

The Effects of an Internet-Based Self-Compassion Writing Intervention for  
Adults with Mental Illness

by

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A Thesis Presented in Partial Fulfillment  
of the Requirements for the Degree  
Master of Social Work

Approved April 2018 by the  
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ARIZONA STATE UNIVERSITY

May 2018

## ABSTRACT

Multiple studies have found that writing with self-compassion about a difficult event helps promote mental health and improve affect in college students and non-clinical populations (Johnson & O'Brien, 2013; Leary et al, 2007; Shapira & Mongrain, 2010). This study investigated whether a self-compassion writing intervention would lead to increases in self-compassion and proactive coping and reductions in depression and physical symptoms in a sample of individuals with different types of mental illness. This study also looked more broadly at the feasibility of conducting an online randomized trial on individuals with mental illness, including psychotic disorders, on Amazon MTurk. Individuals with schizophrenia, schizoaffective disorder, bipolar disorder and/or depression on Amazon MTurk were recruited and randomly assigned to either a (1) treatment condition in which participants wrote with self-compassion or a (2) neutral condition in which participants wrote about how they spent their time. Participants were asked to write for 20 minutes each day for three consecutive days. Outcome measures were administered at baseline, after the three-day intervention, and one month later. Computerized linguistic analysis (LIWC; Pennebaker et al., 2015) was also used to analyze participants' writing to determine if the intervention had the intended effect. Both the treatment and control groups showed significant improvements in self-compassion, proactive coping, general mental health and physical health following the intervention and both groups showed significant improvements in self-compassion, proactive coping and general mental health between the post-test and 1-month follow-up. In addition, the self-compassion writing group's positive affect improved significantly more than the control group after the wave 1 writing intervention and the control group's

negative affect improved significantly more than the self-compassion writing group after the wave 2 writing intervention. Overall, the results suggest both self-compassion writing and writing about how one spends one's time may be beneficial for individuals with mental illness with different needs. Moreover, it was found Amazon MTurk may not be a reliable platform for recruiting individuals with psychotic disorders, and that the prevalence of individuals with any mental illness on MTurk may be equal or greater than the prevalence of any mental illness in the general population.

## ACKNOWLEDGMENTS

I would like to express my gratitude for all of the support I received from Dr. Craig LeCroy. His expert guidance, patience, support, and generous investment of time helped make the completion of this project a reality. I would also like to thank Dr. Katie Stalker for all of her help with the statistics for this project, her patience and willingness to answer the many questions I had. Thank you as well to Dr. Jane Holschuh for help with the clinical research questions that came up and for her enthusiasm and interest in this project. I would also like to thank Darlene Lopez for her support with the statistical analysis. Finally, thank you to my parents, for their love, encouragement, and continual support.

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## SCALES

|                |   |
|----------------|---|
| SCS-SF         | Self-Compassion Scale<br>(Higher Score=Greater Self-Compassion)                                 |
| ‘PCS’          | Proactive Coping Scale<br>(Higher Score=Greater Coping Ability)                                 |
| RDQ (Modified) | Remission From Depression Questionnaire (Modified)<br>(Higher Score= Greater Depression)        |
| CHIPS          | Cohen-Hoberman Inventory of Physical Symptoms<br>(Higher Score=More Physical Symptoms)          |
| PANAS-PA       | Positive and Negative Affect Schedule- Positive Subscale<br>(Higher Score=More Positive Affect) |
| PANAS-NA       | Positive and Negative Affect Schedule- Negative Subscale<br>(Higher Score=More Negative Affect) |

## **Introduction**

Globally, mental illness accounts for one-third of disability (Vigo, Thornicroft, & Atun, 2016). According to the United States Substance Abuse and Mental Health Services Administration's (SAMHSA) 2016 National Survey on Drug Use and Health (NSDUH), an annual survey of 67,500 randomly selected individuals in the United States, 18.3% of the U.S. adult population had some type of mental illness during the past year, and 4.2% of the U.S. adult population had a serious mental illness (SMI) (Ahrnsbrak, Bose, Hedden, Lipari, & Park-Lee, 2017). The results of another national survey, the National Comorbidity Survey Replication (NCS-R), found approximately half (46.4%) of Americans have a history of at least one mental disorder (Kessler et al., 2005).

It is estimated that 11.8 million American adults perceived an unmet need for mental healthcare in 2016 (Park-Lee, Lipari, Hedden, Kroutil, & Porter, 2017). NSDUH respondents indicated the biggest barrier to mental health services was cost: 41.1% of adults identified with any mental illness (AMI) and 46.2% of adults with a SMI who stated they had an unmet need for mental health care explained they could not afford the cost (Park-Lee et al., 2017). Other barriers included: Not having enough time to go to treatment (21.7%), fear of stigma (12.6%), not wanting to take medicine or be committed to a psychiatric hospital (11.9%), health insurance does not pay enough for mental health care (11.9%), confidentiality and privacy concerns (11.0%), fear of others finding out (9.1%), health insurance does not cover mental health care at all (8.8%), and lack of transportation or inconvenient transportation (3.8%) (Park-Lee et al., 2017). In addition, some individuals with mental illness find psychotropic medication is not effective and/or

they cannot find psychotherapy and other mental health services that are tailored towards their specific needs (Jolley et al., 2015).

Low-income individuals are more likely to develop a mental disorder and mental illness is more common in societies, such as the United States, where there is a high level of income inequality (Campion, Bhugra, Bailey, & Marmot, 2013). Gender, cultural and ethnic disparities also exist. For example, lesbian, gay, bisexual individuals are more likely to have poor mental health than heterosexual individuals (Fredriksen-Goldsen, Kim, Barkan, Muraco, & Hoy-Ellis, 2013) and Native Americans are 1-1.5 times more likely to die from a mental illness as white Americans (Payne, Steele, Bingham, & Sloan, 2017). Traditional Western psychotherapy approaches may not be acceptable to those from other cultures and alternative treatment options may not be available (Marsiglia & Kulis, 2015). For example, Native Americans, Asian Americans and Hispanic Americans who hold traditional beliefs may value collectivism over American individualism and feel that their priorities and values clash with Western psychotherapy methods. Similarly, some ethnic groups may not feel comfortable addressing problems or concerns verbally in a direct manner, and may avoid traditional mental health treatment (Marsiglia & Kulis, 2015). Thus, while new medications and psychosocial services such as psychiatric rehabilitation, housing, employment and peer supports are helping many people living with mental illness live fulfilling and productive lives (Sands & Gellis, 2012), significant disparities and barriers to care remain.

Stress and trauma play an important role in both the onset and exacerbation of mental illness (Kilgus, Maxmen, & Ward, 2016). The emotional strain from losing one's job, adjusting to a new culture, or trauma, such as childhood sexual abuse and physical

abuse, may precipitate or exacerbate a mental illness (American Psychiatric Association, 2013). While trauma is often associated with the development of disorders such as post-traumatic stress disorder (PTSD), psychological trauma may also be implicated in the development other types of mental illness (Kilgus et al., 2016; Rudnick & Lundberg, 2012). For instance, individuals with psychosis have a significantly higher prevalence of childhood trauma and dissociation than the general population (Alvarez et al., 2011; Varese, Barkus, & Bentall, 2012) and dissociative experiences that result from trauma may lead to hallucinations (Alderson-Day et al., 2014).

Neuroscience research that found stress causes neuroinflammation, which is associated not only with the onset of behavioral dysfunction, but also with lasting changes in the way the nervous system responds to stress (Calcia et al., 2016). A higher proportion of low-income individuals suffer from mental illness partly because they grow up and live in chronically chaotic environments that are a constant source of stress (Anakwenze & Zuberi, 2013). According to Shahar (2015), stressful situations often provoke criticism from others which becomes internalized. For example, a parent who has just lost their job may take their anger out on their child and the child may criticize and blame themselves for what happened (Shahar, 2015). Criticism and self-criticism in turn, may activate the ‘fight, flight, freeze’ response and motivate individuals to be extra careful to avoid perceived threats so they can stay safe (Gilbert, 2018). This kind of defensive behavior may contribute to intensified psychological distress (Gilbert, 2018).

Several empirical studies support this theoretical model: Self-criticism has been found to be a risk factor for many different types of mental illness such as unipolar depression, anxiety disorders, hypomania, eating disorders, substance use (Shahar &

Henrich, 2013), and personality disorders (Kannan & Levitt, 2013) and also plays a role in auditory hallucinations, persecutory delusions, post-psychotic depression, anxiety and trauma symptoms (Waite, Knight, & Lee, 2015). In addition, it has been found that critical attitudes expressed verbally or non-verbally to patients by family members, called expressed emotion, may result in self-criticism that is stressful enough to affect the course of mental illness (Shahar & Henrich, 2013). High levels of familial expressed emotion predict relapse rates for a variety of different types of mental illness including schizophrenia, mood disorders, eating disorders (Butzlaff & Hooley, 1998). Similarly, stigma (prejudice and discrimination from society at large), that is internalized may cause individuals with mental illness to take on stereotypes (such as “I am dangerous”), isolate themselves (Corrigan & Rao, 2012) and avoid seeking or participating in treatment (Corrigan, Druss, & Perlick, 2014).

Self-criticism is a maladaptive coping strategy which individuals can learn to replace with healthier alternatives through treatment (Gill, 2015). To eliminate economic disparities in mental health and overcome barriers to treatment described above, mental health interventions need to be adapted to the needs of minorities and low-income individuals who might not be able to come into the office for treatment (LeBow, 2006), and who cannot afford to pay out-of-pocket for services. Usual treatments for mental illness include psychotherapy and psychosocial interventions. Psychosocial interventions, such as group therapy or socialization groups, which try to blunt the impact of interpersonal and psychosocial stress by introducing other people into patients’ social circle, are not always successful because patients with severe neurocognitive and



neurological symptoms may be unable to manage the stressors that come with increased social interaction (Kopelowicz, Liberman, Mintz, & Zarate, 1997).

Cognitive behavioral therapy (CBT), the most well-studied psychotherapy, is the treatment of choice for a wide range of mental disorders including depression, panic disorder, post-traumatic stress disorder, obsessive-compulsive disorder and insomnia (Dobson & Dobson, 2016), as well as schizophrenia and bipolar disorder (Buck, Shields, Elvidge, Hayhurst, & Davies, 2017). CBT aims to help clients learn how to reinterpret a stressful situation to mitigate the emotional impact of the situation (Diedrich, Grant, Hofmann, Hiller, & Berking, 2014). CBT lends itself to randomized controlled trials and use in public behavioral health agencies, because it is short, brief and easily replicable (Ryan & Schlosser, 2017), however some individuals with mental illness, especially those who are very self-critical, do not respond well to a strict cognitive approach (Rector, Bagby, Segal, Joffe, & Levitt, 2000). Cognitive neuroscience research supports this finding: LeDoux (1996) discovered that the emotional part of the brain can pick up the emotional significance of a stimulus before that stimulus reaches the cognitive part of the brain. Therapists have found that they often need to employ other methods, such as helping individuals access adaptive emotions such as anger or self-compassion before clients can access the cognitive part of the brain and resolve maladaptive habits such as self-criticism (Greenberg, 2008; Samoilov, 2000).

In the past 20-25 years, the cognitive model has been challenged by the “third-wave” of CBT which promoted acceptance and tolerance of negative affect as an effective emotional regulation mechanism. More recently, researchers have demonstrated that self-compassion may be a potential alternative emotional regulation

mechanism (Neff, 2003a) and found that self-compassion is especially effective for severe symptoms of depression (Diedrich et al., 2014) as well as other kinds of mental illness (Helm, 2016; Jazaieri et al., 2013; Leaviss & Uttley, 2015; Mayhew & Gilbert, 2008).

Researchers have created several different kinds of self-compassion interventions that have been shown to increase positive affect and decrease symptoms of mental illness (Arch et al., 2014; Leaviss & Uttley, 2015; Mayhew & Gilbert, 2008; Smeets, Neff, Alberts, & Peters, 2014). One type of brief, accessible self-compassion intervention that has been used is self-compassion writing, the process of writing about a stressful event with kindness and understanding. While self-compassion writing interventions have been studied in college populations and a few clinical populations, there is limited evidence to support the claim that self-compassion writing is effective for individuals with mental illness. Here, I will discuss what is known about self-compassion, and review research on writing interventions, including self-compassion writing interventions. Then I will present an empirical self-compassion writing study of individuals with mental illness that I conducted on Amazon MTurk, a popular crowdsourcing website. The main objective of this study was to determine whether writing with self-compassion is effective at reducing symptoms and improving well-being in individuals with mental illness, including individuals with major depressive disorder, bipolar disorder, schizophrenia and schizoaffective disorder. A secondary objective was to determine if writing with self-compassion is effective for individuals with psychotic symptoms. Lastly, a broader objective of the research was to determine the feasibility of recruiting subjects with

different types of mental illness, including psychotic disorders, on Amazon MTurk to yield adequate sample sizes for a controlled trial of a writing intervention.

## **Literature Review**

### **Self-Compassion: An alternative emotional regulation strategy**

Compassion may be defined as “a state of concern for the suffering or unmet need of another, coupled with a desire to alleviate that suffering” (Goetz & Simon-Thomas, 2017). Compassion is an affective state which is distinct from empathy, the experience of sharing the feelings of another (Goetz, Keltner, & Simon-Thomas, 2010). Self-compassion, in turn, is simply described as “compassion turned inward” (Neff & Germer, 2017). The practice of compassion and self-compassion has its roots in Buddhist meditation (Lavelle, 2017). While compassion for others and self-compassion are closely related constructs, it is more difficult to be compassionate to ourselves than it is to be compassionate to others, because Western culture emphasizes being compassionate to others more than being compassionate to ourselves (Neff & Germer, 2017). Drawing on Buddhist traditions, Neff (2003a), breaks down the concept of self-compassion into three components:

- (a) self-kindness—extending kindness and understanding to oneself rather than harsh judgment and self-criticism,
- (b) common humanity—seeing one’s experiences as part of the larger human experience rather than seeing them as separating and isolating, and
- (c) mindfulness—holding one’s painful thoughts and feelings in balanced awareness rather than over-identifying with them.

Despite popular misconceptions, self-compassion does not promote self-centeredness or passivity, and does not equate with self-pity (Neff, 2003a). Moreover, self-compassion is distinct from positive psychology techniques that try to improve self-esteem or focus only on the positive aspects of oneself or one's life (Neff, 2003a; Neff, Kirkpatrick, & Rude, 2007). Research comparing self-compassion and self-esteem interventions shows that while 'focusing on the positive' may increase self-esteem and make one feel better in the short term, these effects do not last very long, whereas interventions that specifically aim to increase self-compassion have more lasting effects (Neff & Vonk, 2009).

Self-compassion has a significant inverse relationship with self-criticism ( $r = -.65$ ,  $p < .01$ ) (Neff, 2003b) and self-compassion is associated with adaptive coping strategies and negatively associated with maladaptive avoidance-oriented strategies, such as distraction or suppression of emotions (Neff, Hsieh, & Dejitterat, 2005). Self-compassion appears to help individuals make progress towards their goals by preventing escalation of negative affect during challenging situations (Hope, Koestner, & Milyavskaya, 2014). While CBT tries to change clients' critical self-evaluations, self-compassion approaches try to change clients' relationships to their self-evaluations (Leary, Tate, Adams, Allen, & Hancock, 2007). After a failure, self-compassionate individuals are more likely to use acceptance and cognitive reappraisal emotional regulation strategies (Neff et al., 2005) and are more likely to create a sense of safety for themselves, and tolerate and express their emotions (Gilbert, 2014). However, while self-compassion interventions reduce negative reactions to stress, they do not necessarily eliminate negative emotion. Self-compassion leads to recognizing and validating one's

emotions (Leary et al., 2007; Neff et al., 2005) rather than suppressing negative thoughts or emotions (Neff, 2003b).

A meta-analysis of studies found self-compassion and psychotherapy have a significant inverse relationship with a large effect size ( $r=-0.54$ ) (MacBeth & Gumley, 2012). Additionally, Trompetter, de Kleine, and Bohlmeijer (2017) found self-compassion is a significant mediator of the negative relationship between positive mental health and depression/anxiety and Waite et al. (2015) discovered while self-critical thoughts maintained the distress of individuals with psychosis, self-compassionate thoughts promoted empowered action, recovery and growth. Many of the new third-wave therapy models that promote acceptance, tolerance and mindfulness, including acceptance and commitment therapy (Neff & Tirsch, 2013) indirectly promote the development of self-compassion and self-compassion has been found to statistically mediate the reduction in psychopathology from mindfulness-based cognitive therapy (MBCT) treatments (Kuyken et al., 2010; Shapiro, Astin, Bishop, & Cordova, 2005).

Researchers have discovered that self-compassion can be learned and strengthened through practice (Neff 2003a), and there are several different methods of building self-compassion. The three main Buddhist traditions, Theravāda, Mahāyāna, and Vajrayāna, developed different theories about how people can become more compassionate. On one end of the spectrum, Mahāyāna, and Vajrayāna Buddhists believe compassion is innate and only needs to be uncovered by removing barriers to its expression. On the other end of the spectrum, Theravāda Buddhists believe compassion needs to be created or constructed through practice (Lavelle, 2017). As researchers in the West started to develop secular compassion training curriculum and incorporate

compassion practice into clinical practice, the “innateist” and constructivist approaches discussed above shaped different secular approaches to compassion training and therapy (Lavelle, 2017).

Today, there are four main secular compassion training programs that are used to teach the public how to be more compassionate to themselves and others. One model, Mindful Self-Compassion Training (MSC), focuses on self-compassion, while the others, Compassion Cultivation Training (CCT), Cognitively-Based Compassion Training (CBCT) and Sustainable Compassion Training (SCT), integrate training on compassion for others and self-compassion. CCT, CBCT and MSC appear to be influenced by the traditional constructivist approaches to compassion and Sustainable Compassion Training (SCT) was influenced by the “innateist” approach to compassion (Lavelle, 2017). CCT, CBCT and MSC combine compassion meditation exercises (such as visualizing sending thoughts of compassion to others), psychoeducation and group discussion about compassion, while SCT focuses more on encouraging individuals to re-experience times of warmth, affection and safety, addressing psychological barriers to receiving compassion and debunking misconceptions about compassion (Lavelle, 2017).

CBCT has been used with healthy children and adults as well as trauma survivors, incarcerated women, adolescents in foster care and veterans, and CCT has been used with the general population, cancer survivors, veterans and health professionals (Goetz & Simon-Thomas, 2017). Moreover, CCT has been shown to result in a significant reduction in the number of self-reported psychiatric symptoms in an adult community sample (Jazaieri et al., 2013). However, the CCT, CBCT, SCT and MSC training programs typically charge a significant amount of money and therefore these programs

may not be accessible to low-income individuals. Furthermore, the programs involve a substantial time commitment, such as weekly sessions for 8 consecutive weeks plus in-home practice, and although these training programs may be helpful for some with mental illness, they are not specifically focused on increasing self-compassion and decreasing self-criticism in this vulnerable population.

Compassion-Focused Therapy (CFT) was designed to specifically help individuals who experience high shame and self-criticism (Gilbert, 2018). This approach takes an evolutionary perspective, providing psychoeducation about how the way the human brain evolved made humans vulnerable to rumination, negativity bias and being self-critical. CFT also includes breathing, imagery and specific kinds of mindfulness practice that help people recognize the difference between focusing on potential threats in the environment and focusing on compassion (Gilbert, 2009). One meta-analysis found CFT may be effective for individuals with mood disorders (Leaviss & Uttley, 2015) and Mayhew and Gilbert (2008) found CFT decreases paranoia and psychotic symptoms, including persecutory and malevolent auditory hallucinations, in individuals with schizophrenia. Although promising, CFT is still quite new and is not widely available at this time.

Several studies have shown that even brief self-compassion interventions that involve 1-2 days of face-to-face sessions and take-home assignments may affect change. Albertson, Neff, and Dill-Shackleford (2014) asked women to listen to guided self-compassion meditation recordings that lasted 10 minutes once per day for three weeks and found the intervention significantly reduce body dissatisfaction, body shame, and contingent self-worth based on appearance, and significantly increased levels of self-

compassion and body appreciation relative to controls. In addition, Smeets et al. (2014) found that participants who attended two in-person meetings and practiced a variety of self-compassion take-home assignments daily for two weeks significantly improved levels of self-compassion, mindfulness, optimism, and self-efficacy, and resulted in significantly greater decreases in rumination compared to the control group. Last, Arch et al. (2014) found participants who attended one in-person guided self-compassion meditation session and listened to similar recordings at home for three days significantly reduced sympathetic, cardiac parasympathetic, and subjective anxiety responses and significantly increased levels of self-compassion, compared to controls.

One type of brief intervention that was used in the study by Smeets et al. (2014), and which is part of both the CFT therapy model and the MSC training program, is writing with self-compassion. In CFT, clients are asked to write a compassionate letter to themselves or to someone else that might be going through a similar, difficult situation (Gilbert, 2009), and in the MSC training, individuals are encouraged to keep a self-compassion diary (Neff & Germer, 2013). In addition, Neff (n.d.) offers several free self-compassion exercises, including self-compassion journaling exercises, on her website.

