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Expressive Writing with University Students with Disabilities

A dissertation submitted in partial fulfillment of the requirement for the degree of Doctor
of Philosophy at Virginia Commonwealth University

by

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Abstract

EXPRESSIVE WRITING WITH UNIVERSITY STUDENTS WITH DISABILITIES

By Geraldine M. Lotze, Ph.D.

A dissertation submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy at Virginia Commonwealth University

Virginia Commonwealth University, 2009

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Research suggests college students with high incidence disabilities experience more distress than their peers without disabilities as they adapt to college. The expressive writing paradigm developed by Pennebaker and Beall (1986) effectively reduced distress in college students and other nonclinical samples when participants wrote about emotions they experienced surrounding an upsetting event. Previous research on expressive writing has not addressed the effectiveness of the paradigm with students with disabilities. A randomized control trial study examined changes in distress and daily hassles for participants with disabilities who engaged in expressive writing compared to a control condition in which participants wrote about non-emotional topics. Emotional competencies and coping were also explored as possible proximal outcomes, while distress at baseline and social support were explored as possible moderators of expressive writing outcomes. Fifty seven students, 51% male and mostly European-American

(83.6%), from a large, public university and a local community college both in the Southeastern United States, wrote for 15 minutes on three consecutive days on their own personal computers, with assessment at pre-test, post-test and 30-day follow-up. Expressive writing did not significantly decrease stress or daily hassles, nor did treatment condition differ from the control condition on any of the factors examined. Discussion of participant factors explored possible ceiling effects due to low baseline distress scores and possible limitations related to employing a sample of students with disabilities who are currently receiving college-level support services. Other methodological and procedural issues were also discussed as they relate to best expressive writing practices as well as meeting the needs of students with disabilities. For example, although use of the computer for writing was deemed important for this group of participants, longer writing sessions that may be necessary to impact psychological outcomes could be difficult for students with disabilities. Future directions include qualitative analysis of writing samples in order to develop areas of concern for this population, beginning and ending expressive writing to align with the college academic calendar, as well as use of a control group without disabilities in order to control for baseline levels of distress.

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Introduction

In order to gain an understanding of the significance of investigating the effectiveness of the expressive writing intervention for college students with disabilities, the introduction provides background in three key areas. First, the introduction includes a detailed description of the Expressive Writing paradigm, drawing particular attention to the research involving college students, but without disabilities. This is followed by the theoretical foundation for the developmental stage of emerging adulthood as an important and distinct stage of development between adolescence and adulthood. Last, the current research on this stage of development (emerging adulthood) for university students with high incidence disabilities, including learning disabilities, attention deficit hyperactivity disorder, and Asperger's syndrome, is discussed, with a focus on the issues that make this particular group of students good candidates for the expressive writing paradigm.

Expressive Writing

This section details the expressive writing paradigm including several key aspects. First, a general description of expressive writing is provided including a broad overview of some potential benefits of the intervention. Next, several theoretical models developed to explain the mechanisms by which expressive writing affects areas of general, physical health, and mental health outcomes are explored, operating from the assumption that a better understanding of “why” expressive writing works will further

assist researchers in understanding “for whom” and “under what conditions” the intervention will be most effective (Frattaroli, 2006; Sloan & Marx, 2004). Finally, summaries of the outcome studies for expressive writing interventions are reviewed, followed by a discussion of the mediators and moderators that may have an impact on expressive writing outcomes.

Description and Potential Benefits of Expressive Writing

Expressive writing is a method of emotional disclosure in which individuals write about— rather than speak about — emotions and related cognitions surrounding traumatic or stressful experiences, both acute and chronic. Expressive writing is also called written disclosure, written emotional disclosure, focused expressive writing, and therapeutic writing. Generally speaking, proponents of expressive writing highlight that disclosing information about thoughts and feelings can help individuals to “free their mind of unwanted thoughts, help them to make sense of upsetting events, teach them to better regulate their emotions, habituate them to negative emotions, and improve their connections with their social world, all of which can lead to beneficial effects on health and well-being” (Frattaroli, 2006; p. 823).

The expressive writing paradigm was developed by James Pennebaker who found that when healthy college students wrote about traumatic events – compared to those who wrote about neutral, non-emotional events - for 15-20 minutes, 3-5 times per week in a laboratory setting, they made fewer visits to health services (Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990), experienced improvements in immune functioning (Pennebaker, Kielcolt-Glaser, & Glaser, 1988), and earned improved grade point

averages (Pennebaker & Francis, 1996). More broadly, studies document benefits of the expressive writing paradigm for intervention participants including children, adolescents, and adults from both community and clinical samples.

Although researchers continue to explore various aspects of the expressive writing paradigm, there are several common features to most expressive writing interventions in the areas of study design and methodology. In terms of study design, most studies using expressive writing randomly assign participants to either an experimental or control condition. Participant adjustment variables are generally measured at pre-test, post-test, and often include at least one follow-up assessment, often one month post-intervention. The methodology includes having participants in the experimental condition write for a specified period of time (usually 15-20 minutes) about “your very deepest emotions and thoughts” surrounding an upsetting event that may or may not be related to a specific topic area (Pennebaker, et al., 1990, p. 531). In the control condition, participants are typically asked to write about how they use their time or other unemotional topics, being as detailed, accurate, and objective as possible. The average number of writing “sessions” is 3 to 5 times, occurring simultaneously, daily, or weekly, or at other time intervals specified by the researcher. Finally, the expressive writing intervention takes place in the laboratory, community settings, or in participants’ own homes.

Expressive writing may be of critical value to individuals who may not seek out more traditional therapies due in part to its cost-effectiveness and convenience. Lepore, Greenberg, Bruno and Smyth (2002) explain that by using writing as the modality of expression, many of the barriers to “talk therapy,” such as costs, social constraints,

personal inhibitions, problems in mobility, and lack of access to services, can be avoided. As these researchers explain, “writing overcomes many of these barriers by providing a method for expressing stress-related thoughts and feelings nearly anywhere and without social repercussions” (Lepore & Smyth, 2002; p. 6). In fact, prior research indicates that individuals simply need to write for a short time each day, for fewer than five days, to show improvement. Pennebaker (2004) suggests that the potential efficacy of expressive writing from the “taxpayers’ perspective” is that it may offer more “bang for the buck” than more traditional therapies given the cost-effectiveness and convenience in combination with addressing relevant behaviors and adjustment outcomes such as absenteeism, healthcare utilization, medication use, lab test results, and rates of smoking and drinking (p. 140). Other researchers concur noting that even modest positive effects “if easily and inexpensively obtained, are extremely noteworthy” (Harris, 2006, p. 248). Smyth and Catley (2002) conclude that the greatest cost efficiencies will be realized when the intervention is moved from an individual level to a community level, suggesting that the demonstrated efficacy of the intervention with non-clinical cohorts further supports this shift in intervention venue. Therefore, the power and effectiveness of expressive writing may come about as a result of the ease of administration and utilization, its adaptability as an intervention, and the fact that it is effective at so little cost to participants in terms of time and expense.

Theoretical Models for Expressive Writing

There is still much to be learned about the mechanisms of change enacted by the expressive writing intervention. To this end, researchers have proposed the following

three major theoretical processes by which expressive writing may work: a) disinhibition, b) cognitive-processing, and c) self-regulation. Other lesser known theories include exposure theory and social integration theory. These theoretical processes describe the key mediators of change proposed for effective writing interventions. However, it should be noted that there is much overlap between even these major theoretical foundations.

The first major theoretical approach, disinhibition, refers to the disclosure of previously inhibited, or suppressed, emotions. When traumatic events occur, individuals may try to block out thoughts about the event but at the same time experience intrusive thoughts and rumination (Wegner, 1990) which can create difficulty in bringing a sense of closure related to the traumatic event. Inhibition may be due partly to individuals' development or socialization in terms of the degree to which they have been taught to express or not express their emotions about events (Lumley, Tojek & Macklem, 2002). But, when individuals are given opportunities to write about emotional events, biological changes occur such as reductions in blood pressure, muscle tension, and skin conductance (Pennebaker, 2004).

For the disinhibition theory, Pennebaker (1989) proposed that expressive writing works by allowing individuals to confront previously inhibited emotions. In response to stressful and/or traumatic events, individuals engage in a "mental struggle" that is often distressing as they come to terms with challenges to their basic beliefs and expectations of themselves and the world (Lepore, 1997). This may involve inhibiting emotions and related thoughts, and this inhibition process may cause or exacerbate stress-related disease processes through avoidant thinking and behaviors, intrusive thoughts, and

rumination. Expressive writing operates in a manner similar to the psychoanalytic process of cathartic venting whereby previously inhibited emotions are released resulting in a reduction of thoughts and feelings related to the stressful event(s), thus leading to a host of other psychological and physical benefits. Lepore and Smyth (2002) refer to expressive writing as having some similar aspects to Freud's (1904; 1954) "talking therapy," and the traditional instructions associated with expressive writing seem to echo aspects of "free association" exercises by asking participants to really "let go" and "not worry" about syntactical or grammatical issues as they write (Frattaroli, 2006).

However, further research into the paradigm suggested that inhibition theory may not be sufficient to explain the effects of expressive writing. According to the tenets of this theory, since inhibition is the key to the effectiveness of expressive writing, researchers posit that it should be most effective if the emotions and related thoughts had not been previously disclosed. Greenberg and Stone (1992) tested this hypothesis and found that there were no between-group differences based on disclosure status (i.e., whether or not a traumatic event had been previously disclosed), and in either case disclosing severe traumas resulted in health benefits. In a similar vein, if inhibition was the key process whereby expressive writing worked, it would stand to reason that individuals who were more inhibited (high in constraint) would experience a greater benefit from the intervention. But Francis and Pennebaker (1992) found that individuals who were low rather than high in dispositional constraint benefited most from expressive writing. These findings suggest that although disinhibition is likely one process

contributing to the effectiveness of expressive writing, it is unlikely the sole or key construct with which to explain its effectiveness.

The second major theory, cognitive-processing, refers to the process of constructing meaning and order from stressful events that are organized at the perceptual level and thus remain fragmented and disorganized as sensations of sounds, images, thoughts and feelings (Klein, 2002). Thus, this theory is hypothesized to work through the cognitive processing and restructuring that occurs when disclosing and organizing feelings and thoughts surrounding stressful and traumatic events. By creating an organized narrative, individuals can begin to understand and cope with stressful events. When Pennebaker and colleagues (1990) asked subjects why they thought expressive writing worked for them, a majority said it “allowed them to gain insight into what had happened” (p. 529). One indicator used to determine the degree of cognitive restructuring that occurs during expressive writing is an analysis of the words used in the writing samples themselves. Pennebaker, Mayne, and Francis (1997) noted an increase in words related to potential causes of the stressors or trauma, and insight into the associated events, in the writings of individuals for whom expressive writing was most effective. Further, they found that there was a curvilinear relationship between negative emotion word use and improved health outcomes, such that a moderate number of negative emotion words, indicating moderate emotional arousal, was necessary in combination with cognitive processing in order for changes to occur. Pennebaker (1997) proposed that expressive writing worked because it allowed individuals to organize and make sense of a traumatic event, to come to terms with it, and to eventually integrate an upsetting

experience into one's self-schema. Supporting this premise, Smyth, True, and Souto (2001) found that it was important for individuals to write about an event in a narrative form (rather than bullet or outline formats) in order for expressive writing to be effective, concluding that the organization of the thoughts was important to the process.

The process of reappraising and comprehending intrusive thoughts through expressive writing may render traumatic events or stressors as non-threatening (Lepore, 1997). But researchers differ in how this occurs. Klein and Boals (2001) noted that an important effect of expressive writing is to free up working memory and that weeks after writing, people are less likely to think about their stressors or traumatic events. Klein (2002) proposed that disorganized cognitive traces resulting from stressful memories take up valuable space in the working memory, for example, via intrusive thoughts and efforts to suppress them. Lack of working memory resources may also result in poor reasoning and problem solving. Expressive writing then helps to organize or restructure the cognitive traces into a more coherent structure that is less likely to take up working memory resources, resulting in improved problem solving, coping and health outcomes. Pennebaker (1993) noted that as individuals wrote, their writing also changed from a poorly organized description to a coherent story by the last day of writing. Lutgendorf and Ullrich (2002) explained the cognitive-processing effects of expressive writing as more than linguistic restructuring and suggest that individuals must be actively engaged in experiencing a stressful or traumatic event, including all of the physiological and affective components of the event, in order for the cognitive organization to have a positive effect. Participants who expressed more experiential involvement in the

disclosure writing along with a greater negative mood evoked by the initial writing session, experienced more “resolution” or greater assimilation of the stressful material. Thus, the cognitive processing theory suggests that individuals must be able to cognitively “process” and make sense of traumatic/stressful events in order for the impact of the event(s) to be reduced.

The final major theory developed to explain expressive writing suggests that it may work by facilitating individual self-regulation through increased self-mastery and improved beliefs about one’s own ability to regulate emotions, and allowing for the development of adaptive coping strategies (Esterling, L’Abate, Murray, & Pennebaker, 1999; Greenberg, Wortman, & Stone, 1996; King, 2001). More specifically, self-regulation is the process whereby individuals are able to control and modify their emotional and behavioral responses to be appropriate within particular social and environmental contexts. It is proposed that trauma disrupts the normal self-regulation processes and that through emotional disclosure individuals can make sense of stressful or traumatic events, explore sources of emotion, clarify goals, and get the self-regulation feedback system back on track (King, 2002).

Lepore and colleagues (2002) suggest that expressive writing allows individuals to observe themselves both expressing but at the same time controlling their emotions, and as a result, they develop a stronger sense of their own ability to self-regulate. Through expressive writing and disclosing their emotions surrounding a traumatic/stressful event, individuals develop a sense of control over the challenges, traumas, and stressors with which they must deal. Hemenover (2003) explored positive

self-perceptions of the traditional expressive writing paradigm and found participants in the experimental condition who were writing about a traumatic event had increased feelings of mastery after writing and were better able to “construct their environment in ways that fit their personal needs” (p. 1240). In a unique model of self-regulation, King (2002) explained that through the process of emotional disclosure, individuals are able to cognitively process stressful or traumatic events and to then get the self-regulation feedback system that was disrupted by the trauma, back on track. In their understanding of the cognitive restructuring aspect of expressive writing, Pennebaker and Seagal (1999) explain that expressive writing allows an individual to convert traumatic memories into normal ones, thereby reducing the emotional intensity of the experience, reducing intrusive thoughts, and increasing emotion regulation. As an example of how cognitive restructuring and self-regulation may be operating together in the expressive writing procedure, Pennebaker (1993) noted that individuals who used more emotion words reported greater health outcomes and that a moderate number of negative emotion words predicted improved health (as compared to very high and very low number of emotion words). According to Hannay and Bolton (1999), expressive writing is a form of “self-directed self-empowerment” (p. 157). In all of the aforementioned studies, the researchers acknowledge the role of disinhibition and cognitive processing, but suggest that the key component driving the effectiveness of expressive writing is its ability to help an individual gain self-regulation through mastery over a traumatic experience.

In addition to the three major theories other lesser known theories have also emerged that describe differential processes through which expressive writing may be

effective. Two of these are the social integration theory and the exposure theory. Social integration theorists suggest that as individuals write about their traumatic/stressful experiences, they may also experience a desire to talk about their experiences with other people. Thus, others are alerted to their psychological state which, in turn, allows the individual to develop social ties and gain support from them (Pennebaker & Graybeal, 2001). Therefore, rather than withdraw and become isolated, as sometimes happens to individuals who experience stressful or traumatic events, expressive writing may serve as a mechanism to encourage individuals to develop and strengthen social connections with supportive others.

Others have found support for this theory. Kovac and Range (2000) noted that after disclosing a traumatic event, such as thoughts about suicide, people were more likely to talk about their traumatic event in the weeks or months following disclosure. Heffner-Johnson (2002) also reported that individuals received more social support from friends and family after disclosing a traumatic event. In addition to the expressive writing component, sharing stress-related thoughts and feelings with supportive individuals may facilitate cognitive assimilation and emotional adjustment by lowering arousal (Lepore, 1997; Pennebaker, 1989). Lower levels of arousal afford individuals the opportunity to process and make sense of their situation and regain a sense of well-being and mastery. However, Frattaroli (2006) noted that even in absence of disclosing information about traumatic or stressful events, individuals who participated in expressive writing were more likely to improve their social relationships through activities such as attending a club or meeting or no longer holding a grudge (Frattaroli, 2006). A recent experiment

explored language as a marker of social integration by attaching an electronically activated recorder (EAR) for two days to participants who had spent the previous three days writing and found that those individuals who had written about a stressful or traumatic events as compared to individuals in the control condition demonstrated significant changes in their patterns of speaking, use of self-references, and their use of positive emotion words. After writing, they also found that participants laughed more and even began to subtly change their friendship networks thereby increasing their opportunities for social interactions. Slatcher and Pennebaker (2006) also noted an increase in the use of emotion words in instant-messaging (IM) interactions between romantic couples who had engaged in the expressive writing paradigm. These researchers concluded that expressive writing may enhance relationships in numerous contexts within families, circles of friends, and even work groups. In summation, “expressive writing may serve to strengthen the relational connections of a broad array of social channels, particularly for persons who have not had extensive experience expressing emotions to others” (Slatcher & Pennebaker, 2006, p. 663). However, it is important to note that relatively little research has been done as of yet to test and confirm this theory.

The second less well-known theory is exposure theory. According to this theory, expressive writing may operate in a manner similar to exposure, or flooding, therapy by offering opportunities for individuals to come into repeated contact with aversive thoughts and feelings in a relatively short period of time until the thoughts and feelings become extinct. Exposure theory was proposed by Bootzin (1997) who suggested that expressive writing represents a way of re-living and confronting thoughts and feelings

associated with a trauma, and in this process to have those thoughts and feelings reduce in number and gradually grow extinct – similar to exposure/flooding therapies used with individuals experiencing some phobias or post-traumatic stress disorder (PTSD) symptoms. Sloan, Marx, and Epstein (2005) revisited exposure theory and suggested that the pattern of emotional arousal experienced by expressive writing participants – an increase in emotional arousal after the first writing session with significant reductions as subsequent sessions occur – supports this theory. Further, these researchers noted that individuals who wrote about the same traumatic event each time experienced significantly greater psychological improvement as compared to individuals who wrote about different events each time, again supporting the exposure theory. Klein and Boals (2001) also found a reduction in intrusive thoughts in their two studies of college students writing about the stress of coming to college experienced by incoming freshman, and an upsetting experience for current college students. But not all studies have supported the exposure theory. Lepore (1997) found that expressive writing helped reduce the *impact* of intrusive thoughts in college students worrying about upcoming exams, but it did not reduce the number of the thoughts, which according to the exposure theory, should happen. The recent meta-analysis of experimental disclosure by Frattaroli (2006) found that the larger effect sizes associated with stronger dosages (at least three writing sessions of at least 15 minutes or more), moderate reductions in PTSD symptoms, and large effect sizes for studies of individuals who have a history of trauma seem to support the exposure theory.

Although each of the theories reviewed is promising, there is really no definitive explanation for how expressive writing works. According to King (2002), two conclusions that can be drawn about expressive writing are that a) this intervention is beneficial in terms of health outcomes, and b) we really do not completely understand the processes by which it works. It is likely that more than one theory may be operating and/or a combination of the theoretical mechanisms may underlie the effectiveness of expressive writing. Sloan and Mark (2004b) suggest that one mechanism could account for the initial changes, while another mechanism may account for the maintenance of these changes. For example, cognitive adaptation may occur initially, followed by emotional processing and regulation, and lastly, changes in social networking may occur – all of which will be reflected in improved psychological and health outcomes (Frattaroli, 2006). Another issue to be better understood is the degree to which the effects of expressive writing may be experienced long after the intervention, such that the effects may be gradual and cumulative. Pennebaker (2004) suggests that during and after writing, participants report thinking, talking, and even dreaming about their writing topic. Many parts of their lives are touched, including multiple social and psychological processes. Therefore he suggests that it is likely that a host of psychological, social and biological processes are responsible for the effectiveness of expressive writing.

Outcomes Associated with Expressive Writing

Researchers testing the effectiveness of expressive writing usually focus on general functioning/life outcomes (e.g., work and school related), physical health (including changes in health risk behaviors such as smoking and drinking), and mental

health outcomes (e.g. stress reduction, coping with cancer, etc.). In most studies, participants are randomly assigned to an experimental or a control condition and then asked to write about their thoughts and emotions typically surrounding a stressful or traumatic event (for the experimental condition), or to write about a neutral, non-emotional topic (for the control condition). Research testing the effectiveness of the expressive writing paradigm began with college and community samples, and continued in work with clinical populations with pre-existing conditions such as asthma, arthritis, cancer, PTSD and depression. A number of meta-analyses have synthesized individual studies of expressive writing including those focused more specifically on college samples (Smyth, 1998), clinical samples (Frisina, Borod, & Lepore, 2004), and health-related outcomes (Harris, 2006), and those focused more broadly on a large array of main effect outcomes (i.e., physical, psychological, and subjective) (Frattaroli, 2006). This section provides an overview of the constructs addressed in each general category of outcomes (e.g., general functioning, physical and mental health) and also reviews findings for both individual studies and meta-analyses for each of these categories. The section concludes by addressing some general challenges in studies examining the effectiveness of expressive writing.

General Functioning/Life Outcomes. A number of individual studies have found that after expressive writing opportunities, participants reported positive changes in outcomes related to their general functioning in several domains including school, work, social, and cognitive functioning. Francis and Pennebaker (1992) noted a reduction in the rate of absenteeism from work for university employees who wrote about upsetting

experiences as compared to those in the control group who wrote non-emotionally about the day's events. Later work by the same research team found that students who emotionally disclosed through writing earned higher grade point averages than students in the control group (Pennebaker & Francis, 1996). Another study found that unemployed professionals who wrote about the emotions surrounding their job loss found employment faster than those in the control group (Spera, Buhrfeind, & Pennebaker, 1993).

Turning to meta-analytic work in this area, Frattaroli (2006) also noted generally positive outcomes in studies of work-related and school outcomes (e.g., academic functioning), while studies related to law/forensic outcomes (e.g. number of traffic tickets), and life-goals had mainly non-significant outcomes with the expressive writing procedure. Social relationships were an area of general functioning that was significantly improved through expressive writing. However, there was insufficient evidence to conclude that emotional disclosure has any effect on outcomes related to grief/bereavement, coping strategies, or cognitive schemas (Frattaroli, 2006). In another smaller meta-analysis of 19 published studies, Smyth (1998) also found positive effects of expressive writing on general functioning outcomes (e.g. grade point average, school behavior, reemployment, and cognitive functioning) in the studies reviewed.

Physical health outcomes. Physical health outcomes include reported physical health, physiological functioning, and health risk behaviors. In the seminal work by Pennebaker and Beall (1986), college students who wrote about traumatic events rather than neutral events experienced an increase in negative mood and higher blood pressure immediately after writing, but also experienced a subsequent reduction in health center

visits 6-months following the procedure, a finding that was later replicated by Pennebaker, Colder and Sharp (1990). In a study of incarcerated men, expressive writing was also found to reduce the number of times men in the experimental condition visited the infirmary (Richards, Beal, Segal, & Pennebaker, 2000). Similarly, widows in the experimental as compared to control condition reduced their number of illness-related visits to doctors after written disclosure (Stroebe, Stroebe, Schut, Zech, & van den Bout, 2002).

Subsequent research on expressive writing has found benefits such as improved lung functioning in asthma patients and reduced symptoms in rheumatoid arthritis patients (Smyth, Stone, Hurewitz, & Kaell, 1999) when patients wrote about "the most stressful experience they have ever undergone" (p. 1304) related to their disease compared to a neutral topic. Improved functioning in patients with asthma was noted two weeks after the intervention, while reduced rheumatoid arthritis symptomology was noted 4 months post-intervention. Other studies reported that expressive writing reduced blood pressure (Davidson et al., 2002) and migraine headaches (McKenna, 1997), decreased self-reported upper respiratory problems (Greenberg, et al., 1996), improved the quality of life of breast-cancer patients (Stanton et al., 2002), and reduced the symptoms of fibromyalgia at 3-month follow up (Gillis, Lumley, Mosley-Williams, Leisen, & Roehrs, 2006). Another study of patients with cancer (Zakowski, Ramati, Morton, Johnson, & Flanigan, 2004) found that expressive writing had a positive effect by buffering the distress patients with cancer experienced due to social isolation. Additionally, other studies have found improvements in immune functioning, specifically T lymphocytes,

measured in blood samples taken after each written disclosure session (Pennebaker, et al., 1988) and other endocrine changes, such as a reduction in the reactivation of the Epstein-Barr Virus (Esterling, et al., 1990). However, not all studies found positive outcomes for expressive writing interventions. For example, subsequent studies focusing on individuals with asthma (i.e., Harris, Thorsen, Humphreys & Faul, 2005) did not replicate the positive outcomes found by Smyth et al. (1999).

