thus response training would be predicted to have the same enhancing effect on physiological responding regardless of the input medium. Since writing about a personally traumatic event, like imagery processing, serves to access memory networks as evidenced by physiological