### **Writing Intervention Research**

Writing has probably been used as a way to process difficult experiences and emotions for as many years as people could write. The practice called ‘freewriting’, which involves writing without stopping was popularized by writing teachers such as Goldberg (1986) and Cameron (1992). Freewriting synchronizes thinking with hand movement and breathing, and is a form of mindfulness meditation practice (Goldberg, 1986). Just as freewriting was experiencing a resurgence in popularity in the 1980s and



1990s, psychologists Pennebaker and Beall (1986) began to systematically study the effects of writing about stressful experiences on health.

**Expressive Writing.** Pennebaker and Beall (1986) asked college students to write continuously about their “deepest thoughts and feelings” about a traumatic event for 15 minutes per day for four consecutive days, without receiving feedback from others. Pennebaker and Beall (1986) hypothesized that their intervention would decrease stress associated with inhibiting thoughts and memories of a traumatic event and consequently improve students’ health more than writing about superficial topics. The researchers found students who expressed their thoughts and feelings about a traumatic event through writing experienced greater negative affect immediately following writing than controls who wrote about superficial topics but had fewer physician visits in the six months following the experiment than controls. While lower healthcare utilization does not necessarily indicate improved health, subjects who wrote about their trauma reported that their writing experience was beneficial to them long-term (Pennebaker & Beall, 1986). The researchers suggested the effect they found was not due to catharsis (the process of releasing repressed emotions, originally described by Freud), but rather due to a mechanism previously described by (Jourard, 1971) in which emotional expression leads to an increase in self-understanding, which relieves stress (Pennebaker & Beall, 1986).

Pennebaker and Beall (1986) called their intervention “expressive writing” and since their initial study, researchers have conducted numerous other experiments testing similar expressive writing protocols on diverse populations. By 2013, over 400 expressive writing studies were published (Niles, Haltom, Mulvenna, Lieberman, & Stanton, 2014), with each successive year adding to the count. Many of the studies

supported and built upon the original findings. For example, Petrie, Fontanilla, Thomas, Booth, and Pennebaker (2004) found that HIV patients had higher CD4 lymphocyte (T-helper cell) counts after participating in an expressive writing protocol compared with control group participants; Greenbaum and Javdani (2017) found at risk youth expressive writing participants experienced significant increases in resilience compared to controls; Koschwanez et al. (2013) found older adults with biopsy wounds who participated in expressive writing intervention healed more quickly and completely than controls; and Matthiesen et al. (2012) found infertile couples participating in expressive writing intervention had lower stress levels post-intervention than controls.

However, some expressive writing research did not result in significant effects. Mogk, Otte, Reinhold-Hurley and Kröner-Herwig (2006) examined 30 studies (mostly of college students) using a random effects model. All of the studies they examined included a follow-up survey at least 4 weeks after last writing session and the researchers did not find any significant effects on physical or psychological health. A meta-analysis by Frattaroli (2006) which examined 146 randomized controlled studies using a random effects model found modest, but significant effects on psychological health, physical health and overall functioning ( $r=.075$ ). Ten percent of the experiments in this meta-analysis specifically examined participants who had a psychological health problem and 64% included only college students. Last, Harris (2006) conducted a meta-analysis comparing healthy subjects with clinical samples using a random effects model and found expressive writing was associated with decreased health utilization only for healthy subjects.

Collectively, the expressive writing research suggests that expressive writing works better for some than others. One example of this, is research that shows writing expressively about trauma does not help people who experienced a recent loss or those who have already achieved closure about the experience (Littrell, 2009). In addition, variability in the specific methods and procedures of different expressive writing studies may contribute to the variation in outcomes (Nazarian & Smith, 2010). For example, Nazarian and Smith (2010) found that expressive writing was more effective in studies where subjects wrote in a laboratory than studies where subjects wrote at home, where there are typically more distractions.

Although expressive writing seems to improve health by helping people face and process traumatic experiences (Pennebaker & Beall, 1986) and individuals with different types of mental illness are more likely than the general population to experience trauma and stress (Kilgus et al., 2016; Rudnick & Lundberg, 2012), research on the effects of expressive writing interventions for individuals with mental illness has been mixed and not as consistent as studies on college students or individuals with physical illness (Baikie, Geerligs & Wilhelm, 2012). Perhaps expressive writing is not as effective for individuals with mental illness as for the general population because individuals with mental illness do experience trauma at a higher rate than average and therefore it is harder for them to process their emotions and learn from the writing experience. Indeed, there is evidence that writing about a traumatic event without reassessing the trauma or trying to learn from the experience causes increased distress (Littrell, 2009).

In order to try to get a clearer picture of why expressive writing works in some situations but not others, Greenberg, Wortman, and Stone (1996) explored the effects of

writing a fictitious account of a traumatic event and found participants who wrote about a fictitious traumatic event saw the same reduction in health center visits as participants who wrote about a real traumatic experience that happened to them. King and Miner (2000) then explored the effects of writing about positive aspects of a traumatic experience and found this type of writing produced the same health benefits as writing about trauma without focusing on the perceived benefits. This prompted researchers to experiment with other writing alternatives such as expressive writing combined with a mindfulness intervention (Poon, 2013), and positive writing alternatives such as re-writing one's story (Pascoe, 2016), writing about one's "best possible self" (King, 2001), one's previous successes (Ziemer, 2014), and "the most intensely positive experience" of one's entire life (Baikie, Geerligs & Wilhelm, 2012). Positive writing was shown by several researchers to be as effective or more effective at improving well-being than expressive writing in healthy subjects (Toepfer, Altmann, Risch, & Wilz, 2015) and was found to immediately increase positive affect (Burton & King, 2004; King, 2001).

As researchers explored alternative writing interventions, multiple alternative mechanisms of change were proposed such as: forming a narrative of the traumatic events and creating meaning; exposure to feared memories or thoughts; increasing self-understanding or gaining insight into a problem or traumatic memory; enhancing and facilitating positive emotional reflection; improving interpersonal interactions and access to social support; and increasing the ability to regulate one's emotions (Mattina, 2011). Pennebaker and others concluded that researchers are not likely to find a single theory or mediator that can explain the effectiveness of writing interventions partly because writing intervention researchers use slightly different protocols and outcome measures in their

work, but also because expressive writing likely influences people in many different ways and affects various populations differently (Pennebaker, 2004; Sloan & Marx, 2004).

**Self-compassion writing.** After different positive writing alternatives were explored, researchers started exploring the effects of self-compassion writing interventions on different populations. Self-compassion writing is similar to expressive writing in that subjects write about a difficult experience, but they also use elements of self-compassion to process their emotions. While there have been multiple studies (mentioned above) that have examined the effects of comprehensive compassion-based training programs, compassion-focused therapy, or a mix of brief self-compassion interventions on a variety of populations, to this writer's knowledge, there have been only 12 published studies to date that have examined the effectiveness of a stand-alone self-compassion writing intervention. Unlike the standard expressive writing protocol, the self-compassion writing interventions that have been tested to date have not asked participants to write "continuously" without stopping.

Similar to the diverse body of expressive writing research, different self-compassion writing researchers have used slightly different writing prompts and protocols in their studies. Some researchers asked participants only to write words of kindness and understanding to themselves, and suggested they write something kind that a good friend might say to them in the moment (Breines & Chen, 2012; Imrie & Troop, 2012; Shapira & Mongrain, 2010), while other researchers incorporated all three components of self-compassion (mindfulness, self-kindness and common humanity) and asked participants to mindfully describe their emotions and reactions to the stressful

event without self-judgment, write about how others also experience similar stressful situations and strong emotions, and jot down some kind words of understanding to themselves, including kind words that a friend might say to them (Helm, 2016; Johnson & O'Brien, 2013; Leary et al., 2007; Odou & Brinker, 2013; Williamson, 2014; Wong & Mak, 2016; Zabelina & Robinson, 2010; Ziemer, 2014). In addition, in order to help participants develop self-understanding and self-kindness, two self-compassion writing interventions also asked participants to try to understand the core need underneath their stress and consider that their distress makes sense (Shapira & Mongrain, 2010; Ziemer, 2014). One study (Baker & McNulty, 2011) asked participants only to write a list of thoughts in response to several statements related to self-compassion.

In addition to using different writing instructions, some researchers had participants write at one time point only (Baker & McNulty, 2011; Breines & Chen, 2012; Helm, 2016; Johnson & O'Brien, 2013; Leary et al., 2007; Odou & Brinker, 2013; Zabelina & Robinson, 2010), while others asked participants to write multiple times at different time points (Imrie & Troop, 2012; Shapira & Mongrain, 2010; Williamson, 2014; Wong & Mak, 2016; Ziemer, 2014). Moreover, five out of 12 self-compassion writing studies discussed above (Breines & Chen, 2012; Johnson & O'Brien, 2013; Shapira & Mongrain, 2010; Williamson, 2014; Ziemer, 2014) were conducted fully online and the rest were conducted at least partly in person. Last, over seven of the self-compassion studies to date have used college students as participants, and two studies used samples from the general population.

Leary et al. (2007) conducted the first systematic self-compassion writing study. The researchers asked U.S. college students to write about a negative event that happened

to them, including details about what led up to the event, who was present, and how they felt and behaved. Leary et al. (2007) then broke the sample up into three groups: a self-compassion writing condition, a self-esteem writing condition, and a control condition. Participants in the two treatment groups were asked to write one more time about the negative event they described previously following the condition-specific instructions that were given to them. Participants in the self-compassion writing condition were asked to write using three prompts. The first prompt about common humanity asked participants to list ways other people experience similar stressful events. The second prompt asked participants to write a paragraph to themselves using self-kindness just as they would speak to a friend. The last prompt asked participants to “describe their feelings about the event in an objective and unemotional fashion” (Leary et al., 2007).

Participants in the self-esteem writing condition were asked first, to write down their positive characteristics; second to write about how the event was not completely their fault; and third, to write how the event doesn’t indicate anything about how they are as a person. Participants in the control condition did not do any further writing. The researchers found that asking participants to write with self-compassion just once led participants to accept their role in difficult situations and experience less negative affect compared to participants in the expressive writing and self-esteem writing conditions.

Some of the subsequent self-compassion writing research replicated the Leary et al. (2007) finding that self-compassion writing is more effective at reducing negative affect than expressive writing. Two groups of researchers, who modeled their self-compassion writing intervention directly after Leary’s intervention, found writing with self-compassion one time only reduced negative affect immediately following the

intervention. Odou and Brinker (2013) found self-compassion writing reduced Australian college students' negative affect significantly compared to expressive writing, and Johnson and O'Brien (2013) found self-compassion writing resulted in less negative affect and state shame for Canadian college students compared to an expressive writing condition. Johnson and O'Brien (2013) also found that two weeks after the intervention, only students in the self-compassion condition showed reductions in shame-proneness and depression.

Williamson (2014) however, studied the effects of an even longer self-compassion writing intervention, in which she asked college students to complete a writing task twice per week for four weeks that included all three components of self-compassion in a single, combined writing prompt, and found different results. Neither self-compassion writing nor expressive writing at this frequency had a significant effect on depression, anxiety, stress, or self-compassion. Taken together, these four studies suggest that self-compassion writing may be more effective at affecting psychological improvements than expressive writing in some populations and that breaking up the writing task into short separate sub-tasks may be more effective.

In a comparison of a self-compassion writing intervention with a positive writing intervention, Ziemer (2014) administered a single, combined writing prompt that touched on all three components of self-compassion, similar to Williamson (2014), as well as a writing prompt designed to increase self-efficacy (the belief in one's ability to succeed in face of obstacles) on a population of chronic pain patients. The researcher asked participants to write once per week for three consecutive weeks and found that self-compassion writing and self-efficacy writing both resulted in significantly less pain, less



depression, and greater self-compassion and positive affect, but only the self-compassion writing produced a significant decrease in intrusive pain (Ziemer, 2014).

Several researchers also further investigated the differential effects of a self-compassion writing intervention versus a control group modeled after the control group by Leary et al. (2007). First, Zabelina and Robinson (2010), followed the Leary et al. (2007) protocol using a different scale to measure participants' affect and compared the self-compassion treatment group against a control group that was only assigned to write a description of the negative event that had happened to them. Unlike Leary et al. (2007), Zabelina and Robinson (2010) found undergraduate students who wrote with all three components of self-compassion did not have any significant changes to mood post-intervention. The researchers also found, however, that students that were high in self-judgment became more creative following the self-compassion writing intervention (Zabelina & Robinson, 2010).

Second, Wong and Mak (2016) compared self-compassion writing with a true control group that wrote about how they spent their time and administered the treatment and control intervention on three consecutive days, similar to the original expressive writing paradigm (Pennebaker & Beall, 1986). The researchers studied the effects of a self-compassion writing intervention for Chinese college students that addressed all three components of self-compassion in three separate prompts and they were the first to examine the effects of self-compassion writing on physical functioning. Wong and Mak (2016) found self-compassion writing decreased the treatment group's physical symptoms compared to controls who wrote about how they spend their time, but self-compassion writing did not significantly affect participants' mood. The lack of

improvement in affect may have occurred because participants were reluctant to report affective complaints (which is common in the Asian culture) (Wong & Mak, 2016) and the improvement in physical symptoms may be related to the tendency for individuals of Asian descent to experience mental health problems as physical distress rather than psychological distress (Kramer, Kwong, Lee, & Chung, 2002).

Third, Helm (2016) studied individuals diagnosed with generalized anxiety disorder (GAD) using a control group that participated in relaxation training and a treatment group that used the self-compassion intervention designed by Leary et al. (2007). Helm (2016) found writing with self-compassion produced significantly greater increases in positive expressivity than relaxation training, and both self-compassion writing and relaxation training reduced emotion dysregulation and negative expressivity. To this writer's knowledge, Helm (2016), is the only researcher to date that has studied the effects of self-compassion writing on individuals with a diagnosis of mental illness.

Shapira and Mongrain (2010) were the first to test an intervention that focused solely on writing words of self-kindness to oneself. Unlike the Leary et al. (2007) protocol, they asked participants to write every day for one week. The researchers recruited Canadians on Facebook and randomized participants into a self-kindness condition and an optimism condition. Shapira and Mongrain (2010) found that writing words of self-kindness and writing designed to increase optimism both produced significant increases in happiness and decreases in depression, and that those participants who scored highest in social connectedness benefited the most from the self-kindness intervention. In addition, they found that the reduction in depressive symptoms persisted

for both groups at the three-month follow-up, and the increase in happiness persisted for both groups at the three-month and six-month follow-ups (Shapira & Mongrain, 2010).

Several researchers also further explored how simply writing with self-kindness writing compares with expressive writing and other types of positive writing interventions. Imrie and Troop (2012) found that an intervention for day hospice patients in the U.K. that asked the control group to write expressively and the treatment group to write with self-kindness twice over the course of two weeks, resulted in increases in happiness for both groups and that individuals in the self-compassion writing group also reported increased levels of stress following the intervention. However, their study used a very small sample size ( $n=13$ ). In a similar study, Breines and Chen (2012) studied individuals from the general population across the U.S. and found simply writing with self-kindness significantly increased individuals' self-compassion and motivation to improve themselves compared to writing designed to improve one's self-esteem. Collectively, these three studies suggest that even writing focused on only on the self-kindness aspect of self-compassion is at least as effective as expressive writing and positive writing at improving some aspects of mental health and well-being.

The last study known to this writer in which the effects of writing with self-compassion were analyzed, used a considerably different protocol than the rest of the studies. Baker and McNulty (2011) randomized undergraduates who were in a romantic relationship to a treatment group in which participants were asked to list the thoughts that would lead them to agree with one positively-scored item from each of the three subscales of the self-compassion scale (SCS); or a control group in which participants were asked to list the thoughts that would lead them to agree with one negatively-scored

item from each of the three subscales of the SCS. The researchers found men assigned to the treatment group who were high in conscientiousness were more likely to be motivated to correct their interpersonal mistakes and engage in accommodation behaviors, while women who were high in conscientiousness were motivated to resolve relationship issues and accommodate others regardless of their level of self-compassion.

To the best of this writer's knowledge, there have not been any online studies examining the effects of a self-compassion writing intervention for individuals with mental illness, or any writing intervention trials with individuals who have psychosis or psychotic symptoms, however several case studies (Schneider, Austin & Arney, 2008 and Cooper, 2014) suggest writing can be helpful for individuals with schizophrenia.

### **Online Testing with Amazon MTurk**

Amazon's Mechanical Turk (MTurk) platform is a website that allows the public to sign up for research studies and earn a small financial reward for their participation. MTurk has been a popular crowdsourcing site for clinical researchers for more than seven years (Chandler & Shapiro, 2016). While traditional campus-based and community-based samples engage in similar rates of problematic respondent behaviors (such as new participants talking with others who have already completed the experiment beforehand) as MTurk workers, it is more feasible to conduct research with large sample sizes on MTurk than it is using traditional designs (Necka, Cacioppo, Norman, & Cacioppo, 2016). Moreover, it has been found that MTurk recruitment and testing produces indistinguishable results from in-person testing when face-to-face interaction between researcher and participant is not required (Buhrmester, Kwang, & Gosling, 2011; Casler, Bickel, & Hackett, 2013).

Research has shown that the MTurk population is older than traditional college populations, but younger than the overall U.S. population (Difallah, Filatova, & Ipeirotis, 2018). In addition, the percentage of U.S. females on MTurk is slightly greater than the percentage of females in the overall U.S. population and the average MTurk worker income is lower than the average U.S. income (Difallah et al., 2018). Interestingly, MTurk workers have an equal (Shapiro, Chandler, & Mueller, 2013) or greater (Arditte, Cek, Shaw, & Timpano, 2016) proportion of depression, a greater proportion of anxiety (Arditte et al., 2016; Shapiro et al., 2013), and a higher prevalence of OCD and hoarding symptoms (Arditte et al., 2016) than the general population. However, to this writer's knowledge, the prevalence of other types of mental illness, such as bipolar disorder and schizophrenia, in the MTurk population is largely unknown.

### **Linguistic Analysis of Self-Compassion**

Analyzing and comparing the presence of known linguistic markers of self-compassion in the treatment and control groups' writing can serve as a manipulation check for self-compassion writing studies by testing whether participants instructed to write with self-compassion implemented the task as directed (Ziemer, 2014). Neff et al. (2007) identified linguistic characteristics of writing high in self-compassion by creating a mock interview in which they asked participants, "Please describe your greatest weakness." The researchers found self-compassion is negatively correlated with the use of first person singular pronouns such as "I"; positively correlated with the use of first person plural pronouns such as 'we', and social references (such as friends, family and other humans); and not correlated significantly with negative emotion words (Neff et al., 2007).

Self-compassion writing intervention studies by Helm (2016), Wong and Mak (2016) and Ziemer (2014) all found that individuals in their experiments who were instructed to write with self-compassion used significantly more positive emotion words or positive expressivity than controls. Wong and Mak (2016) and Imrie and Troop (2012) also found individuals who wrote with self-compassion used significantly more causation words (e.g., because, effect, hence) than the control group. In addition, Wong and Mak (2016) found those writing with self-compassion used significantly more negative emotion words (e.g., hurt, ugly, nasty) and insight words (e.g., think, know, consider) than the control group; and Ziemer (2014) found those writing with self-compassion used significantly more social process words (e.g., they, child, mate, talk) than the self-efficacy condition, but found no differences in cognitive process words, insight words, or negative emotion words.

A more recent linguistic analysis of self-compassion by Sawyer (2017) sheds some light on the contradictory findings noted above. Sawyer (2017) recorded individuals speaking in stream-of-consciousness fashion, analyzed the recordings and found that while self-compassion is correlated with more positive emotion words, fewer words associated with anger, sadness, certainty, negative emotion, and present-focus, the use of positive emotion words reflect the underlying construct of self-compassion and the other associations were cues that did not contribute to overall judge accuracy.

For the purposes of examining the linguistic characteristics of individuals with mental illness, it should be noted that research has found individuals with psychosis (Fineberg et al., 2016) and individuals with schizophrenia (Strous et al., 2009) use more first-person pronouns (such as “I”) than healthy controls. Moreover, Fineberg et al.

(2016) found individuals with psychosis also use more biological process words (such as “body” and “health”), and negative words than the general population, and that individuals with other types of mental and physical illness also seem to use more first-person pronouns, biological process words and negative words than the general population. How writing with self-compassion may influence these linguistic characteristics of individuals with mental illness is an open question.

### **Statement of the Problem**

Recently there has been a new, international push by the World Health Organization to find evidence-based, scalable mental health interventions, such as self-help material, to help people affected by adversity (World Health Organization, 2017). Writing interventions offer great potential as scalable treatments for mental illness for multiple reasons. First, they can be used by people who may be unwilling or unable to participate in psychotherapy because they are inexpensive and portable (Pascoe, 2016). Second, writing interventions may help reach Native Americans, Hispanic Americans and other ethnic groups who may be reluctant to engage in traditional Western talk therapy. Last, individuals with positive schizotypy or hypomania have been found to be more creative than average (Baas, Nijstad, Boot, & De Dreu, 2016), and it may be that individuals with these types of mental illness view writing interventions (which are inherently creative) in a more favorable light than psychotropic medications and traditional forms of therapy.