Meta-analyses of expressive writing studies have also found that physical and physiological functioning significantly improves as a result of the procedure with the exception of health risk behaviors, such as smoking, drinking or increasing exercising (Frattaroli, 2006; Smyth, 1998). It is proposed that such behaviors do not change because they are often less related to emotional issues than cognitive ones. The Smyth (1988) meta-analysis of expressive writing studies focused on the health outcomes of largely college-aged samples and found significant physical health outcomes in studies that examined physiological functioning (e.g. improvements in heart rate, blood pressure, lipids, cholesterol levels, etc.).

In a more recent meta-analysis that examined studies specifically focused on physical health outcomes, Harris (2006) analyzed 30 published studies using randomized trials that were reporting a reduction in health care utilization (a proxy for health improvement) as an outcome. He concluded that writing about stressful events reduced health care utilization in healthy samples, but was not so effective for samples with preexisting medical conditions (e.g. asthma, fibromyalgia). One possible explanation for the group differences is that health care utilization is more normally distributed in clinical

samples than in healthy samples and therefore may be less influenced by change in a few individuals (Harris, 2006; p. 250). According to Harris, it is important to consider whether or not change in health care utilization is necessarily a desirable outcome for all populations, and suggests further research with participants who have been identified as under- or over-using health care in order to test this conclusion.

Psychological Outcomes. Expressive writing has been found to reduce the stress associated with preparing for exams (Lepore, 1997), reduce anxiety in incoming college students (Pennebaker, Colder, & Sharp, 1990), enhance social relationships (Slatcher & Pennebaker, 2006) and coping with the stress associated with losing one's job (Spera et al., 1994). But of particular interest has been the research on participants with psychiatric and psychological symptoms related to stress, where results have been somewhat mixed. College students with a history of anxiety experienced a reduction in their anxiety symptoms and fewer visits to the medical clinic after a written disclosure intervention (Russ, 2002). Schoutrop, Lange, Hanewald, Davidovich, and Salomon (2002) investigated the use of expressive writing to relieve the symptoms of post-traumatic stress disorder (PTSD) in individuals ages 18 to 49 and noted that the experimental group who wrote about the trauma they had experienced had fewer intrusive thoughts, reduced depressive symptoms, and less avoidant behavior than the control group. Koopman, Ismailji, Holmes, Classen, Paresh, and Wales (2005) examined the utilization of expressive writing with survivors of intimate partner violence and found that women with higher baseline levels of depression experienced greater benefits from expressive writing as compared to those with lower initial levels of depression. In a study of adolescents,

Soliday, Garofalo, and Rogers (2004) found that expressive writing positively impacted moods and feelings of optimism, and decreased feelings of distress at two and six weeks post-intervention. These results were consistent with findings in the adult literature that indicate a latent and lasting effect of expressive writing interventions (Pennebaker, 1993).

It is particularly challenging to explore the overall effectiveness of expressive writing for psychological outcome types because of some mixed findings across different outcomes being used to indicate effectiveness. For example, Sloan and Mark (2004) found a reduction in depressive symptomology for college students who had experienced at least one traumatic event within the past year, while Gidron et al. (2002) found an increase in doctor's visits (a negative outcome) for a sample of men with PTSD who wrote about their stress. But researchers continue to explore the use of expressive writing with populations experiencing "stress." In their study of expressive writing to reduce stress in adults in Mexico, Dominguez et al. (2006) concluded that a writing intervention produces the fastest transition between the states of distress to relaxation than any other psychological technique that he and his team have used. But even the Frattaroli (2006) meta-analysis concludes that there are mixed findings of expressive writing on stress symptoms and insufficient evidence to date to conclude that expressive writing significantly reduces stress. However, the largest effect sizes do occur when psychological outcomes are related to emotions (e.g. depression, anxiety) rather than to cognitions (e.g. schemas). Therefore, when it is effective, the usefulness of expressive writing in stress reduction lies in the positive benefits that are produced within a short

period of time – all aspects of the intervention that are significant for individuals experiencing acute or chronic stressors.

Meta-analyses have noted significant psychological outcomes as well. The significant outcomes across psychological measures of well being that were noted in the Smyth (1998) meta-analysis (e.g. happiness, anxiety, positive and negative affect) were also noted in a more recent meta-analysis done by Frisina, Borod, and Lepore (2004). This study focused on samples with clinical diagnoses related to both physical and psychological diagnoses. Nine studies were reviewed, two of which were unpublished, with results indicating positive main-effects on outcome measures of depression, mood, anxiety, and sleep quality. But although expressive writing was less effective for psychiatric than for physically ill populations when the groups were examined separately, the outcomes were still significant (Frisina et al., 2004). In analyzing this finding, they proposed that it is likely that the cognitive impairment that accompanies some psychiatric diagnoses might impact the effectiveness of the intervention (Frisina et al, 2004).

Challenges: One general challenge in exploring expressive writing outcomes is the wide range of outcomes that have been tested and the wide array of measures used to assess the outcomes and to indicate the effectiveness of the procedure. For example, Sloan and Marx (2004b) listed 15 outcomes for the 27 studies that they reviewed using the written disclosure paradigm, including self-reported physical health, mood state, general psychological functioning, depression, and anxiety. Generally speaking, the outcomes do fall into broad categories of general functioning/life outcomes (e.g. grade point averages, well-being), physical health and health risk behaviors (e.g. related to

disease or illness, smoking), and mental health outcomes (e.g. related to distress, anxiety, mood, self-esteem, etc). But further complicating matters is that these outcomes are often interrelated. As an example, distress may mediate physical health outcomes through effects on the immune system (Booth & Petrie, 2002; Lutgendorf & Ullrich, 2002), but all three variables (physical health factors, immune functioning, and psychological distress) can be moderators in other models as well.

Pennebaker (2002), who developed the expressive writing paradigm, writes of the “messiness” of the outcome measures used by numerous studies. Between-studies meta-analyses of expressive writing studies have concluded that most major outcome types significantly improve as a result of the procedure, with the exception of health risk behaviors such as smoking and drinking cessation, and increasing exercise, as these seem to be cognitively based, rather than emotionally based, behaviors (Frattaroli, 2006; Smyth, 1998). The Smyth (1988) meta-analysis noted an overall effect size for the expressive writing studies reviewed was $d = .47$ at one month post-treatment, representing a 23% improvement in the experimental group over the control group. This effect size is well within the range of acceptable effect sizes in other studies of psychological, behavioral, or educational treatments (Smyth, 1998). Frisina et al. (2004) also concluded that expressive writing yielded a small, but significant, improved health effect size ($d = .19$; $p < .05$) in their meta-analytic work. The large Frattaroli (2006) meta-analysis found a positive and significant r - effect size of .08 for the 146 studies that were reviewed. Although the effect size may be smaller than for more traditional and highly researched psychotherapies, the size of the effect relative to the simplicity, ease, and

almost non-existent cost of the intervention is highly significant and important (Frattaroli, 2006). Frattaroli (2006) suggests that we need to “find out when [expressive writing] does and does not work and with whom” (p. 141) rather than debate whether or not the effect size is large enough. In an effort to develop a “model” paradigm, many investigators have explored possible mediators and moderators found to be associated with the written disclosure procedure.

Mediators

Most recent models of expressive writing have emphasized more immediate proximal cognitive and emotional changes (e.g., cognitive restructuring and emotional habituation) that are then hypothesized to result in outcomes that represent longer-term cognitive, emotional and social changes (e.g., positive changes in mental and physical health). But statistically testing mediating effects to link these short- and long-term processes has been challenging largely due to the relatively small sample sizes in expressive writing studies, and thus the reduced power with which to test mediational models (Pennebaker, 2004). However, particular aspects of self- regulation, specifically emotional habituation and cognitive restructuring, intrusive thoughts, and word usage are theoretical mediators that have received some attention by researchers.

Lepore and colleagues (2002) noted that individuals who experienced emotional dysregulation, either over-regulated or under-regulated, experienced poorer health outcomes. Individuals who are over-regulated tend to inhibit, avoid, constrict, and/or suppress their emotional responses. Emotional over-regulation has been implicated in cancer (Gross, 1989), cardiovascular disorders (Davidson et al., 2002), and compromised

immune system functioning (Petrie, Booth, Pennebaker, Davison, & Thomas, 1995). Individuals who are emotionally over-regulated also might ignore signs and symptoms of poor physical health, delay seeking help, and might not work on problematic situations or relationships. Individuals with under-regulated emotions tend to have little or not control over their emotions and experience all emotion-evoking stimuli intensely with exaggerated physiological arousal, and little control over their responses. Under-regulated emotions have been implicated in cardiovascular disorders and infectious illnesses (Lepore, 1998), high levels of negative emotions (e.g. anxiety, depression) and also related to asthma, arthritis, and coronary artery disease (Friedman & Booth-Kewley, 1987), as well as to increased hostility and impulsiveness that contribute to interpersonal problems (Smith, 1992). Lepore and colleagues suggest that the expressive writing directs the attention of the writers to their emotions surrounding a stressor or trauma, helping individuals to habituate or be desensitized to the stressor, and finally, by allowing individuals the opportunity to cognitively reappraise the stressful event with these processes resulting in improved health outcomes. Further, emotion regulation can positively affect outcomes in any of three response channels – subjective, physiological, and behavioral. Therefore, using theory and research on emotional regulation, these researchers suggest that emotional response tendencies and self-regulation of emotional responses are plausible mediators of both mental and physical health outcomes. In earlier work by Lepore (1997), intrusive thoughts were found to mediate the relation between emotional expression and psychological adjustment to stressors by diminishing the

impact of intrusive thoughts, and it is clear that this most recent model has taken this finding into consideration.

Several researchers have used word analyses to test proposed emotional and cognitive mediational processes of both mental and physical health outcomes (e.g., Esterling, et al., 1999). Esterling and colleagues suggested that the increase in negative emotion words and a decrease in positive emotion words is a short-term effect of expressive writing mediated the more distal impact of expressive writing on positive health outcomes. Additionally, word analyses found that an increase in both causal and insight words over the course of writing is strongly associated with improved health (Pennebaker, 1997). Creswell et al. (2007) assessed self-affirmation, cognitive processing, and discovery of meaning as potential mediators of expressive writing on physical health in early-stage breast cancer survivors. A content analysis of the essays written by 63 participants resulted in coding excerpts from the essays into the three constructs (e.g. self-affirmation, cognitive processing and discovery of meaning) that were defined and established a priori. Each excerpt was designated as a “text unit” defined as “a single sentence or multiple consecutive sentences describing a potential self-mediator” (Creswell et al., p. 242). Following the Baron and Kenny (1986) guidelines, mediation was tested using the text units. The authors concluded that self-affirmation fully mediated the relation between expressive writing and physical symptoms at a 3-month follow up, and suggest that self-affirmation may act as the psychological mechanism for the benefits of expressive writing. Their findings are consistent with the previous research proposing that self-affirmations can buffer stress

and improve well-being (Creswell et al., 2005) and expressive writing studies that show writing about one's positive experiences or "a best possible future self" produces improvements in health and well-being (Burton & King, 2004; King, 2001). There is also a theoretical link between the findings of this study and the intervention research using expressive writing, as well as health psychology perspectives on coping with chronic diseases. However, some could argue that using a content analysis of the naturalistic occurrence of statements in the context of expressive writing rather than directly manipulating the three variables may be subject to bias and thereby has less generalizability to other samples.

Slatcher and Pennebaker (2006) also explored the role of natural language use as a mediator of the social psychological processes, specific romantic relationship stability that occurred after engaging in expressive writing. Previous researchers already noted the importance of both positive and negative emotion words in the writing generated in written disclosure sessions (e.g., Esterling et al., 1999), but Slatcher and Pennebaker (2006) chose to investigate word usage in a naturalistic setting – with instant messaging. After completing an expressive writing procedure (writing 20 minutes a day, three days in a row), the emotional disclosure group used more positive emotion words in their instant message conversations as compared to the control group and experienced improved relationship quality and stability. The authors conclude that, "Expressive writing may serve to strengthen the relational connections of a broad array of social channels, particularly for persons who have not had extensive experience expressing emotions to others" (p. 663). Zakowsky and colleagues (2004) explored the role of

avoidance and intrusive thoughts as cognitive variables that could mediate the effect of emotional disclosure on distress in patients with cancer. They found that written disclosure buffered the effects of social constraints on distress in the patients who wrote about their emotions related to having cancer, but that the effects were mediated by a patient's level of avoidance and *not* their experience of intrusive thoughts about cancer. Those patients who experienced high levels of social constraints and who were not given the opportunity to disclose their emotions in writing, continued to exhibit cognitive avoidance of cancer-related thoughts six months later. The authors contend that by allowing patients to express themselves emotionally about their cancer, they relinquish the protective cognitive mechanisms of avoidance as the cancer-related information becomes less threatening. Due to the small sample size, more conclusive, mediational analytic procedures (Baron & Kenny, 1986) were not applied to this study so that generalization of these findings should be viewed with caution.

Overall, there are few studies that have focused on the mechanisms of change in the expressive writing paradigm. In their review of the theories underlying the written disclosure paradigm, Sloan and Mark (2004) explain that it is quite possible that a single theory may not be able to account for the effects of expressive writing. It appears likely that expressive writing operates through a complex process, and possibly a combination of processes, such as some combination of immediate cognitive and/or emotional changes, longer-term cognitive and/or emotional changes, social processes and biological factors, rather than being accounted for by any single factor. As Pennebaker (2004) writes, during the interval between intervention and outcome, “a host of overlapping

processes affect participants.” (p. 139). Clearly, there is need for continued research in this area. For example, earlier models noting the number of words within a particular “category” (e.g. positive and negative emotion words) as indicative of change mechanisms (Esterling, et al, 1999) are being updated with models that focus on the emotional and cognitive processes that earmark change (Lepore et al, 2002; Kliewer, 2008). Unfortunately, expressive writing research is also impacted by small sample sizes and immense differences in methodology in both the intervention and selection and measurement of outcomes limiting the ability in many cases to test mediation models due to a lack of statistical power. However, it is important that further research in expressive writing includes continuing exploration of the mediational processes that explain the underlying mechanism by which the intervention is proposed to create positive changes in mental and physical health.

Moderators

Research on the expressive writing paradigm has addressed a number of potential moderators of this intervention such as demographic, setting, methodology, and treatment variables. Demographic variables that have been examined include sex, age, ethnicity, and education level, and studies have also considered whether the impact of the intervention varies according to participant-based variables including individual differences in baseline levels of well-being (e.g., stress-levels) and personality variables. Several setting variables have been considered such as, a) the specific setting from which a sample is drawn (e.g. community versus hospital setting), b) the location of the writing sessions (e.g. in a home, research laboratory, or clinic setting), and c) the amount of

privacy that is afforded during the disclosure writing that may be linked to location. Methodological variables include the effect of using or not using pre-disclosure priming, the timing of follow-up, payment of participants, and overall number of participants in terms of power to detect effects. Finally, examples of treatment variables that have been considered as moderators include dosage (e.g., number of writing sessions), writing instructions, time since a traumatic event occurred that is being written about, as well as the mode of written disclosure (typing vs. writing by hand). This section reviews studies in the expressive writing literature that have tested moderator effects within each of these categories.

Demographic variables

Demographic variables tested as moderators include ethnicity, education level, sex, and age. For ethnicity and education level, a meta-analytic review of 146 studies found these participant factors had no significant moderating effects on expressive writing outcomes (Frattaroli, 2006). However, it is important to note that for most of the studies in this meta-analysis, there was little ethnic variability in the samples as a majority of the participants (72%) across the 146 studies were Caucasian. One exception was a study that compared Asian American participants to Caucasian participants and found that Asian American participants experienced greater reductions in shame and physical symptoms as a result of expressive writing than Caucasian participants (Rivkin, 2000). Overall, the paucity of research in this area highlights the need for researchers to examine the potential benefits of expressive writing across ethnically diverse samples.

Based on cultural differences in the socialization of emotional expression, important variations may exist in the effects of expressive writing across different ethnic groups.

A number of studies have also examined whether younger samples (with the majority of studies representing samples of college students) benefit more from expressive writing as compared to older samples (comprised primarily of non-student populations) and if the benefits of expressive writing varied for men and women (e.g., Frattaroli, 2006; Smyth, 1998). Smyth's (1998) meta-analysis concluded that younger samples and men benefited more from expressive writing than older populations and women. It is important to note that this synthesis of research included studies conducted between 1990 and 1994 and only 13 of the 19 articles that investigated expressive writing used an experimental paradigm (e.g. including both experimental and control conditions). Smyth explained the higher effect size for psychological outcomes for college students compared to older non-students by suggesting that older participants (mean age of 48.5 years vs. 18.8 years of age for college student participants) had more "rigidly defined views of the self, making it more difficult for writing to produce change" (p. 181). As to the greater benefit of expressive writing for men versus women, Smyth concluded that "traditional sex roles make it less likely for men to disclose a trauma or express emotion than women" (p. 181) and thus expressive writing may offer a vehicle for men to engage in such disclosure. Smyth (1998) also agreed with earlier conclusions reached by several authors (e.g., Pennebaker, 1993; Solomon, Avitzur, & Mikulincer, 1990) when he suggested that men may "focus more on the trauma when writing -- a difference that may facilitate the beneficial effects of expression" (p. 181). Supporting this conclusion,

Lumley, et al. (2002) found that individuals who are ambivalent about emotional expression and/or are likely to inhibit their emotional expression, are most likely to benefit from disclosure.

However, the meta-analysis by Frattaroli (2006) demonstrated contradictory results in that neither age nor sex impacted effect size. It is important to note that all but one of the articles included in the Smyth (1998) meta-analysis were also part of the Frattaroli meta-analysis. In direct contrast to Smyth (1998), Frattaroli (2006) found a smaller psychological health effect size for studies using participants aged 18-22 compared to those using community (and older) samples, when disclosure setting (a controlled laboratory setting versus at home) was controlled. Still, there had been no specific study that has "directly compared student versus non-student treatment participants in a single experimental disclosure study" (p. 855). Frattaroli (2006) also noted that studies with higher proportions of men were not significantly more likely than studies with higher proportions of women to have higher overall psychological health, reported health, or subjective impact effect sizes (p. 855). Seven of the eight studies that specifically explored Gender X Treatment effects found no significant effects (Booth, Petrie, & Pennebaker 1997; Donnelly & Murray, 1991; Kelley, Lumley, & Leisen, 1997; Russ, 1992; Sheese, Brown, & Graziano, 2004; Van Middendorp, 2004) and the remaining two studies found that women benefited more from expressive writing than men. For example, Pennebaker et al. (1990) found a reduction in clinic visits for illness for women, not men, among a sample of college students. Further analyses of the

moderating effects of sex may yield a more definitive explanation of the influence of gender on outcomes (Frattaroli, 2006; Sloan & Marx, 2004).

Participant-based variables

In addition to demographic variables, the potential moderating effects of baseline levels of variables assessing well-being (e.g. stress level, mood, or physical health status) and personality variables (e.g. neuroticism, alexithymia, optimism, and emotional inhibition) have also been explored. In a number of studies, participants are targeted for the expressive writing intervention because they are experiencing psychological or health issues or dealing with the psychological ramifications of experiencing a traumatic event (Magnus, Diener, Fujita, & Payor, 1993). As an example, Frattaroli (2006) found initial level of stress significantly moderated the effects of expressive writing in a within-studies analysis such that studies of individuals with higher baseline levels of stress noted greater benefits from the intervention as indicated by both the overall effect size ($r = .10$) and reported health effect size ($r = .19$). However, it has been noted that when participants have been diagnosed with clinical levels of stress, initial level of psychological stress was not found to moderate reported health outcomes (e.g. health care utilization) (Harris, 2006). It is possible that levels of stress can moderate expressive writing outcomes within a certain range, but individuals who are experiencing clinical levels of stress may also be experiencing symptoms that may actually impede the impact of the intervention such as alexithymia and repression (e.g., Lumley, et al., 2002) and disordered cognition (Pennebaker & Seagal, 1999). In a study not included in the Frattaroli (2006) meta-analysis, Koopman et al. (2005) found that initial stress level did indeed moderate the

outcomes of expressive writing in their sample of survivors of intimate partner violence, specifically by reducing depression, but PTSD symptoms themselves were not reduced.

Several researchers have also explored the role of personality variables on the effects of expressive writing. In a between-studies analysis, Frattaroli (2006) found that psychological factors including mood, neuroticism, alexithymia, and emotional inhibition did not significantly moderate any of the psychological or physical main effects.

Unfortunately, neither Smyth (1998) nor Frisina (2004) examined well-being variables in their meta-analyses. However, in a study of 88 university students, Baikie (2008) concluded that the effects of expressive writing were moderated by baseline levels of alexithymia. Specifically, expressive writing was more beneficial for individuals who scored higher on alexithymia, a personality trait describing someone who is "lacking words for feelings" (Lumley et al, 2002; p. 83). Also, several studies have found that another psychological factor, intrusive thoughts, moderated the relation between the expression of stress-related thoughts and psychological adjustment to stressors, in this case by diminishing the impact of intrusive thoughts (Lepore, 1997; Lepore & Greenberg, 2002). Participants in the experimental conditions did not experience fewer intrusive thoughts, just that their impact appeared to be "blunted" by the process of "expressing one's stressor related thoughts and feelings" (Lepore, 1997; p. 1034), although how and why this happens remain unclear.

Other researchers have also explored the role of personality variables as moderators. Brouwers, Sorrentino, Roney, and Hanna (2004) recognized the range of individual responses to stressors and noted that an individual's orientation to uncertainty

may moderate the effects of written disclosure. An individual with an uncertainty-orientation may actively seek situations and activities that help them attain clarity about themselves and their environments, as compared to someone who is certainty-oriented and for whom clarity about themselves and their environment is achieved by maintaining their already existing schemata and ideas (Sorrentino & Roney, 2000). Using physiological measures of skin conductance and heart rate, these researchers found that disclosing a high-intensity traumatic event is more beneficial to an uncertainty-oriented person than someone who is certainty-oriented. As a matter of fact, it is even suggested that a certain-oriented individual may even be further traumatized by the written disclosure of such an event. Therefore, individual differences in one's uncertainty orientation may moderate responses to expressive writing.

Setting. The location of the disclosure sessions is another moderator of interest. Frattaroli (2006) concluded that greater psychological effect sizes were produced when the writing was done at home rather than in a controlled, laboratory setting. This factor was not examined in other meta-analyses (e.g., Smyth, 1998; Frisina et al., 2004). It seems somewhat at odds with the expectation that more controlled settings should allow less room for error and greater compliance, thus larger effect sizes. Despite the issue of having more scientific control, being able to write at home may allow individuals to relax more and become more engaged in the disclosure process. However, one concern when expressive writing takes place outside of the laboratory setting is being able to monitor and provide support for the possibility that participants may experience increased negative emotions during the writing process, especially after the first writing session.

For example, Sheffield, Duncan, Thomson, and Johal (2002) examined expressive writing in a home-based setting with follow-up at 3, 7, and 30 week intervals. On writing days, the emotional disclosure group experienced less positive mood than the control group; and at three weeks, the emotional disclosure group actually reported more negative physical health symptoms and missed classes. However, at thirty weeks, the emotional disclosure group reported improvements in all psychological and physical health measures. In noting the detrimental short-term effects of written disclosure, care needs to be taken with participants who are writing outside of the controlled dosage designs of lab studies. However, as of yet no primary study has randomly assigned participants to different writing locations in order to systematically explore the effect of disclosure location.

Another setting moderator is the amount of privacy afforded to participants. Frattaroli (2006) found that across studies, studies that afforded greater privacy during disclosure resulted in larger overall and psychological health effect sizes, for many of the same reasons that writing at home resulted in the same outcomes (i.e., individuals were able to relax more and be more engaged in the process). Of particular note is that only psychological outcomes, and not physical health outcomes, were moderated by disclosure location and privacy. This could be due to the fact that outcomes that are related to psychological health (e.g., reduction in distress, depression and anxiety symptoms, life satisfaction, and coping strategies) may be particularly sensitive to individuals' feeling at ease and getting fully engaged in the emotional disclosure process.

Methodology. Four methodological variables may moderate the effects of expressive writing: payment for participation, priming, timing of follow-up, and sample size. Frattaroli (2006) concluded that when participants were given payment for participating in expressive writing studies, only subjective effect sizes were impacted. Specifically, payment increased the likelihood that participants in both the experimental and control conditions rate the intervention as helpful and enjoyable. It is likely that control group participants who have not received some payment, are especially likely to subjectively rate the intervention poorly. This makes sense as the control condition is often a thinly cloaked alternative to the experimental condition and most participants likely soon realize that they are not engaging in the intervention condition. It is most important to recognize that payment did not moderate outcomes in other areas, such as well-being, and psychological and physical health. Thus in regard to external validity, payment does not moderate the effectiveness of the intervention for participants in the experimental condition, but it does make participation more palpable for participants in the control condition.

Findings about the effects of priming are somewhat mixed. While some researchers explain that participants are warned in advance about what they will be asked to write about (e.g., Kovac & Range, 2002), few studies explicitly state whether or not this occurs. When Cole (2003) specifically tested priming participants with the information that they would be asked to write about an upsetting or traumatic event, priming moderated the effect sizes for the experimental group. Priming actually made the control group get worse after the experiment, thereby increasing the treatment vs. control

effect size, and thus the significant moderator effect (Cole, 2003). The treatment group came to the study ready to disclose, but the control group had to inhibit their feelings and write about a neutral topic. Frattaroli (2006) did not find that priming was a significant moderator in a between-studies analysis of expressive writing studies, possibly due to discrepancies in researcher reporting about priming.

The timing of follow-up is the last methodology moderator to be examined. Few researchers provide a rationale for the follow-up period they choose, leading to some speculation as to whether or not the effects of the intervention are somewhat fleeting (Sloan & Marx, 2004). Frattaroli (2006) concluded that studies with follow-up periods of less than one month had larger overall and psychological health effect sizes than studies with follow-up periods of 1 month or more. Some studies have measured change as early as 1 day after disclosure (Booth, et al., 1997) or as long as 15 months after the intervention (Gidron et al., 2002). For example, Lepore (1997) collected follow-up data 7 days after the expressive writing intervention ended while Pennebaker and Beall (1986) collected follow-up data (e.g. health center visits) 6-months after the writing sessions. However, based on concerns of the impact of short-term negative effects for studies with follow-up analyses conducted less than 1-month after the conclusion of treatment, these studies were excluded from analyses in some meta-analyses (Frisina, 2004; Smyth, 1998). Although the immediate effect of written disclosure is often increased distress, this is quickly replaced with measurable benefits. More generally, overall findings also suggest that the effects of expressive writing may "wear off" over time and that regular "booster

writing sessions" may need to be given to improve and lengthen the positive outcome effects

Treatment. Numerous treatment variables have been proposed to moderate outcomes of the expressive writing intervention in between-studies meta-analyses, but in most cases, they have not been experimentally tested as moderators in primary studies. These moderators include variables related to dosage (i.e., the number of writing sessions, the length of each writing session, and the amount of time between writing sessions), the writing topic, disclosure instructions, and mode of disclosure.

Dosage. In meta-analytic reviews, the typical dosage standards analyzed were number (more or less than 3 writing sessions), time (more or less than 15 minutes), and spacing (e.g. daily vs. weekly sessions) (Frattaroli, 2006; Smyth, 1998). According to Sloan and Marx (2004b), expressive writing studies include on average three sessions although there have been studies with as few as one writing session (Greenberg et al, 1996; Lepore, 1997) and as many as seven sessions (Stroebe et al., 2002). With regard to the amount of time spent during each session, although the average length of time is 20 minutes (Sloan & Marx, 2004b), some studies have sessions that lasted 30 minutes (Greenberg et al, 1996) and even 45 minutes (Schoutrop et al, 2002). Frattaroli (2006) concluded that "more may be better" (p. 857) in terms of the impact of the number of sessions and length of time spent writing in each session, such that three or more sessions, of 15 minutes or more of writing time, are optimal. These two dosage variables were related to overall effect size, with number of writing sessions and the amount of time spent during each session related to psychological health effect sizes. The number of

sessions also related to subjective impact effect sizes, in other words, whether or not participants rated the writing procedure as enjoyable or not.

The spacing of sessions (daily vs. weekly sessions) was not found to moderate any of the outcomes in the Frattaroli (2006) study, contrary to the conclusions of the Smyth (1998) meta-analysis where it was suggested that increased time between sessions was positively related to the overall effect size. One possible explanation for the different results between these two meta-analyses is the much larger number of studies on which the Frattaroli (2006) meta-analysis was completed (Sloan & Marx, 2004). Pennebaker does not even mention spacing of sessions in the instructions for expressive writing on his website (2000), and there is wide variability of this variable, with a majority of studies holding writing sessions on consecutive days (Sloan & Marx, 2004). The spacing of writing session has been systematically tested with no significant differences found in the potential benefit of daily versus weekly treatment sessions (e.g., Sheese et al., 2004), nor did an analysis of expressive writing studies indicate that a longer period between sessions is beneficial, as compared to writing on consecutive days (Sloan & Marx, 2004b). The most recent study that specifically examined the spacing of expressive writing sessions found that there were no significant differences between the spacing of writing sessions. College students were randomly assigned to write for 15 minutes on three occasions in the following prescribed manner: in three sessions separated by 10 minute breaks (total of 1 hour), three sessions separated by 35 minute breaks (total of 3 hours), or three 15 minute sessions separated by 24 hours (Chung & Pennebaker, 2008). Chung and Pennebaker concluded that although more emotionally taxing, a brief 1-hour

expressive writing procedure has effects comparable to the traditional 3-day method.

Therefore, it appears that disclosure sessions may be arranged in a manner most convenient for experimenters and participants within these general parameters.

Writing topic. In considering written disclosure about traumatic events, two potential moderators are: a) whether or not information about the trauma/stressor has been disclosed prior to the expressive writing procedure, and b) the number of months that have passed since the event being written about occurred. Both were found by Frattaroli (2006) to moderate psychological health effect sizes, with studies requiring disclosure of previously undisclosed events, and requiring the traumatic event to be more recent, resulting in greater effect sizes. In addition, studies in which months since event occurred significantly moderated overall and reported health effect sizes as well. There have been no primary studies that have manipulated time since event in a single study, but whether or not a topic has been previously disclosed or not has been examined. Two studies reported in one paper by Paez, Velasco, and Gonzalez (1999) found that written disclosure of a previously undisclosed event was beneficial (Study 1), and disclosing an event that had been previously disclosed was also beneficial (Study 2). In contrast, Greenberg and Stone (1992) experimentally compared writing about undisclosed traumas, previously disclosed traumas and trivial events and found that prior disclosure of the trauma did not moderate the outcomes of the expressive writing intervention. Therefore the effects of prior disclosure of event and time since the event are inconclusive.

Disclosure instructions. There is much variability in the disclosure instructions that are given in expressive writing interventions. Researchers can direct participants to write about a particular event, or not; they can request that participants write about the same event each time, or allow participants to choose whether or not to do this; they can limit the timeframe in which an event that will be written about has occurred in order to examine if expressive writing is more effective for more recent events or for events that have happened in the past; they can offer more (or less) guidance in the instructions about how and what to write about a traumatic event; and they can even test audience effects on expressive writing outcomes.

An analysis of the disclosure instructions given to participants in expressive writing studies concluded that studies that gave more directed questions or examples of what to write in the emotive-writing instructions had marginally larger physical health effects and significantly larger psychological health effect sizes than studies that did not give directed questions (Frattaroli, 2006). This is somewhat in contrast to what Pennebaker (1997) suggested, which was that the effects would be greater if participants are able to choose their own writing topic. But even with more directed questions that might limit the topic somewhat (e.g., "write about adjusting to college" or "write about past childhood sexual abuse"), there are many opportunities to choose a specific topic within the guidelines offered in the instructions. For example, if asked to write about adjusting to college, participants would be free to choose the particular aspect of adjustment that was most traumatic for them - leaving home, living with a roommate, adjusting to a new schedule, etc. The Smyth (1998) meta-analysis also concluded that

there were greater effect sizes if participants were not limited as to whether or not a trauma was a current or past event. Therefore, it appears that participants are able to respond in personally meaningful ways even to instructions that are more directed.

Further, letting participants choose whether to write about the same topic each session or to change topics also is related to larger outcomes (Sloan and Marx, 2004a; Frattaroli, 2006). Frattaroli (2001) tested this by offering specific instructions to either switch topics or not switch topics and found that in both cases, specific instructions were related to improvements in a measure of analytical thinking when compared to a group that was given no instructions regarding topic switching. Frattaroli (2006) concluded that neither time reference of instructions (e.g. instructing participants to write about a current trauma vs. a past trauma vs. allowing a personal choice) nor focus of instructions (instructions that are specifically designed to promote cognitive processing or insight vs. giving participants standard disclosure instructions, p.858) moderated any of the outcome types. A majority of expressive writing studies use the standard instructions -- simply asking participants to write about their deepest emotions surrounding an event of their choice. Instructions can also be related to whether or not experimental participants must write about the same event in each session or not. In one study in which the disclosure instructions were systematically varied, Sloan, Marx, and Epstein (2005) offered expressive writing to college undergraduates with a trauma history and at least moderate posttraumatic stress symptoms and concluded that writing about the same traumatic event each time significantly reduced psychological and physical symptoms compared to either

writing about different traumatic events each time or about one's daily activities (the control condition).

Another moderator related to disclosure instructions is the recency effect of the trauma. Disclosing more recent events has been shown to predict effect size. More specifically, Frattaroli (2006) noted that in the "typical" instructions in the experimental condition, when asked to write about one of the most "upsetting and traumatic events of their entire life" (p.858), most individuals write about a relatively current event without the instructions even asking them to do so, therefore this is a very difficult moderator to isolate and study. Frattaroli also notes that in the 146 studies analyzed in the 2006 meta-analysis, there was no significant difference in the recency of events written about between studies that instructed participants to write about a recent event as compared to participants who were given a choice of disclosing a current or past event (Frattaroli, 2006).

Whether or not participants are told that their writing passages will be read by someone has also been explored as a possible moderator of expressive writing. Between-studies analysis indicated that outcome effect sizes (as measured by self-reported quantitative measures) were larger if the participants were instructed that their writings would be kept private rather than read and qualitatively analyzed by someone (Frattaroli, 2006). Hannay and Bolton (1999) instructed depressed or anxious patients that their writing was "for their [the patients'] eyes only" and the patients could even tear up their writing when they were finished. Although content of the writing could not be analyzed, other quantitative measures were used to examine effects at pre- and post-intervention, as

well as follow-up. When asked to evaluate the process, participants felt expressive writing to be beneficial to them because "it was done by them rather than for them ..." (p. 158). Most studies in which the writing is not collected and read by others allow the disclosure to take place in the home, and disclosing at home is related to larger effect sizes (see the prior section on setting). However, the relation between "audience" and effect size becomes nonsignificant if location is controlled (Frattaroli, 2006).

Mode of disclosure. Modality of writing (by hand or on computer) was not found to moderate any of the outcome types, especially if participants were comfortable with typing on a computer. In an earlier study comparing writing by hand and typing by Brewin and Lennard (1999), participants who wrote their responses by hand, rather than typing them, wrote for a longer period, used more words, and reported greater negative and less positive affect, all of which correlate positively with larger expressive writing effect sizes. The group that wrote by hand also felt that they disclosed more (based on subjective responses). Brewin and Lennard (1999) concluded that typing exerts an additional load on working memory, even for moderately experienced typists, which thereby reduces the capacity to engage deeply in the emotional disclosure process. However, the study does not define what is meant by a "demonstrate[d] ...ability to type continuously on a keyboard" (Brewin & Lennard, 1999; p. 356). It is likely that as more and more individuals begin typing on computers at earlier and earlier ages, the process of typing is less likely to use the working memory that it was proposed to have taken almost ten years ago. In a more recent study by Hemenover (2003), participants (college students) typed on laptop computers set up in single, private laboratory rooms. In this

study, participants who disclosed their emotions surrounding a traumatic event of their choosing increased in positive self-perceptions (e.g. mastery, personal growth, self-acceptance) and decreased in distress (e.g. depression, interpersonal sensitivity, anxiety, somatization) at three months posttest, with the control participants showing no changes in these variables. It is possible that studies using typed responses will increase in the future, however the differences between handwritten and typed responses has not been directly tested.

Conclusion

Research has shown that written disclosure is an effective intervention to improve psychological and physical health, as well as overall functioning. Based on the current literature, it works best for participants who have pre-existing health problems or who have a history of trauma. When writing, participants should be made as comfortable as possible, even being able to write in their own homes, and payment appears to enhance how much participants enjoy the writing process. Participants should write at least three times about events that have happened somewhat recently, or at least events that they have not fully processed. They can be given specific instructions about their disclosure procedure. To show the largest effects, follow-up should be conducted one month after the procedure.

What is not important is whether or not participants write about the same topic each time, how far apart the writing sessions are scheduled, and as suggested by some studies, whether or not they write by hand or type their responses. It is also important that each session lasts at least 15 minutes, but a conclusive optimal amount of time has not

been indicated. Research on the moderators of expressive writing is often plagued by a lack of intentional investigation of such relationships, which is often post-hoc (Lumley et al., 2002). Some moderators may also be difficult to detect statistically as several moderators may be confounded with one another. A systematic examination of moderator effects, using samples large enough to test these effects, will enable researchers to further understand the "boundary conditions of the expressive writing paradigm" (Baikie & McIlwain, 2008).

Much of the research on expressive writing has been conducted with university students who encompass the emerging adulthood stage of development – that period of development that adolescents progress into prior to entering adulthood – with a focus on the stressors and issues impacting individuals during this period of development. Arguably, college students with disabilities experience these same adjustment distress and factors, but through a unique lens of their own “disability” experience. Therefore, the question remains as to whether expressive writing can be meaningful and useful to this unique population within the university setting.

Emerging Adulthood

Historically, human development has been conceptualized as growth from infancy, into childhood, into adolescence, and ultimately into adulthood, with most of the focus being on development prior to adulthood. Each developmental "stage" is said to contain unique cognitive, biological, and social changes that impact growth and development and that prepare the individual for the following stage. Freud's psychoanalytic theory emphasized psychosexual stages that culminated in the genital

stage that lasted from adolescence throughout adulthood. The first five years of development laid the foundation for further development and were of key significance. Erikson theorized that psychosocial development entails a series of crises/conflicts in which individuals engage with others to resolve and whose outcomes have long-lasting effects throughout development. According to Erikson, development was not something that occurred to prepare individuals for adulthood - it was an ongoing process that continued throughout adulthood until death occurred. Piaget's theory of cognitive development noted distinct stages of cognitive development that ended at approximately age 12, when adolescents were able to engage in formal operational thinking including the more abstract social and ethical concepts that denote adulthood. The grand theories have stood the test of time through empirical exploration in various cultures and contexts.

But scientists in the United States and Canada began noting some significant demographic shifts occurring in the population of young adults who had turned 18 and who had reached a legal age for a number of activities, including emancipation from home. Coté noted that adolescence was becoming longer in modern societies and that "youth" was taking up much, if not all, of what in earlier society would have been called "adulthood." He also noted that adulthood was being perceived of as uncharted territory for many entering into it -- adulthood of modern society was not like the adulthood experienced by one's parents or grandparents (Coté, 2000). According to Schwartz and Pantin (2006), the social structures of adolescence began to increasingly "decouple" from those of adulthood in modern Western societies (e.g., education from work, family of origin from family of procreation), and the result was a generation of young people who

moved from the structured life of adolescence to the responsibility-based life of adulthood without the support and dictums of society. Further, Arnett (2006) noted that the median age of marriage and the age of first childbirth had steadily increased in industrialized countries from the 1950's to the 21st century, that college enrollment had risen substantially since the 1950's, and that more moves were made by individuals between the ages of 19 and 25 than for any other age group (Arnett, 2006). It appeared that the changes were all somewhat related -- individuals were putting off marriage, parenthood, careers, and permanent residency while they were moving, attending college, and exploring a plethora of options prior to making the enduring commitments associated with adulthood.

In modern industrialized societies such as the United States, the years between adolescence and adulthood, approximately ages 18 - 29, have been conceptualized as a unique developmental period of personal and social growth and adjustment by some scientists. Arnett called this stage of development "emerging adulthood" (EA) -- characterized primarily by the feelings of being "in between" adolescence and adulthood and not fitting squarely into either stage. As Arnett explains, the term "emerging" is an important aspect of the moniker "emerging adulthood" as it denotes the important preparation for adulthood and the responsibilities and stability that come with it, through a period that is profoundly different than adolescence. Although most developmentalists acknowledge age 18 as the upper bound of the stage of adolescence, Arnett suggests that "there is no firm upper transition age from EA to young adulthood. I think people vary a lot in when they feel adult and when they experience key transition events such as

entering stable work and getting married . . . any specific age masks a lot of variance” (J. Arnett, personal communication, April 30, 2009). He acknowledges the enormous changes that occur as adolescents leave home for the first time, leaving the umbrella of support and control proffered by parents/adult caregivers, and enter into a phase of unbounded opportunities and choices. But emerging adults are not simply drifting in a sea of possibilities -- they are actively engaged in the process of preparing for adulthood.

Based on over a decade of research on emerging adults (Arnett, 2004), Arnett has proposed that there are five key feature of emerging adulthood that make it a unique period of development. Emerging adulthood is an age of: identity exploration, instability, self-focus, of feeling in-between (being neither an adolescent nor an adult), and of possibilities filled with high hopes and optimism.

During this age of identity exploration, exploring and developing one's identity as an emerging adult is a much different experience than the identity exploration that is often associated with adolescence. For one thing, there is much more independence with which to develop an identity for emerging adults. They are independent from parents, yet are not yet committed to many of the long-term relationships (e.g. marriage, parenthood, career, etc.) associated with adulthood. Identity development during these years is often a matter of exploring possibilities and in so doing, developing more of an independent self-concept and realistic future orientation. Through dating, choosing a major and exploring career options, emerging adults are exploring their own identities because in order to choose a partner for marriage and raising a family, selecting a field of study that they foresee engaging in for many years as a career, and even traveling to different locales,

emerging adults are having to ask themselves what matters most to them, and thus develop their own identities. Outside of their parents' purview, emerging adults begin to develop a worldview and are able to explore differences and similarities with the views held by their parents and with which they were raised, and this, too, contributes to identity development. In Arnett's (2004) work, the issue of identity was all encompassing to emerging adults and even when they were not talking about it specifically, every feature of emerging adulthood was wrapped around the significance of developing a unique identity

In this age of instability, emerging adulthood is also the period of life in which individuals are the most unstable, making more actual geographic moves and relocations than at any other period of individual development (Arnett, 2006). For most, the first move at age 18 or 19 is out of the home of their parents, and then numerous other "moves" occur, from a dorm to an apartment, from one apartment to another, from school upon graduation, even back to their parental home for a limited time until another move can be made (Goldscheider & Goldscheider, 1999). These changes reflect the instability that Arnett proposes is a defining feature of emerging adulthood.

In describing this as an age of self focus, it is a time when individuals can focus on their own needs and identity development, but with more improved social cognition as a result of moving beyond adolescence. Thus the self-focused orientation of this stage is quite different from the self-centered egocentrism that characterizes adolescence. Arnett points to the improved relationship that most emerging adults develop with their parents as a demonstration of this shift in social cognition, as individuals become more

considerate and understanding of others, even those with whom they are closest.

Emerging adults experience increased autonomy in their lives and are free to pursue the "who am I" question of identity during this period of development, thus the self-focus that characterizes them. Along with a freedom from social obligations and expectations, they also spend more time alone than any other age group except for the elderly (Larson, 1990). Most emerging adults view these "alone times" as temporary, however, until they make the decision to live otherwise by selecting, among other things, a life partner, a career, or a permanent home.

When Arnett (2001) asked individuals ages 12 to 55 whether or not they considered themselves adults, respondents ages 18-25 overwhelmingly (60%) responded that they did not feel that they were full adults, but nor did they feel they were still adolescents -- they felt in-between the two developmental stages. Thus this feature of emerging adulthood is referred to as the age of feeling in-between (Arnett, 2006). Individuals in this age group were not experiencing the changes associated with puberty, nor were they still in high school or living at home. But neither did they feel that they were adults yet. Further, this same study (Arnett, 2001) found that not until reaching age 35 and older did a clear majority of individuals consider themselves to be adults. There were still some "feeling in-between" responses from age 25 up until age 35. Arnett concluded that becoming an adult is more of a gradual process than a shift that occurred because of chronological age, therefore he chose the term "emerging" as a key descriptor of this specific period of adult development. According to Arnett (2006), numerous studies in industrialized countries, with various ethnic and socioeconomic status (SES)

groups, have consistently described adulthood as the period of development characterized by the ability to: accept responsibility for yourself, make independent decisions, and become financially independent. Thus "adulthood" is not simply comprised of a host of transition events (e.g., finish education, marriage, parenthood, obtaining a full-time job) but is rather a gradual process that can unfold in individuals in various ways, times, and even order.

Lastly, emerging adulthood is the age of possibilities, characterized by increased optimism and hope for the future that lies ahead. According to Arnett (2006), "even if their current lives are a struggle, as is the case for many emerging adults, they continue to believe that they will ultimately prevail" (p. 13). For some emerging adults, this is the first period of their lives in which they can dramatically change the direction and focus of their lives away from the difficulties and challenges of their family. Emerging adults have the maturity as well as the legal status to live independently. Some have even suggested that this developmental period is a critical period for the expression of resilience (Masten, Obradovic & Burt, 2006).

Empirical support for the distinction of emerging adulthood as a stage of development unique from adulthood is growing. Arnett (2000) cautions that emerging adulthood exists only in cultures where young people have a prolonged period of independent role exploration during the late teens and twenties, so research has examined this construct in different cultures. Nelson and Chen (2007) examined emerging adulthood in the collectivist culture of China, and concluded that while high future expectations are experienced by Chinese emerging adults, some social values and cultural

characteristics (e.g. values of family obligation) made other features of emerging adulthood, such as identity exploration and instability, less salient. In Japan, Rosenberger (2007) suggests that emerging adulthood may be best understood with a "redefinition of social norms that takes shape in response to what has come before and what is emerging in the economic and political experience of the current generation" (p. 95). Fuligni (2007) explored emerging adulthood in Asian and Latin American families, suggesting that cultural traditions of family support, obligation, and residential status may be gradually changing as more children who have immigrated to the United States enroll in college and thus prolong the culturally normed transition into adulthood. Therefore, it is likely that immigrant youth will begin to experience emerging adulthood in a way that is more similar to that of their peers from other backgrounds. In the same issue, Douglass (2007) examined emerging adulthood in European nations, and specifically noted the low numbers of children being born as indicating the changing "process" of becoming an adult in European societies. In some countries, governments have developed ways to minimize the economic and domestic instability that characterize emerging adulthood in the United States (e.g., providing economic support to youth while they are in college), while in other countries, families willingly provide economic support for children until they are well into their thirties. Additional articles explored the construct of emerging adulthood in Latin America (Galambos & Martínez, 2007) and Argentina (Facio, Resett, Micocci, & Mistrorigo, 2007). In conclusion, most of the research is noting that the transition from adolescence into adulthood is socially and culturally altered so that the features of emerging adulthood are culturally specific, but that as young people are

exposed to more choices and possibilities, the process of transitioning into adulthood is growing longer. Specifically, enrollment in college has been noted by many of the researchers as a key element in the shift.

Although Arnett (2007) suggests that scientists need the term "emerging adulthood" to explain the new social and cultural phenomenon of delaying the responsibilities of adulthood until later in life, not everyone agrees that it is necessary to distinguish this age stage from adulthood. Hendry and Kloep (2007) argue that development is nonlinear and reversible (Baltes, 1997), and that the search for identity has always been conceptualized as a lifelong process, not simply limited to one part of adulthood. Therefore, there is no need for a unique term to describe these early years of adulthood. In their conceptualization of life transitions, there is much irregularity between the developmental stages of adolescence, early adulthood, middle age, and old age, allowing that some identity domains may be reached earlier or later for each individual -- individuals do not attain adulthood after a smooth, linear progression through emerging adulthood.