While a standalone online writing intervention may not be sufficient, especially for cases of serious mental illness, accessible writing interventions may reduce frequency or number of sessions of therapy needed to help clients or help prevent the onset or

exacerbation of mental illness in vulnerable populations. Making writing interventions available online helps to ensure that these interventions have a broad reach, are accessible and affordable and help overcome common barriers to treatment such as stigma (Clay, 2012).

As mentioned above, writing may affect different people in different ways and different types of writing may be best suited for different populations and situations (Pennebaker, 2004; Sloan & Marx, 2004). Considering what we know about how self-criticism is a significant risk factor for mental illness (Kannan & Levitt, 2013; Shahar & Henrich, 2013; Waite et al., 2015), and how self-compassion may buffer against self-criticism and promote positive mental health in individuals with mental illness (Arch et al., 2014; Leaviss & Uttley, 2015; Mayhew & Gilbert, 2008; Smeets et al., 2014), it seems self-compassion writing may be particularly helpful for individuals with a variety of different types of mental illness. In addition, just as self-compassion mediates the relationship between mindfulness-based cognitive therapy (MBCT) and the reduction of psychopathology (Kuyken et al., 2010; Shapiro et al., 2005), self-compassion may represent an alternative mechanism that helps explain the effectiveness of all forms of therapeutic writing that have been tested to date, including expressive writing and positive writing, for individuals with mental illness.

The current study was designed to fill gaps in knowledge about the effectiveness of self-compassion writing interventions for individuals with mental illness and about the prevalence of psychotic disorders on Amazon MTurk. We aimed to determine the feasibility of conducting a randomized controlled trial on Amazon MTurk for individuals with mental illness, including individuals with psychotic disorders, by measuring the



number of subjects recruited, the dropout rate and subjective feedback from participants, as well as the approximate prevalence of individuals with different types of mental illness on MTurk. Secondly, we aimed to determine whether self-compassion writing increases levels of self-compassion, and improves coping ability, general mental health and physical health in adults with mental illness. Thirdly, we aimed to determine if compassion writing increases levels of self-compassion, improves coping ability, general mental health and physical health in adults with psychotic symptoms. Individuals with mental illness were randomized into two groups: a treatment group that wrote with self-compassion, and a control group that wrote factually about how they spent their time. Participants were asked to complete three 20-minute writing sessions on three consecutive days (wave 1, wave 2, and wave 3). Psychological and physical outcomes were then assessed.

### **Hypotheses**

**Hypothesis 1a.** Based upon research that found large, e-health, online studies in general have high attrition rates, sometimes exceeding 80% (Christensen & Mackinnon, 2006), and previous online self-compassion writing intervention research that experienced high attrition rates from 34% (Ziemer, 2014) to approximately 50% (Johnson & O'Brien, 2013; Williamson, 2014), we predicted that the attrition rate for the current study would be between 50-80%.

**Hypothesis 1b.** As mentioned above, research shows that there are similar or greater proportions of individuals with mental illness such as depression and anxiety on Amazon MTurk than the general population (Arditte et al., 2016; Shapiro et al., 2013). In the general population, the prevalence of schizophrenia is less than 1% (National Institute

of Mental Health, 2018), and the prevalence of schizoaffective disorder is even smaller (American Psychiatric Association, 2013). While the rate of disorders such as bipolar disorder and schizophrenia on Amazon MTurk is largely unknown, based upon the estimate that there are more than 2,000 workers on Amazon MTurk at any given time and that the half-life of workers is 12-18 months (Difallah et al., 2018), we predicted that we would be able to recruit and retain at least 20 MTurk workers with psychotic disorders to test the self-compassion writing on this specific subpopulation.

**Hypothesis 2a.** Based on recent research suggesting that self-compassion interventions (Albertson et al., 2014; Arch et al., 2014; Neff & Germer, 2013; Smeets et al., 2014), and self-compassion writing interventions in particular (Breines & Chen, 2012; Ziemer, 2014) increase levels of self-compassion, we hypothesized that subjects who completed the self-compassion writing intervention in the current study would show a greater increase in self-compassion at the Wave 3 post-test than participants in the control group. Because the writing intervention was brief and repeated only over the course of three days, we predicted that there would be a significant improvement on outcome measures at the post-test, but not at the 1-month follow-up. We conjectured that long-term change in this population would require a longer intervention.

**Hypothesis 2b.** Based on research by Neff et al. (2005) that found self-compassion is positively correlated with adaptive coping abilities and research that found self-compassion may help individuals make progress with their goals by controlling negative affect (Hope et al., 2014), we hypothesized that subjects who completed the self-compassion writing intervention in the current study would show a greater increase in proactive coping at the Wave 3 post-test than participants in the control group.

**Hypothesis 2c.** Based on research that demonstrated that self-compassion is negatively correlated with mental illness (MacBeth & Gumley, 2012) and that self-compassion interventions can protect against mental illness (Trompetter et al., 2017; Waite et al., 2015), and reduce mental health symptoms like depression and anxiety (Arch et al., 2014; Neff & Germer, 2013), we hypothesized that participants who completed the self-compassion writing intervention in the current study would show a greater improvement in general mental health at the post-test than participants in the control group.

**Hypothesis 2d.** Based on the original expressive writing study by Pennebaker and Beall (1986), subsequent expressive writing studies (Koschwanetz et al., 2013; Petrie et al., 2004; Sloan & Marx, 2004), and Wong and Mak (2016)'s self-compassion writing study that showed that writing interventions are effective at improving physical symptoms, we hypothesized that participants in the treatment group would show a greater decrease in physical symptoms at the post-test than the control group.

**Hypothesis 3.** Based on previous self-compassion writing research that showed positive affect significantly improved for participants who wrote with self-compassion (Helm, 2016; Imrie & Troop, 2012; Ziemer, 2014) and positive writing research that resulted in immediate increases in positive affect after each wave's intervention (Burton & King, 2004; King, 2001), we hypothesized that individuals in the treatment group in the current study would show a greater increase in positive affect than the control group after each wave's writing intervention. Unlike the other outcome measures, we measured positive and negative affect immediately before and after each wave's intervention to be consistent with previous writing research.

**Hypothesis 4.** Based upon multiple previous analyses that have shown that individuals writing with self-compassion use significantly more social references (Neff et al., 2007; Ziemer, 2014) and positive emotion words (Helm, 2016; Neff et al., 2007; Sawyer, 2017; Wong & Mak, 2016; Ziemer, 2014), we predicted that in the current study, participants in the treatment group would use significantly more social references and positive emotion words than participants in the control group. Although several studies raised the possibility that other linguistic markers of self-compassion may exist (Imrie & Troop, 2012; Wong & Mak, 2016; Ziemer, 2014), the evidence for these markers was mixed. Only positive emotion words and social references were fully supported by multiple studies.

**Hypothesis 5.** To this writer's knowledge, only two of the previous self-compassion writing studies asked participants to subjectively evaluate their writing experience (Imrie & Troop, 2012; Ziemer, 2014). Imrie and Troop (2012) found both the treatment and expressive writing control groups rated their writing as personal, meaningful, and valuable, and Ziemer (2014) found both the self-efficacy writing condition and the self-compassion writing condition gave similar subjective ratings about their writing. Because the current study had the control group write about a neutral topic, we predicted that the treatment group would rate their writing as significantly more personal and emotional than the control group and that participants in the treatment group would rate their writing as being more beneficial than participants in the control group. We also predicted that the treatment group would report that they wrote more about experiences that they haven't shared with others and that the treatment group would be significantly more likely to "do this type of writing" on their own.

## **Method**

### **Subjects**

The current study used an experimental field study design. The study was posted on the Amazon MTurk platform between July 5, 2017 and August 11, 2017. Participants were randomized by the Qualtrics platform to an experimental group (self-compassion writing condition) or a control group (neutral writing condition). We aimed to have a total of 400 adults with mental illness complete the entire study; 1,009 MTurk workers signed up for the study and 203 workers completed the entire study.

The inclusion criteria for the study were: English-speaking adults 18 years or older with a diagnosis of major depressive disorder, bipolar disorder, schizophrenia and/or schizoaffective disorder who lived in one of the following 18 English-speaking countries: Antigua and Barbuda, Australia, The Bahamas, Barbados, Belize, Canada, Dominica, Grenada, Guyana, Ireland, Jamaica, New Zealand, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Trinidad and Tobago, United Kingdom, United States. The MTurk platform made the survey available only to workers who lived in the countries listed above, who were at least 18 years old and who were English-speaking. Prospective participants were notified of the mental illness inclusion criteria in the title of the study, in the description of the study and on the consent form [Appendix A].

Consistent with our review of MTurk compensation for similar research projects, we decided to pay participants \$4 for completing the entire study. Initially, the researcher had planned to divide up the compensation over the course of the experiment, however due to technical difficulties, this was not possible. Both the study posting and the consent form notified participants that they would be paid \$4 after they completed the 1-month

follow-up survey. Subjects provided electronic informed consent through the Qualtrics platform. After consenting, participants completed a screening question with Yes/No options asking them if they have major depression, bipolar disorder, schizophrenia or schizoaffective disorder. Participants that answered “Yes” were taken to the first day’s study and participants that answered “No” were automatically disqualified from the study. As an extra precaution, the survey design automatically excluded individuals who indicated they were less than 18 years old. This study was approved by the Arizona State University Institutional Review Board.

### **Measures**

Participants completed a demographic questionnaire, which included questions about ethnicity, gender, education, employment status, last year’s annual income and country of residence [Appendix B]. Participants were also asked to complete health status measures, adapted from Holschuh (2007), which included questions about mental health diagnoses, psychotic symptoms, use of psychotropic medication, use of mental health care services, use of emergency room/hospital/crisis centers and overall physical health [Appendix C]. Four scales measuring self-compassion, coping ability, general mental health, and overall physical health were administered at the baseline, post-test and 1-month follow-up time points. A scale measuring positive and negative affect was administered immediately before and after each wave’s writing intervention. Last, the Subjective Evaluation of Writing Task measure was administered immediately after the Wave 3 intervention.

**The Self-Compassion Scale, Short-Form (SCS-SF) (Raes, Pommier, Neff, & Van Gucht, 2011).** The SCS-SF is a 12-item self-assessment that measures self-

compassion on a 5-point Likert scale (from 1= “Almost never” to 5= “Almost always”) [Appendix C]. Items are averaged to create a total score. Low scores (from approximately 1.0-2.5) indicate low levels of self-compassion and high scores (from approximately 3.5-5.0) indicate high levels of self-compassion. Items include, “I try to be understanding and patient towards those aspects of my personality I don't like,” and “When I fail at something that's important to me, I tend to feel alone in my failure”. The SCS-SF has a near perfect correlation with the Self-Compassion Scale, long form (a 26-item scale) ( $r \geq 0.97$ ) and the SCS–SF has demonstrated good internal consistency ( $\alpha \geq 0.86$  in all samples). Both the SCS and the SCS-SF were normed on college sample populations (Neff, 2003; Raes et al., 2011), however Neff, Whittaker, and Karl (2017) found an overall self-compassion score explained at least 90% of variance of many different populations (including students, community members and clinical populations). In the current study, the Cronbach’s alpha for the SCS-SF was .85 for the pretest, .89 for the posttest and .89 for the 1-month follow-up.

**The Proactive Coping Scale (Greenglass, Schwarzer, Jakubiec, Fiksenbaum, & Taubert, 1999).** The Proactive Coping Scale (‘PCS’) is a 14-item self-assessment that measures autonomous goal setting and self-regulatory goal attainment cognitions and behavior, along a 4-point Likert scale (from 1= “Not at all true” to 5= “Completely true”). Items are summed to create a total score, which may range from 14-56. Low scores indicate poor coping skills and high scores indicate strong coping skills [Appendix D]. Items include, “I often see myself failing so I don't get my hopes up too high,” “I turn obstacles into positive experiences,” and “I visualize my dreams and try to achieve them”. The scale has high internal consistency ( $\alpha = .85$  and  $.80$ ) and satisfactory factorial

validity and homogeneity. In the current study, the Cronbach's alpha for the PCS was .88 for the pretest, .90 for the posttest and .90 for the 1-month follow-up.

**The Remission from Depression Questionnaire (RDQ) (modified)**  
**(Zimmerman et al., 2013).** The RDQ is a 41-item, self-assessment that measures a broad spectrum of experiences reported by patients as being indicative of remission, along a 3-point Likert scale. Items are summed to create a total score. Participants are asked to assess their experiences over the past week. The questionnaire includes questions about depression, anxiety, irritability, positive mental health, coping ability, functioning, life satisfaction, and well-being. The RDQ has excellent internal consistency, with a Cronbach's alpha of .97 for the total scale. The test-retest reliability of the total scale was .85. In addition, the RDQ is significantly correlated with patients' self-reported remission status. For the current study, the positive mental health, depression and anxiety subscales were selected, combined and administered in order to measure general mental health. Items included, "I saw myself as a person of value," "I had a positive outlook on life," and "My energy level was low". The Likert scale was changed to a 4-point scale, (from 1= "Not at all or rarely true" to 4= "Almost always true"), to avoid ceiling effects [Appendix E]. Scores range from 29-116. Low scores indicate low depression/good general mental health and high scores indicate high depression/poor general mental health. The Cronbach's alpha for this RDQ (modified) scale was .93 for the pretest, .94 for the posttest and .95 for the 1-month follow-up.

**The Cohen-Hoberman Inventory of Physical Symptoms (CHIPS) (Cohen & Hoberman, 1983).** CHIPS is a 33-item self-assessment that measures a variety of common physical symptoms such as back pain and diarrhea along a 5-point Likert scale



(from 1= “Not bothered by the problem” to 5= “Extremely bothered by the problem”)  
[Appendix F]. Items are summed to create a total score, which may range from 33-165. Low scores indicate good physical health (few physical symptoms) and high scores indicate poor physical health (many physical symptoms). The scale asks participants how much each symptom has bothered or distressed them during the last two weeks. The scale has good reliability ( $\alpha = .88$ ). In the current study, the Cronbach’s alpha for the CHIPS scale was .82 for the pretest, .87 for the posttest and .85 for the 1-month follow-up.

**The Positive and Negative Affect Schedule (PANAS) Short Form (Kercher, 1992).** The PANAS Short Form is a 10-item self-assessment that measures how intensely participants currently feel five positive emotions (alert, inspired, excited, enthusiastic, and determined) and five negative emotions (afraid, upset, nervous distressed, and scared), along a 5-point Likert scale (from 1= “Very slightly to not at all” to 5= “Extremely”) (Kercher, 1992) [Appendix G]. The short-form was developed from the original 20-item PANAS measure (Watson, Clark, & Tellegen, 1988). The five positive emotion items are summed to create the positive affect (PA) subscale and the five negative emotions items are summed to create the negative affect (NA) subscale. Total scores range from 5-25. A low score on the positive affect subscale indicates low positive affect and a high score on the positive affect subscale indicates high positive affect. Similarly, a low score on the negative affect subscale indicates low negative affect and a high score on the negative affect subscale indicates high negative affect. The PANAS short-form has good internal consistency (Cronbach’s alphas range from .75 to .78 for the positive affect scale and .81 to .87 for the negative affect scale (Kercher, 1992;

Mackinnon et al., 1999). In the current study, the Cronbach's alphas for the PANAS short form PA ranged from .79-.84 for the three pre-writing scores and .84-.87 for the three post-writing scores; the Cronbach's alphas for NA ranged from .88-.89 for the three pre-writing scores and .88-.91 for the three post-writing scores.

**The Subjective Evaluation of Writing Task.** The Subjective Evaluation of Writing Task is a 6-item self-assessment that measures participants' perceptions of their writing experience along a 7-point Likert scale (from 1= "Not at all" to 5= "A great deal"). The measure used in the current study was adapted from the original expressive writing study (Pennebaker & Beall, 1986) and more recent self-compassion writing research (Ziemer, 2014). Participants were asked to rate how personal and emotional they thought their writing was, the degree to which they disclosed information they never shared with anyone before, how beneficial the writing was for them and how likely they are to do this type of writing again on their own [Appendix H]. Because each item measures different aspects of the participants' writing experience, each item is analyzed separately, consistent with previous writing intervention research (Ziemer, 2014).

**Linguistic Inquiry and Word Count 2015 (LIWC2015) (Pennebaker, Boyd, Jordan, & Blackburn, 2015).** LIWC2015 is a computer software program that analyzes text by tracking usage of various word categories (Pennebaker et al., 2015). The word categories were originally developed by independent judges and validated psychometrically. Hundreds of studies have confirmed the validity of LIWC's categories (Pennebaker et al., 2015). The LIWC is commonly used in expressive writing and self-compassion writing studies (Helm, 2016; Wong & Mak, 2016; Ziemer, 2014) to analyze participants' writing. In the current study, the LIWC2015 was used to analyze the

content of participants' writing from the wave 1, wave 2 and wave 3 writing interventions in order to detect linguistic differences between the experimental and control groups, to ensure the intervention had the intended effect. Usage of a certain word category is expressed as a percentage of the total words in the sample (Pennebaker et al., 2015).

## **Procedures**

After the demographic questions, health status questions and initial baseline outcome measures were administered at wave 1, the experimental and control groups each received four consecutive writing exercises and were asked to write for five minutes on each writing prompt, for a total of 20 minutes. After participants completed the wave 1 intervention, they were invited to enter their email address so that the wave 2 survey link could be emailed to them in 24 hours. They were informed that their email address would be kept in a separate database that was not associated with their data and they would have 24 hours from the receipt of the email to complete the next wave's survey. Participants were invited to complete the wave 3 and the 1-month follow-up survey in a similar manner. Twenty-eight days after participants completed wave 3 and entered their email address, a link to the 1-month survey was emailed to them. The total length and duration of the intervention is consistent with Frattaroli's (2006) meta-analytic findings regarding effective writing intervention conditions.

Due to technical difficulties with the Qualtrics platform's built-in timer, the researcher was not able to time participants as they wrote. In lieu of this, participants were asked to time themselves using a timer and were provided with a link to the Internet timer on Google that they could use. Just before the start of each day's writing intervention and directly after the intervention, subjects were asked to complete a brief

scale measuring their positive and negative affect. As an additional manipulation check, an item that asked, “If you are reading this question, mark ‘Almost Always True’,” was included in the middle of the baseline, post-test and 1-month follow-up surveys.

Participants wrote on their computers, directly into the survey itself. The health status questions and four measures were administered again directly after the wave 3 writing exercises and at the 1-month follow-up survey. In addition, immediately after the wave 3 writing exercise, participants were asked to complete the Subjective Evaluation of Task questionnaire. At the end of the 1-month follow-up survey, subjects were given the opportunity to write briefly about how the writing experience was for them [Appendix I]. Figure 1 below illustrates the experimental design of the study.

### Wave 1

Demographic questionnaire

Health Status questionnaire

Self-Compassion Scale (SCS-SF);

Proactive Coping Scale (PCS);

Remission from Depression Questionnaire revised (RDQ- modified);

Cohen-Hoberman Inventory of Physical Symptoms (CHIPS);

Pre-writing affect measure- Positive and Negative Affect Schedule (PANAS)

Writing intervention (4 prompts, 5 minutes each)

Post-writing affect measure - Positive and Negative Affect Schedule (PANAS)

Invitation to enter email address for link to Wave 2 study

### Wave 2

Pre-writing affect measure- Positive and Negative Affect Schedule (PANAS)

Writing intervention (4 prompts, 5 minutes each)

Post-writing affect measure - Positive and Negative Affect Schedule (PANAS)

Invitation to enter email address for link to Wave 3 study

### Wave 3

Pre-writing affect measure- Positive and Negative Affect Schedule (PANAS)

Writing intervention (4 prompts, 5 minutes each)

Post-writing affect measure - Positive and Negative Affect Schedule (PANAS)

Subjective Evaluation of Writing Task measure

Health Status questionnaire

Self-Compassion Scale (SCS-SF);

Proactive Coping Scale (PCS);

Remission from Depression Questionnaire revised (RDQ- modified);

Cohen-Hoberman Inventory of Physical Symptoms (CHIPS);

Invitation to enter email address for link to 1-month follow-up survey

### 1-month follow-up

Health Status questionnaire

Self-Compassion Scale (SCS-SF);

Proactive Coping Scale (PCS);

Remission from Depression Questionnaire revised (RDQ- modified);

Cohen-Hoberman Inventory of Physical Symptoms (CHIPS);

Open-ended feedback question

*Figure 1.* Illustration of measurements over time.

**Intervention.** The same general writing recommendations [Appendix D] were given to both groups each day, before their respective writing prompts were displayed. To try and minimize in-home distractions, participants were asked to find a quiet space, free of distractions, in which to write. The self-compassion writing intervention [Appendix E] integrated writing prompts from previous studies of self-compassion writing (Imrie & Troop, 2012; Leary et al., 2007; Shapira & Mongrain, 2010; Wong & Mak, 2016; Ziemer, 2014), Neff's (2017) self-compassion journal-writing prompts and copyrighted material provided by the Compassion Institute (2017) for non-commercial purposes. To ensure each writing prompt was brief and understandable, the researcher used four separate writing prompts, one for each of the three components of self-compassion, as well as a fourth writing prompt which asked participants to consider the core need behind their distress and how their distress makes sense, similar to the studies by Shapira and Mongrain (2010) and Ziemer (2014).

The first writing prompt asked the experimental group to think of a recent difficult or stressful experience or a source of suffering and bring awareness to the difficult thoughts, emotions and body sensations related to this experience and describe them exactly as they are, in a non-judgmental way.

They were given the following as an example:

I felt angry and impatient because she was being so slow... I started tapping my foot and felt my face get hot and my chest expand... I yelled at her to hurry up and I felt foolish afterwards...

The second experimental writing prompt asked participants to acknowledge what they were hoping for and needing, and to write about the core need underneath their stress or suffering, such as a need for health, safety, love, appreciation, connection, or achievement. The third experimental writing prompt asked participants to write an anonymous letter to them self in which they offer a message of common humanity. They were given the following as an example: “Dear Self: All humans make mistakes, fail sometimes, get angry and experience disappointment...”

The fourth writing prompt asked participants to write to themselves using self-kindness. To ensure the self-kindness writing prompt was accessible to everyone, instead of asking participants to imagine what kind words a good friend might say to them, the researcher modeled this task after material from the CCT training (Compassion Institute, 2017). Participants were asked to:

Imagine a wise, compassionate person you trust or a compassionate figure from nature (such as a mountain, ocean, animal or tree) surrounding you with compassion. What would this compassionate figure say to you right now to help ease your suffering? Write down these compassionate words to yourself.

Consistent with previous expressive writing and compassion writing research (Baikie, Geerligs, & Wilhelm, 2012; Matthiesen et al., 2012), the neutral writing intervention instructed participants to describe in detail how they spend their time [Appendix F]. In order to match the structure of the experimental writing intervention as much as possible, the control writing intervention was broken up into four separate parts.

The first writing prompt asked participants to write about how they spent their time this morning or yesterday morning, leaving out emotions and providing just the facts. They were given the following example:

After I heard my alarm go off, I rested in bed for about 10 minutes before I got up and turned off the alarm. Then I walked into the bathroom, looked at myself in the mirror, turned on the water in the sink to wet my toothbrush, squeezed Crest toothpaste on my toothbrush and brushed my teeth for about 2 minutes.

The second writing prompt instructed control participants to write about how they spent their time this afternoon or yesterday afternoon; the third writing prompt asked control participants to write about how they spent their time this evening or yesterday evening; and the final writing prompt asked control participants to write about how they plan to spend their time tomorrow.

Both groups were told not to worry about spelling or grammar. Directly below the experimental writing prompts, participants were given these instructions:

If you feel bored or uncomfortable and don't know what to write, describe how you are feeling right now and what is preventing you from writing. Or write whatever comes into your head such as, "I don't know what to write... I don't know what to write..." just to keep your fingers moving and thoughts flowing. Please write until the time is up.



Directly below the control group writing prompts, participants were given the following instructions:

If at any time you run out of things to write, describe something you already wrote about in more detail. Or write: "I don't know what to write... I don't know what to write..."

The specific suggestions excerpted above were included to try to model the current protocol after Pennebaker and Beall's (1986) original expressive writing study. However, whereas researchers using the standard expressive writing protocol tell all participants that they can rewrite what they just wrote if they feel stuck (Pennebaker, 2010), this researcher provided more than one way to overcome writer's block to each group and provided slightly different recommendations to each group in order to help the treatment group remain mindful of their feelings and the control group focused on the facts.

Prior to the launch of the experiment, the writing exercises and instructions were piloted with five acquaintances of the researcher. The pilot subjects read the instructions, practiced writing and provided critical feedback about the experience. The instructions and exercises were then modified for clarity.

**Safety Considerations.** Participants were informed of the possible risk of breach by a third party when using the Internet, prior to the commencement of the study. As described above, participants' email addresses were stored separately from participants' data. In addition, participants were notified that the work they perform on MTurk can be

linked to their public Amazon.com profile page and they were informed that they may wish to restrict what information they choose to share in their public Amazon.com profile to keep their work private.

Lastly, the Substance Abuse and Mental Health Services Administration (SAMHSA)'s National Hotline and the Suicide Prevention Lifeline's telephone numbers were provided so that participants could receive referrals for mental health services or free, confidential counseling, should the study trigger emotional distress. Participants were notified to call 911 in case of emergency.

**Data Analysis.** Sample baseline clinical and demographic characteristics were reported using means and standard deviations for continuous variables and frequencies and percentages for categorical variables. Likewise, study feasibility, including treatment retention and general treatment satisfaction, were assessed using similar descriptive statistics. Pre-treatment outcome measures and demographic characteristics were examined using independent t-tests (for continuous variables) or chi-square tests (for nominal variables) to identify control variables needed for use in later analyses. Lastly, analyses of variance (ANOVAs) and analyses of covariance (ANCOVAs) were utilized to explore the effect of treatment on primary and secondary clinical outcomes and effect sizes were reported.

## **Results**

### **Recruitment, Retention, and Session Attendance**

One-thousand nine individuals enrolled in the study; seven declined to sign the consent form and 39 were found to be ineligible. The total attrition rate from Wave 1 through the 1-month-follow-up survey was 74.5%. One-hundred thirty-one participants

dropped out during Wave 1 ( $n=131$ , 13.6%). Eight-hundred thirty-two participants completed Wave 1 ( $n=832$ , 86.4%). Six-hundred fifty-five participants signed up for Wave 2 ( $n=655$ , 78.7%). Four-hundred ten participants who signed up for a Wave 2 link started Wave 2 ( $n=410$ , 62.6%). Twenty-eight participants dropped out during Wave 2 ( $n=28$ , 6.8%). Three-hundred eighty-two participants completed the Wave 2 intervention ( $n=382$ , 93.2%). Three-hundred fifty Wave 2 completers signed up for Wave 3 ( $n=350$ , 91.6%). Two-hundred seventy-seven participants who signed up for Wave 3 started Wave 3 ( $n=277$ , 79.1%). Thirteen participants dropped out during the Wave 3 intervention ( $n=13$ , 4.7%). Two-hundred sixty-four participants completed the Wave 3 intervention ( $n=264$ , 95.3%). Two-hundred fifty-seven Wave 3 completers signed up for the 1-month follow-up survey ( $n=257$ , 97.3%). Two-hundred sixteen participants who signed up for the 1-month follow-up survey started the 1-month follow-up survey ( $n=216$ , 84.0%). Five participants dropped out during the 1-month follow-up ( $n=5$ , 2.3%). Two-hundred eleven participants who signed up for the 1-month follow-up survey completed the 1-month follow-up survey ( $n=211$ , 97.7%). Eight participants who completed the entire study were excluded because, due to technical errors, they either completed both the experimental and control interventions or were reassigned to a different group in the middle of the experiment. See Figure 2 below for a consort diagram.

Reasons for dropout may have included technical problems that were encountered with some of the links to the Wave 2 and Wave 3 studies that were sent to participants. Although this researcher was able to produce corrected, working links to all participants

who emailed for help, some participants may have encountered a problem but did not request help.

In addition, partway into the experiment, it was discovered that the study design did not meet MTurk requirements and because the study design was unlike the typical MTurk studies workers are used to, some participants were not aware they were required to complete four separate parts of the study in order to get paid. Many of the participants who started the study requested payment after the first wave. Because rejecting their request would have impacted the workers' credentials, the researcher compensated all of the workers who requested payment after Wave 1 the full \$4. As a result, some of the participants may have not continued on with the study because they saw they were paid and believed they already completed the study. At the end of the 1-month follow-up, only those participants who had not been already paid were compensated and no one was paid twice.

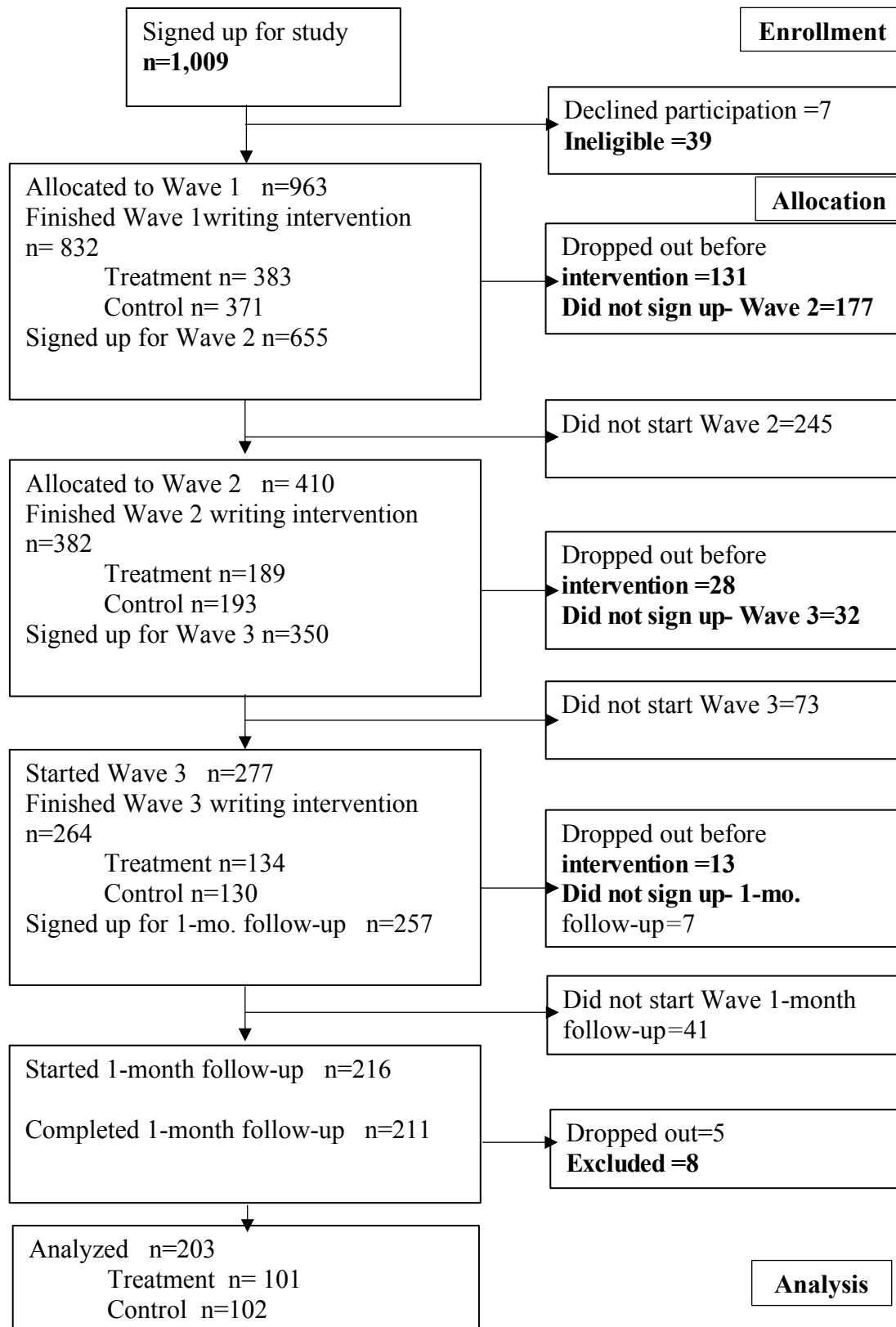


Figure 2. Consort diagram.

## **Sample Characteristics**

The majority of study participants were females ( $n = 539$ , 64.8%), white ( $n = 604$ , 72.6%), with at least some college or training ( $n=728$ , 87.5%). About half of the sample was employed either full-time or part-time ( $n=520$ , 62.5%). Ninety-seven percent of study participants resided in the United States ( $n=808$ ; including Puerto Rico), and the remaining individuals lived in Canada  $n=11$ , 1.3%, the United Kingdom ( $n=8$ , 1.0%), Jamaica ( $n=2$ , 0.2%) and Trinidad and Tobago ( $n=1$ , 0.1%). Additional demographic and characteristics of the sample are included in Table 1 below.

The majority of participants (69.0% of completers) reported they experienced at least one type of psychotic symptom and one-third of these participants (33.6%) indicated they experienced a psychotic symptom within the last week. Most participants also reported that they saw a mental health professional within the last year (74.4% of completers). Over half of participants (56.7% of completers) reported they were currently taking psychotropic medication, and approximately half (46.7% of completers) reported they had at least one psychiatric emergency visit in the past and that their physical health was good or excellent, compared to others their age (48.3% of completers). Additional clinical characteristics of the sample are included in Table 2 and Table 3 below.

Table 1

*Baseline Demographic Characteristics of Completers and Dropouts*

|                   |  | <i>n</i> (%) or <i>M</i> ( <i>SD</i> ) |                                |                              |
|-------------------|--|--|--------------------------------|------------------------------|
| Characteristic    |  | All<br>( <i>n</i> =832)                | Completers<br>( <i>n</i> =203) | Dropouts<br>( <i>n</i> =629) |
| Age               |  | 32.00 (9.35)                           | 34.59 (9.91)                   | 31.16 (9.01)                 |
| Gender            |  |  |                                |                              |
|                   | Male                                       | 269 (32.3%)                            | 51 (25.1%)                     | 218 (34.7%)                  |
|                   | Female                                     | 539 (64.8%)                            | 148 (72.9%)                    | 391 (62.2%)                  |
|                   | Male Transgender                           | 6 (0.7%)                               | 2 (1.0%)                       | 4 (0.6%)                     |
|                   | Female Transgender                         | 5 (0.6%)                               | 0 (0.0%)                       | 5 (0.8%)                     |
|                   | Gender variant/non-conforming              | 12 (1.4%)                              | 2 (1.0%)                       | 10 (1.6%)                    |
|                   | Prefer not to answer                       | 1 (0.1%)                               | 0 (0.0%)                       | 1 (0.2%)                     |
| Employment status |  |  |                                |                              |
|                   | Full-time                                  | 394 (47.4%)                            | 81 (39.9%)                     | 313 (49.8%)                  |
|                   | Part-time                                  | 114 (13.7%)                            | 34 (16.7%)                     | 80 (12.7%)                   |
|                   | Student                                    | 105 (12.6%)                            | 24 (11.8%)                     | 81 (12.9%)                   |
|                   | Homemaker                                  | 58 (7%)                                | 16 (7.9%)                      | 42 (6.7%)                    |
|                   | Disabled                                   | 71 (8.5%)                              | 22 (10.8%)                     | 49 (7.8%)                    |
|                   | Unemployed                                 | 71 (8.5%)                              | 23 (11.3%)                     | 48 (7.6%)                    |
|                   | Retired                                    | 6 (0.7%)                               | 1 (0.5%)                       | 5 (0.8%)                     |
|                   | Unknown                                    | 1 (0.1%)                               | 0 (0.0%)                       | 1 (0.2%)                     |
|                   | Freelancer/Indep. Contractor/Self-employed | 12 (1.4%)                              | 2 (1.0%)                       | 10 (1.6%)                    |
| Education         |  |  |                                |                              |
|                   | Some high school                           | 11 (1.3%)                              | 3 (1.5%)                       | 8 (1.3%)                     |
|                   | High school/GED                            | 93 (11.2%)                             | 14 (6.9%)                      | 79 (12.6%)                   |
|                   | Some college                               | 378 (45.4%)                            | 79 (38.9%)                     | 299 (47.5%)                  |
|                   | College degree                             | 258 (31.0%)                            | 68 (33.5%)                     | 190 (30.2%)                  |
|                   | Advanced degree                            | 92 (11.1%)                             | 39 (19.2%)                     | 53 (8.4%)                    |

(continued)

(continued)

|                    |  | <i>n</i> (%) or <i>M</i> ( <i>SD</i> ) |                                |                              |
|--------------------|--|--|--------------------------------|------------------------------|
| Characteristic     |  | All<br>( <i>n</i> =832)                | Completers<br>( <i>n</i> =203) | Dropouts<br>( <i>n</i> =629) |
| Annual income      |  |  |                                |                              |
|                    | Under \$5,000                          | 153 (18.4%)                            | 46 (22.7%)                     | 105 (17.0%)                  |
|                    | \$5,000-\$24,999                       | 262 (31.5%)                            | 64 (31.5%)                     | 198 (31.5%)                  |
|                    | \$25,000-\$49,999                      | 241 (29.0%)                            | 54 (26.6%)                     | 187 (29.7%)                  |
|                    | \$50,000-\$99,999                      | 143 (17.2%)                            | 32 (15.8%)                     | 111 (17.6%)                  |
|                    | \$100,000 or more                      | 33 (4.0%)                              | 7 (3.4%)                       | 26 (4.1%)                    |
| Race/<br>ethnicity |  |  |                                |                              |
|                    | White                                  | 604 (72.6%)                            | 155 (76.4%)                    | 449 (71.4%)                  |
|                    | Black or African American              | 96 (11.5%)                             | 18 (8.9%)                      | 78 (12.4%)                   |
|                    | American Indian or Alaska<br>Native    | 6 (0.7%)                               | 3 (1.5%)                       | 3 (0.5%)                     |
|                    | Asian                                  | 34 (4.1%)                              | 8 (3.9%)                       | 26 (4.1%)                    |
|                    | Native Hawaiian or Pacific<br>Islander | 2 (0.2%)                               | 0 (0.0%)                       | 2 (0.3%)                     |
|                    | Hispanic                               | 54 (6.5%)                              | 9 (4.4%)                       | 45 (7.2%)                    |
|                    | Eastern European/Central<br>Asian      | 1 (0.1%)                               | 0 (0.0%)                       | 1 (0.1%)                     |
|                    | Mixed ethnicity                        | 34 (4.1%)                              | 10 (4.9%)                      | 24 (3.8%)                    |
|                    | Other                                  | 1 (0.1%)                               | 0 (0.0%)                       | 1 (0.1%)                     |
| Country            | Canada                                 | 11 (1.3%)                              | 2 (1.0%)                       | 9 (1.4%)                     |
|                    | Jamaica                                | 2 (0.2%)                               | 1 (0.5%)                       | 1 (0.2%)                     |
|                    | Puerto Rico                            | 2 (0.2%)                               | 1 (0.5%)                       | 1 (0.2%)                     |
|                    | Trinidad and Tobago                    | 1 (0.1%)                               | 0 (0.0%)                       | 1 (0.2%)                     |
|                    | United Kingdom                         | 8 (1.0%)                               | 2 (1.0%)                       | 6 (1.0%)                     |
|                    | United States                          | 808 (97.1%)                            | 197 (97.0%)                    | 611 (97.1%)                  |



Table 2

*Baseline Clinical Characteristics of Completers and Dropouts*

| Characteristic                                  | n(%) or <i>M(SD)</i> |                  |                  |
|---|----------------------|------------------|------------------|
|   | All                  | Completers       | Dropouts         |
| Diagnosis                                       | ( <i>n</i> =832)     | ( <i>n</i> =203) | ( <i>n</i> =629) |
| Agoraphobia                                     | 4 (0.5%)             | 2 (1.0%)         | 2 (0.3%)         |
| Anxiety   | 521 (62.6%)          | 125 (61.6%)      | 396 (63.0%)      |
| ADHD  | 9 (1.1%)             | 1 (0.5%)         | 8 (1.3%)         |
| Autism Spectrum Disorder                        | 7 (0.8%)             | 1 (0.5%)         | 6 (1.0%)         |
| Bipolar Disorder                                | 217 (26.1%)          | 36 (17.7%)       | 181 (28.8%)      |
| Depression (unspecified)                        | 2 (0.2%)             | 1 (0.5%)         | 1 (0.2%)         |
| Eating Disorder                                 | 78 (9.4%)            | 19 (9.4%)        | 59 (9.4%)        |
| Gender Dysphoria                                | 1 (0.1%)             | 1 (0.5%)         | 0 (0.0%)         |
| Major Depressive Disorder                       | 632 (76%)            | 174 (85.7%)      | 458 (72.8%)      |
| Obsessive Compulsive Disorder                   | 116 (13.9%)          | 28 (13.8%)       | 88 (14.0%)       |
| Panic Disorder                                  | 129 (15.5%)          | 32 (15.8%)       | 97 (15.4%)       |
| Persistent Depressive Disorder                  | 1 (0.1%)             | 0 (0.0%)         | 1 (0.2%)         |
| Personality Disorder                            | 54 (6.5%)            | 11 (5.4%)        | 43 (6.8%)        |
| Posttraumatic Stress Disorder                   | 150 (18.0%)          | 45 (22.2%)       | 105 (16.7%)      |
| Premenstrual Dysphoric Disorder                 | 1 (0.1%)             | 0 (0.0%)         | 1 (0.2%)         |
| Psychosis (unspecified)                         | 1 (0.1%)             | 1 (0.5%)         | 0 (0.0%)         |
| Schizoaffective Disorder                        | 19 (2.3%)            | 5 (2.5%)         | 14 (2.2%)        |
| Schizophrenia                                   | 27 (3.2%)            | 4 (2.0%)         | 23 (3.7%)        |
| Social Phobia                                   | 2 (0.2%)             | 1 (0.5%)         | 1 (0.2%)         |
| Substance Use                                   | 65 (7.8%)            | 12 (5.9%)        | 53 (8.4%)        |
| Unknown   | 2 (0.2%)             | 0 (0.0%)         | 2 (0.3%)         |
| Psychotic Symptoms                              | ( <i>n</i> =832)     | ( <i>n</i> =203) | ( <i>n</i> =629) |
| At least one symptom                            | 617 (74.2%)          | 140 (69.0%)      | 477 (75.8%)      |
| Auditory hallucinations                         | 157 (18.9%)          | 33 (16.3%)       | 124 (19.7%)      |
| Persecutory Delusions                           | 436 (52.4%)          | 103 (50.7%)      | 333 (52.9%)      |
| "Reading minds" or Thought Insertion/Withdrawal | 112 (13.5%)          | 21 (10.3%)       | 91 (14.5%)       |
| Delusions of Reference                          | 165 (19.8%)          | 39 (19.2%)       | 126 (20.0%)      |
| Grandiose Delusions                             | 103 (12.4%)          | 24 (11.8%)       | 79 (12.6%)       |
| Last psychotic episode                          | ( <i>n</i> =616)     | ( <i>n</i> =143) | ( <i>n</i> =477) |
| Within the last week                            | 219 (35.5%)          | 48 (33.6%)       | 171 (35.8%)      |
| Within the last month                           | 131 (21.3%)          | 26 (18.2%)       | 106 (22.2%)      |
| Within the last 3 months                        | 92 (14.9%)           | 23 (16.1%)       | 71 (14.9%)       |
| Within the last year                            | 73 (11.9%)           | 15 (10.5%)       | 59 (12.4%)       |
| More than one year ago                          | 87 (14.1%)           | 31 (21.7%)       | 56 (11.7%)       |
| Not sure  | 14 (2.3%)            | 0 (0.0%)         | 14 (2.9%)        |