It has also been noted that emerging adulthood cannot occur when there are limited resources and/or disadvantages. Rather than being in a state of emerging adulthood, Hendry and Kloep (2007) suggest that individuals may be in a state of "prevented adulthood" and/or "unhappy stagnation" if they lack the resources (e.g., education, suitable jobs, affordable housing) to gain independence and self-reliance. Côté (2000) noted that there are a significant number of young adults who experience transitional difficulties and problems, especially those who have the least economic,

intellectual, and psychological resources. So that while most developmental researchers agree that developmental change often occurs as a result of challenges, conflicts and crises, for many young adults, the range of choices, challenges and risks means there are fewer safety nets to support them (Hendry & Kloep, 2007).

Emerging adulthood and Individuals with Disabilities

While much research has investigated the experience of emerging adulthood across different cultures and ethnic groups, there has been a dearth of research on the experience for young adults with disabilities. A recent literature search using the terms "emerging adulthood" and "disabilities" yielded one study. Galambos, Darrah, and Magill-Evans (2007) investigated the differences in the experience of subjective age for emerging adults ages 20-30 years with and without motor disabilities (e.g. cerebral palsy, spina bifida). Subjective age is the age that an individual "feels" as compared to their chronological age. The study examined the factors that impacted subjective age for the emerging adults with motor disabilities (e.g. psychosocial maturity, parental overprotection, and severity of disability), and found that there was not a significant difference between emerging adults with and without motor disabilities. Psychosocial maturity was a significant predictor of subjective age in the group with motor difficulties, clearly aligning with previous research showing that responsibility and independence are strongly associated with the belief that one has achieved adult status (Arnett, 1994; Galambos et al., 2007). The framework of emerging adulthood has not yet been utilized in the context of experiences for individuals with learning and neurodevelopmental disabilities without motor limitations and thus leaves open the question whether or not a

theory that has been developed based on typically developing individuals is applicable to those with disabilities, and if it is applicable, then how is it modified or altered by the experience of having a disability.

College Students with Disabilities

It is difficult to determine how many students with disabilities are enrolled in colleges and universities because students do not have to report their disability, and many choose not to, but it is generally accepted that the percentage of students with disabilities who are enrolling in post-secondary education programs is increasing. An estimate based on longitudinal data collected by the Cooperative Institutional Research Program that includes 469 institutions and 275,811 students is that approximately 9 percent of all students enrolled in college have a disability (Henderson, 1999). The same study reported that students with learning disabilities (LD) continue to be the fastest growing group, with two in five freshmen with disabilities reporting a learning disability. The number of students with attention deficit hyperactivity disorder (ADHD) is even more difficult to ascertain. Lee, Oakland, Jackson, and Glutting (2008) reported a nearly 60% increase in the percentage of students with ADHD registered with the Office of Disability Services at a large southern university in 1998. It even more difficult to measure how many college students have an autism spectrum disorder (ASD), such as Asperger's Syndrome (AS). Many go undiagnosed or are simply perceived as "a little bit strange," said Lars Perner, an assistant professor of marketing at San Diego State University who has Asperger's syndrome (Bundy, 2004). Although LD, ADHD, and ASD have specific diagnostic symptomology, there are some characteristics shared between these three disability

categories.

Learning Disabilities. Individuals with LD comprise the largest group of disabilities. According to the Interagency Committee on Learning Disabilities, the term learning disability is "a generic term that refers to a heterogeneous group of disorders, manifested by significant difficulties in acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities or of social skills (National Institute For Literacy, 2002, p.2). Learning disabilities are related to central nervous disorder dysfunction, and are lifelong disabilities, impacting individuals in various aspects of their life. Individuals with LD have average to above average intelligence, but experience unique difficulties with academics as well as social interactions, include difficulties with reading social cues and nuances, seeming less sensitive to others' feelings and having trouble discriminating social responses (Martínez-Marrero & Estrada-Hernández, 2008). Individuals with LD often experience problems with self-esteem and general emotional-social functioning, with evidence indicating that these problems continue throughout adulthood (Buchanan & Wolf, 1986; Hoffman, Sheldon, Minskoff, Sauter, Steidle, et al., 1987). Adjustment of students with LD to university life is also impacted by characteristics of LD (Cooper, 1985; Neault, 1985). College students with LD experience difficulties with academic content, organization, time management and study skills, exacerbated by the hidden nature of their disability, their reluctance to disclose their disability, larger class sizes, and the more limited teacher-student contact in college settings (Janiga & Costenbader, 2002). Studies have also found that many college students with LD suffer from poor-self-concept, interpersonal difficulties, and high levels

of stress (Saracoglu, Minden, & Wilchesky, 1989). There is also some research indicating that students with LD tend to be slightly older than their non-disabled college peers, and take longer to complete their degrees (Horn & Verktold, 1999). In a study by Horn and Verktold (1999) on university graduation rates for students with LD, five years after entering college, only 50% of the students with LD had completed their degree and graduated compared with 64% of the nondisabled students.

Attention Deficit Hyperactivity Disorder. ADHD is neurodevelopmental disability characterized by patterns of behavior related to inattention, hyperactivity, and impulsivity displayed at developmentally inappropriate levels when compared to typically developing peers (American Psychiatric Association, 2000). It was once believed that ADHD diminished during adolescence and actually abated in adulthood, but recent evidence indicates that it is a lifelong disorder (Barkley, 2006). In adulthood, inattention symptoms are most common, with hyperactivity and impulsivity declining with age. Adults with ADHD are at increased risk for antisocial behaviors, internalizing behaviors, interpersonal difficulties, alcohol and drug abuse, and other maladaptive behaviors (Fischer, Barkley, Smallish, & Fletcher, 2002; Marks, Newcorn, & Halperin, 2001). The prevalence of college students with ADHD is generally less than in the general adult population (Javorsky & Gussin, 1994), where it is estimated that 2 - 5% of all adults display ADHD symptoms (Barkley, 2006). Prevalence in specific university samples range from 0.2% (Weyandt, Linterman, & Rice, 1995) to 4% (Heiligenstein, Conyers, Berns, & Miller, 1998). ADHD is also more prevalent in males than females. In females, ADHD symptoms tend to include more internalizing problems, such as depression and

anxiety, and fewer symptoms of hyperactivity and impulsivity. Academically, students with ADHD are very capable, with most students functioning well within the normal to above normal intellectual range. Students with ADHD who attend college have even higher academic aptitude and better compensatory skills than students with ADHD who do not choose to go to college (Glutting, Monaghan, Adams, & Sheslow, 2002), however compared to typically developing college peers, they are at greater risk for underachievement, school dropout, and emotional impairment (Lee, Oakland, Jackson, Glutting, 2008) and are more likely to discontinue their postsecondary education earlier than students without ADHD (Lee et al., 2008). College students with ADHD are also more likely to experience low self-esteem and difficulties in anger control and anger expression when faced with psychological distress (Ramirez et al, 1997; Richards, Deffenbacher, & Rosén, 2002; Richards, Rosén, & Ramirez, 1999).

Asperger's Syndrome. No two individuals with autism, a neurodevelopmental disorder characterized by difficulties that affect development in the areas of social interactions, communication, and behavior, are exactly alike. Thus the conceptualization of this disability as a spectrum disorder on which a wide range of abilities -- and disabilities -- occurs. Individuals with AS experience a "high functioning" form of autism and are often able to function more independently in academic and employment settings than other individuals with other forms of autism. The number of students with AS who are enrolled in college is increasing, due in part to more accurate diagnosing and the identification of higher-functioning individuals who may have been overlooked in the past, as well as early identification and enrollment in intervention programs that have

improved outcomes for individuals with ASD (Adreon & Durocher, 2007). But the exact percentage of college students with AS is unknown. College students with AS frequently have difficulties engaging in reciprocal social interactions and communication, thus even though they want to have relationships, they often have a difficult time picking up on nonverbal communication and subtle social cues, placing them at greater risk of being misunderstood by others and being perceived of as being disinterested or rude. They are also at greater risk of being teased and being taken advantage of in social situations (Adreon & Durocher, 2007). AS also impacts executive functioning, the cognitive processes necessary for goal-directed behavior such as planning, initiation, organization, inhibition, working memory and self-monitoring (Clark, Prior, & Kinsella, 2002). College students with AS experience other issues as well that impact their adjustment to college, such as sensory issues (e.g. oversensitivity to noises, smells, textures) (Myles & Simpson, 2002; Prince-Hughes, 2002), lighting (Myles, 2005), and taste (Myles, Cook, Miller, Risuser, & Robbins, 2000) making it challenging for them to live in dormitories and to use university based meal programs. Although many students with AS benefit from the same academic accommodations and supports that students with learning disabilities receive, the greatest challenge for students with AS is adjusting to the social demands of the college setting (Welkowitz & Baker, 2005)

In summary, students with LD, ADHD, and AS share some academic challenges in a college setting, but these issues may be overshadowed by the social and emotional issues that impact them. Young adults with these disabilities may struggle with emotional impairment, lower self-esteem, and a misunderstanding of social cues and relationship

factors, as well as the perceptions of other students that they are just "different" somehow, oftentimes making social adjustment different. Many feel the stigma of people thinking that they have a "kid problem" (Olney & Kim, 2001) and therefore something that they should have grown out of by the time they entered college.

The transition from adolescence to adulthood for youth with disabilities can be daunting. There have been studies that have examined issues facing college students with disabilities, but they have not been framed within a developmental paradigm. Some of these studies will be summarized in the following paragraphs.

Using focus groups with a total of 16 participants, Olney and Kim (2001) explored the integration of a cognitive disability into the identity of college students and concluded that this is a very different experience than if a student has a physical disability. Young adults with cognitive disabilities that impact their memory, attention span, organization, mood and motivation (loosely defined in the study as including the disability domains of learning, developmental, psychiatric, and neurological disorders) have a much more difficult time holding the belief that their disability experience is valuable. Since the disabilities are "invisible," group identification is unclear, and rather than progressing through a stage process where aspects of the disability are integrated into one's identity which may be more typical in individuals with physical disabilities (Livneh, 1991), individuals with hidden disabilities go through a complex process of integrating multiple factors, including their disability factors, into their a positive self-concept. Further, the processes appeared to be directly related to how participants made sense of their situations and the meanings they attributed to their disability status. These

processes include self-definition, appraisal of one's abilities and limitations, and management of the perceptions of others. In addition, rather than reaching a point of "adjustment," the experience of having a disability is different minute to minute, with individuals sometimes expressing self-assurance and shame, and conflict and coherence within the same moment in time. According to the researchers, instead of reaching a point of "adjustment, participants experience both "disability and self-acceptance as moving targets on the landscape of their lives" (Olney & Kim, 2001; p.578).

Coping strategies for students with disabilities has been a topic of interest as well. Livneh and Wilson (2003) conducted an exploratory investigation of coping strategies as predictors and mediators of disability-related variables and psychosocial adaptation. Their study included 121 university students with predominantly non-visible disabilities. Students who used problem-focused coping strategies experienced better adjustment and increased life satisfaction, while those who disengaged were not as well adjusted. However, coping strategies played a very minor role in mediating the effect of disability-related variables on psychosocial adaptation to disability. Heiman and Kariv (2004) compared the coping strategies between LD and non-LD college students, using self-reported measures of stress, support and strategies. Students with LD used more emotional coping strategies, compared to task-oriented and avoidance-oriented strategies, than non-LD students. In this particular study, students with LD also were more task-oriented and perceived more social support than their non-LD peers. Heiman and Kariv (2004) suggest that their results should be viewed with optimism by those concerned about the adjustment of students with disabilities to a university setting, while also

asserting that young adults with disabilities use a variety of coping modes in order to adjust.

In later work, Heiman (2005) sought to isolate the role of social support networks in relation to the stress, sense of coherence and academic success of university students with learning disabilities. In this study, comparing young adults with LD to those without LD, Heiman (2005) found that students with LD perceived themselves as having less social support, and attributed their academic success to external factors, rather than to their own study skills and academic characteristics. Students with LD also experienced slightly more academic stress than their nondisabled peers. However, Heiman (2005) cautions that one of the limitations of this study is that the university sample from which the participants were chosen is the Open University of Israel, described as a "distance-learning institution with an open admissions policy, high academic standards, and a unique and extremely flexible self-study method" (p.462) thereby limiting generalizability of the findings.

Except for one study exploring the adjustment of emerging adults with physical disabilities (Galambos, Darrah, & Magill-Evans, 2007), there are currently no studies that examine the development of individuals with disabilities within the frame of the emerging adulthood model. The transactional model (Sameroff & Feise, 1990) of human development notes the reciprocal interactions of both the individual and their environments as contributors to human development, thus it becomes important to view this period of development within the framework of a developmental model, in this case emerging adulthood. Rather than simply to explore the processes of adjustment for

individuals with disabilities, it will be useful to note similarities to, and differences, from the current work on emerging adulthood in typically developing individuals to ascertain the universality of the paradigm across both disabled and nondisabled populations.

Purpose of the Study

The number of students with disabilities who are entering colleges is increasing as early identification of a disability is improving, more accurate diagnoses are being given, and better strategies are being provided, at the appropriate level of support, to youth with disabilities throughout their public school experience. Thus, higher education is becoming a more viable option for individuals with disabilities, who in the past might not have considered it. But the difference between a high school senior and college freshman is simply 3 months. Although many students with disabilities come to college prepared to make the academic and social adjustments, many emerge from a system of supports and involvement from various professionals and family members, to a system in which they are expected to be independent, and to be self-advocates for their academic needs, while navigating the complex waters of a social world with decreased or no adult-controlled parameters. Even students with disabilities who remain in their parent's home are exposed to choices and options that were not present in the context of a secondary school environment.

Meanwhile, we are recognizing the vast and significant changes that occur to individuals during this time period - the sort of "free falling" sense to this time in their lives when they are not fully adult, yet experiencing many of the "freedoms" newly available to them by not living at home; the importance of processing and developing an

"adult" identity; experiencing new, non-restricted social and romantic relationships; and making moves and transitions in accommodations, to name a few - processes conceptualized within the developmental framework of emerging adulthood. These experiences are replete with challenges and expectations for youth who have functioned without disabilities throughout their lives, but having a disability creates another filter through which development must occur. When they were in high school, students who needed socialization were offered opportunities for "engagement" by eager parents and special education teachers, or were coaxed into participating in clubs and other organized, social events. Academic support came in the form of individualized education plans, when a room full of adults offered guidance and recommendations to guide academic achievement. While most colleges now have offices to offer support to students with disabilities, involvement is supposed to be student-driven. For some emerging adults with disabilities, this is a time to leave behind the stigma and limitations of their disability, while for others, this is a time to fully integrate and process their identity with their disability blended into it. Thus while a college or university provides the context in which development for emerging adults can occur, individuals with disabilities may experience the same context through a different lens, and in most cases at such a rapid pace, that they lack the time to come to terms with the shifts and changes that they are incurring. What is often forgotten is that for many individuals with disabilities, change, itself, is unsettling. Therefore, the constructs of change that occur throughout the college experience, in addition to the sheer fact that they are occurring at all, impact the adjustment of young

adults with disabilities, and often negatively. They are often functioning with an elevated level of stress not experienced by their non-disabled peers.

Expressive writing has been proposed and tested as an effective, affordable, and manageable process by which to improve physical and psychological health. Its power lies in its simplicity - process the emotions and feelings surrounding a negative, or traumatic, event through writing over a relatively short period of time - and it is possible that individuals will feel better when it is over. The paradigm has been tested and found to be effective with college students and with community populations, as well as with both non-clinical and clinical populations. It appears to be most effective when there are emotions that need to be experienced and processed, rather than changing a negative habit or behavior. And it has been shown to be effective with some individuals who have experienced stressful events and have developed the emotional "hardware" to avoid re-experiencing the painful feelings associated with the trauma. Effectiveness is often indicated by improved physical health, but reductions in psychological adjustment have also been noted. In some cases, individuals have even "improved" by expanding their social network and perceived social support. All of these "improvements" would be supportive for an emerging adult with a disability. But the paradigm has never been tested with this particular population, nor with any age group with a disability is proposed that participating in an expressive writing intervention will yield improvements that will then facilitate positive adjustment in the university context. Further, if it is shown to be effective, it can be offered to any student with a disability, with minimal cost in terms of time and materials, to support their college adjustment. Expressive writing is not a

panacea but a starting point with which students with disabilities can process and ameliorate some of the challenges that may be associated with the college experience and identity formation that occurs during this unique period of development.

Hypotheses

Hypothesis 1. As compared to participants in the control condition, those in the intervention condition will report a significantly greater: a) decrease in global distress, b) decrease in somatic symptoms, and c) reduction in depression and anxiety, immediately after completing the expressive writing intervention and at one-month follow-up.

Hypothesis 2. As compared to participants in the control condition, those in the intervention condition will experience a significantly greater reduction in the perception of the severity of daily hassles immediately after completing the expressive writing intervention and at one-month follow-up.

Hypothesis 3. Coping, specifically reframing and seeking social support for both instrumental and emotional reasons, will mediate the relation between treatment condition at pre-test and distress at follow-up (including the composite measure of distress and individual subscales of somatization, depression, and anxiety). First, participants in the experimental condition will report a greater increase in the frequencies of adaptive coping strategies after the writing sessions, from pre-test to post-test, as compared to participants in the control condition. Second, participants who report greater frequencies of adaptive coping strategies at post-test will report greater reductions in levels of distress at follow-up. Finally, the increased frequency of coping strategies will

account for the relation between treatment condition at pre-test and levels of distress at follow-up.

Hypothesis 4. Emotional competencies, including habituation, cognitive restructuring (e.g. insight and causation words), and alexithymia, will mediate the relation of the treatment condition at pretest to distress at follow-up. First, participants in the experimental condition will report a greater increase in emotional habituation and cognitive restructuring, and greater reduction in alexithymia, from pre-test to post-test, as compared to participants in the control condition. Second, participants who report greater increases in emotional habituation and cognitive restructuring and greater reductions in alexithymia will report greater reductions in levels of distress at follow-up. Finally, increased emotional habituation and cognitive restructuring, and reduced alexithymia, will account for the relation between treatment condition at pre-test and levels of distress at follow-up.

Hypothesis 5. The initial level of distress at pre-test will moderate the effect of the treatment condition on distress, somatic symptoms, depression, and anxiety at post-test and follow-up. First, participants in the experimental condition will report reduced distress, depression, anxiety and somatic symptoms from the pre-test to post-test as compared to participants in the control condition. Second, participants in the experimental condition who experience greater levels of distress at pre-test will report significantly greater reductions in distress, somatic symptoms, depression, and anxiety, at post-test and at follow-up than those participants in the experimental condition who have lower levels of distress at pre-test.

Hypothesis 6. Social support will moderate the effect of the treatment condition on distress, somatization, depression, and anxiety at post-test and follow-up. First, participants in the treatment condition will report greater reductions in distress, depression, anxiety, and somatization from the pre-test to post-test and from pre-test follow-up as compared to participants in the control condition. Second, participants in the experimental condition with higher levels of social support at pre-test will report significantly greater reductions in distress (both global and specific constructs of somatic symptoms, depression and anxiety) both at post-test and follow-up than those participants in the experimental condition who report lower levels of social support at pretest.

Method

Setting and Participants

Participants were 57 undergraduate and/or graduate students enrolled at Virginia Commonwealth University (VCU) and at J. Sargeant Reynolds Community College who had self-identified and registered with their respective university's Office of Disability Support Services (DSS) as having either a learning disability (LD), attention deficit hyperactivity disorder (ADHD), or Asperger's syndrome (AS). As part of the registration process at DSS, students provide psychological testing indicating their disability and supporting their need for academic accommodations. Recruitment procedures (described below in the procedures section) were in place in order to protect the confidentiality of the students.

Criteria for inclusion in the study included both disability status as described above and being between the ages of 18 and 29. The demographic representation of the students was similar to the university and community college student body at large. In 2007, 58% of the 20,232 students at VCU were female, with a majority identifying themselves as Caucasian (55%), African American (21%) and Asian American (11%). The demographic data for the same year at J. Sargeant Reynolds Community College noted that 56% of the student body (of 12,557 students) was female, with 62% identifying themselves as Caucasian, 27% as African American, 5% as Asian American,

and 3% as Hispanic. Neither DSS office gathered demographic data on the students who were registered at the offices.

Approximately half of participants in the current study were male ($N = 28$; 50.9%). Forty six (83.6%) identified European American as their race, with the remaining participants choosing African American (3.6%), Asian American (9.1%), and Hispanic (3.6%). Participants were almost equally split between identifying their primary disability as a learning disability (43.6%) and ADHD (50.9%), while only 3 (5.5%) identified Asperger's syndrome as their primary disability. A majority of students (94.5%) attended VCU, while 3 attended JSRCC. Only 1 participant was a graduate student, with the remainder being split between primarily Sophomore, Junior and Senior standing at both colleges. Freshman status was the next smallest grade level represented ($N = 5$; 8.9%).

Measures

Psychological Distress. The Revised Symptom Checklist (SCL-90-R) (Derogatis, 1994) is a well-validated and reliable measure of psychological and emotional distress for subjects age 13 years and older with a sixth grade reading level. Participants completed the 90 items for Global Distress Score. The subscales of somatization (i.e., flu-like symptoms such as headache, nausea: 12 items), depression (13 items), and anxiety (10 items), were also calculated. These specific subscales were chosen to provide an index of emotional and psychological distress comparable to those used in similar disclosure studies (Kaminski, Turnock, Rosen, & Laster, 2006). Participants rated the extent to which they have experienced each symptom of distress during the past 7 days on a 5-point scale ranging from 1= *not at all* to 5= *extremely*. Cronbach's alphas at pre-test for

the Global Distress scale was .96, while specific dimension alphas were .90 for somatization, .81 for anxiety, and .87 for depression..

Hassles and Uplifts. The Hassles and Uplifts Scale (DeLongis, Folkman, & Lazarus, 1988) assessed frequency of and responses to common day-to-day potential irritants, including traffic, time pressures, finances, work events, and others, on a given day, which can contribute to feelings of distress. In order to assess both the reported occurrence of a hassle and the individual's appraisal of its severity, the scoring system devised by Dohrenwend & ShROUT (1985) was used in which respondents rated each of the 52 items with a 6 point range: 0 = "did not occur"; 1 = "occurred, not severe"; 2 = "occurred, somewhat severe"; 3 = "occurred, moderately severe"; 4 = "occurred, very severe"; 5 = "occurred, extremely severe".. The sum of the scores was calculated, with higher scores indicating greater hassle and severity. In the current study, the Cronbach's alpha for the total measure was .93.

Perceived Social Network. The Multidimensional Scale of perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) was used to measure each participant's perception of their social network, including friends (e.g. "My friends really try to help me."), family (e.g. "I can talk about my problems with my family."), and significant others (e.g. "I have a close person who encourages me."). An additional category – school related – was added to further assess the perceptions of support connections with academic professors and personnel. This category included four additional items following the format of the other items in the measure. The items were: "I receive emotional support from a professor and/or another adult at my university."; "There is a

professor or another adult on campus that I can go to for help whenever I need it.”; “I can share my greatest happiness and sadness with a professor and/or another adult who I know at my university.”; and “When I have a difficult decision to make, there is an adult at my university, such as a professor or adult advisor, who I know I can go to for help.”

Respondents were asked to rate each item on a 7 point Likert scale, with 1 = *very strongly disagree*, to 7 = *very strongly agree*. Total scores range from 16 – 112 (subscale scores range from 4 – 28), with higher scores indicating greater perceived social support.

Cronbach’s alpha at time 1 was .90 for the entire scale.

Coping. Twelve items from the COPE Inventory (Carver, Scheier, & Weintraub, 1989) were used to assess participant coping. The three subscales used were Positive reinterpretation & growth (e.g., *I look for something good in what is happening*), Seeking social support for instrumental reasons (e.g., *I try to get advice from someone about what to do*), and Seeking social support for emotional reasons (e.g., *I discuss my feelings with someone*). Respondents were asked to rate how they would respond when they experienced a stressful event, ranging from 1 = *“I usually don’t do this at all.”* To 4 = *“I usually do this a lot.”* In the current study, reliabilities as expressed by Cronbach’s alpha were .77 for the total scale, .80 for the Positive interpretation and growth subscale; .68 for the Seeking social support for instrumental reasons, and .88 for Seeking social support for emotional reasons.

Emotion Regulation. The Toronto Alexithymia Scale - TAS-20 version (Parker, Bagby, Taylor, Endler, & Schmitz, 1993; Bagby, Parker, & Taylor, 1994, 1994a) is a self-report questionnaire which measures alexithymia as a three-dimensional

construct, relating to (a) difficulty identifying feelings, (b) difficulty describing feelings, and (c) externally oriented thinking. The scale is comprised of 20 statements, divided into 3 subscales matching each the aforementioned constructs, describing behaviors, thoughts, and preferences. The items were rated on a 5-point scale ranging from 1 = “Not At All Like Me, or Not True”, to 5 = “Completely Like Me, or Very True.” Five of the items were reverse coded. TAS Factor 1 assessed difficulties in identifying feelings (DIF) (e.g., “*I have feelings that I cannot quite identify.*”); TAS Factor 2 concerned itself with difficulty in describing feelings (DDF) (e.g., “*It is difficult for me to find the right words for my feelings.*”); and TAS Factor 3 reflected concrete, externally-oriented thinking or a preoccupation with the details of external events (EOT) (e.g., “*I prefer talking to people about their daily activities rather than their feelings.*”). A score of > 60 indicates the presence of alexithymia. Reliabilities in the current study include a Cronbach’s alpha of .78 for the total scale.

Emotional habituation. Emotional habituation was assessed by having participants complete the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) after each writing session. The PANAS contains a 10-item positive affect and a 10-item negative affect subscale used to assess changes that occur in negative and positive mood for each writing session. Words that measure positive affect are: interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active. Negative affect words are: distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid. Participants were asked to rate items after each writing session on a scale from 1 to 5, based on the strength of emotion, where 1 = “very

slightly or not at all," and 5 = "extremely. In the Treatment Condition, Cronbach's α for each of the 3 writing times were .89, .90, and .89 for the Positive Affect Scale for Writing 1, Writing 2, and Writing 3 respectively, and $\alpha = .80, .82,$ and $.80$ for the Negative Affect scale at each of the 3 writing times. For the Control Condition, Cronbach's alphas for each of the 3 writing times were: .88, .90, and .92 for the Positive Affect Scale, and .87, .84, and .84 for the Negative Affect Scale.

Cognitive Restructuring and Insight. Writing samples were analyzed using the Linguistic Inquiry and Word Count (LIWC) (Pennebaker, Francis, & Booth, 2001). The program analyzed text on a word-by-word basis and classified words into several high-level categories, including negative emotionality terms (e.g., *sad, hurt, guilty*), positive emotionality terms (e.g., *happy, joy, peaceful*), and terms reflecting cognitive insight (e.g., *think, know*) and causation (e.g., *because, effect*). Writing samples were identified by the participant ID numbers, saved as text files and submitted to Dr. J. Pennebaker at the University of Texas where he analyzed the text files. In previous studies, an increase in insight and causation words has predicted greater health benefits for the expressive writing (treatment) condition than for the control condition (Pennebaker et al., 1997). It is also expected that participants in the experimental condition will use the least positive emotion and most negative emotion words, thus also providing a manipulation check throughout the writing sessions (Hemenover, 2003).

(Table 1).

Procedure

The study was approved by Virginia Commonwealth University's IRB. An e-mail

Table 1.

Constructs and Measures

Construct	Measure
Distress	1. SCL-90-R
	2. Daily Hassles Scale
Perceptions of Social Network	3. Multidimensional Scale of Perceived Social Support
Coping	4. COPE
Emotional Competence	5. Toronto Alexithymia Scale (emotion regulation)
	6. PANAS (habituation)
	7. LIWC (cognitive restructuring (insight and causation words))

describing the study was sent to students who were registered at each university's DSS office by the coordinators of DSS offices. The email presented a brief overview of the project and asked that students who might be interested in finding out more about the study respond to the DSS office with that information. Upon receiving this information, each DSS office then emailed the study staff with the name and email of the interested student. At this point, the study staff sent each student an email requesting a phone number and an optimal time to contact the student with more information. The DSS office at VCU also had fliers available for students who came into the office. On this form, students were asked to sign to give permission for the DSS office to contact the study staff. These forms were then given to the study staff.

The VCU DSS office sent emails about the study to 419 students on September 24, 2008, November 21, 2008, January 26, 2009, February 16, 2009, and March 30, 2009. The subject line of the email sent by the VCU DSS office was “Research Study for Students with Learning Disabilities, ADHD, and AS.” Thus rather than targeting students with specific disabilities, all students registered at the office received the email. JSRCC sent out one email in February 12, 2009, to 143 students who met the study disability criteria.

In addition to the emails, the VCU DSS office began calling students who had not responded to the email invitations. These calls were made over a two week period beginning on February 27, 2009. Each attempt at contact with the students was documented on a contact list, including date and time of day. Students were given a brief overview of the study and asked for permission for the study PI to contact them later with more information about the study. If permission was given, their name and phone number was given to the study staff. Over this two week period, 143 phone calls were. Of these calls, 14 students asked to be contacted with further information, 19 declined to participate, 96 messages to call DSS for information about the study were left, 7 wrong numbers were encountered, and 7 phone numbers were no longer in service or had been disconnected. Overall, a total of 57 students were recruited to participate in the study, however, two students who were over 29 years-old were excluded based on the study focus on emerging adulthood.

The consent form was read aloud and reviewed with each participant. Once informed consent was obtained, subjects were randomly assigned to conditions by

alternating between assignment to experimental and control groups based on order of presentation to the study. Demographic data was collected (age, sex, ethnicity, primary disability, and year in school (e.g. freshman, sophomore) and all participants were given the pre-test questionnaires to complete. The questionnaires were administered in paper and pencil format and included the assessments of stress, coping, social networks, anxiety, depression, and emotional competence. Two participants requested that the questionnaires be read aloud to them. .

After completing the pre-test measures, each participant scheduled three - 15 minute writing sessions during a one-week (7-day) period. They were informed that they would receive an e-vite sent to their email address with a link to a password protected site on which they would do the writing and answering of the brief questions following the writing. The 15 minute time limit for writing was also emphasized. It was up to each participant to time their own writing, but a link to a stopwatch was also placed on the survey itself should participants choose to use it. Email and additional contact information was verified. Participant names and email addresses were then input into the Inquisite Survey program by the study staff.

Participants in the experimental condition were asked to write about their “deepest thoughts and feelings” about concerns or stressors related to their college experience using the following instructions, based on the instructions developed by Pennebaker and Beall (1986), and modified for this particular intervention:

I would like you to write your very deepest thoughts and feelings about what it has been like to be a young adult who is (has) received services from the office of disability student services.

In your writing, I'd like you to really let go and explore your deepest emotions and thoughts. You might tie your topic to:

- your relationships with others, including your roommate, parents, romantic partners, friends or relatives
- your past, your present or your future
- who you have been, who you would like to be or who you are now

You may also write about the same general issues or experiences on all days of writing or about different topics each day. All of your writing will be completely confidential.

Don't worry about spelling, grammar or sentence structure. The only rule is that once you begin writing, you must continue until the time is up.

Participants in the control condition were given the following instructions:

Prompt 1: During today's writing session, I want you to describe in detail yesterday from the time you got up to the time you went to bed. For example, you might start when your alarm went off and you got out of bed. You could include the things you ate, what you wore, where you went, which buildings or objects you passed by as you walked from place to place. Don't leave out any details. Be as specific as you can.

The most important thing in your writing is for you to describe your day as accurately and as objectively as possible. Do not mention your own emotions, feelings, or opinions. Your description should be as objective and detailed as possible.

Don't worry about spelling, grammar or sentence structure. The only rule is that once you begin writing, you must continue until the time is up.

Prompt 2: During today's writing session, I want you to describe objectively and in detail two (2) rooms in your home or apartment (either where you living now or in the past). You might want to include:

- the size and color of the room
- the number of windows
- what and where objects are located in the room
- details of the objects such as shape, size and color

Don't leave out any details. Be as specific as you can. If you have extra time, please write about an additional room or rooms.

The most important thing in your writing is for you to describe the rooms as accurately and as objectively as possible. Do not mention your own emotions, feelings, or opinions. Your description should be as objective and detailed as possible.

Don't worry about spelling, grammar or sentence structure. The only rule is that once you begin writing, you must continue until the time is up.

Prompt 3: During today's writing session, I want you to describe in detail your plans for the next three (3) days. Don't leave out any details. Be as specific as you can.

It is important that you describe every detail, including when you will wake up each day, what you will eat, where you will go to classes, what errands you will run, etc. Give specific details. The most important thing in your writing is for you to describe your plans as accurately and as objectively as possible. Do not mention your own emotions, feelings, or opinions. Your description should be as objective and detailed as possible.

Don't worry about spelling, grammar or sentence structure. The only rule is that once you begin writing, you must continue until the time is up.

After each writing session, participants completed the 20 item PANAS and a brief, seven item manipulation check that used a 5-point Likert scale (1 = *not at all*, to 5 = *extremely*) to indicate the extent to which their writing was upsetting, emotional, important, difficult, stressful, and shared with others. Examples of questions were "I expressed emotion in my writing today" and "My writing was difficult for me today." Manipulation checks have been used in numerous studies exploring expressive writing, where it is expected that writing about a "traumatic" life event ought to produce more emotional and upsetting narrative content than writing about the details of how the day was spent. Upon completing the writing and the 27 questions, they hit the Submit button at the bottom of the survey and they were finished. Informal participant feedback indicated that each writing session took approximately 22 minutes from accessing the link to pressing the submit button.

On the day after their last writing, subjects again met with the investigator and were given a questionnaire to complete. After completing the post-writing questionnaire, participants were given \$10 for their participation, and contact information was verified

for a follow-up assessment occurring 30-days following the last writing session. On this date (30 days post-writing), participants received an e-vite to complete the follow-up survey and to then inform the study staff so that arrangements could be made to give each participant the remaining \$20. Participants were given 3 days to complete the follow-up questionnaire and if they failed to do so, study staff called them and reminded them to do so. Some participants chose to have their payment mailed to them.

Procedures were in place should participants experience feelings of discomfort for which they feel they need support. As part of the consent process, participants were advised that should a particular item on a questionnaire make them feel uncomfortable, they could skip that question. They could also discontinue participation at any time throughout the process. As part of the consent process, they were reminded that in regard to the writing task, it was important to realize that the writing topic was under their own control, thus they could change a topic at any point if they so chose. In addition, the study staff was trained to provide an appropriate referral for participants (e.g., to university counseling services) if needed.

Results

Prior to testing study hypotheses, data screening procedures were conducted. Data were screened for outliers, which were handled according to guidelines outlined by Tabachnick and Fidell (1996). This procedure involved converting scales scores to z-scores, and then recoding any outliers with a value greater than 3.29 ($z < .001$) to equal 3.29. Only one outlier was noted within the SCL-90-R Somatization subscale scores and the value for this participant's score was adjusted using this procedure. Reliability coefficients were also examined for each study variable at each time point and all alpha coefficients were above .75 with one exception; the alpha for Perceived Social Network scale at T2, where the alpha was .68. The normality of the distribution for each study variable at each time was explored using Kolmogorov-Smirnov tests for each study variable at each time point. This test compares the set of sample scores for a study variable to a set of normally distributed scores that have the same mean and standard deviation as the set of sample scores (Field, 2009). A non-significant finding indicates that the distribution within the set of samples scores does not differ significantly from a normal distribution. Analyses were run for the treatment and control groups separately because study hypotheses involved group comparisons and thus demonstrating normality of the distribution for study variables within each group was of key importance (Field, 2009). There were no significant findings across the three time points for either the treatment or control condition.

Attrition analyses were conducted to determine whether participants who completed the intervention (i.e., participated in the post-test) differed in terms of demographic characteristics and levels of pre-test variables compared to participants who did not complete the intervention using chi-square analyses for dichotomous variables and Analyses of Variance (ANOVAs) for continuous variables. No significant differences studying mean levels of study variables were found between the two participants who did not complete the post-test assessment and the 53 participants who did. A similar set of analyses was conducted to determine if participants who completed the post-test and follow-up surveys differed across demographic characteristics and levels of pre-test variables compared to participants who did not complete both of these surveys. No significant mean differences across study variables were found for these 3 participants who did not complete both post-test and follow-up surveys and the 50 participants who did.

Manipulation Checks

The experimental manipulations were largely successful (see Table 2) as indicated by significantly different mean scores by condition for each of the seven items assessed via the manipulation checks. Across the three writings, participants in the EW condition expressed more emotions, and found their writing more personal and more important as compared to those in the control condition. Participants in EW versus the control condition also found their writing more upsetting after T2 and T3, but felt that they had greater increases in their understanding of themselves at only T1 and T2, not T3. There was only one significant difference between the treatment and control conditions for

Table 2

Manipulation Checks after Writing for Both Conditions.

Post-Writing Question	Means Writing 1			Means Writing 2			Means Writing 3			
		E (N=26)	C (N=27)	F <i>df</i> = 1,51	E (N= 26)	C (N= 26)	F <i>df</i> = 1,50	E (N= 26)	C (N=26)	F <i>df</i> = 1,50
1. I expressed emotion in my writing today.	<i>M</i> <i>SD</i>	3.5 (0.8)	2.3 (1.2)	17.4***	3.2 (0.9)	1.5 (0.8)	53.3***	3.0 (0.9)	1.6 (0.9)	30.1***
2. I was upset after writing today.	<i>M</i> <i>SD</i>	1.5 (0.8)	1.6 (1.1)	0.0	1.9 (1.3)	1.3 (0.6)	3.9*	1.5 (1.1)	1.1 (0.3)	3.7*
3. My writing was personal today.	<i>M</i> <i>SD</i>	3.5 (0.9)	2.2 (1.3)	17.5***	3.2 (1.1)	2.2 (1.2)	11.4***	3.2 (1.0)	2.2 (1.3)	9.5**
4. My writing was difficult for me today.	<i>M</i> <i>SD</i>	2.2 (1.2)	1.6 (1.1)	2.6	2.6 (1.3)	1.7 (0.9)	8.6**	2.5 (1.4)	2.2 (1.3)	0.7
5. The writing I did today is important.	<i>M</i> <i>SD</i>	3.2 (1.0)	2.1 (0.9)	11.9***	2.9 (1.0)	1.8 (1.1)	11.5***	2.8 (0.9)	2.2 (1.3)	4.7*
6. My writing increased my understanding of myself.	<i>M</i> <i>SD</i>	2.8 (1.1)	1.7 (0.9)	13.0***	2.5 (1.1)	1.3 (0.5)	26.0***	2.0 (0.9)	2.1 (1.3)	0.1

Table 2 Continued

7. I have previously discussed with someone what I wrote about today.	<i>M</i>	2.5	1.9	3.4	2.2	1.7	2.3	2.3	1.5	8.5**
	<i>SD</i>	(1.3)	(1.3)		(1.3)	(1.2)		(1.3)	(0.6)	

Note: All writing questionnaires were answered using a 5 –point scale ranging from 1 = not at all to 5 = extremely. * $p < .05$; ** $p < .01$; *** $p < .001$ whether or not writings had been previously shared with others at T3 with participants in the treatment group reporting a greater likelihood that they had previously shared information. However, this finding may be due largely to the decrease in the mean score and standard deviation for the control condition.

the LIWC analyses of the texts corroborated the manipulation check self-reports (see Table 3). The EW participants used more positive and negative emotion words at each writing time than did controls. Individuals in the experimental versus control condition also used significantly more insight and causation words at each writing. In addition, the number of words written by participants was calculated. There were no significant between-group differences for words typed per writing session until Writing 3. At this time, participants in the control group wrote significantly more words than those in the treatment group ($F(1,52) = 5.196$ $p < .05$). This compares well to the LIWC mean word count of 327 words for the treatment groups (301 words for control group) calculated across 20 studies and reported by Pennebaker, Francis, and Booth (2001), while also realizing that this analysis included studies that used various time limits for their writing condition. (See Table 4).

Table 3

LIWC Word Analysis for Number of Words per Writing Time by Treatment Condition..

		E	C	F
Writing 1	<i>M</i>	393	412	0.3
	<i>SD</i>	(153)	(124)	<i>df</i> = 1, 54
Writing 2	<i>M</i>	340	378	0.8
	<i>SD</i>	(156)	(170)	<i>df</i> = 1,54
Writing 3	<i>M</i>	230	411	5.2*
	<i>SD</i>	(124)	(172)	<i>df</i> = 1,53

Note: * $p < .05$

Table 4.

LIWC Word Analysis for Percentage of Positive Emotion, Negative Emotion, Causation and Insight Word per Writing by Treatment Condition

Word Type		E (N=24)	C (N=26)	F	E (N=26)	C (N=26)	F	E (N=26)	C (N=26)	F
PEW	<i>M</i>	3.3	1.8	17.4***	3.2	1.5	53.3***	3.0	1.6	30.1***
	<i>SD</i>	(1.1)	(1.0)	<i>df</i> =1,48	(0.9)	(0.8)	<i>df</i> =1,52	(0.9)	(0.9)	<i>df</i> =1,48
NEW	<i>M</i>	2.8	1.0	38.6***	2.5	0.5	63.6***	2.3	0.3	50.9***
	<i>SD</i>	(1.1)	(1.0)	<i>df</i> =1,49	(1.2)	(0.6)	<i>df</i> =1,51	(1.3)	(0.5)	<i>df</i> =1,48
CW	<i>M</i>	1.8	1.0	13.9***	2.2	0.7	52.7***	2.0	1.2	7.6***
	<i>SD</i>	(0.8)	(0.7)	<i>df</i> =1,49	(0.9)	(0.5)	<i>df</i> =1,51	(1.1)	(1.1)	<i>df</i> =1,49
IW	<i>M</i>	3.8	1.3	56.6***	3.9	1.2	72.5***	4.2	1.1	54.2***
	<i>SD</i>	(1.2)	(1.1)	<i>df</i> =1,48	(1.6)	(0.2)	<i>df</i> =1,52	(1.6)	(1.5)	<i>df</i> =1,48

Note: PEW = Positive emotion words; NEW = Negative emotion words; CW = Causation words; IW = Insight Words. * $p < .05$; ** $p < .01$; *** $p < .001$.

Descriptive Analyses

Descriptive statistics including means, standard deviations, and ranges for each study variable at pre-test are reported in Table 5 for the total sample and by treatment and by treatment condition. Mean scores for the Global Distress composite of the SCL-90-R indicated that participants were minimally (i.e., “*Only a little bit*”) distressed ($M = 0.7$, $SD = 0.5$). When the subscales were examined, participants at pre-test were only experiencing minimal amounts of depression ($M = 0.6$, $SD = 0.6$), anxiety ($M = 0.7$, $SD = 0.6$) and somatization ($M = 0.7$, $SD = 0.7$). This low amount of distress was also indicated by the low mean number and experience of daily hassles by participants, which was rated on average as “*Occurred, but not severe*,” ($M = 0.7$, $SD = 0.5$). In terms of coping traits, participants reported moderate values for the degree to which they positively reinterpreted situations, ($M = 3.1$, $SD = 0.7$), and sought social support for emotional, ($M = 2.7$, $SD = 0.9$), and instrumental, ($M = 2.9$, $SD = 0.6$), reasons. Participants mildly agreed ($M = 4.9$, $SD = 1.0$) that family, friends, significant others, and academic personnel provided some social support. For the multidimensional scale of perceived support, as expected, participants perceived more support from their family ($M = 5.5$, $SD = 1.3$), friends ($M = 5.4$; $SD = 1.2$), and significant others ($M = 5.5$; $SD = 1.5$) than from academic professors and adult advisors ($M = 3.1$, $SD = 1.6$). It is unclear whether DSS support staff were encompassed by participants as they considered social support from adult advisors. The mean score for alexithymia at pre-test was 43 ($SD = 10$), well below the cutoff score of 60 at which point alexithymia is said to be present. Thus, students with disabilities who participated in the study reported minimal

Table 5

Means, Standard Deviations, and Ranges for Dependent Variables by Treatment Condition.

<i>Variable</i>	Total (N=55)			Experimental (N=27)			Control (N=28)			<i>F</i>
	<i>Mean</i>	<i>SD</i>	<i>Range</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>	
Global Distress (SCL)	0.7	0.5	0.8 – 2.4	0.8	0.6	0.8 – 2.4	0.8	0.4	0.1 – 1.6	0.0
Depression (SCL)	0.6	0.6	0.0 – 3.5	0.5	0.7	0/0 – 3.5	0.7	0.5	0.1 – 1.9	0.6
Anxiety (SCL)	0.7	0.6	0.0 – 2.2	0.7	0.6	0/0 – 2.2	0.7	0.6	0.0 – 2.1	0.4
Somatization (SCL)	0.7	0.7	0.0 – 3.8	0.6	0.8	0.0 – 3.8	0.7	0.6	0.8 – 2.1	1.1
Daily Hassles (H&US)	36.9	27.3	0.0 - 119	36.0	23.8	0.0 - 100	36.9	27.3	1.0 - 118	0.1
Social Support (MSPSS)	4.9	1.0	2.1 – 6.8	4.9	1.1	2.1 – 6.3	5.0	0.9	3.1 – 6.8	0.2
Reinterpretation (COPE)	3.1	0.7	1.3 – 4	3.0	0.8	1 – 4	3.0	0.7	1.75 – 4	0.8
Emotional Support (COPE)	2.7	0.9	1 - 4	2.5	0.8	1 – 4	2.6	0.9	1 – 4	0.5
Instrumental Support (COPE)	2.9	0.6	1.5 – 4	2.7	0.7	1 – 4	2.9	0.7	1 – 4	0.7
Alexithymia (TAS)	43.0	10.0	22 - 67	43.0	11.0	22 - 67	43.0	10.0	28 - 60	0.0

Note: SCL = Revised Symptom Checklist; H&US = Hassles & Uplifts Scale; MSPSS = Multidimensional Scale of Perceived Social Support; COPE = COPE Scales; TAS = Toronto Alexithymia Scale. * $p < .05$

rates of stress and daily hassles, modest support from others, and did not meet the criterion for alexithymia at pre-test.

ANOVAs indicated no significant group differences based on treatment condition for any study variable. There were no significant differences in percentages of males and females for either condition ($\chi^2(1,55) = .50, p = .50$), for ages ($F(1,53) = 1.0, ns$), nor for race ($\chi^2(1,55) = .18, p = .67$). Mean differences in levels of pre-test variables were also explored across gender and disability status. There were no significant mean differences across study variables for males and females with the exception that the mean rate of seeking social support for emotion reasons was significantly higher for males than females, $F(1, 53) = 11.5, p < .001$. With two exceptions, there were also no significant mean differences across study variables based on disability status. Students with ADHD reported significantly higher rates of anxiety than students with LD or Asperger's syndrome, $F(1, 53) = 6.9, p < .05$, and students with LD reported significantly lower rates of anxiety than students with ADHD or Asperger's syndrome, $F(1, 53) = 5.6, p < .05$.

Correlational Analyses

Correlations among each of the study variables at pre-test for the total sample and by treatment condition are presented in Tables 6 and 7. One goal in reviewing the correlation matrix was to determine whether any demographic variables were significantly correlated with other study variables (e.g., distress, coping, social support, and emotional competence) in order to identify covariates for subsequent analyses. No significant relations were found between the demographic variables and these study variables, so the demographic variables were not entered as covariates in analyses testing

study hypotheses. For demographic factors (age, sex, year in school, and disability), there were two significant correlations – between age and year in school ($r = .69, p < .001$), and a significant negative correlation between the disabilities of LD and ADHD ($r = -.90, p < .001$). Participants were asked for their primary disability, thus although there is often great comorbidity of LD with ADHD (Pliska, 2000), for this study, inclusion in one category nullified inclusion in any other category. As 94.5% of the participants were either LD or ADHD, the significant negative correlation was expected.