(continued)

| (continued)                                 |                      |                  |                  |
|---|----------------------|------------------|------------------|
| Characteristic                              | n(%) or <i>M(SD)</i> |                  |                  |
|   | All                  | Completers       | Dropouts         |
| Last seen by mental health professional     | ( <i>n</i> =828)     | ( <i>n</i> =203) | ( <i>n</i> =629) |
| Within the last year                        | 618 (74.3%)          | 151 (74.4%)      | 467 (74.2%)      |
| More than a year ago                        | 171 (20.6%)          | 43 (21.2%)       | 128 (20.3%)      |
| Never                                       | 39 (4.7%)            | 9 (4.4%)         | 30 (4.8%)        |
| Missing                                     | 4 (0.5%)             | 0 (0.0%)         | 4 (0.6%)         |
| Currently seeing mental health professional | ( <i>n</i> =618)     | ( <i>n</i> =151) | ( <i>n</i> =467) |
| Yes   | 451 (73.0%)          | 106 (70.2%)      | 345 (73.9%)      |
| No  | 163 (26.4%)          | 42 (27.8%)       | 121 (25.9%)      |
| Not sure                                    | 4 (0.6%)             | 3 (2.0%)         | 1 (0.2%)         |
| Taking psychotropic medication              | ( <i>n</i> =828)     | ( <i>n</i> =203) | ( <i>n</i> =629) |
| Yes   | 480 (57.7%)          | 115 (56.7%)      | 365 (58.0%)      |
| No  | 340 (40.9%)          | 84 (41.4%)       | 256 (40.7%)      |
| Not sure                                    | 8 (1.0%)             | 4 (2.0%)         | 4 (0.6%)         |
| Missing                                     | 4 (0.5%)             | 0 (0.0%)         | 4 (0.6%)         |
| Number of psychiatric emergency visits      | ( <i>n</i> =821)     | ( <i>n</i> =203) | ( <i>n</i> =629) |
| 1 time                                      | 188 (22.6%)          | 48 (23.6%)       | 140 (22.3%)      |
| 2 times                                     | 107 (12.9%)          | 20 (9.9%)        | 87 (13.8%)       |
| 3 or more times                             | 98 (11.8%)           | 26 (12.8%)       | 72 (11.4%)       |
| Not sure                                    | 5 (0.6%)             | 1 (0.5%)         | 4 (0.6%)         |
| Never                                       | 423 (50.8%)          | 108 (53.2%)      | 315 (50.1%)      |
| Missing                                     | 11 (1.3%)            | 0 (0.0%)         | 11 (1.7%)        |
| Last psychiatric emergency                  | ( <i>n</i> =397)     | ( <i>n</i> =95)  | ( <i>n</i> =302) |
| Within the last 1 month                     | 17 (4.2%)            | 3 (3.1%)         | 14 (4.6%)        |
| Within the last 6 months                    | 59 (14.9%)           | 11 (11.3%)       | 48 (15.9%)       |
| Within the last year                        | 61 (15.4%)           | 10 (10.3%)       | 51 (16.9%)       |
| More than a year ago                        | 258 (65.0%)          | 70 (72.2%)       | 188 (62.3%)      |
| Not sure                                    | 2 (0.5%)             | 1 (1.0%)         | 1 (0.3%)         |
| Overall physical health                     | ( <i>n</i> =822)     | ( <i>n</i> =203) | ( <i>n</i> =629) |
| Poor  | 92 (11.1%)           | 32 (15.8%)       | 60 (9.5%)        |
| Fair  | 319 (38.3%)          | 73 (36.0%)       | 246 (39.1%)      |
| Good  | 338 (40.6%)          | 80 (39.4%)       | 258 (41.0%)      |
| Excellent                                   | 73 (8.8%)            | 18 (8.9%)        | 55 (8.7%)        |
| Missing                                     | 10 (1.2%)            | 0 (0.0%)         | 10 (1.6%)        |

Table 3

*Baseline Outcome Scores for Completers and Dropouts*

| Measure  | <i>n</i> (%) or <i>M</i> ( <i>SD</i> ) |                            |                            |
|----------|--|----------------------------|----------------------------|
|          | All                                    | Completers                 | Dropouts                   |
| SCS-SF   | 2.40 (0.66), <i>n</i> =786             | 2.29 (0.64), <i>n</i> =203 | 2.44 (0.66), <i>n</i> =583 |
| PCS      | 2.54 (0.55), <i>n</i> =767             | 2.50 (0.53), <i>n</i> =203 | 2.56 (0.56), <i>n</i> =564 |
| RDQ      | 2.72 (0.53), <i>n</i> =764             | 2.73 (0.51), <i>n</i> =203 | 2.71 (0.54), <i>n</i> =561 |
| CHIPS    | 2.36 (0.75), <i>n</i> =759             | 2.26 (0.71), <i>n</i> =203 | 2.40 (0.75), <i>n</i> =556 |
| PANAS-PA | 2.18 (0.83), <i>n</i> =754             | 2.08 (0.78), <i>n</i> =203 | 2.22 (0.85), <i>n</i> =551 |
| PANAS-NA | 2.24 (1.05), <i>n</i> =754             | 2.10 (0.98), <i>n</i> =203 | 2.29 (1.07), <i>n</i> =551 |

Independent t-tests were performed to compare the length of participants' writing and how long it took participants to complete the experiment. The average character count for the treatment group's writing samples ( $M=688.21$ ,  $SD=304.75$ ) did not differ significantly from the control group's writing samples ( $M=651.29$ ,  $SD=336.95$ );  $t(201)=-0.82$ ,  $p=0.41$  and participants in the treatment and control groups did not differ significantly in how long they took to complete the experiment [Appendix K]. All of the participants did not complete the interventions within 24 hours of receiving the invitation for the next wave. Participants took up to 17 days to complete the writing interventions which were intended to last a total of three consecutive days, and participants took between 30-45 days to complete the entire experiment [Appendix K].

**Preliminary Analyses**

All analyses were completed using the statistical software IBM SPSS Version 24. First, missing value analyses were computed. For completers, missing values ranged from 0%- 19.4% for wave 1, 1%-12% for wave 2, 1.5%-5.3% for wave 3, and 0%-2.4% for the combined data set. Results for the single item manipulation check that asked, "If

you are reading this question, mark ‘Almost Always True’” were also analyzed. For the baseline survey, only two participants (1.0% of the sample) did not mark ‘Almost Always True’, and for the post-test and 1-month follow-up surveys, only one participant (0.5%) of the sample did not mark ‘Almost Always True’”. Each variable was also checked for outliers by converting raw scores to standardized scores (z-scores) and looking for data points that deviated from the mean. All percentages were within range of expected limits (Field, 2013).

All of the scales yielded acceptable internal consistency. Cronbach’s alphas ranged from 0.79 to 0.95 (see the “Method” section for details). A correlation matrix of Pearson’s  $r$  correlation coefficients was created to analyze the relationships between demographic and clinical variables and outcome variables. None of the correlations were above 0.80, which indicates the variables did not have particularly strong correlations with each other (Field, 2013).

To check that demographics were comparable between the treatment and control groups and between completers and dropouts, the effect size and statistical significance of the group differences were assessed. An independent t-test was performed to detect possible baseline differences in the continuous variable, age, between treatment and control groups and between completers and non-completers. Chi-square tests were performed to determine whether there were baseline differences between the treatment and control groups and between completers and non-completers among the following categorical variables: gender, ethnicity, education, employment status, income and country.

There was one significant difference in the distribution of demographic factors between treatment and control groups. The relation between gender and group was significant,  $\chi^2(3) = 7.97, p = 0.047, V = 0.20$ . There were significantly more females in the control group and more males in the treatment group than expected.

There were three significant baseline demographic differences for completers and non-completers. First, the relation between age and completion status was significant;  $t(830) = -4.597, p < .01$ . The mean age for completers ( $M = 34.59, SD = 9.91$ ) was significantly greater than the mean age of non-completers ( $M = 31.16, SD = 9.01$ ). This finding had a small to medium Cohen's  $d$  effect size ( $d = 0.38$ ), which indicates the difference in age between completers and non-completers was substantial (Cohen, Cohen, West, & Aiken, 2003).

Second, the relation between gender and completion status was significant;  $\chi^2(5) = 11.25, p = 0.047, V = 0.11$ . Significantly more males and fewer females dropped out than expected. Third, the relation between education level and completion status was significant;  $\chi^2(4) = 23.64, p < 0.01, V = 0.17$ . More high school/GED graduates and participants with some college/university experience, and fewer participants with college degrees and advance degrees dropped out than expected.

Differences in clinical characteristics at baseline were also tested. Chi-square tests were conducted for each health status measure and each diagnosis and univariate analyses were performed for each outcome measure. First, for those participants who completed the entire study, the relation between substance use and group was significant;  $\chi^2(1) = 5.59, p = 0.02, \phi = 0.17$ . Significantly more participants in the control group indicated they had a substance use disorder than participants in the treatment group.

Second, the relation between ‘currently seeing a mental health professional’ and group was significant;  $\chi^2(1) = 8.21, p = 0.004, \phi = 0.00$ . Individuals in the treatment group were less likely to be currently seeing a mental health professional than participants in the control group. Third, the relation between ‘number of psychiatric emergency visits’ and group was significant;  $\chi^2(3) = 8.44, p = 0.038, V = 0.20$ . Individuals in the treatment group were more likely to never had emergency psychiatric care and less likely to have received emergency psychiatric care one time only, or three or more times, than the control group. Of those who did receive emergency psychiatric care at least once, the relation between ‘last psychiatric emergency’ and group was significant;  $\chi^2(3) = 10.77, p = 0.013, V = 0.34$ . Individuals in the treatment group were more likely to have last received emergency psychiatric care within the last 6 months or the last year and less likely to have last received emergency psychiatric care over a year ago than individuals in the control group. These differences suggest that randomization of participants may not have been completely effective. A comparison of baseline outcome measures for the treatment and control groups using independent t-tests did not produce any significant differences.

In addition, there were several clinical differences between completers and dropouts. The relation between depression and completion status was significant;  $\chi^2(1) = 13.99, p < 0.01, V = 0.13$ . The relation between bipolar disorder and completion status was also significant;  $\chi^2(1) = 9.706, p < 0.01, V = 0.11$ . Participants with depression and bipolar disorder were more likely to drop out of the study than expected. In addition, the relation between scores on the self-compassion scale (SCS-SF) and completion status was significant;  $F(1,784) = 4.55, p < 0.01$ . Dropouts had significantly higher SCS-SF

scores ( $M=2.44$ ,  $SD=.66$ ) than completers ( $M=2.29$ ,  $SD=0.64$ ), which indicates dropouts had significantly more self-compassion than completers at baseline. The relation between scores on the CHIPS scale and completion status was also significant;  $F(1,757)=5.05$ ,  $p=0.03$ . Dropouts had significantly higher CHIPS scores ( $M=2.40$ ,  $SD=0.75$ ) than completers ( $M=2.26$ ,  $SD=0.71$ ), which indicates dropouts had more physical symptoms than completers at baseline. Additionally, the relation between PANAS-PA (positive affect) scores and completion status was significant;  $F(1,752) = 4.30$ ,  $p=0.04$ . Dropouts had significantly higher PANAS PA (positive affect) scores ( $M=2.22$ ,  $SD=0.85$ ) than completers ( $M=2.08$ ,  $SD=0.78$ ). Last, the relation between PANAS-NA (negative affect) scores and completion status was significant;  $F(1,752) = 5.18$ ,  $p=0.02$ . Dropouts had significantly higher negative affect scores ( $M=2.29$ ,  $SD=1.07$ ) than completers ( $M=2.10$ ,  $SD=0.98$ ). In summary, participants who did not complete the study were more likely to have higher levels of self-compassion, more physical complaints, and greater positive and negative affect than participants who completed the entire study.

Marginal analyses were completed to determine if the variables that significantly differed at baseline for those who completed the entire study impacted the post-test and 1-month follow-up results. Four out of five of the potential covariates listed above significantly impacted outcomes: gender, number of psychiatric emergency visits, last psychiatric emergency visit and currently seeing a mental healthcare professional. Two of these variables were part of a set of cascading questions: The question about participants' last psychiatric emergency visit only applied to those who indicated they had at least one previous psychiatric emergency visit, and the question about whether

participants are currently seeing a mental healthcare professional only applied to those who indicated they saw a mental healthcare professional at least once. In preparation for analyses of covariance, the sample was broken up into four groups based on how they responded to these two key questions, as the covariates that were part of a series of cascading questions didn't apply to all participants and this created significantly reduced and unequal sample sizes when the entire sample was analyzed as a whole. The group that indicated they had at least one psychiatric emergency visit and saw a mental healthcare professional at least once in the past was named the "ER subgroup" and had a total of 91 participants ( $n=91$ ). The group that indicated they had no ER visits in the past and saw a mental healthcare professional at least once in the past was named the "No ER subgroup" and had a total of 102 participants ( $n=102$ ). The other two groups (that indicated they never saw a mental healthcare professional) had sample sizes of less than 10 participants each and were not included in the exploratory analyses.

Marginal analyses were computed for the "ER subgroup" and the "No ER subgroup" to determine which covariates to use in the sub-analysis. Gender, 'last psychiatric emergency visit', and 'currently seeing a mental healthcare professional', did not significantly impact any of the outcome measure scores at post-test or at 1-month follow-up for the 'ER subgroup'. Only gender significantly impacted some of the outcome measure scores at the post-test and 1-month follow-up for the "No ER subgroup", therefore gender was selected as a covariate to be used for further testing for the "No ER subgroup". 'Currently seeing a mental healthcare professional' did not significantly affect the outcome measure scores at post-test or 1-month follow-up for the "No ER subgroup", therefore this variable was excluded from this analysis.



## Outcomes

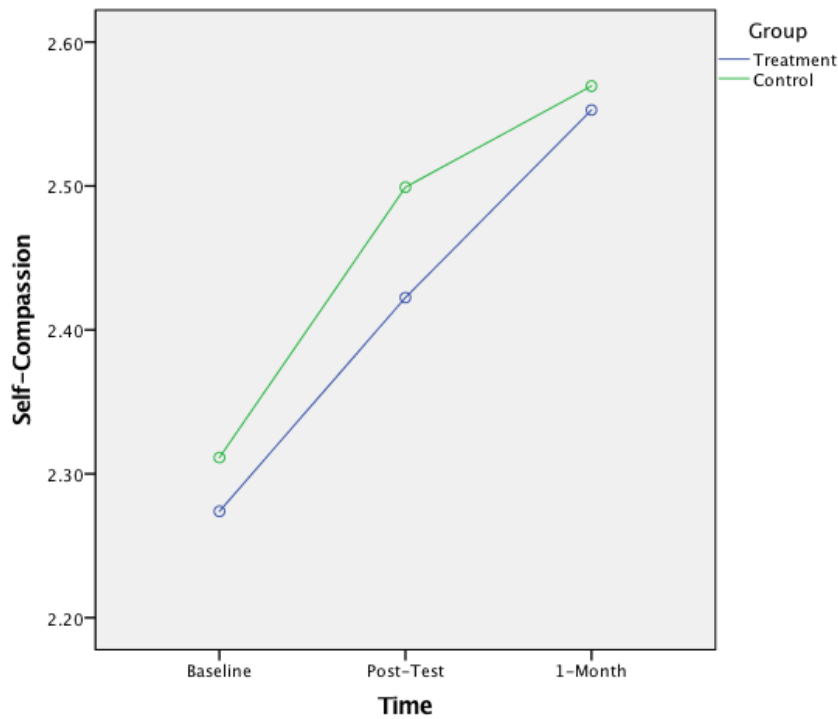
**Hypothesis 1a.** It was predicted that the attrition rate for the current study would range from 50-80%. This hypothesis was supported. As mentioned above, the total attrition rate for the current study was 74.5%.

**Hypothesis 1b.** Out of the 1,009 individuals who signed up for the study 977 indicated they had a diagnosis of depression, bipolar disorder, schizophrenia or schizoaffective disorder. Based upon the estimate that there are more than 2,000 workers on Amazon MTurk at any given time and that the half-life of workers is 12-18 months (Difallah et al., 2018), and the fact that the current study spanned approximately one month, it is estimated that at least 47.3% MTurk workers that were online at the time of the study had some type of mental illness. Five individuals who completed the entire study indicated they had schizoaffective disorder and four individuals who completed the entire study indicated they had schizophrenia. 69.0% of participants who completed the entire study indicated they had at least one psychotic symptom [Table 2].

**Hypothesis 2a.** It was predicted that the treatment group's self-compassion scores (as measured by the SCS-SF) would show a greater increase from baseline to post-test compared to the control group. This hypothesis was not supported.

A repeated measure ANOVA comparing self-compassion scores at baseline and post-test scores yielded a significant within-group effect,  $F(1,201)=30.39, p<0.01$ ). Self-compassion increased significantly from baseline to post-test for both the treatment and control groups with a large effect size ( $\eta^2=0.13$ ), indicating the increases were both substantial (Cohen, 1988). A repeated measure ANOVA comparing self-compassion scores at post-test and 1-month follow-up also yielded a significant within-group effect;

$F(1,201)=13.65, p<0.01$ . Self-compassion increased significantly from post-test to 1-month follow-up for both the treatment and control groups, with a medium effect size ( $\eta^2=0.06$ ), indicating that the increases were both substantial. Interaction effects and between-group effects were not significant [Appendix K]. See Table 4 below for means and standard deviations for the self-compassion outcomes. The plotted results below illustrate the significant increases in self-compassion for both groups from baseline to 1-month follow-up (Figure 3).



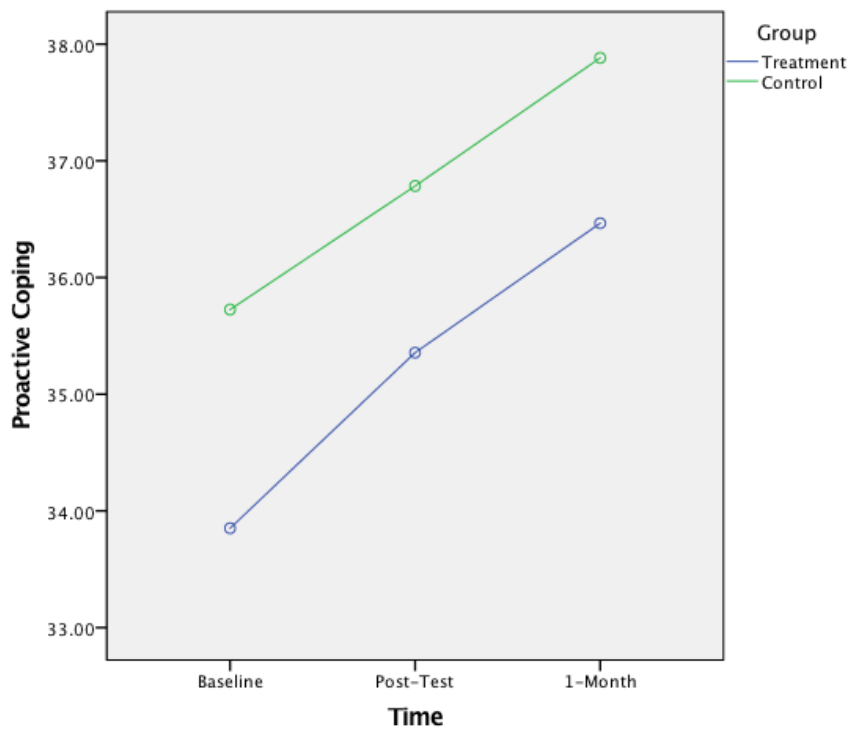
*Figure 3.* Mean self-compassion scores for treatment and control groups over time.

**Hypothesis 2b.** It was predicted that the treatment group's proactive coping scores would show a greater increase from baseline to post-test compared to the control group. This hypothesis was not supported.