For the total sample, the SCL-90-R Global Distress composite was significantly correlated with the SCL-90-R subscales for depression, somatization, and anxiety. The SCL-90-R subscales for somatization, anxiety, and depression were also significantly positively Hassles and Uplifts Scale, MSPSS = Perceived Support Network, INT = Positive Growth and Re-interpretation, SUP-E = Social Support for Emotional Reasons, SUP-I = Social Support for Instrumental Reasons, TAS = Alexithymia. All correlations greater than .62 are significant at a per test significance level of $p < .001$ based on a multistage Bonferroni with a familywise Type 1 error rate of $p < .10$. * $p < .001$. SCL-90-R subscales for somatization, anxiety, and depression were also significantly positively correlated (r s ranged from .63 to .98, $p < .001$). Finally, the SCL-90 Global Distress composite was positively correlated to the Daily Hassles scale ($r = .62, p < .001$). Comparisons between significant changes over time for any of the distress variables based on condition: Global Distress, $F(2,100) = 1.6, p = 0.2$; Somatization, $F(2,100) = 2.0, p = 0.2$; Depression, $F(2,100) = 2.7, p = 0.1$, and Anxiety, $F(2,100) = 2.6, p = 0.1$ (See Figures 1 - 4). Significant scores were transformed to z' scores then

Table 6

Zero-Order Correlations among Demographic, Distress, Coping, and Emotional Competence Variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	----															
2. Sex	-.05	----														
3. Year	.69*	.09	----													
4. LD	.03	.16	.03	----												
5. ADHD	.07	-.05	.10	-.90*	----											
6. AS	-.21	-.24	-.27	-.21	-.25	----										
7. GD	.16	.02	.21	-.23	.23	-.02	----									
8. SOM	.11	.08	.15	.06	.03	-.20	.70*	----								
9. DEP	.17	.13	.11	-.15	.09	.13	.85*	.47	----							
10. ANX	.17	-.06	.31	-.31	.34	-.07	.87*	.64*	.61*	----						
11. H&US	.26	-.06	.07	-.05	-.03	.17	.62*	.44	.66*	.38	----					
12. MSPSS	-.03	.21	.05	.04	-.02	-.04	-.36	-.02	-.01	-.29	-.31	----				
13. INT	.09	.03	.29	.26	-.19	-.14	-.24	-.07	-.15	-.26	-.04	.06	----			
14. SUP-E	.02	.42	.11	.22	-.18	-.08	-.08	.14	.17	-.05	.03	.43	.02	----		

Table 6, continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
15. SUP-I	.09	.11	.09	-.06	.01	.10	-.04	.12	.09	.02	.00	.11	.48	.15	----	
16. TAS	-.15	-.04	-.06	-.21	.22	-.03	.42	.16	.21	.38	.20	-.36	-.37	-.31	-.37	----

Notes: LD = Learning Disability, ADHD = Attention-Deficit Hyperactivity Disorder, AS = Asperger’s Syndrome, GD = Global Distress, SOM = Somatization, ANX = Anxiety, H&US = Hassles and Uplifts Scale, SUP = Perceived Support Network, INT = Positive Growth and Re-interpretation, SUP-E = Social Support for Emotional Reasons, SUP-I = Social Support for Instrumental Reasons, TAS = Alexithymia All correlations greater than .62 are significant at a per test significance level of $p < .001$ based on a multistage Bonferroni with a familywise Type 1 error rate of $p < .10$. * $p < .001$.

Table 7

Zero-Order Correlations among Demographic, Distress, Coping, and Emotional Competence Variables for Participants in Treatment Condition (below the diagonal) and Control Condition (above the diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	----	.02	.69*	-.01	.08	-.18	.40	.05	.07	.02	.29	.28	.27	-.11	.28	-.36
2. Sex	-.17	----	.08	.07	.01	-.21	-.21	-.14	-.07	-.23	-.16	.12	-.06	.41	.11	-.26
3. Year	.67*	.08	----	-.07	.20	-.35	-.06	-.04	-.16	.05	-.01	.28	.48	.05	.16	-.22
4. LD	.03	.24	.11	----	-.87*	-.23	.03	.08	-.42	-.01	.12	.07	.24	.03	-.25	-.10
5. ADHD	.09	-.10	.00	-.86*	----	-.18	.33	-.07	.25	.42	-.07	.16	-.18	-.39	-.02	.18
6. AS	-.23	-.25	-.20	-.22	-.32	----	.26	-.17	.46	.09	.59	-.40	-.31	.05	-.23	.33
7. GD	.25	.18	.42	-.09	.18	-.17	----	.53	.85*	.86*	.50	-.39	-.45	-.25	-.16	.26
8. SOM	.13	.27	.26	-.10	.19	-.18	.80*	----	.31	.47	.29	.06	-.10	-.7	.15	-.16
9. DEP	.30	.31	.39	.09	-.06	-.07	.86*	.60	----	.55	.62	-.36	-.50	-.24	-.14	.16
10. ANX	.31	.09	.60	-.20	.29	-.18	.90*	.78*	.69*	----	.26	-.39	-.38	-.29	-.07	.32
11. H&US	.21	.06	.17	.06	.03	-.17	.74*	.56	.71*	.52	----	-.14	-.12	.11	-.08	.03
12. MSPSS	-.35	.29	-.18	.06	-.17	.20	-.34	-.07	-.32	-.21	-.49	----	.22	.14	-.05	-.37
13. INT	-.12	.12	.08	.21	-.20	-.01	-.09	-.19	-.11	-.15	.05	-.09	----	-.19	.48	-.37

Table 7, continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
14. SUP-E	-.09	.43	.15	.06	.03	-.16	.04	.22	.15	.15	-.07	.65*	-.14	----	.12	-.40
15. SUP-I	-.16	.11	.00	-.26	.06	.37	.06	.03	-.03	.11	.11	.26	.49	.17	----	-.52
16. TAS	.06	.16	.12	-.12	.26	-.26	.54	.46	.38	.49	.38	-.36	-.36	-.24	-.22	----

Notes: LD = Learning Disability, ADHD = Attention-Deficit Hyperactivity Disorder, AS = Asperger’s Syndrome, GD = Global Distress, SOM = Somatization, ANX = Anxiety, H&US = Hassles and Uplifts Scale, SUP = Perceived Support Network, INT = Positive Growth and Re-interpretation, SUP-E = Social Support for Emotional Reasons, SUP-I = Social Support for Instrumental Reasons, TAS = Alexithymia All correlations greater than .62 are significant at a per test significance level of $p < .001$ based on a multistage Bonferroni with a familywise Type 1 error rate of $p < .10$. * $p < .001$.

compared. None of these correlations were significantly different based on treatment condition.

Main effects of expressive writing on distress variables and daily hassles

Hypothesis 1 was examined using Analysis of Variance (ANOVA) and repeated measures ANOVA. There are two assumptions for ANOVA: a) the assumption of normality, and b) the assumption of homogeneity. For all study variables, the assumption of normality was met as demonstrated by non-significant Kolmogorov-Smirnov tests. To test the assumption of homogeneity, the Levene's Test of Equality of Error Variances was run for each ANOVA. No significant findings emerged across analyses for Levene's test indicating the equality of the error variance across groups.

Analyses of Covariance (ANCOVAs) were first run to assess pre- to post-test changes in global distress, depression, anxiety, and somatization. For these analyses, the dependent variables represented each construct at T2 and the independent variable was assignment to treatment condition, controlling for each construct at T1. Treatment condition was dummy-coded (0 = control condition and 1 = treatment condition). No significant differences in the mean frequencies of global distress, $F(1,50) = 4.1, p = .05$, or depression, $F(1,50) = 2.8, p = .10$, were found across treatment groups at T2. Participants in the treatment group reported significantly higher scores on anxiety than the control group from T1 to T2, $F(1,50) = 5.2, p < .05$. In contrast, participants in the treatment group reported significantly lower scores on somatization as compared to the control group from T1 to T2, $F(1,50) = 4.1, p < .05$. To measure post- to follow-up changes in the outcome variables, ANCOVAs were run with the dependent variables

reflecting each construct at T3, the independent variable representing assignment to treatment condition, controlling for each construct at T1 and T2 (See Tables 8 and 9). No significant differences were found in mean frequencies of global distress, $F(1,48) = 0.1, p = 0.8.$, somatization, $F(1,48) = 0.2, p = 0.6$, depression, $F(1,48) = 0.03, p = 0.9$, or anxiety, $F(1,48) = 0.02, p = 0.9$, and at T3.

Repeated measures ANCOVAs were then conducted to examine changes over time in the mean values of global distress, depression, anxiety, and somatization (See Table 10). For these analyses, the within-subjects factor was the mean level of each construct at T1, T2, and T3 and the between subjects factor was condition (i.e., treatment or control). Prior to interpreting analyses, the Mauchly's Test of Sphericity was examined and was not significant for global distress or anxiety indicating that the assumption of sphericity was met and the level of dependence between conditions for each of these outcome variable over time was similar (Field. 2009). For depression and somatization, Mauchly's test was significant and therefore tests of within-subjects effects were interpreted using the Huynh and Feldt correction (Field, 2009). Within subject effects were significant for all factors (Global Distress: $F(2, 100) = 260.7, p < .001$; Somatization: $F(2, 100) = 183.2, p < .001$; Depression: $F(2,100) = 77.2, p < .001$; and Anxiety: $F(2,100) = 160.9, p < .001$) indicating that there were significant changes over time in each of the factors. Pairwise comparisons indicated significant differences in the overall level of each distress variable from T1 to T3 and from T2 to T3. However, these changes did not vary by treatment condition across time. Specifically, there were no significant changes over time for any of the distress variables based on condition:

Table 8

ANCOVA's for Distress Variables and Daily Hassles at T2 as a Function of Study

Condition.

<i>Measure</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Global Distress (T2)				
Global Distress (T1)	1	9.5	9.5	127.7***
Treatment Condition	1	0.3	0.3	4.1
Error	50	3.7	0.1	
Somatization (T2)				
Somatization (T1)	1	5.9	5.9	45.3***
Treatment Condition	1	0.0	0.0	0.0
Error	50	6.5	0.1	
Depression (T2)				
Depression (T1)	1	14.1	14.1	89.7***
Treatment Condition	1	0.2	0.2	1.4
Error	50	7.8	0.2	
Anxiety (T2)				
Anxiety (T1)	1	9.8	9.8	79.6***
Treatment Condition	1	0.6	0.6	4.6*
Error	50	6.2	0.1	
Perception of Daily Hassles (T2)				
Perception of Daily Hassles (T1)	1	9.1	9.1	93.7***
Treatment Condition	1	0.0	0.0	0.4
Error	50	4.9	0.1	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Table 9

ANCOVAs for Distress Variables and Daily Hassles at T3 as a Function of Study

Condition.

<i>Measure</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Global Distress (T3)				
Global Distress (T1)	1	6.7	6.7	69.6***
Treatment Condition	1	0.0	0.0	0.7
Error	49	4.7	0.1	
Somatization (T3)				
Somatization (T1)	1	6.6	6.6	64.1***
Treatment Condition	1	0.0	0.0	0.2
Error	49	5.0	0.1	
Depression (T3)				
Depression (T1)	1	11.3	11.3	74.8***
Treatment Condition	1	0.0	0.0	0.1
Error	49	7.4	0.4	
Anxiety (T3)				
Anxiety (T1)	1	10.6	10.6	89.3***
Treatment Condition	1	0.0	0.0	0.3
Error	49	5.8	0.1	

Table 9 continued

<i>Measure</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>
Perceptions of Daily Hassles (T3)				
Perception of Daily Hassles (T1)	1	5.3	5.3	54.1***
Treatment Condition	1	0.0	0.0	0.1
Error	49	4.8	0.1	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Global Distress, $F(2,100) = 1.6, p = 0.2$; Somatization, $F(2,100) = 1.3, p = 0.2$; Depression, $F(2,100) = 0.4, p = 0.7$, and Anxiety, $F(2,100) = 2.6, p = 0.1$ (See Figures 1 - 4).

A repeated measures ANOVA was run to examine changes in the perception of daily hassles over time by treatment condition. As the assumption of sphericity was not met for this analysis, the Huynh-Feldt correction was used (Field, 2009). As with the distress variables, the perception of daily hassles changed significantly over time, $F(2,100) = 214.3, p < .001$, but no significant changes were found by treatment condition over time, $F(2,100) = 0.4, p = 0.7$ (See Table 10). Pairwise comparisons indicated significant differences in the overall level of daily hassles from T1 to T3 and from T2 to T3 (see Figure 5).

Mediating effects of coping and emotional competencies for expressive writing

For hypotheses 3 and 4, a series of ANOVAs were proposed to test for potential mediating effects of coping and emotional competencies on the relation between

Table 10

Summary of Repeated Measures ANOVAs Global Distress, Somatization, Depression, Anxiety, and Daily Hassles).

Factor	Treatment Condition			Control Condition			TreatmentX Condition
	Time 1 M (SD)	Time 2 M (SD)	Time 3 M (SD)	Time 1 M (SD)	Time 2 M (SD)	Time 3 M (SD)	
GD	0.7 (0.6)	0.7 (0.6)	1.5 (0.5)	0.8 (0.4)	0.6 (0.4)	1.5 (0.4)	1.6
SOMA	0.5 (0.8)	0.5 (0.6)	1.4 (0.5)	0.8 (0.6)	0.8 (0.6)	1.5 (0.4)	1.3
DEP	0.5 (0.7)	0.9 (0.7)	1.6 (0.7)	0.7 (0.5)	0.7 (0.6)	1.6 (0.6)	0.4
ANX	0.6 (0.6)	0.6 (0.7)	1.5 (0.6)	0.7 (0.6)	0.5 (0.4)	1.5 (0.6)	2.6
PDH	35.7 (24.4)	35.6 (27.4)	77.6 (20.0)	36.9 (28.4)	34.1 (27.5)	80.1 (26.4)	0.4

Note: GD = Global Distress; SOMA = Somatization; DEP = Depression; ANX = Anxiety; PDH = Perception of Daily Hassles. No Treatment X Condition interactions were significant at $p < .05$

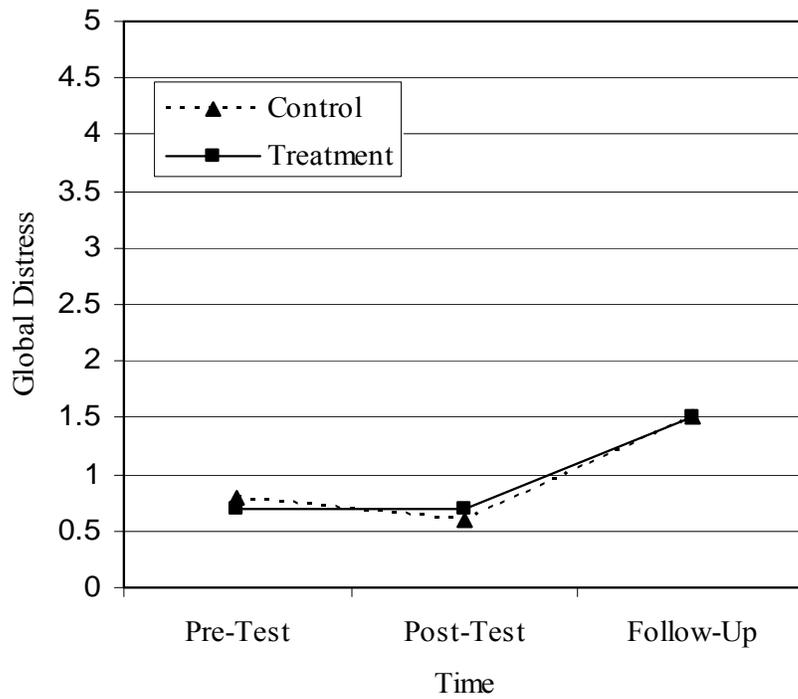


Figure 1. Means of Global Distress by Condition Over Time (N = 52).

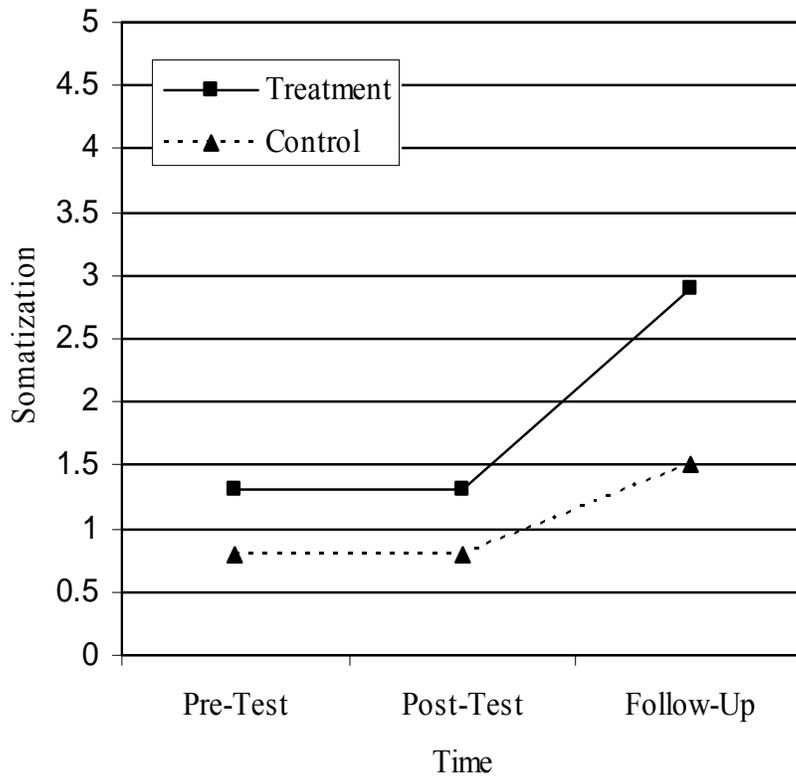


Figure 2. Means of Somatization by Condition Over Time (N = 52).

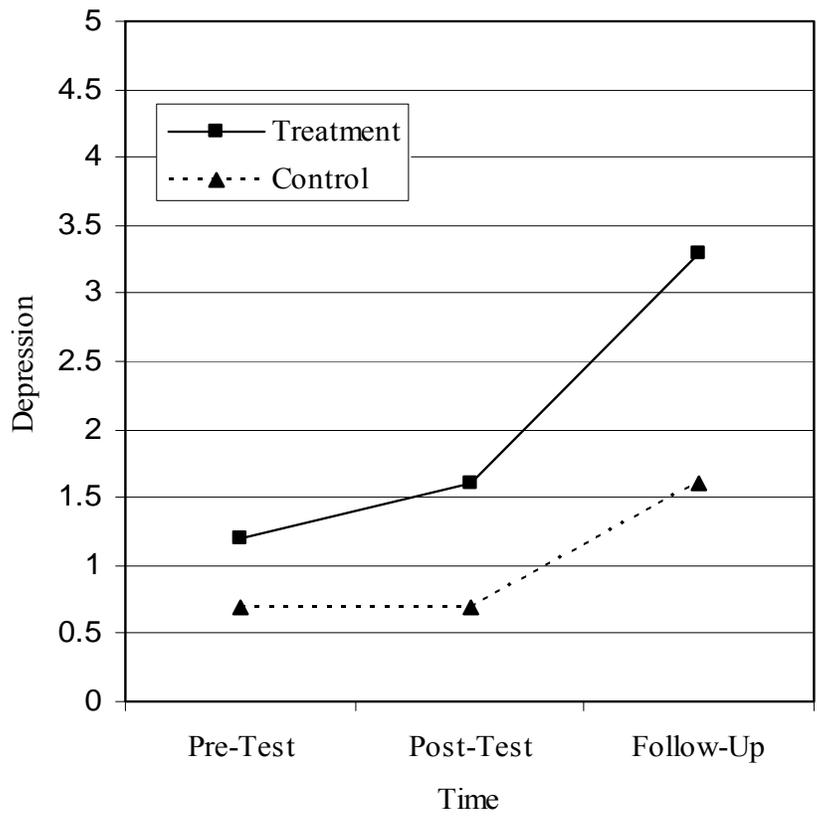


Figure 3. Means of Depression by Condition Over Time (N = 52).

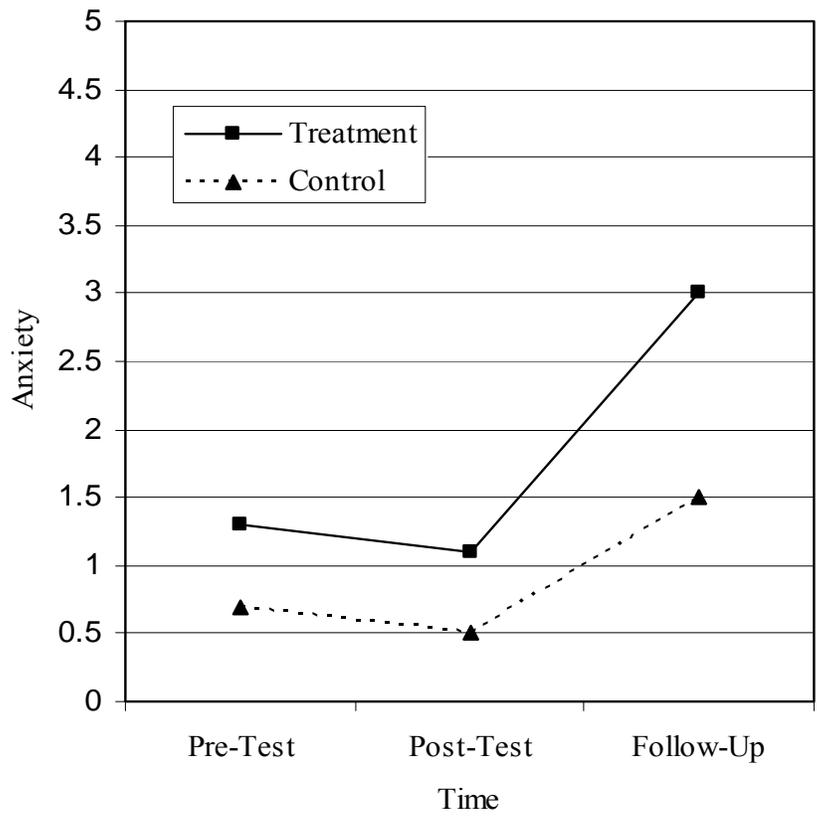


Figure 4. Means of Anxiety by Condition Over Time (N = 52).

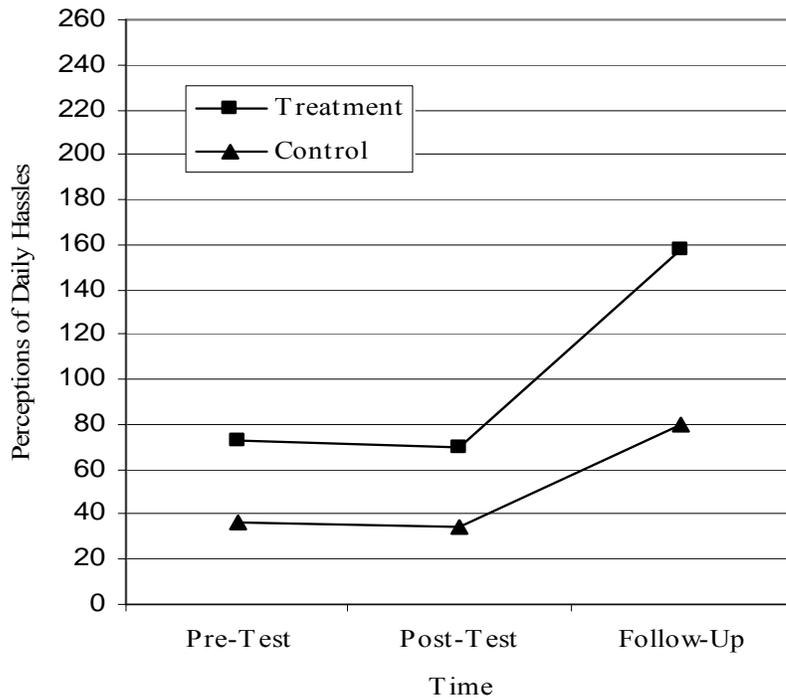


Figure 5. Means of Daily Hassles by Condition Over Time (N = 52).

condition and distress variables. According to Baron and Kenny (1986), significant relations must be found between: a) the predictor at T1 and the potential mediator at T2, b) the predictor at T1 and outcome at T3, and c) the potential mediator at T2 and outcome at T3 in order to test for mediation. Based on analyses of main effects, no significant relations were found between the predictor (condition) and outcome variables (i.e., global distress, anxiety, depression, and somatization) and thus tests of mediation could not be conducted. In lieu of conducting mediational analyses, coping strategies and emotional competencies were examined as proximal main effects at post-test and follow-up.

A series of ANCOVAs were conducted to assess differences in mean scores on coping and alexithymia at T2 for individuals in the treatment versus control condition, controlling for mean scores of these variables at T1. Another series of ANCOVAs were run to test for differences in rates of coping and alexithymia at T3 by condition, controlling for levels of coping and alexithymia at T1 and T2. No significant relations were found any of the coping variables or for alexithymia. Additional analyses were conducted to test whether individuals in the treatment vs. control condition differed in their total percentage of insight and causation words in text (LIWC total percentage across three writings) (see Table 11). Participants in the treatment condition used a significantly larger percentage of insight and causation words than the participants in the control condition across each of the three writings.

Moderating effects of initial levels of distress variables and social support for expressive writing

Hierarchical regression analyses were used to examine the potential moderating effect of T1 levels of distress and social support on the relation between treatment condition and levels of distress and social support both T2 and T3. Twelve separate regression analyses were run for each of the distress variables (i.e., global distress, anxiety, depression, and somatization, and social support at T2 and T3. For all analyses, distress and social support variables at T1 were centered at the mean, and high and low scores represent one standard deviation above and below the mean. At Step 1, treatment condition and T1 levels of distress or social support were entered, followed by the treatment Condition X T1 Distress or Treatment Condition X T1 Social Support at Step 2. No significant two-

Table 11

Habituation (Positive and Negative Words) for Each Writing by Treatment Condition.

	3	Means - Writing 1			Means - Writing 2			Means - Writing		
		E (N=24)	C (N=26)	F	E (N= 26)	C (N= 26)	F	E (N= 26)	C (N=26)	F
PANAS										
1. Positive Words	<i>M</i>	28.0	21.9	1.8	24.2	20.7	1.5	23.6	20.9	8.6**
	<i>SD</i>	(8.5)	(6.9)		(8.7)	(10.5)		(7.4)	(8.2)	
2. Negative Words	<i>M</i>	15.2	14.6	0.2	16.1	12.8	5.2*	14.2	13.9	0.9
	<i>SD</i>	(5.0)	(5.4)		(6.2)	(4.1)		(4.7)	(5.4)	

Note: After writing, questionnaires were answered along a 5 – point scale ranging from 1 = not at all to 5 = extremely All one way ANOVAs are based on 1, 50 degrees of freedom. * $p < .05$; ** $p < .01$; *** $p < .001$.

way interactions (Treatment Condition X T1 Distress) were found for the SCL-90-R composite of global distress or subscales of depression, and the Treatment Condition X T1 Social Support interaction effect was also not significant (See Tables 12 – 15). Significant two-way interactions (Treatment Condition x T1 Level of Distress) were found for somatization and anxiety. For anxiety, among participants who reported lower levels of anxiety at T1, little difference in mean levels of anxiety at T2 was found for individuals in the treatment versus control groups. For participants who reported higher levels of anxiety at T1, participants in the treatment group reported higher levels of anxiety at T2 as compared to participants in the control group (see Figure 6). A similar pattern of findings emerged for Treatment Condition x Somatization when somatization was the DV at T3 (see Figures 7).

Table 12

Hierarchical Regression Analyses Examining Moderating Effects of Distress at T1 by Assignment on Distress Outcomes at T2

Global Distress					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.72***	
Assignment	0.15	0.08	0.15		
Global Distress at T1	0.88	0.08	0.84***		
Step 2				0.73***	0.00
Assignment	0.15	0.08	0.15		
Global Distress at T1	0.79	0.13	0.75***		
Assignment X Global Distress at T1	0.15	0.16	0.11		
Somatization					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.48***	
Assignment	-0.02	0.10	-0.02		
Somatization at T1	0.50	-0.07	0.69***		
Step 2				0.48***	0.00
Assignment	-0.02	0.10	-0.02		
Somatization at T1	0.47	0.13	0.65***		
Assignment X Somatization at T1	0.04	0.16	0.05		

Table 12 continued

Depression					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.65***	
Assignment	0.13	0.11	0.10		
Depression at T1	0.81	0.09	0.79***		
Step 2				0.65***	0.0
Assignment	0.13	0.11	0.10		
Depression at T1	0.84	0.13	0.82***		
Assignment X Depression at T1	-0.04	0.18	-0.03		

Anxiety					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.61***	
Assignment	0.23	0.10	0.21*		
Anxiety at T1	0.75	0.09	0.78***		
Step 2				0.67***	0.06**
Assignment	0.22	0.09	0.20*		
Anxiety at T1	0.51	0.11	0.53***		
Assignment X Anxiety at T1	0.49	0.16	0.35**		

Note: * $p < .05$; ** $p < .01$; $p < .001$.

Table 13

Hierarchical Regression Analyses Examining Moderating Effects of Distress at T1 by Assignment on Distress Outcomes at T3

Global Distress					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.73***	
Assignment	-0.02	0.07	-0.02		
Global Distress at T1	0.13	0.14	0.14		
Global Distress at T2	0.69	0.13	0.74***		
Step 2				0.74***	0.01
Assignment	-0.02	0.07	-0.02		
Global Distress at T1	0.22	0.16	0.23		
Global Distress at T2	0.70	0.13	0.76***		
Assignment X Global Distress at T1	-0.16	0.15	-0.13		
Somatization					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.57***	
Assignment	0.05	0.10	0.05		
Somatization at T1	0.07	0.37	0.08		
Somatization at T2	0.48	0.31	0.68		
Step 2				0.61***	.04
Assignment	0.08	0.09	0.08		

Table 13 Continued

Factor	B	SE	β	R^2	ΔR^2
Somatization at T1	0.70	0.46	0.87		
Somatization at T2	-0.31	0.48	-0.44		
Assignment X Somatization at T1	0.38	0.18	0.44*		

Depression					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.61***	
Assignment	-0.02	0.11	-0.02		
Depression at T1	0.07	0.09	0.08		
Depression at T2	0.70	0.09	0.75***		
Step 2				0.61***	0.00
Assignment	-0.02	0.11	-0.02		
Depression at T1	0.12	0.11	0.13		
Depression at T2	0.71	0.10	0.77***		
Assignment X Depression at T1	-0.08	0.19	-0.07		

Anxiety					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.66***	
Assignment	-0.02	0.10	-0.01		
Anxiety at T1	0.18	0.14	0.18		

Table 13 Continued

Factor	B	SE	β	R^2	ΔR^2
Anxiety at T2	0.68	0.14	0.67***		
Step 2				0.67***	0.01
Assignment	-0.03	0.10	-0.03		
Anxiety at T1	0.23	0.14	0.23		
Anxiety at T2	0.73	0.15	0.74***		
Assignment X Anxiety at T1	-0.20	0.18	-0.14		

Note: * $p < .05$; ** $p < .01$; $p < .0$

Table 14

*Hierarchical Regression Analyses Examining Moderating Effects of Social Support at T1
by Assignment on Distress Outcomes at T2*

Global Distress					
Factor	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2
Step 1				0.76***	
Assignment	0.15	0.07	0.15*		
MSPSS at T1	-0.11	0.04	-0.21**		
Global Distress at T1	0.80	0.08	0.76***		
Step 2				0.76***	0.00
Assignment	0.15	0.07	0.15*		
MSPSS at T1	-0.11	0.06	-0.21		
Global Distress at T1	0.80	0.08	0.76***		
Assignment X MSPSS at T1	0.00	0.07	0.01		
Somatization					
Factor	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2
Step 1				0.96***	
Assignment	0.08	0.04	0.06*		
MSPSS at T1	0.01	0.02	0.01		

Table 14 Continued

Factor	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2
Somatization at T1	1.14	0.04	0.99***		
Step 2				0.96***	0.00
Assignment	0.09	0.04	0.06*		
MSPSS at T1	-0.01	0.03	-0.02		
Somatization at T1	1.15	0.04	0.99***		
Assignment X MSPSS at T1	0.03	0.04	0.03		
Depression					
Factor	<i>B</i>	<i>SE</i>	β	R^2	ΔR^2
Step 1				0.45***	
Assignment	0.28	0.14	0.21*		
MSPSS at T1	-0.35	0.07	-0.52***		
Depression at T1	0.40	0.11	0.38***		
Step 2				0.45***	0.00
Assignment	0.28	0.14	0.21*		
MSPSS at T1	-0.37	0.11	-0.55**		
Depression at T1	0.40	0.11	0.39***		
Assignment X MSPSS at T1	0.03	0.15	0.03		

Table 14 Continued

Factor	Anxiety				
	B	SE	β	R^2	ΔR^2
Step 1				0.65***	
Assignment	0.21	0.09	0.19*		
MSPSS at T1	-0.13	0.05	-0.23**		
Anxiety at T1	0.69	0.09	0.71***		
Step 2				0.65***	0.00
Assignment	0.21	0.09	0.19*		
MSPSS at T1	-0.09	0.08	-0.16		
Anxiety at T1	0.69	0.09	0.71***		
Assignment X MSPSS at T1	-0.06	0.10	-0.08		

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 15

*Hierarchical Regression Analyses Examining Moderating Effects of Social Support at T1
by Assignment on Distress Outcomes at T3*

Global Distress					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.75***	
Assignment	-0.01	0.07	-0.01		
MSPSS at T1	-0.07	0.04	-0.15		
Global Distress at T1	0.16	0.14	0.17		
Global Distress at T2	0.59	0.14	0.64***		
Step 2				0.75***	0.00
Assignment	-0.01	0.07	-0.01		
MSPSS at T1	-0.07	0.06	-0.15		
Global Distress at T1	0.16	0.14	0.17		
Global Distress at T2	-0.59	0.14	0.64***		
Assignment X MSPSS at T1	-0.01	0.07	-0.01		
Somatization					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.60***	
Assignment	0.04	0.09	0.05		
MSPSS at T1	-0.08	0.04	0.05		

Table 15 Continued

Factor	B	SE	β	R^2	ΔR^2
Somatization at T1	0.04	0.36	0.05		
Somatization at T2	0.49	0.31	0.71		
Step 2				60***	0.00
Assignment	0.04	0.10	0.05		
MSPSS at T1	-0.09	0.07	-0.20		
Somatization at T1	0.05	0.37	0.07		
Somatization at T2	0.49	0.31	0.70		
Assignment X MSPSS at T1	-0.02	0.09	0.03		

Depression					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.63***	
Assignment	0.00	0.11	0.00		
MSPSS at T1	-0.09	0.07	-0.15		
Depression at T1	0.11	0.10	0.11		
Depression at T2	0.61	0.11	0.66***		
Step 2				0.63***	0.00
Assignment	0.00	0.11	0.00		

Table 15 Continued

Factor	B	SE	β	R^2	ΔR^2
MSPSS at T1	-0.12	0.10	-0.19		
Depression at T1	0.11	0.10	0.12		
Depression at T2	0.61	0.11	0.66***		
Assignment X MSPSS at T1	0.04	0.10	0.05		
Anxiety					
Factor	B	SE	β	R^2	ΔR^2
Step 1				0.67***	
Assignment	-0.01	0.10	-0.01		
MSPSS at T1	-0.07	0.05	-0.13		
Anxiety at T1	0.19	0.13	-0.13		
Anxiety at T2	0.61	0.15	0.60***		
Step 2				0.67***	0.00
Assignment	-0.01	0.10	-0.01		
MSPSS at T1	0.19	0.13	-0.20		
Anxiety at T1	0.20	0.14	0.20		
Anxiety at T2	0.61	0.15	0.60***		
Assignment X MSPSS at T1	-0.00	0.20	-0.00		

Note: * $p < .05$; ** $p < .01$; $p < .001$.

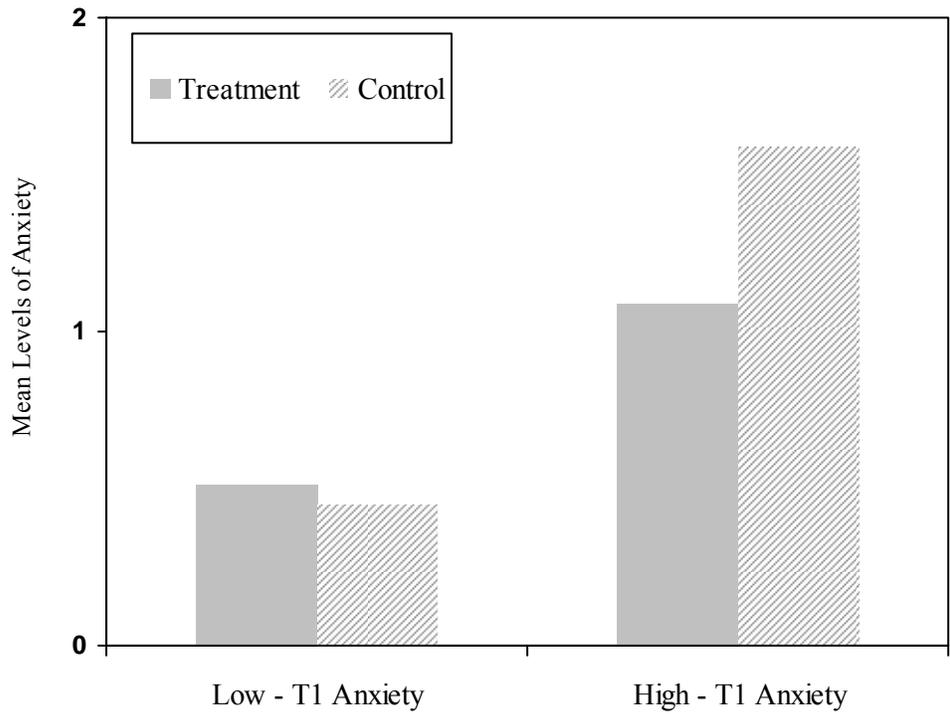


Figure 6. Mean levels for Anxiety at T2 as a Function of Anxiety at T1 and Treatment Condition

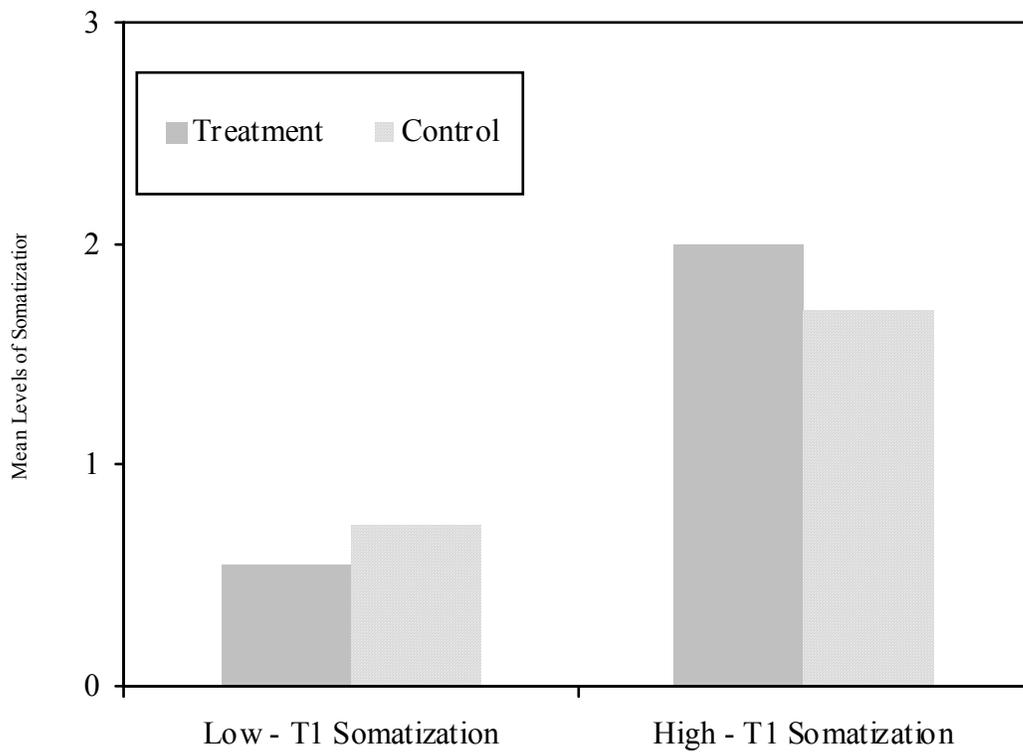


Figure 7. Mean Levels for Somatization at T3 as a Function of Somatization at T1 and Treatment Condition

Discussion

Expressive Writing did not reduce levels of distress or daily hassles experienced by university students with LD, ADHD, and AS. Nor did it enhance emotional competencies or coping in terms of reinterpreting stressful events or seeking social support for emotional or instrumental reasons. Although changes in the distress variables did occur, they occurred for both the treatment and control groups, and in similar patterns at both post-test and at the 30-day follow-up. At no point did the treatment condition experience a significant reduction in distress or daily hassles, however, both groups experienced a significant increase in distress and daily hassles at follow-up. However, tests of the effectiveness of the expressive writing paradigm as a between-group manipulation did indicate that the mechanics of the expressive writing treatment was working. Students in the treatment condition disclosed that their writing was more emotional, personal, and meaningful, and even that they had moderately increased their self-understanding as a result of the writing. Thus it is fair to say that while the intervention procedure itself was effective, the impact of the intervention as an agent of change with this particular sample of participants was not.

The expressive writing paradigm was initially developed and explored with college students, so its effectiveness with this population is well documented. Thus its lack of positive main effects with college students with disabilities is perplexing. A recent study by Hemenover (2003) utilized a comparably sized sample of college students ($N =$

50) and noted a greater reduction in distress for the treatment group as compared to the control group, using the same measure of distress that was used in this study. However, there were differences worth noting. Participants in the experimental condition were asked to write about their feelings and emotion surrounding a particularly traumatic event. The study was also arranged around the parameters of a semester, (e.g., taking pre-test measures at the beginning of the semester, writing once/week over a 3-week period, and conducting follow-up assessment at the end of the semester). Finally, the writing was done in a supervised, laboratory environment. Significant results were also found by Pennebaker, Colder and Sharp (1990) for new college freshmen in their EW treatment condition when asked to write specifically about “coming to college” (p. 531) on three consecutive days. Specifically, students in the treatment condition reported fewer health clinic visits as compared to controls. In many ways, this topic more closely resembles the writing topic in the current study, but all students completed their writing at the beginning of the fall semester, and the follow-up assessment was conducted at the end of the Spring semester. Overall, the study explored college adjustment as a coping process and suggested that by using a “confrontational” mechanism such as expressive writing, positive adjustment would be facilitated (Pennebaker et al., 1990). However, the coping event was a specific one – college adjustment – rather than a more chronic, lifelong issue such as having a disability.

Based on the results, it is important to explore some factors that may have influenced these null findings and to also explore some of the positive outcomes, although not measured for significance, of this study. First, an examination of the unique

qualities of this particular sample will be discussed, including factors that influenced the study directly and indirectly such as issues related to disability identity, recruitment and sample size. Second, the methodology used, including issues related to timing of the intervention and topic, will be explored. Third, particulars of the experimental procedure utilized in this study will be discussed, especially the procedures employed to carry out the study. Last, future directions of the usefulness of expressive writing with students with disabilities will be explored.

Students with Disabilities

To my knowledge, this is the first study to utilize an EW intervention with this specific population. It was proposed that students with disabilities would benefit from the opportunity to explore their college adjustment through the “lens” of their disability in order to better adapt to the personal, social and academic challenges of the university environment. In addition, it was proposed that students with disabilities were possibly experiencing higher levels of distress within the academic environment that were negatively impacting them as compared to students without disabilities.

It is interesting to note that at baseline, participants in this study reported low amounts of distress and few if any daily hassles and annoyances. The students also began the study with a moderately supportive social network of friends, family, significant others, and university personnel, as well as experience in using potentially adaptive coping strategies. In addition, they were also functioning quite well in regards to their emotional well-being and self-understanding and their ability to discuss their feelings and emotions. Thus, it is

quite possible that the study failed to find main effects or group differences due to ceiling effects – this group of students was well-adjusted to begin with.

This raises the question of sampling and a possible bias. In order to control for reliability of disability diagnosis, participants were students registered at the office of Disability Student Services at their respective colleges. In this way, they were unique from other students with the same disabilities who attended college without DSS support and involvement. In a recent study of academic identity development of students with learning disabilities, (including ADHD), Anctil, Ishikawa, and Scott (2008) proposed that the knowledge of one’s learning disability, including personal strengths and weaknesses, along with self-advocacy and conflict resolution skills is what helped students access the specific services offered by DSS offices. In other words, “the use of personal and academic accommodations in college was a behavioral output of self-realization” (Anctil et al., p.171).” Therefore, it is likely that the students who are registered with the DSS offices are students who have already developed an awareness of the impact of their disability on their performance and well-being. Rather than using the expressive writing opportunity to “reframe” or integrate their disability into their identity, or to construct meaning from their disability experience, the participants in this sample had likely already been engaged in this process. When put in terms of the theories of how expressive writing works to impact change, there may not have been a need for a freeing and/or processing of inhibited emotions (disinhibition theory), no need to construct meaning from the disability experience (cognitive-processing theory), and no need to gain emotional self-regulation (self-regulation theory). There were also no changes over

time in their perception of social support, so it is highly likely that the social integration theory was not integral to this expressive writing experience.

Further, it is possible that the expressive writing paradigm was offering nothing new to this particular group of students. As suggested by the aforementioned research, it is likely that most of students had also already engaged in some disclosure about the impact of their disability on their university experience, simply as a result of registering with DSS. One student wrote in her third writing that quite recently her academic advisor asked her how her having a learning disability “got in the way of school or studying or anything.” Thus it is likely that the writing did not provide a unique opportunity, but rather an established “time” to ponder the experience. According to the Frattaroli (2006) meta-analysis, expressive writing is most effective if: 1) what is written about has not been previously disclosed, 2) if what is being written about is causing distress, and 3) whether or not the traumatic and/or stressful event occurred more recently. It appears that these three conditions may not have been met in this study.

The method used to obtain participants was unwieldy but essential in order to preserve the privacy of those students who had registered with their respective DSS offices. However, it also placed study staff in an indirect versus direct position to recruit potential participants with some clear limitations as to the extent of initial recruitment and follow-up efforts that were possible. Although the overall recruitment rates were relatively low, it is important to note that the response rate for this project were comparable to other survey efforts conducted at the VCU DSS office (personal communication with J. Knight, March 9, 2009). Thus this relatively passive – but

necessary - form of recruitment resulted in a smaller number of participants available for this particular study. As a result of the small sample size, this study was plagued by relatively low power which is an important limitation to address. Post-hoc power analyses indicated a low statistical power for the final sample of 55 participants (i.e., meaning that there was a fairly large chance of not finding a small effect in the study,) thereby increasing the chances of a Type II error. However, many expressive writing studies are conducted with even smaller sample sizes and significant effects are found. Thus this factor, alone, does not appear to bear the sole responsibility for the insignificant results of this study.

Methodology- Timing and Treatment

In addition to sample size issues, it is also important to review the timing of the expressive writing intervention. Change in distress did occur over time, but not due to the treatment. Rather, both the control and treatment groups changed in similar ways. Both groups experienced a clear increase in distress at follow-up. After examining the timing of the intervention and the 30-day follow-up, I concluded that the increase in distress occurring for both conditions did not align with any particular university-wide event (e.g. final exams, an end of semester workload that would likely be experienced by all students, etc.) or any other historical event that might have been experienced by all the students. However, the importance of the timing of the intervention must not be overlooked. Previous work with stress reduction in college samples took place around particularly stressful events, such as exam time (Lepore, 1997) and adjustment to college for incoming students (Pennebaker, Colder, and Sharp, 1990). In the current study, the

“stress” that was to be reduced was not time-specific, therefore timing was not a factor controlled for in the procedure.

It could also be argued that the single 30-day follow-up assessment was insufficient to detect the long-term effects of writing given the findings by several groups that the effects (primarily health outcomes) of writing do not emerge until several months following expressive writing (Petrie et al., 1995; Smyth et al., 1999). It could be argued that follow-up data should be collected at later periods in order to assess the true effectiveness of the expressive writing condition. But it is important to note that the increase in distress at 30-days follow-up was for both writing conditions, and obviously not a factor related to the treatment condition. Thus, it is unlikely to be an important factor in the null results of this study but merits consideration in determining the timing of the intervention for future studies. Specifically, future studies of expressive writing may benefit from having a control condition of students without disabilities in order to ascertain whether changes due to possible contextual issues may be impacting all students. In order to control for contextual effects, it will also likely be important to begin and end expressive writing studies at naturally occurring points during the college academic calendar, thus possibly controlling for the spurious effects of timing. Because expressive writing was designed to explore potential experiences of distress or stress, targeting the points in the academic calendar when these experiences are heightened for youth with and without disabilities is also an important consideration.