A repeated measures ANOVA comparing proactive coping scores at baseline and post-test scores yielded a significant within-group effect;  $F(1,201)=18.22, p<0.01$ .

Proactive coping increased significantly from baseline to post-test for both the treatment and control groups, with a medium effect size ( $\eta^2=0.08$ ), indicating the increases were both substantial. A repeated measure ANOVA comparing post-test and 1-month follow-up scores also yielded a significant within-group effect;  $F(1,201)=11.74, p<0.01$ .

Proactive coping increased significantly from post-test to 1-month follow-up for both the treatment and control groups, with a medium effect size ( $\eta^2=0.06$ ), indicating both increases were substantial. Interaction effects and between-group effects were not significant [Appendix K]. See Table 4 below for means and standard deviations for the treatment and control groups. The plotted results below illustrate the significant increases in proactive coping for both groups from baseline to 1-month follow-up (Figure 4).

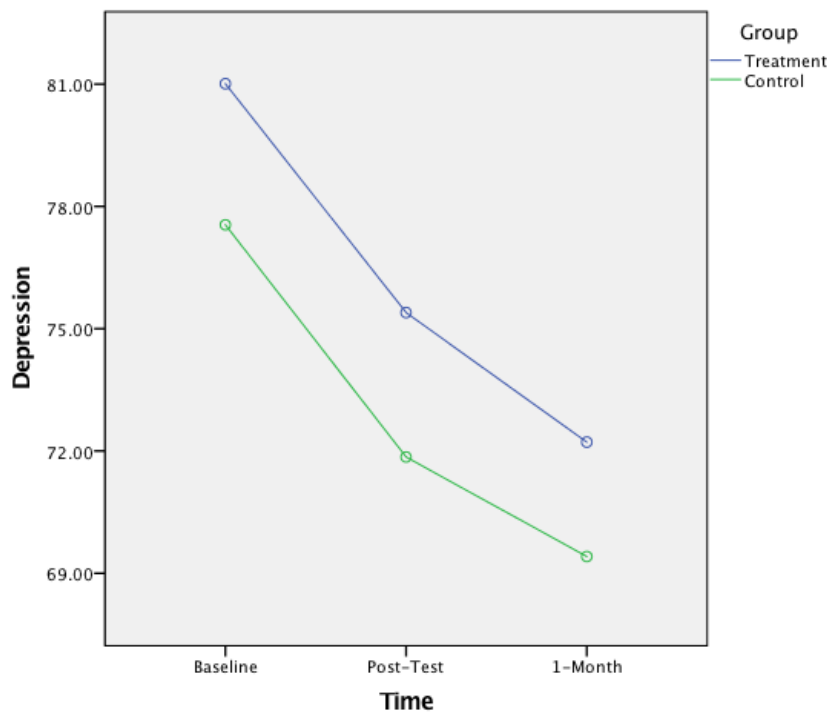


*Figure 4.* Mean proactive coping scores for treatment and control groups over time.

**Hypothesis 2c.** It was predicted that the treatment group's depression scores (as measured by the RDQ (modified)) would show a greater decrease from baseline to post-test compared to the control group. This hypothesis was not supported.

A repeated measure ANOVA comparing RDQ (modified) scores at baseline and post-test scores yielded a significant within-group effect;  $F(1,201)=91.63, p<0.01$ . Depression decreased significantly from baseline to post-test for both the treatment and control groups, with a large effect size ( $\eta^2=0.31$ ), indicating the decreases were both substantial. A repeated measures ANOVA comparing RDQ (modified) scores at post-test and 1-month follow-up also yielded a significant within-group effect;  $F(1,201)=11.64, p<0.01$ . Depression decreased significantly from post-test to 1-month follow-up for both

the treatment and control groups, with a medium effect size ( $\eta^2=0.06$ ), indicating the decreases were both substantial. Interaction effects and between-group effects were not significant [Appendix K]. See Table 4 below for means and standard deviations for the treatment and control groups. The plotted results below illustrate the significant decreases in depression for both groups from baseline to 1-month follow-up (Figure 5).

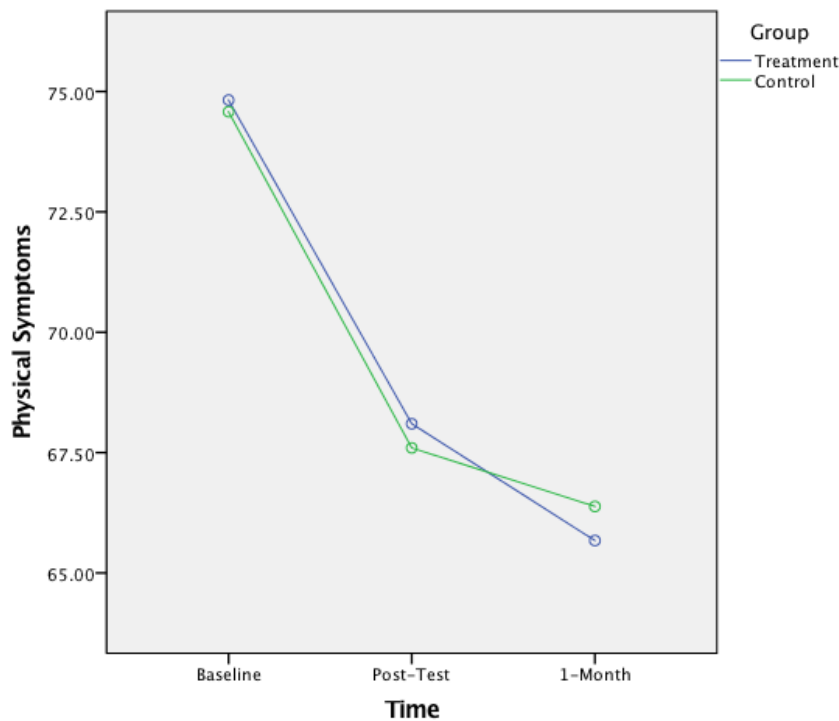


*Figure 5.* Mean RDQ (Modified) scores for treatment and control groups over time.

**Hypothesis 2d.** It was predicted that the treatment group's physical symptom scores would show a greater decrease from baseline to post-test compared to the control group. This hypothesis was not supported.

A repeated measures ANOVA comparing CHIPS scores at baseline and post-test scores yielded a significant within-group effect;  $F(1,201)=75.74$ ,  $p<0.01$ . Physical

symptoms decreased significantly from baseline to post-test for both the treatment and control groups, with a large effect size ( $\eta^2=0.27$ ), indicating both of the decreases were substantial. A repeated measures ANOVA comparing CHIPS scores at post-test and 1-month follow-up scores did not yield any effects [Appendix K]. Physical symptoms did not decrease significantly from post-test to 1-month follow-up. Interaction effects and between-group effects were not significant [Appendix K]. See Table 4 below for means and standard deviations for the treatment and control groups. The plotted results below illustrate the significant decreases in depression for both groups from baseline to post-test (Figure 6).



*Figure 6.* Mean CHIPS scores for treatment and control groups over time.

Table 4

*Descriptive Statistics for Baseline, Post-Test and 1-Month Follow-Up Scores for SCS-SF, PCS, RDQ (Modified), and CHIPS*

| Measure | Group     | <i>n</i> | Baseline |           | Post-Test |           | 1-Month  |           |
|---------|-----------|----------|----------|-----------|-----------|-----------|----------|-----------|
|         |           |          | <i>M</i> | <i>SD</i> | <i>M</i>  | <i>SD</i> | <i>M</i> | <i>SD</i> |
| SCS-SF  | Control   | 102      | 2.31     | 0.63      | 2.50      | 0.69      | 2.57     | 0.75      |
|         | Treatment | 101      | 2.27     | 0.65      | 2.42      | 0.77      | 2.55     | 0.74      |
| PCS     | Control   | 102      | 35.73    | 7.20      | 36.78     | 7.18      | 37.88    | 7.02      |
|         | Treatment | 101      | 33.85    | 7.52      | 35.36     | 8.36      | 36.47    | 8.15      |
| RDQ     | Control   | 102      | 77.55    | 14.32     | 71.85     | 15.19     | 69.41    | 17.19     |
|         | Treatment | 101      | 81.01    | 13.33     | 75.40     | 15.91     | 72.22    | 15.95     |
| CHIPS   | Control   | 102      | 74.58    | 24.27     | 67.60     | 25.44     | 66.38    | 26.63     |
|         | Treatment | 101      | 74.82    | 22.64     | 68.10     | 23.58     | 65.67    | 22.71     |

**Hypothesis 3.** It was predicted that the treatment group's positive affect scores (as measured by the PANAS-PA) would show a greater increase after each wave's writing intervention than the control group. This hypothesis was not fully supported.

Repeated measures ANOVAs were performed comparing PANAS-PA pre-intervention and post-intervention scores for each of the three writing interventions administered at wave 1, wave 2, and wave 3. A repeated measures ANOVA comparing the PANAS-PA pre-intervention and post-intervention scores for wave 1 yielded a significant interaction effect;  $F(1,201)=26.68, p<0.01$ , with a large effect size ( $\eta^2=0.12$ ). Post-hoc testing was completed. Pairwise comparisons using the LSD post hoc criterion for significance showed the mean difference for the treatment group was significant ( $M=2.60, p<0.01$ ) and the mean difference for the control group was not significant ( $M=0.39, p=0.196$ ). Therefore, only the treatment group's positive affect increased significantly from pre-intervention testing to post-intervention testing during wave 1.

A repeated measures ANOVA comparing PANAS-PA pre-intervention and post-intervention scores for wave 2 yielded a significant within group effect;  $F(1,201)=15.47$ ,  $p=0.000$ . Both the treatment group and control group significantly increased in positive affect from pre-intervention testing to post-intervention testing for wave 2. This result had a medium effect size ( $\eta^2=0.07$ ), indicating that both increases were substantial.

Similar to the wave 1 analyses, a repeated measures ANOVA comparing PANAS-PA pre-intervention and post-intervention scores for wave 3 yielded a significant interaction effect;  $F(1,201)=4.06$ ,  $p=0.045$ , with a small effect size ( $\eta^2=0.02$ ). Post-hoc testing was completed. Pairwise comparisons using the LSD post hoc criterion for significance showed the mean difference for the treatment group was significant ( $M=1.55$ ,  $p<0.01$ ) and the mean difference for the control group was also significant ( $M=0.66$ ,  $p=0.036$ ). Therefore, positive affect increased significantly only for the treatment group from pre-intervention testing to post-intervention testing for wave 3. See Table 5 for means and standard deviations for PANAS-PA scores.

Negative affect scores (as measured by the PANAS-NA) were also explored. A repeated measures ANOVA PANAS-NA comparing pre-intervention and post-intervention scores for wave 1 yielded a significant within-group effect;  $F(1,201)=25.40$ ,  $p<0.01$ . Both the treatment group and control group significantly decreased in negative affect from pre-intervention testing to post-intervention testing for wave 1. The effect size was medium to large ( $\eta^2=0.11$ ), indicating both decreases were substantial. A repeated measures ANOVA comparing PANAS-NA pre-intervention and post-intervention scores for wave 2 yielded a significant between-group effect;  $F(1,200)=4.23$ ,  $p=0.041$ . Only the control group's negative affect decreased significantly from pre-



intervention testing to post-intervention testing for wave 2. The effect size was small ( $\eta^2=0.02$ ), which indicates the effect was not substantial. The repeated measures ANOVA analysis for the wave 3 PANAS-NA scores did not yield any significant results [Appendix K]. See Table 5 below for means and standard deviations for PANAS-NA scores.

Table 5

*Descriptive Statistics for Positive and Negative Affect Schedule, Waves 1-3*

| Measure  | Wave   | Group     | n   | Pre-writing |      | Post-writing |      |
|----------|--------|-----------|-----|-------------|------|--------------|------|
|          |        |           |     | M           | SD   | M            | SD   |
| PANAS-PA | Wave 1 | Control   | 102 | 10.85       | 4.41 | 11.25        | 4.92 |
|          |        | Treatment | 101 | 9.87        | 3.36 | 12.48        | 3.96 |
|          | Wave 2 | Control   | 102 | 10.81       | 3.98 | 11.63        | 4.70 |
|          |        | Treatment | 101 | 11.19       | 4.63 | 12.38        | 4.32 |
|          | Wave 3 | Control   | 102 | 11.02       | 4.45 | 11.68        | 4.99 |
|          |        | Treatment | 101 | 10.95       | 4.35 | 12.50        | 4.61 |
| PANAS-NA | Wave 1 | Control   | 102 | 10.13       | 4.92 | 8.62         | 4.56 |
|          |        | Treatment | 101 | 10.77       | 4.87 | 9.51         | 4.43 |
|          | Wave 2 | Control   | 101 | 7.81        | 3.89 | 7.36         | 3.96 |
|          |        | Treatment | 101 | 8.79        | 4.89 | 8.67         | 4.32 |
|          | Wave 3 | Control   | 102 | 7.72        | 3.68 | 7.75         | 4.27 |
|          |        | Treatment | 101 | 8.79        | 4.58 | 8.55         | 4.49 |

**Hypothesis 4.** It was predicted that participants in the treatment group would use significantly more social references (such as friends, family and other humans) and more positive emotion words. This hypothesis was fully supported.

The treatment group used significantly more positive emotion words ( $M=3.86$ ,  $SD=1.15$ ) than the control group ( $M=1.68$ ,  $SD=0.89$ );  $t(201)=15.15$ ,  $p<0.01$ ). In addition, the treatment group used significantly more social references ( $M=10.58$ ,  $SD=2.83$ ) than the control group ( $M=5.32$ ,  $SD=2.73$ );  $t(201)=13.48$ ,  $p<0.01$ ). Both

results had very large effect sizes (positive emotion:  $d=2.47$ , social references:  $d=1.93$ ), which indicate the differences were substantial. Exploratory analyses of other linguistic markers were also performed. The treatment group used significantly fewer first person singular pronouns such as “I”, significantly more words suggesting certainty (a type of cognitive process subcategory) and significantly more present-focused words than the control group [Appendix K]. In addition, the treatment group also used significantly more negative emotion words, significantly more words related to anger and sadness and significantly fewer first person plural pronouns such as “we” than the control group [Appendix K].

**Hypothesis 5.** It was predicted that the treatment group would rate their writing as significantly more personal and emotional than the control group and that participants in the treatment group would rate their writing as being more beneficial than participants in the control group. It was also predicted that the treatment group would report that they wrote more about experiences that they haven’t shared with others and that the treatment group would be more likely to indicate that they would “do this type of writing” on their own. All of these predictions were supported, except for the last prediction that the treatment group would be more likely to indicate that they would “do this type of writing” on their own.

Independent t-tests that did not assume equal variances were performed for the items about how personal and emotional participants’ writing was, because Levene’s test was significant for these items ( $F=40.32$ ,  $p<0.01$ ;  $F=32.469$ ,  $p<0.01$ ). The rest of the analyses used t-tests that did assume equal variances. First, the treatment group rated their writing as significantly more personal ( $M=6.42$ ,  $SD=0.95$ ) compared to the control

group, ( $M=5.40$ ,  $SD=1.83$ );  $t(143.79)=4.88$ ,  $p < .01$ ), with a medium effect size ( $d=0.56$ ). Second, the treatment group rated their writing as significantly more emotional ( $M=5.81$ ,  $SD=1.33$ ) than the control group ( $M=3.61$ ,  $SD=2.06$ );  $t(163.66)=8.86$ ,  $p < .01$ ), with a large effect size ( $d=1.07$ ). Third, the treatment group indicated it was significantly more difficult for them to write ( $M=4.38$ ,  $SD=1.87$ ) than the control group ( $M=3.45$ ,  $SD=1.95$ );  $t(192)=3.387$ ,  $p < .01$ ), with a medium effect size ( $d=0.48$ ). Fourth, the treatment group indicated they wrote about experiences they hadn't shared with others before ( $M=5.15$ ,  $SD=1.67$ ) significantly more than the control group ( $M=3.11$ ,  $SD=1.83$ );  $t(192)=8.12$ ,  $p < .01$ ), with a large effect size ( $d=1.11$ ). Fifth, the treatment group found their writing to be significantly more beneficial ( $M=5.15$ ,  $SD=1.58$ ) than the control group ( $M=4.29$ ,  $SD=1.85$ );  $t(192)=3.50$ ,  $p < .01$ ), with a medium effect size ( $d=0.46$ ). Last, the treatment group tended to report that it was more than "somewhat likely" that they would "do this type of writing on my own" ( $M=4.31$ ,  $SD=1.92$ ) whereas the control group tended to indicate it was less than "somewhat likely" that they would "do this type of writing on my own" ( $M=3.74$ ,  $SD=2.18$ ). The results for this item were not statistically significant,  $t(192)=1.92$ ,  $p=.056$ ), and had a small yet substantial effect size ( $d=.26$ ).

### **Exploratory Analysis**

**Physical Health.** To determine if the self-compassion writing intervention may have impacted participants' physical health, responses to the health status question: "Compared to others your age, how would you rate your physical health currently?" were analyzed. Ratings of "1" (Poor) and "2" (Fair) were collapsed into one category ("1") and ratings of "3" (Good) and "4" (Excellent) were collapsed into a second category

(“2”). Data were then analyzed using an one-way ANOVA which revealed a significant within group effect. Both the treatment group and control group’s subjective ratings of physical health increased significantly from baseline to 1-month follow-up  $F(2,330)=12.608, p<0.01$ . This result had a medium effect size ( $\eta^2=0.07$ ), indicating both increases were substantial.

**Outcomes for Subgroups.** In an exploratory analysis, repeated measures ANOVAs and ANCOVAs were performed for the ‘ER subgroup’ and the ‘No ER subgroup’ for the four main outcome measures (SCS-SF, PCS, RDQ (modified), and CHIPS). An ANOVA of self-compassion scores for the “ER subgroup” yielded significant within-group effects. Self-compassion increased significantly for both the treatment and control groups for the “ER subgroup” between baseline and post-test measurements ( $F(1,89)=7.40, p=0.008, \eta^2=0.08$ ), and between post-test and 1-month follow-up measurements ( $F(1,89)=5.37, p=0.023, \eta^2=0.06$ ). Repeated measures ANCOVAs were performed, with gender as a covariate as described above, to compare self-compassion scores for the “No ER subgroup” and did not yield any significant effects either between baseline and post-test nor between post-test and 1-month follow-up [Appendix K].

A repeated measures ANOVA of proactive coping scores from baseline to post-test for the “ER subgroup” did not yield any significant results [Appendix K]. A repeated measure ANOVA comparing proactive coping from post-test to 1-month follow-up for the “ER subgroup” yielded a significant between-group effect, with a small to medium effect size ( $F(1,89)=3.98, p=0.049, \eta^2=0.04$ ). Proactive coping increased significantly more from post-test to 1-month follow-up for the control group than for the treatment

group in the “ER subgroup”. Repeated measures ANCOVAs were performed to compare proactive coping scores for the “No ER subgroup”, using gender as a covariate. A repeated measure ANCOVA did not yield any significant results between baseline and post-test for the “No ER subgroup” [Appendix K]. A repeated measures ANCOVA comparing proactive coping scores between the post-test and 1-month follow-up for the “No ER subgroup” yielded a significant within group effect ( $F(1,88)=4.06, p=0.047, \eta^2=0.04$ ). Both the treatment and control groups in the “No ER subgroup” significantly increased in proactive coping post-test to 1-month follow-up.

Repeated measures ANOVAs comparing RDQ (modified) scores for the “ER subgroup” yielded significant within-group effects. Depression decreased significantly for both the treatment and control groups between baseline and post-test ( $F(1,89)=43.641, p=0.000, \eta^2=0.33$ ), and between post-test and 1-month follow-up ( $F(1,89)=5.62, p=0.020, \eta^2=0.06$ ) for the “ER subgroup”. Both the treatment and control groups in the “ER subgroup” showed significant decreases in depression from baseline to post-test and from post-test to 1-month follow-up. Repeated measures ANCOVAs of RDQ (modified) scores for the “No ER subgroup”, with gender as a covariate, also yielded significant within group effects. Depression decreased significantly for both the treatment and control groups between baseline and post-test ( $F(1,88)=9.91, p=0.002, \eta^2=0.10$ ) and between post-test and 1-month follow-up ( $F(1,88)=6.09, p=0.016, \eta^2=0.07$ ) for the “No ER subgroup”. Both the treatment and control groups in the “No ER subgroup” showed significant decreases in depression from baseline to post-test and from post-test to 1-month follow-up.

A repeated measures ANOVA comparing CHIPS scores for the “ER subgroup”, yielded a significant within-group effect. Physical symptoms decreased significantly for both the treatment and control groups between baseline and post-test measurements ( $F(1,89)=31.84, p=0.000, \eta^2=0.26$ ), however a repeated measures ANOVA comparing post-test and 1-month follow-up scores did not yield any significant effects [Appendix K]. Repeated measures ANCOVAs comparing CHIPS scores for the “No ER subgroup”, with gender as a covariate, also yielded a significant within group effect between baseline and post-test. Physical symptoms decreased significantly for both the treatment and control groups between baseline and post-test measurements for the “No ER subgroup” ( $F(1,88)=7.91, p=0.006, \eta^2=0.08$ ). A repeated measure ANCOVA comparing post-test and 1-month follow-up scores for the “No ER subgroup” did not yield any effects. Physical symptoms did not decrease significantly from post-test to 1-month follow-up for the “No ER subgroup”. See Table 6 and Table 7 below for means and standard deviations for the outcomes for both subgroups.