Further review of the increase in stress and distress at follow-up for both conditions also warrants the suggestion that the change in both conditions may be

attributable to possible experimenter effects. It is possible that the relationship building that occurred between the experimenter and the participants could be a factor in these findings. Although this relationship building likely contributed to the high retention rate in this study, it may also have contributed to the lower distress results when meeting with the experimenter, and the higher distress results at follow-up when this contact was concluded. Although a script was followed, this bears further investigation.

It is also possible that cognitive dissonance might have impacted the results. Although the student participants were quite well-adjusted, distress levels for both the control and treatment condition increased at follow-up during which they completed the same questionnaire. On one hand, an argument could be made that responding repeatedly to questions about having a disability perhaps contributed to youth in the treatment condition doubting their own earlier responses. However, it is critical to note that participants in the control condition had a similar increase in stress and distress at follow-up with no significant differences in the mean level for any measure found between these conditions. Although this expressive writing procedure has been followed for numerous studies, it may be valuable to further explore its dynamics when working with students with disabilities in future studies. For future research, it is important to keep in mind that students with non-visible disabilities fluctuate in their self-acceptance and rather than ever developing a cohesive identity, they vacillate within any moment between adjustment and conflict (Olney & Kim, 2001). However, it is disappointing that engaging in the treatment condition did not help reduce any cognitive dissonance that might have occurred.

It is also important to examine the topic about which the students in the expressive writing condition were asked to write. There is still much discussion about whether writing topics should be more general or more specific in nature (Gidron et al., 2002). In other words, the difference between simply asking individuals to write about any “trauma or event” in their lives as compared to asking them to write about a topic in a more directed and specific way (e.g., feelings surrounding breast cancer, being a victim of partner abuse). Topic guidance has been proposed to support the cognitive processing theory of expressive writing such that it should encourage insight into a particular event (Klein, 2002; Pennebaker, 1997). In addition, Frattaroli (2006) found that studies where participants were given more specific directions and examples had significantly greater psychological effect sizes than studies using more general instructions. But, in addition to topic itself, is the very nature of the “disability” about which participants in this study were asked to write. It is likely that when asked to explore how one’s disability has impacted adjustment, cognitive schemas were being explored rather than emotional responses to a stressor. Greater use of insight and causative words is said to correlate with more positive outcomes, and this occurred in the current study for the treatment condition. However, it is likely that much more time would be needed to impact one’s working model or self identity as compared to the more rapid changes that might occur when processing emotional responses. The process of change in self-awareness might be seen in how an individual responds to the stressors associated with college. In fact, this phenomenon has been proposed by Lepore (1997) who concluded that stress itself may not be impacted by expressive writing; rather one’s adjustment to stress may be altered.

Study Procedures

The procedures utilized in this study were also based on best practices developed and analyzed through current research and recent meta-analyses of the expressive writing paradigm, including the writing being done in the privacy of each participant's home rather than a laboratory setting. It could be argued that in order to impact a more chronic, long-term issue such as stress related to one's disability, "more is better" and that longer writing sessions should have been used (Frattaroli, 2006; Sloan & Mark, 2004). However, concern for the issues surrounding the disabilities of the participants, including possible dysgraphia and issues related to attention and time management, resulted in the selection of a 15-minute writing session, three times within a one week period. This treatment dosage corresponded to Frattaroli's recommendations for optimal dosage (2006) based on his meta-analysis. However, although these specification might prove challenging for students with disabilities, the possibility of longer writing sessions, increased number of writing sessions, and longer intervals between writing have all been related to positive effects and bear exploration in future studies (Gebler & Maercker, 2007).

The current study utilized a home-based, computer email reminder and response system. Participants received a personalized e-vite to write on pre-designated writing days. This e-vite included a link to a password protected site on which they completed all of their writing and post-writing questionnaires. Both of these procedural methods merit discussion. Although writing at home was associated with greater effect sizes in several studies (Frattaroli, 2006; Sheffield et al., 2002), there is an obvious limitation on experimental control that can be exerted utilizing a home writing procedure. Each

participant was responsible for timing their own writing. A link to a stopwatch was provided on the writing “page” of the link; however, no participant opted to use this. Rather, they used their own sources of timers (e.g. personal watches, cell-phones, kitchen timers). At issue here is whether or not participants actually wrote for the allotted 15 minutes. The mean number of words remained largely the same over the three writing sessions. This seems to imply that participants were regulating the amount of time that they wrote, allowing for time to think and process what they were writing, and typed a reasonable number of words per writing session. In previous research examining group differences in the number of words used, Brewin and Lennard (1999) found that when participants were writing about stressful events, they used more words than the control condition. This difference was not noted in this study.

Study participants also completed their writing and follow-up survey at home using their personal computers, in part because for many students with learning disabilities, computer usage is an oft used accommodation in the classroom. Computers are also required for each student at VCU, thus are considered normative technology for all students. While many participants expressed appreciation for the ease of participation that was afforded by this procedure, one student wrote “Wow I hate this keyboard- it's so hard to type on. I can't believe that they claim that these things are better for people.” It was not within the purview of this study to compare this computer-based procedure with hand-written responses, but by examining the manipulation checks, it appears that participants in the treatment condition did respond as expected to the writing procedure when using this particular writing modality. In a recent investigation of the impact of

different settings on expressive writing effectiveness, Corter and Petrie (2008) created the following three settings in which to write: a) the “confessional” setting--a dimly lit laboratory with computer prompted instructions and writing done on a computer, b) the “stark” setting--a brightly lit, sterile laboratory setting with computer prompted instructions and writing done on the computer, and c) the “personal” confessional--a laboratory setting with a personally delivered prompt and writing done by hand.

Although they noted increased engagement of the “personal” confessional group over the other two conditions (via post-writing questionnaires), this engagement did not translate into the causative and insight word outcomes that are proposed to mediate the positive outcomes of expressive writing (Pennebaker & King, 1999). Further, in a recent contribution by Randy Waterman (2008) on the LD Online Website (a site that is associated with the National Joint Committee on Learning Disabilities), the usefulness of writing on a computer for individuals with disabilities was explained:

The problem with pen and paper as a medium for moving ideas from one's head to paper is many fold: handwriting might not be fast or clear enough; the transfer of ideas has to have decent fidelity the first time because the recording process is permanent, and once recorded there is no possibility of change. . . using the computer as a digital extension of your memory makes it easier to find things when you want them.

If expressive writing is to allow for the cognitive processing of an event, and thus the freeing up of working memory that has been proposed to occur as a result of this procedure (Klein & Boals, 2001), it seems that using a computer for the writing will be beneficial for students with disabilities. Therefore, computer usage in and of itself may not negatively influence the effects of expressive writing. It is even possible that using the computer for this study was one reason that participants chose to be involved.

Obviously, further work exploring the usefulness of this modality for expressive writing studies would be beneficial.

Limitations

Several limitations of the current study are noted. First, a great heterogeneity exists among students with disabilities on any college campus. In a recent web-based study examining the adjustment of students with ADHD to college as compared to students without disabilities using two campus', the Group X Site (campus) interaction was significant at one campus, and not at another (Rabiner, Anastopoulos, Costello, Hoyle, & Swartzwelder, 2008). Although it is easy to acknowledge the great range of abilities and weakness within any particular disability group, it is difficult to control for these factors. It is also quite possible that students who had the self-awareness and understanding to access the supports of a disability student services program could likely represent students who have best reframed their identity to include their disability status but could also represent students with disabilities who have the greatest need for accommodations. Without a control group of students by which to compare distress over the time of this study, it is difficult to ascertain this. It is quite possible that students with disabilities who are not registered at the DSS offices are experiencing the most distress as they negotiate the choppy waters of college adjustment.

In addition, some students with disabilities may simply have chosen not to participate in the study because writing was involved. A significant percentage of students with disabilities struggle with writing. Because the recruitment procedures needed to protect the anonymity of students with disabilities, the factors associated with

the decision not to participate in this study could not be explored. An important direction for future research would be to gain a better understanding of the responsiveness of students with disabilities to participation in a “writing” intervention. If this is an issue, further work is also merited to explore what types of accommodations may help this modality of intervention be well received by young adults with disabilities.

It is also possible that the study measures did not capture the scope of issues that may create stress or distress among college students with disabilities. This will be explored more in implications for future directions, but perhaps using a measure more related to the college context would have more clearly indicated issues of concern and distress for students. For example, a measure of global distress may be important in ascertaining baseline group differences, but it may not present the range of areas that are particularly stressful to a college population.

Future Directions

Although almost every study that explores the experience of students with disabilities at college notes that they are at higher risk for distress in the academic, social and personal milieu of a college environment, this was not the case for the participants in the current study. This is not to suggest that college students with disabilities are unable to function due to their distress; rather it is highly likely that the students with disabilities who seek out post-secondary education are likely to be amongst the better adjusted of their peers with disabilities to begin with, although a college environment poses many new challenges for even those students who fared well in high school (Wolf, 2001). As one participant wrote, “Having a disability is not as bad as in high school – in college,

people you meet “are on the right side of ‘adult’.” It could be possible that the distress as examined through the measures used in this study did not assess the areas that are of greatest concern to this particular group of students. Thus it will be important to analyze what the participants wrote in response to the expressive writing prompt to seek themes and issues that are of concern to them. In this way, stress reduction interventions such as expressive writing can be targeted more directly at the issues that are specific to this unique and growing population.

One area to further explore with expressive writing is its usefulness as a prevention versus intervention paradigm. In the current study, expressive writing was used as an intervention, with the goal of ameliorating generalized patterns of preexisting distress associated with a chronic condition within a particular context. Changes that occur surrounding a chronic condition could be more cognitive in nature rather than the emotional changes that are more strongly associated with the success of expressive writing interventions. Expressive writing may be better used in a preventive context to reduce the impact of particularly challenging events. This suggestion is supported by success rates in the use of expressive writing to reduce distress related to specific events or traumas, as compared to inconsistent rates of success surrounding pre-existing conditions (Harris, 2006), PTSD symptomology (Koopman et al., 2005), and even caregiver stress associated with caring for children with chronic conditions (Schwartz & Drotar, 2004). Continued exploration comparing the usefulness of expressive writing in prevention and intervention contexts may yield important results related to the usefulness of this paradigm.

List of References

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Appendix A

Daily Hassles and Uplifts Scale

DIRECTIONS: Circle the answer that best describes how much of a hassle and/or irritant you felt each item on the list was to you within the past 24 hours.

0 = *did not occur*

1 = *occurred, not severe*

2 = *occurred, somewhat severe*

3 = *occurred, moderately severe*

4 = *occurred, very severe*

5 = *occurred, extremely severe*

1. Your child(ren)	0	1	2	3	4	5
2. Your parents or parents in law	0	1	2	3	4	5
3. Other relative(s)	0	1	2	3	4	5
4. Your spouse	0	1	2	3	4	5
5. Time spent with family	0	1	2	3	4	5
6. Health or well-being of a family member	0	1	2	3	4	5
7. Sex	0	1	2	3	4	5
8. Intimacy	0	1	2	3	4	5
9. Family-related obligations	0	1	2	3	4	5
10. Your friend(s)	0	1	2	3	4	5
11. Fellow workers	0	1	2	3	4	5
12. Clients, customers, patients, etc.	0	1	2	3	4	5
13. Your supervisor or employer	0	1	2	3	4	5
14. The nature of your work	0	1	2	3	4	5
15. Your work load	0	1	2	3	4	5
16. Your job security	0	1	2	3	4	5
17. Meeting deadlines or goals at school	0	1	2	3	4	5
18. Enough money for necessities (e.g. food, clothing, housing, health care, taxes, insurance)	0	1	2	3	4	5
19. Enough money for education	0	1	2	3	4	5

20. Enough money for emergencies	0	1	2	3	4	5
21. Enough money for extras (e.g. entertainment, recreation, vacations)	0	1	2	3	4	5
22. Financial care for someone who doesn't live with you	0	1	2	3	4	5
23. Investments	0	1	2	3	4	5
24. Your smoking	0	1	2	3	4	5
25. Your drinking	0	1	2	3	4	5
26. Mood-altering drugs	0	1	2	3	4	5
27. Your physical appearance	0	1	2	3	4	5
28. Contraception	0	1	2	3	4	5
29. Exercise(s)	0	1	2	3	4	5
30. Your medical care	0	1	2	3	4	5
31. Your health	0	1	2	3	4	5
32. Your physical abilities	0	1	2	3	4	5
33. The weather	0	1	2	3	4	5
34. News events	0	1	2	3	4	5
35. Your environment (e.g., quality of air, noise level, greenery)	0	1	2	3	4	5
36. Political or social issues	0	1	2	3	4	5
37. Your neighborhood (e.g. neighbors, setting)	0	1	2	3	4	5
38. Conserving (gas, electricity, water, gasoline, etc.)	0	1	2	3	4	5
39. Pets	0	1	2	3	4	5
40. Cooking	0	1	2	3	4	5
41. Housework	0	1	2	3	4	5
42. Home repairs	0	1	2	3	4	5
43. Yardwork	0	1	2	3	4	5
44. Car maintenance	0	1	2	3	4	5
45. Taking care of paperwork (e.g. paying bills, filling out forms)	0	1	2	3	4	5
46. Home entertainment (e.g. TV, music, reading)	0	1	2	3	4	5

47. Amount of free time	0	1	2	3	4	5
48. Recreation and entertainment outside the home (e.g. movies, sports, eating out, walking, organizations)	0	1	2	3	4	5
49. Eating (at home)	0	1	2	3	4	5
50. Legal matters	0	1	2	3	4	5
51. Being organized	0	1	2	3	4	5
52. Social commitments	0	1	2	3	4	5

Appendix B

Multidimensional Scale of Perceived Social Support (MSPSS)

DIRECTIONS: We are interested in how you feel about the following statements. Read each statement carefully. Circle the answer that most closely indicates how you feel about each statement.

- 1 = Very Strongly Disagree
- 2 = Strongly Disagree
- 3 = Mildly Disagree
- 4 = Neutral
- 5 = Mildly Agree
- 6 = Strongly Agree
- 7 = Very Strongly Agree

1. There is a special person who is around when I am in need. 1 2 3 4 5 6 7
2. I receive emotional support from a professor and/or another adult at my university. 1 2 3 4 5 6 7
3. There is a special person with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
4. My family really tries to help me. 1 2 3 4 5 6 7
5. There is a professor or another adult on campus that I can go to for help whenever I need it. 1 2 3 4 5 6 7
6. I get the emotional help and support I need from my family. 1 2 3 4 5 6 7
7. I have a special person who is a real source of comfort to me. 1 2 3 4 5 6 7
8. My friends really try to help me. 1 2 3 4 5 6 7
9. I can count on my friends when things go wrong. 1 2 3 4 5 6 7
10. I can share my greatest happiness and sadness with a professor and/or another adult who I know at my university. 1 2 3 4 5 6 7
11. I can talk about my problems with my family. 1 2 3 4 5 6 7
12. I have friends with whom I can share my joys and sorrows. 1 2 3 4 5 6 7
13. There is a special person in my life who cares about my feelings. 1 2 3 4 5 6 7

14. My family is willing to help me make decisions. 1 2 3 4 5 6 7
15. I can talk about my problems with my friends. 1 2 3 4 5 6 7
16. When I have a difficult decision to make, there is an adult at my university, such as a professor or adult advisor, who I know I can go to for help. 1 2 3 4 5 6 7

Appendix C

COPE Inventory

DIRECTIONS: Respond to each of the following items by **CIRCLING** one of the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true **FOR YOU** as you can. Please answer every item. There are no “right” or “wrong” answers, so choose the most accurate answer for **YOU** – not what you think “most people” would say or do. Indicate what **YOU** usually do when **YOU** experience a stressful event.

- 1 = I usually don't do this at all
- 2 = I usually do this a little bit
- 3 = I usually do this a medium amount
- 4 = I usually do this a lot

- | | | | | |
|---|---|---|---|---|
| 1. I try to grow as a person as a result of the experience. | 1 | 2 | 3 | 4 |
| 2. I discuss my feelings with someone. | 1 | 2 | 3 | 4 |
| 3. I get used to the idea that it happened. | 1 | 2 | 3 | 4 |
| 4. I accept that this has happened and that it can't be changed. | 1 | 2 | 3 | 4 |
| 5. I try to get emotional support from friends or relatives. | 1 | 2 | 3 | 4 |
| 6. I try to see it in a different light, to make it seem more positive. | 1 | 2 | 3 | 4 |
| 7. I get sympathy and understanding from someone. | 1 | 2 | 3 | 4 |
| 8. I look for something good in what is happening. | 1 | 2 | 3 | 4 |
| 9. I accept the reality of the fact that it happened. | 1 | 2 | 3 | 4 |
| 10. I talk to someone about how I feel. | 1 | 2 | 3 | 4 |
| 11. I learn to live with it. | 1 | 2 | 3 | 4 |
| 12. I learn something from the experience. | 1 | 2 | 3 | 4 |

Appendix D

Toronto Alexithymia Scale (TAS)

DIRECTIONS: Please **CIRCLE** the number that best describes how the following statements describe you, using the following scale:

1. Not At All Like Me, or Not True
2. A Little Like Me, or A Little True
3. Somewhat Like Me, or Sometimes True
4. Quite A Bit Like Me, or Pretty True
5. Completely Like Me, or Very True

	[1]	[2]	[3]	[4]	[5]
	Not At All Like Me/ Not True	A Little Like Me/A Little True	Somewhat Like Me/ Sometimes True	Quite A Bit Like Me/ Pretty True	Completely Like Me/ Very True
1. I am often confused about what emotion I am feeling.	1	2	3	4	5
2. It is difficult for me to find the right words for my feelings.	1	2	3	4	5
3. I have physical sensations that even doctors don't understand.	1	2	3	4	5
4. I am able to describe my feelings easily.	1	2	3	4	5
5. I prefer to analyze problems rather than just describe them.	1	2	3	4	5
6. When I am upset, I don't know if I am sad, frightened, or angry.	1	2	3	4	5
7. I am often puzzled by sensations in my body.	1	2	3	4	5
8. I prefer to just let things happen rather than to understand why they turned out that way.	1	2	3	4	5

	Not At All Like Me/ Not True	A Little Like Me/A Little True	Some what Like Me/ Sometimes True	Quite A Bit Like Me/ Pretty True	Compl etely Like Me/ Very True
9. I have feelings that I can't quite identify.	1	2	3	4	5
10. Being in touch with emotions is essential.	1	2	3	4	5
11. I find it hard to describe how I feel about people.	1	2	3	4	5
12. People tell me to describe my feelings more.	1	2	3	4	5
13. I don't know what's going on inside me.	1	2	3	4	5
14. I often don't know why I am angry.	1	2	3	4	5
15. I prefer talking to people about their <i>daily activities</i> rather than their <i>feelings</i> .	1	2	3	4	5
16. I prefer to watch "light" entertainment shows rather than psychological dramas.	1	2	3	4	5
17. It is difficult for me to reveal my innermost feelings, even to close friends.	1	2	3	4	5
18. I can feel close to someone, even in moments of silence.	1	2	3	4	5
19. I find examination of my feelings useful in solving personal problems.	1	2	3	4	5
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.	1	2	3	4	5

Appendix E
Positive and Negative Affect Schedule (PANAS)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way during the past week.

Use the following scale to record your answers:

- (1) = Very slightly or
- (2) = A little
- (3) = Moderately
- (4) = Quite a bit
- (5) = Extremely not at all

1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5

15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5

Appendix F
Post-Writing Manipulation Check

Please rate the following statements AFTER you have completed your 15 minutes writing session using the following scores:

1 = not at all 2 = A little bit 3 = Moderately 4 = Quite a bit 5 = Extremely

- | | | | | | | |
|---|---|---|---|---|---|---|
| 1. I expressed emotion in my writing today. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. I was upset after writing today. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. My writing was personal today. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. My writing was difficult for me today. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. The writing I did today is important. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. My writing increased my understanding of myself today. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. I have previously discussed with someone what I wrote
about today | 1 | 2 | 3 | 4 | 5 | 6 |

Appendix G

Consent Form

Virginia Commonwealth University
Expressive Writing Project – VCU IRB # HM11768
Student Consent for Participation

If you have any questions or need clarification on wording please ask the study staff. You may take home a copy of this consent form to think about or discuss with family or friends before making your decision.

PURPOSE OF THE STUDY:

The purpose of this study is to learn more about college experiences for youth with disabilities. We hope to have a total of 180 students participate in this study. You have been asked to participate in this study because you are an undergraduate at VCU or J. Sargeant Reynolds Community College and have identified yourself as having a disability with the VCU or J. Sargeant Reynolds office of Disability Student Services.

DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT:

If you decide to be in this study, you will be asked to sign this consent form after you have had all your questions answered.

If you agree to participate in the study, here is what would happen:

- You would take part in a brief writing exercise (lasting around 15 minutes) in your own home 3 times within one week. You will be given instructions for what to write about.
- You would fill out a survey 3 times: before the 1st writing session, after the 3rd writing session, and 30 days after the last writing session.

In appreciation of your time and effort for participating in the study, you will receive a total of \$30---\$10 after you complete the final writing and \$20 after you return the follow-up survey 30 days later.

What are the potential risks and benefits of taking part in the study?

There is little risk to participating in this study. The most likely risk is that a question asked during the survey or a part of the writing exercise may make you feel

uncomfortable. You can choose not to answer any question and can stop the survey or writing exercises at any time. If you should become upset for any reason while completing the survey or doing the writing exercises, you can contact the study staff and they will talk with you and can also assist in providing any referrals needed, however, VCU will not cover the cost for these services.

A potential benefit of this project is that by answering these questions, you may help us learn about college experiences for students your age. We will use what we learn to help other college students with disabilities

There are no costs for participating in this study other than the time you will spend in the writing sessions and filling out surveys.

Your participation in this project is voluntary. You can decide whether to take part in this project or not. If you choose to be in the project, you may withdraw at any time. You may also choose not to answer any question you do not want to answer and still remain in the project.

What about privacy and confidentiality?

All of the information that you provide will be kept private. We will not tell anyone the answers you give us; however, information from the study and the consent form may be looked at or copied for research or legal purposes by VCU and the Office of Research.

All information that you provide will be coded with an identification number that we will generate (not your student identification number). Your name will not be used on any answer sheet or put together with any information you provide. Surveys returned by e-mail will be coded only with an identification number and the e-mail will be permanently deleted once the survey data is saved.

Information that we find from this study may be presented at meetings or published in papers, but your name will not ever be used in these presentations or papers.

Although your responses will remain anonymous, should you disclose information that purports your doing harm to yourselves or others, study staff are required by law to report this information to the appropriate authorities in order to protect you.

Who should I contact if I have questions?

Geri Lotze
VCU Psychology Department
810 West Franklin Street
Richmond, VA. 23284
Telephone: 804-828-2713
E-mail: lotzegm@vcu.edu

Terri Sullivan
VCU Psychology Department
810 West Franklin Street
Richmond, VA. 23284
Telephone: 804-828-9304
E-mail: tsullivan@vcu.edu

You may also feel free to contact the Office for Research at the address and phone number below:

*Virginia Commonwealth University
800 East Leigh Street, Suite 113
P.O. Box 980568
Richmond, VA 23298
Telephone: 804-827-2157*

Consent:

I have read this consent form and understand the information about the study. All my questions about the study and my participation in it have been answered. My signature says that I am willing to participate in this study.

Participant name printed

Participant signature

Date

Name of person conducting informed consent discussion/witness
(Printed)

Signature of person conducting informed consent discussion/witness

Date

Principal Investigator signature

Date

Biography

Geri M. Lotze, Ph.D., completed her doctoral work in Developmental Psychology at Virginia Commonwealth University in August, 2009. Prior to earning her Ph.D., Geri earned her undergraduate degree in Psychology from the College of William and Mary (1979), an M.S. in Community Clinical Psychology from California State University, Long Beach (1987); a M.T. in Special Education from the University of Richmond, Virginia (1994); and an M.S. in General Psychology at V.C.U. (2006). She has worked in the fields of gerontology, community health, and middle, high and university -level education. Her current research focus is on adolescents and emerging adults with high incidence disabilities. She also continues to work with children who have experienced the incarceration of their mothers. Geri is married with a blended family of five adult-aged children.