Table 6

*Descriptive Statistics for SCS-SF, PCS, RDQ (Modified) and CHIPS for Participants with Mental Health Visits and Psychiatric Emergency Visits*

| Measure | Group     | n  | Baseline |       | Post-Test |       | 1-Month |       |
|---------|-----------|----|----------|-------|-----------|-------|---------|-------|
|         |           |    | M        | SD    | M         | SD    | M       | SD    |
| SCS-SF  | Control   | 54 | 2.40     | 0.66  | 2.57      | 0.73  | 2.62    | 0.83  |
|         | Treatment | 37 | 2.24     | 0.69  | 2.46      | 0.78  | 2.49    | 0.80  |
| PCS     | Control   | 54 | 36.80    | 7.71  | 37.30     | 7.62  | 38.59   | 7.10  |
|         | Treatment | 37 | 33.22    | 8.30  | 34.32     | 9.52  | 34.84   | 9.25  |
| RDQ     | Control   | 54 | 77.28    | 13.10 | 71.43     | 15.67 | 69.94   | 18.92 |
|         | Treatment | 37 | 83.81    | 12.10 | 76.54     | 17.88 | 71.49   | 15.92 |
| CHIPS   | Control   | 54 | 78.98    | 25.28 | 72.15     | 26.64 | 69.59   | 26.22 |
|         | Treatment | 37 | 75.30    | 21.73 | 68.35     | 24.15 | 65.86   | 22.91 |

Table 7

*Descriptive Statistics for SCS-SF, PCS, RDQ (Modified) and CHIPS for Participants with Mental Health Visits and Without Psychiatric Emergency Visits*

| Measure | Group     | N  | Baseline |       | Post-Test |       | 1-Month |       |
|---------|-----------|----|----------|-------|-----------|-------|---------|-------|
|         |           |    | M        | SD    | M         | SD    | M       | SD    |
| SCS-SF  | Control   | 42 | 2.28     | 0.60  | 2.43      | 0.66  | 2.53    | 0.66  |
|         | Treatment | 60 | 2.29     | 0.63  | 2.48      | 0.73  | 2.59    | 0.71  |
| PCS     | Control   | 42 | 34.43    | 6.37  | 36.21     | 6.81  | 37.19   | 7.09  |
|         | Treatment | 60 | 34.10    | 7.29  | 35.87     | 7.85  | 37.23   | 7.48  |
| RDQ     | Control   | 42 | 75.02    | 14.46 | 70.64     | 14.02 | 70.31   | 15.87 |
|         | Treatment | 60 | 79.15    | 13.87 | 74.47     | 15.06 | 67.43   | 15.61 |
| CHIPS   | Control   | 42 | 69.24    | 22.52 | 61.98     | 23.45 | 63.43   | 28.24 |
|         | Treatment | 60 | 73.67    | 23.61 | 67.18     | 23.69 | 64.90   | 22.74 |

## Discussion

The current study tested the feasibility of recruiting enough individuals with mental illness (including individuals with psychosis) on Amazon MTurk to conduct a randomized self-compassion writing trial and a subgroup analysis for individuals with psychotic disorders. The current study also tested the hypothesis that writing about a stressful event with self-compassion would be more effective at increasing self-compassion and proactive coping skills and reducing depression and physical symptoms in individuals with mental illness than writing about how one spends one's time. Last, the current study tested the hypothesis that individuals with mental illness who wrote with self-compassion would use significantly more positive emotion words and social references in their writing than controls. Below I outline and discuss the implications of the findings.

## **Feasibility of Mental Illness Research on MTurk**

A comparison of the number of individuals with mental illness recruited for the current study with the estimated number of individuals who are available on MTurk at any given time indicates that there may be an equal or greater proportion of individuals with any mental illness on MTurk than in the general population. This is consistent with previous research that found MTurk workers have an equal (Shapiro et al., 2013) or greater (Arditte et al., 2016) proportion of depression, a greater proportion of anxiety (Arditte et al., 2016; Shapiro et al., 2013), and a higher prevalence of OCD and hoarding symptoms (Arditte et al., 2016) than the general population. While sufficient numbers of individuals with mental illness signed up for the experiment, there were few individuals with schizophrenia and schizoaffective disorder who completed the entire study. While some individuals with bipolar disorder and major depression experience psychotic symptoms (American Psychiatric Association, 2013) and could potentially be included in a subgroup analysis of individuals with psychotic disorders, and over half of the study participants indicated that they had experienced at least one psychotic symptom, these individuals were not screened by a mental healthcare professional. Therefore, it is uncertain whether all 69% of participants who indicated they experienced psychosis actually had a psychotic disorder. Even healthy individuals may have a brief experience of psychosis at some point in their lives (Verdoux & van Os, 2002). According to one study, 20.1% of individuals who were 26 years old, reported at least one delusional experience, and 13.2% reported at least one hallucinatory experience (Poulton et al., 2000). Yet even this finding does not fully account for the large number of participants in the current study who indicated they experienced psychosis. It appears as if some



participants interpreted the questions about psychosis more broadly than intended. For instance, participants who indicated that they frequently worried about others causing them harm may have experienced anxiety about being hurt, but not necessarily at the level that would indicate psychosis. Therefore, while Amazon MTurk may be a viable option for researchers studying individuals with mental illness, it may not be particularly effective for studies that specifically aim to study individuals with psychosis.

Additionally, it is interesting to note that the mean baseline self-compassion scores for both the treatment and control groups fell below 2.5, which indicates participants on average were low in self-compassion (Raes, Pommier, Neff, & Van Gucht, 2011). Given what we know about the inverse relationship between self-compassion and psychopathology (MacBeth & Gumley, 2012), this finding lends credibility to the study in that it suggests those that signed up for the experiment may indeed have been prone to develop some type of mental illness.

### **Overall Effects**

The analysis of outcome measures for the entire sample indicates that overall, both the treatment and control groups improved significantly over time. Both groups demonstrated significantly improved self-compassion and proactive coping, significantly less depression, and significantly fewer physical symptoms at the post-test than they did at baseline, with medium to large effect sizes. In addition, both groups demonstrated significantly improved self-compassion and proactive coping and significantly less depression between the post-test and 1-month follow-up, with medium effect sizes.

The results of the analysis of physical symptoms is supported by the results from the single health status question that asked participants to subjectively compare their

physical health to others of the same age. A one-way ANOVA of this question found both the treatment and control groups reported that their overall physical health improved significantly over time. It is interesting to note that this result differs from the study by Wong and Mak (2016) which found that Chinese university students who wrote with self-compassion writing had significantly fewer physical symptoms compared with students who wrote about how they spend their time, yet these findings may be somewhat specific to Chinese or Asian individuals or a college student sample.

The current study also explored whether there were any changes in positive and negative affect after each writing intervention for participants in the treatment and control groups. Findings indicate that the treatment group's positive affect increased significantly after the wave 1 writing intervention and both the treatment and control group's positive affect increased significantly after the wave 2 and wave 3 writing interventions. These results are more ambiguous than Helm's (2016) finding that self-compassion writing increases positive expressivity more than relaxation training. The findings from the current study somewhat resemble results from Ziemer's (2014) self-compassion study which found that positive affect increased significantly immediately after the second writing intervention for both the self-compassion writing group and the self-efficacy writing group but did not increase significantly after the first or third writing interventions for either group. In the current study, positive affect may have improved naturally on its own for both groups after wave 2 and wave 3, or both writing conditions may have actually caused an increase in positive affect after wave 2 and wave 3. The significant increase in positive affect for the treatment group after the wave 1 intervention may have been due to a subject expectancy effect (Supino, 2012). More research is

needed on the effects of self-compassion writing for individuals with mental illness to clarify whether self-compassion writing and writing about how one spends one's time improve positive affect in individuals with mental illness.

In addition, it was found that both the treatment and control groups' negative affect decreased significantly and substantially after the wave 1 intervention, the control group's negative affect decreased significantly and substantially after the wave 2 intervention, and neither group changed significantly in negative affect after the wave 3 intervention. Unlike previous self-compassion writing research by Leary et al. (2007), Johnson and O'Brien (2013), and Odou and Brinker (2013) which found that self-compassion writing decreases negative affect significantly more than other types of writing in college students, the evidence from the current study about negative affect is less clear. Self-compassion writing and writing about how one spends one's time may both have the potential to help improve negative moods in individuals with mental illness, but more research is needed to determine how these interventions impact negative affect. Because individuals with mental illness are more vulnerable to stress (Anakwenze & Zuberi, 2013) and trauma (Kilgus et al., 2016; Rudnick & Lundberg, 2012) and write with more negative emotion than non-clinical populations (Fineberg et al., 2016), it may have been harder for participants in the current study to reassess and learn from their stressful experiences, and it may have been more likely for the participants in the current study compared to studies with different populations to write about a stressful situation or trauma that was so recent that they were not ready to process the event through writing. This may have resulted in little improvement in negative affect or made it more difficult to see significant changes in negative affect in such a short period of time. Alternatively,

writing about how one spends one's time may have helped some individuals improve their sense of self-efficacy and led to a reduction in negative mood.

### **Effects on Subgroups**

The exploratory analysis of two subgroups, one group that sought out mental health care and had previous psychiatric emergency visits, and another group that sought out mental health care but did not have any previous psychiatric emergency visits, found that individuals who sought mental healthcare but did not have any emergency psychiatric visits did not experience any significant changes in self-compassion over time and did not experience any change in proactive coping between baseline and post-test, whereas individuals who sought mental healthcare and had previous emergency psychiatric visits experienced significant increases in self-compassion, and proactive coping from baseline to post-test, regardless of condition. Interestingly, both subgroups reported they experienced significantly less depression and fewer physical symptoms at post-test and 1-month follow-up. These results lend support to the hypothesis that both self-compassion writing and writing about how one spends one's time help individuals with mental illness feel better, but perhaps through different trajectories. This idea is explored more below.

### **Alternative Hypotheses**

The results of this study lead us to ask: "Did the administration of assessment measures over time produce improvement in both the treatment and control groups rather than the writing itself or did the improvement across time occur naturally by itself? Were the two different writing conditions both effective in different ways for different people

or life situations? Or did the simple act of sitting down, making time to think and putting events into perspective create significant change?”

In answer to the first question, it is important to consider not just how using a treatment writing intervention compares to a neutral writing condition but also compared to no treatment at all. The current study followed the original expressive writing protocol design (Pennebaker & Beall, 1986) and compared the treatment intervention (in this case, self-compassion writing) with a control or placebo condition that involves writing about a neutral topic (in this case, writing about how you spend your time), but did not use a “no treatment” group. Leary et al. (2007) reported they used a “true control” in the original self-compassion writing experiment and others such as Johnson and O’Brien (2013) followed this protocol, however the participants in these “true control” groups were asked to write about a negative event, just like the treatment groups. To this writer’s knowledge, the only self-compassion writing study to date that used a control group that did not write or journal at all was Williamson (2014), which did not find any significant effects from the self-compassion or expressive writing interventions.

It is possible that the treatment in the current study may not have had a significant effect and that both groups improved naturally on their own. One possible explanation for why the treatment group did not improve more than the control group is that the intervention may have been too brief, especially for individuals with mental illness who are especially vulnerable to stress (Anakwenze & Zuberi, 2013) and trauma (Kilgus et al., 2016; Rudnick & Lundberg, 2012). Individuals with mental illness tend to write with more negativity (Fineberg et al., 2016) and therefore may need to write with self-compassion for a longer period of time to see a positive effect. Alternatively, a different

type of intervention that asks participants to write about a positive experience with self-compassion may be more beneficial for this population, or at least useful as an introduction to working with self-compassion and using writing as a form of emotional regulation. In addition, it may be that because some participants did not complete the three-day intervention over three consecutive days as directed, the intervention was not concentrated or powerful enough to have a true effect.

For the second question, it is important to consider why both types of writing (self-compassion writing and writing about how one spends one's time) may have produced significant improvements. Writing about how one spends one's time, may have been helpful for some individuals with mental illness who were feeling anxious and discouraged about the many challenges before them. For these individuals, writing about what they have done that day, or the day before might have built a sense of self-efficacy, improved confidence and helped them feel better about themselves. This in turn, may have helped the individuals be more self-compassionate and less self-critical. Interestingly, there is some anecdotal evidence that writing about every day activities in a daily journal may help individuals with psychosis create a more coherent sense of self (Stone, 2005).

Different writing interventions may be more or less useful for different types of mental illness. However, we know that a mental illness diagnosis, or even a specific mental illness diagnosis, alone may not be a good indicator of what the treatment needs of individuals are. Historically, mental disorders have been defined in a categorical manner rather than along a continuum, but even individuals with the same diagnosis may have significantly different symptoms and clinical needs, based on etiology, duration of

illness and other factors (Kilgus et al., 2016). For example, it is known that females and males with autism experience the condition differently (Halladay et al., 2015) and, as previously discussed, depression is experienced more as physical symptoms than psychological distress in some cultures (Kramer et al., 2002).

In addition, as with anyone, the symptoms and needs of individuals with mental illness vary from day to day, week to week, month to month. Moreover, individuals vary in how prepared they are to change and how interested they are in treatment, and it is difficult to help someone create change if they are not motivated to change (Prochaska & DiClemente, 1983). From this perspective, it is not surprising that writing about how one spends one's time and writing about a difficult experience with self-compassion could fill different needs at different times for a group of people who share a clinical diagnosis and/or other commonalities.

It is important to note here that in the current study, both the treatment and control groups wrote on average approximately the same number of characters, perhaps because they were both encouraged to write continuously and given multiple examples of what to do if they felt stuck. There are no known expressive writing meta-analyses that explore differences in word count between the treatment and control groups (J.W. Pennebaker, personal communication, April 2, 2018; J. Frattaroli, personal communication, March 29, 2018), and Pennebaker reported that in general, participants in the control group in expressive writing studies may tend to write less than participants in the treatment group (J.W. Pennebaker, personal communication, April 2, 2018). In the current self-compassion writing study, the researcher took extra care to design the writing prompts so that all participants wrote with sufficient detail and that the only difference between the

treatment and control groups would be the variation in writing topic. An example was given to both the treatment and control groups to show the level of detail that was expected. Therefore, the length of the treatment and control group's writing may be more equivalent than in previous writing studies and this may have had an impact on the outcomes.

Notably, Niles, Byrne Haltom, Lieberman, Hur, and Stanton (2016) found that one of the mechanisms of change of writing interventions is the level of detail with which participants write. This suggests that part of the treatment effect is the length and depth of writing rather than the specific topic participants are writing about. This evidence supports the claim that the more participants write, the more their writing helps build motivation and positive affect, and the more likely it becomes that both treatment and control groups will experience improvement.

Last, the current study raises the question of whether the simple act of sitting down and making time for oneself to think and put things into perspective may be an act of self-compassion that is strong enough to affect health outcomes for individuals with mental illness. While the tasks assigned to the treatment and control groups were different on the surface, at a higher level, they both asked participants to stop and reflect about their lives. Because individuals with mental illness are more vulnerable to stress and trauma and more self-critical than the general population, making time to reflect on any aspect of their lives may have been helpful at relieving stress.

### **Participants' Subjective Experiences**

The results of the Subjective Evaluation of Writing Task analysis demonstrated that participants were more than "somewhat" willing to write about a stressful experience



with self-compassion, even though it was “somewhat” difficult for them to write, and less willing to write in detail about how they spend their time even though it was not as difficult. Moreover, participants in the treatment group indicated that they thought self-compassion writing was beneficial for them, whereas participants in the control group rated their writing experience only slightly more than “somewhat beneficial”.

Several participants were moved by the experience of writing with self-compassion so much that they wrote to the researcher to express how helpful the intervention had been for them. For instance, one participant wrote that the writing intervention fundamentally changed her view of the world and her perspective on life. Another participant who had technical difficulties with receiving compensation electronically after the experiment wrote that she got so much out of the study, she didn’t really care about payment because it wasn’t that important.

Finding a treatment that participants believe is worthwhile and are willing to engage is perhaps the most difficult part of designing therapeutic interventions. If individuals with mental illness are not willing to participate in a particular intervention, then there is simply no way it can be effective. Therefore, even though writing about how one spends one’s time may have similar benefits as self-compassion writing, self-compassion writing may be a more useful strategy in the long run.

### **Manipulation Checks/Linguistic Analysis**

The overall finding that the treatment and control groups both significantly increased in self-compassion and proactive coping, and decreased in depression and physical symptoms after the writing intervention raises the question, “Did the self-compassion writing intervention have the full intended effect?” An analysis of the single

item manipulation check, “If you are reading this question, mark...” indicates that the vast majority of participants were paying attention and engaged in the experiment.

In addition, the linguistic analysis found that the two substantiated linguistic markers for self-compassion (positive emotion words and social references) appeared significantly more frequently in the treatment group’s writing than in writing by the control group and the large effect sizes demonstrate that the difference in frequency was substantial. It is also notable that even though individuals with psychosis or with mental or physical illness in general tend to use more first-person singular words such as “I” than the general population (Fineberg et al., 2016; Strous et al., 2009), the treatment group in this study used significantly fewer first person singular pronouns such as “I” in the study compared to the control group. This finding lends additional support to the hypothesis that the self-compassion intervention had a significant effect, as it appears to have changed the natural tendency of individuals with mental illness to use a lot of first-person pronouns.

The current study also found that the treatment group used significantly fewer first-person plural pronouns such as “we” than the control group. While Neff et al. (2007) and Sawyer (2017) found individuals with high levels self-compassion used significantly more first-person plural pronouns than individuals low in self-compassion, this has not been reflected in the self-compassion writing intervention research. In addition, the treatment group in the current study used significantly more negative emotion words and significantly more words related to anger and sadness. This finding corroborates the finding by Wong and Mak (2016), that found participants who write about difficult experiences with self-compassion use more negative emotion words than

participants who write about how they spend their time. It is also consistent with research by Neff et al. (2007) that found increasing self-compassion does not necessarily lead to a reduction in negative affect and partially consistent with research by Sawyer (2017) that found even though judges determined that the use of fewer negative emotion words is indicative of high self-compassion, the relative amount of negative affect is not related to the core construct of self-compassion. While Ziemer's (2014) self-compassion study found there was no significant difference in negative emotion words between the treatment and comparison groups, in this study both groups wrote about topics involving physical pain that might trigger strong emotions.

Curiously, in the current study, participants in the treatment group used more words related to 'certainty' and wrote with more of a present-focus. Sawyer (2017) found individuals high in self-compassion have less of a present-focus and use fewer words related to 'certainty' than controls, but that these linguistic markers are not directly related to the self-compassion construct. The reason for the discrepancy in these two findings is unknown but may be related to the specific sample that was studied or a reflection of the particular self-compassion writing intervention used in this study.

In addition to the linguistic analysis manipulation check, on the Subjective Evaluation of Task questionnaire, the treatment group rated their writing as significantly more personal and emotional than the control group and the treatment group indicated they wrote more about experiences they haven't shared before than the control group. This suggests participants in the treatment group were writing about personal and emotional experiences significantly more than the control group. However, the mean control group rating for how emotional they thought their writing was 3.61, close to

“somewhat emotional” and the mean control group rating for how much they wrote about experiences that they haven’t shared much with others before was 3.11, just below “somewhat”. At first glance, this suggests that even though the control group was instructed to stick to the facts and write about how they spent their time, they may have taken the opportunity to express some emotions and process experiences they hadn’t shared before. It is notable that when the LIWC linguistic analysis means for positive emotion and negative emotion for both treatment and control groups in the current study are compared to the Pennebaker et al. (2015) LIWC dataset containing 29 samples from experiments where individuals completed expressive writing interventions, we can see that participants in the control group in the current study tended to use considerably fewer negative ( $M=0.81\%$ ,  $SD=0.59$ ) and positive emotion ( $M=1.68\%$ ,  $SD=0.89$ ) words than expressive writing participants in the Pennebaker et al. (2015) dataset (positive emotion:  $M=2.57\%$ ; negative emotion:  $M=2.12\%$ ) and participants in the treatment group in the current study tended to use considerably more negative ( $M=3.47\%$ ,  $SD=1.06$ ) and positive emotion ( $M=3.86\%$ ,  $SD=1.15$ ) words than expressive writing participants in the Pennebaker et al. (2015) dataset. This evidence further supports the assertion that participants in the treatment and control groups followed instructions and the self-compassion writing intervention had the intended effect.

### **Limitations of the Study**

The current study has several limitations. First, the sample recruited for the study may not be representative of all individuals with mental illness. Because recruitment was limited to individuals signed up to work on the Amazon MTurk platform and such individuals may be experienced at psychological testing (Necka et al., 2016), the

generalizability of our findings are limited and will require replication in a more generalizable sample. The experiment excluded individuals who do not have access to the Internet or who do not feel comfortable using computers, and this may have unintentionally limited participation to individuals with a higher educational status. Second, the study had a high attrition rate. As discussed above, high attrition is quite common in longitudinal online research (Christensen & Mackinnon, 2006). The consequence of high attrition was reduced statistical power for the analysis.

Third, all participants self-identified as having a mental illness and selected which mental illness(es) they had from a list and/or wrote in a diagnosis. While our estimate of the percentage of individuals with mental illness on Amazon MTurk is similar to some national prevalence statistics (Kessler et al., 2005), participants were not screened by a clinical professional and a considerable number of participants may have misrepresented themselves so they could participate in the study and get paid (Sharpe Wessling, Huber, & Netzer, 2017). Future online studies may avoid this pitfall by conducting the study on alternative crowdsourcing platforms that have qualifications for mental illness so researchers can select a setting to automatically prescreen for this qualification, or by putting up a short, prescreen study on the MTurk platform which asks a single question about mental illness to screen out individuals without mental illness, which pays all respondents a small very amount in compensation (Sharpe Wessling et al., 2017).

Fourth, the intervention was conducted in a natural setting rather than in a laboratory and participants may have experienced significant distractions which may have influenced their ability to engage in the writing task. In an effort to control for this, participants were asked in the writing instructions to find a quiet, private place to

complete their writing [Appendix D]. The results from single item manipulation check suggests the vast majority of participants appeared to paying attention. Moreover, although the natural setting may have impacted participants' ability to focus, the natural setting may have been a strength rather than a limitation of the study, because the writing intervention was designed to be used by participants at home, not in a laboratory or office setting. Fifth, as mentioned above, not all participants completed the interventions within 24 hours after receiving the invitation for the next wave. While the email invitations to the next wave were designed with the intention to make the links active for 24 hours only, this proved not to be possible. This technical difficulty may have had the effect of diluting the power of the intervention. Sixth, participants were asked to time themselves and the researcher did not have an accurate way of estimating how much time participants wrote for. However, an analysis of the length of participants' writing showed that there were not significant differences in the length of participants' writing between groups [Appendix K].

Last, the study did not record any direct behavioral measures, such as medical records showing the number of hospital visits to balance out data from self-reports. Self-reports only modestly correlate with behavioral measures in expressive writing research (Pennebaker, 2004). Moreover, measuring behavioral change over time using some of the health status measures proved not to be an effective way to assess for functional improvement. For instance, if a participant started out not having any psychiatric emergency visits and at post-test the participant indicated he had one psychiatric emergency visit, it is unclear if the emergency visit indicates the participant became worse or signals that the participant was finally motivated to seek treatment. Thus, the

self-compassion writing intervention may have had a bigger impact on individuals' behavior than the current data reveal.

### **Future Research**

Additional self-compassion writing research with individuals with different types of mental illness should be conducted to determine if both self-compassion writing and writing about how one spends one's time both lead to significant improvement in psychological and physical health and if variables such as 'last psychiatric emergency visit' influence the effectiveness of self-compassion writing for individuals with mental illness. Researchers should consider including both a 'placebo' condition in which participants write about how they spend their time and a 'no treatment' condition in future self-compassion writing research, to tease apart the effects of writing. In addition, researchers may wish to track differences in length of the treatment and control groups' writing samples in order to control for this factor and compare the length of different groups' writing across studies. This may help in interpreting outcomes and also represent a more reliable way of assessing participants' work in online studies than using time stamps for participants' start and end times, which has been used in some previous online writing studies (Ziemer, 2014).

Future research might also explore the effects of having participants write continuously about any topic of their choosing, similar to 'freewriting'. In this type of intervention, participants would not be directed to write about a specific kind of experience, but to write about whatever comes to mind and to focus on the mindful act of writing itself. Alternatively, participants in the treatment group could be given a choice of different writing interventions (such as expressive writing, positive writing and self-

compassion writing) to see if participants can successfully choose an intervention that meets their needs. A third type of writing intervention discussed above, positive self-compassion writing, might combine a self-compassionate focus with writing about a positive event in one's life.

Because individuals with mental illness, even those who share the same diagnosis, are quite diverse, future research might consider drawing upon the network approach to mental disorders, which aims to pinpoint key, transdiagnostic symptoms that cause secondary symptoms (Fried et al., 2017). Participants with mental illness that are recruited for a writing study could be screened using a network approach to identify what transdiagnostic symptoms they have to help identify which particular writing interventions help which 'root' psychological causes of mental illness. Eventually, a writing intervention computer program could be developed that would appropriately assess, intervene and prevent the development of mental illness or halt its progression.

In addition, writing intervention researchers should consider incorporating procedures for helping participants set and keep writing goals into future writing intervention research. Some of the participants who drop out of online writing studies may be truly interested in learning about how writing can help improve their health but may not have the knowledge or skills to successfully achieve their goals and implement a writing practice. Anecdotally, this researcher has learned that one of the hardest challenges that individuals face when they are trying to incorporate daily journaling or writing into their lives is making the time and finding a way to keep their commitment to their writing goals. Simple behavioral principles, such as helping participants schedule a specific time right after they perform a routine task such as brushing their teeth, may help



individuals fit writing into their day. This could motivate participants to continue to write after the experiment ends and also help reduce high attrition rates that are experienced with online research. Last, future writing research might consider using technology such as cell phone applications to collect direct, behavioral data in order to better assess whether writing interventions impact participants' behavior.

### **Summary and Treatment Implications**

Individuals with mental illness experience psychological distress that may be at least partially due to self-criticism (Kannan & Levitt, 2013; Shahar & Henrich, 2013; Waite et al., 2015). Several studies have shown self-compassion buffers against self-criticism and promotes mental health (Arch et al., 2014; Leaviss & Uttley, 2015; Mayhew & Gilbert, 2008; Smeets et al., 2014). Low-income individuals are more vulnerable to stress (Anakwenze & Zuberi, 2013) and trauma (Kilgus et al., 2016; Rudnick & Lundberg, 2012), are more at risk of developing mental illness (Campion et al., 2013) and require portable, low-cost interventions (LeBow, 2006) to prevent or treat mental health concerns. In addition individuals from other cultures may not be willing to engage in traditional talk therapy treatment. Writing interventions may potentially help fill both of these needs. While there have been multiple studies that have studied the effects of self-compassion writing on different populations, to this writer's knowledge, this is the first study to examine the effects of self-compassion writing on individuals with different types of mental illness. This study also explored the feasibility of conducting a randomized trial of individuals with mental illness, including psychotic disorders, on Amazon MTurk.

The current study found that Amazon MTurk may not be suitable for conducting a randomized trial for individuals with psychotic disorders and discovered there may be an equal or greater proportion of individuals with any mental illness in the MTurk community compared to the general population. In addition, this study found both writing about how one spends one's time and self-compassion writing may help improve the psychological and physical health of individuals with mental illness as an adjunct to psychotherapy or as a standalone treatment but that these two different writing conditions may affect participants in different ways. Additional research needs to be done to determine how different writing interventions can better "meet clients where they are" (Hepworth, Rooney, Rooney, & Strom-Gottfried, 2013) to address their specific needs.

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APPENDIX A  
CONSENT FORM

You are being asked to take part in a research study of how writing with self-compassion affects the physical and mental well-being of adults with serious mental illness. We are asking you to take part because you signed up at the MTurk web site for this study. Please read this form carefully and contact us with any questions you may have before agreeing to take part in the study.

**What the study is about:** The purpose of this study is to learn if writing with self-compassion about a negative life event improves physical and mental well-being in adults with a serious mental illness. You must be at least 18 years old and have a diagnosis of major depression, bipolar disorder, schizophrenia or schizoaffective disorder to take part in this study.

**What we will ask you to do:** If you agree to be in this study, you are consenting to participate in *four online sessions*. The first three sessions need to be completed over three consecutive days. On the first day, you will be asked to take a survey. The survey will take about 25 minutes to complete. The survey will include questions about how much schooling you completed, how much money you make, what type of serious mental illness you have, if you have any physical complaints and if you experience symptoms of mental illness. You will then be asked to complete four writing exercises and complete a brief, two minute, post-writing survey. Each writing exercise will take about five minutes to complete.

On the second day, you will be asked to complete the four, five-minute writing exercises again and complete the two-minute survey before and after you write.

On the third day, you will be asked to complete the four, five-minute writing exercises again and complete the two-minute survey before and after you write. Immediately following this, you will be asked to complete a 25 minute survey similar to the survey you complete on Day 1.

Twenty-eight days (approximately one month) after you complete the third day, you will be sent an email asking you to participate in one final survey. The survey will take about 25 minutes to complete. It will be similar to the surveys you complete on Day 1 and Day 3.

**Risks and benefits:** We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach of confidentiality is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks by removing all personal identifiers from our files once all coding and analysis is complete. In any sort of report we make public we will not include any information that will make it possible to identify you.

As researchers we are not qualified to provide counseling services and we will not be following up with you after this study. If you feel upset after completing the study, or find that some questions or aspects of the study triggered distress, talking with a qualified clinician may help. You may call the Substance Abuse and Mental Health Services Administration (SAMHSA)'s National Hotline at 1-800-662-HELP (4357) to receive a confidential referral to mental health services. If you feel you would like immediate assistance please call the Suicide Prevention Lifeline at 1-800-273-TALK (8255) to receive free, confidential counseling. In case of emergency, please call 911.



There are two possible benefits to you. First, the writing exercises may help you reduce stress and internal conflict and improve your mood. You may also learn a new skill (compassion writing) that you can use virtually anywhere to help you feel better.

**Compensation:** You will earn a total of \$4.00 if you complete the entire study.

**Confidentiality.** Any work performed on MTurk can be linked to your public Amazon.com profile page. Thus, you may wish to restrict what information you choose to share in your public Amazon.com profile. It is possible that if you try to contact with us through MTurk, your name and e-mail address will be included in your correspondence. MTurk worker IDs (i.e., the 14 character sequence of letters and numbers used to identify workers) will NOT be shared with anyone. MTurk worker IDs will only be collected for the purposes of distributing compensation and will not be associated with survey responses.

**Taking part is voluntary:** Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide to take part, you are free to withdraw at any time.

**If you have questions:** The researchers conducting this study are Debby Urken and Prof. Craig LeCroy, PhD. If you have questions, you may contact Prof. Craig LeCroy at [lecroy@asu.edu](mailto:lecroy@asu.edu). If you have any questions or concerns regarding your rights as a subject in this study, you may contact Arizona State University's Research Integrity office at 480-965-6788 or access their website at <https://researchintegrity.asu.edu/humans/participants>.

**By clicking "I agree" below** you are indicating that you are at least 18 years old, have a diagnosis of major depression, bipolar disorder, schizophrenia or schizoaffective disorder, have read and understood this consent form and agree to participate in this research study. Please print a copy of this page for your records. **To submit your response, please press the >> icon below.**

- ☐ I agree
- ☐ I do not agree

APPENDIX B

DEMOGRAPHIC QUESTIONS

Q1 Do you have major depression/major depressive disorder, bipolar disorder, schizophrenia or schizoaffective disorder?

Yes

No

Q2 How old are you? \_\_\_\_\_

Q3 To Which Gender Identity Do You Most Identify?

Male

Female

Transgender Female

Transgender Male

Gender Variant/Non-conforming

Not listed (specify): \_\_\_\_\_

Prefer not to answer

Q4 Are you employed?

Full-time

Part-time

Student

Looking after home/family

Unemployed due to poor health

Unemployed for other reasons

Retired

Other: \_\_\_\_\_

Q5 How much schooling have you completed?

No schooling

Elementary school

Some high school/secondary school

Completed high school/secondary school or GED

Some college/university

College degree (BA, BS, etc.)

Advanced Degree (Master's, Doctorate, etc.)

Q6 How much did you earn last year?

Under \$5,000

\$5,000-\$24,999

\$25,000-\$49,999

\$50,000-\$99,999

\$100,000 or more

Q7 What is your ethnicity?

White

Black or African American

American Indian or Alaska Native

Asian  
Native Hawaiian or Pacific Islander  
Hispanic  
Mixed ethnicity  
Other: \_\_\_\_\_

Q8 Where do you live?

Antigua and Barbuda  
Australia  
The Bahamas  
Barbados  
Belize  
Canada  
Dominica  
Grenada  
Guyana  
Ireland  
Jamaica  
New Zealand  
St Kitts and Nevis  
St Lucia  
St Vincent and the Grenadines  
Trinidad and Tobago  
United Kingdom  
United States  
Other: \_\_\_\_\_

APPENDIX C

HEALTH STATUS QUESTIONS

## Health Status Questions

Q1 I have a diagnosis of (choose all that apply):

Anxiety Disorder  
Bipolar Disorder  
Eating Disorder  
Major Depression  
Obsessive Compulsive Disorder (OCD)  
Panic Disorder  
Personality Disorder  
Post-Traumatic Stress Disorder (PTSD)  
Schizoaffective Disorder  
Schizophrenia  
Substance abuse  
Other (specify): \_\_\_\_\_

Q2 Have you ever experienced any of the following? Do not report them if they happened to you only while you were using alcohol or drugs. [Check all that apply.]

Hearing voices that others do not hear or seeing things that others do not see.  
Frequently worrying that others are planning to cause you harm or harass you.  
Thinking that other people can read your mind, insert or remove thoughts from your mind or that you can read other people's minds.  
Seeing signs or hidden messages in your environment that are meant specifically for you.  
Thinking that you have supernatural gifts, special powers or unheard of wealth or fame.

[Display Q3 only if Q2 is answered]

Q3 When was the last time you had any of the above experiences?

Within the last week  
Within the last month  
Within the last 3 months  
Within the last year  
More than a year ago  
Not sure

Q4 When did you last consult with a mental healthcare professional (doctor, nurse, therapist, social worker, case manager, etc.)?

- Never
- Within the last year
- More than a year ago

[Display Q5 only if Q4 is “Within the last year” or “More than a year ago”.]

Q5 Are you currently seeing a mental healthcare professional (doctor, nurse, therapist, social worker, case manager, etc.) for your mental illness?

- Yes
- No
- Not sure

Q6 Are you currently taking prescription medication for your mental illness?

- Yes
- No
- Not sure

Q7 How many times have you been admitted to an emergency room, crisis center or hospital for psychiatric care?

- Never
- 1 time
- 2 times
- 3 or more times
- Not sure

[Display Q8 only if Q7 is “1 time”, “2 times”, “3 or more times” or “Not sure”.]

Q8 When was the last time you were admitted to the emergency room, crisis center or hospital for psychiatric care?

- Within the last 1 month
- Within the last 6 months
- Within the last year
- More than a year ago
- Not sure

Q9 Compared to others your age, how would you rate your physical health currently?

Excellent

Good

Fair

Poor



## APPENDIX D

### SELF-COMPASSION SCALE – SHORT FORM (SCS-SF)

Please read each statement carefully before answering. Below each item, indicate how often you behave in the stated manner.

|                            |                            |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Almost<br>Never            |                            |                            |                            | Almost<br>Always           |

Q1 When I fail at something important to me I become consumed by feelings of inadequacy.

Q2 I try to be understanding and patient towards those aspects of my personality I don't like.

Q3 When something painful happens I try to take a balanced view of the situation.

Q4 When I'm feeling down, I tend to feel like most other people are probably happier than I am.

Q5 I try to see my failings as part of the human condition.

Q6 When I'm going through a very hard time, I give myself the caring and tenderness I need.

Q7 When something upsets me I try to keep my emotions in balance.

Q8 When I fail at something that's important to me, I tend to feel alone in my failure.

Q9 When I'm feeling down I tend to obsess and fixate on everything that's wrong.

Q10 When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

Q11 I'm disapproving and judgmental about my own flaws and inadequacies.

Q12 I'm intolerant and impatient towards those aspects of my personality I don't like.

## APPENDIX E

### PROACTIVE COPING SCALE (PCS)

The following statements deal with reactions you may have to various situations. Indicate how true each of these statements is depending on how you feel about the situation. Do this by checking the most appropriate box.

|                            |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Not at                     | Barely                     | Somewhat                   | Completely                 |
| All True                   | True                       | True                       | True                       |

Q1 I am a "take charge" person.

Q2 I try to let things work out on their own.

Q3 After attaining a goal, I look for another, more challenging one.

Q4 I like challenges and beating the odds.

Q5 I visualize my dreams and try to achieve them.

Q6 Despite numerous setbacks, I usually succeed in getting what I want.

Q7 I try to pinpoint what I need to succeed.

Q8 I always try to find a way to work around obstacles; nothing really stops me.

Q9 I often see myself failing so I don't get my hopes up too high.

Q10 When I apply for a position, I imagine myself filling it.

Q11 I turn obstacles into positive experiences.

Q12 If someone tells me I can't do something, you can be sure I will do it.

Q13 When I experience a problem, I take the initiative in resolving it.

Q14 When I have a problem, I usually see myself in a no-win situation.

## APPENDIX F

### REMISSION FROM DEPRESSION SCALE (RDQ)– MODIFIED

The items on this scale ask about different aspects of your mental health such as symptoms, sense of well-being and enjoyment in life. Use the following scale to indicate how well each item describes you for the past week.

|                                    |                            |                            |                            |
|------------------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1         | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Not at<br>All or<br>Rarely<br>True | Sometimes<br>True          | Often<br>True              | Almost<br>Always<br>True   |

Q1 I felt sad or depressed.

Q2 I was not interested in the things I usually enjoy.

Q3 My appetite was poor.

Q4 My appetite was much greater than usual.

Q5 I had difficulty sleeping.

Q6 I was sleeping too much.

Q7 My energy level was low.

Q8 I felt guilty.

Q9 I thought I was a failure.

Q10 I had problems concentrating.

Q11 I had difficulty making decisions.

Q12 I wished I was dead.

Q13 I had thoughts about killing myself.

Q14 I felt anxious.

Q15 I worried excessively.

Q16 I got irritated easily.

Q17 I felt "on edge".

Q18 I had a sense of dread or impending doom.

Q19 I felt at ease.

Q20 I cared about things in my life.

Q21 I was able to have fun.

Q22 I saw myself as a person of value.

Q23 I had a positive outlook on life.

Q24 I could focus and concentrate well.

Q25 I could make decisions without a lot of self-doubt.

Q26 I felt confident.

Q27 I woke up feeling fresh and rested.

Q28 When I woke up I looked forward to the day.

Q29 I had the desire to do things.

## APPENDIX G

### COHEN-HOBERMAN INVENTORY OF PHYSICAL SYMPTOMS SCALE (CHIPS)



Mark the number for each statement that best describes how much that problem has bothered or distressed you during the past two weeks including today.

Mark only one number for each item. At one extreme, 0 means that you have not been bothered by the problem. At the other extreme, 4 means that the problem has been an extreme bother.

|                            |                            |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Not Bothered               |                            |                            |                            | Extremely Bothered         |
| by the                     |                            |                            |                            | by the                     |
| Problem                    |                            |                            |                            | Problem                    |

Q1 Sleep problems (can't fall asleep, wake up in the middle of the night or early in the morning)

Q2 Weight change (gain or loss of 5 lbs. or more)

Q3 Back pain

Q4 Constipation

Q5 Dizziness

Q6 Diarrhea

Q7 Faintness

Q8 Constant fatigue

Q9 Headache

Q10 Migraine headache

Q11 Nausea and/or vomiting

Q12 Acid stomach or indigestion

Q13 Stomach pain (e.g., cramps)

Q14 Hot or cold spells

Q15 Hands trembling

Q16 Heart pounding or racing

Q17 Poor appetite

Q18 Shortness of breath when not exercising or working hard

Q19 Numbness or tingling in parts of your body

Q20 Felt weak all over

Q21 Pains in heart or chest

Q22 Feeling low in energy

Q23 Stuffy head or nose

Q24 Blurred vision

Q25 Muscle tension or soreness

Q26 Muscle cramps

Q27 Severe aches and pains

Q28 Acne

Q29 Bruises

Q30 Nosebleed

Q31 Pulled (strained) muscles

Q32 Pulled (strained) ligaments

Q33 Cold or cough

## APPENDIX H

### POSITIVE AND NEGATIVE AFFECT SCHEDULE (PANAS) SHORT-FORM

This scale consists of a number of words that describe different feelings and emotions. Read each item and then choose the appropriate answer from the drop down list next to that word. Indicate to what extent you feel this way right now.

☐ Very Slightly or Not at All    ☐ A Little    ☐ Moderately    ☐ Quite a Lot    ☐ Extremely

- 1) Inspired
- 2) Afraid
- 3) Alert
- 4) Upset
- 5) Excited
- 6) Nervous
- 7) Enthusiastic
- 8) Scared
- 9) Determined
- 10) Distressed

APPENDIX I

SUBJECTIVE EVALUATION OF WRITING TASK

Listed below are a group of statements that address the writing that you have completed in this study.

Please rate the extent to which you feel each statement corresponds with your writing experience. If you do not feel that the statement corresponds with your experience at all, choose 1. If you feel that the statement corresponds a great deal, choose 7. If you feel somewhere in between, choose any of the numbers between 1 and 7.

Please respond honestly, since there are no right or wrong answers.

|                            |                            |                            |                            |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 |
| Not at all                 |                            |                            | Somewhat                   |                            |                            | A great deal               |

Q1 I feel that my writing was personal

Q2 I feel that my writing was emotional

Q3 I found it difficult to write

Q4 I wrote about experiences that I haven't shared much with others before

Q5 I feel that my writing was beneficial

Q6 It is likely I will do this type of writing on my own

APPENDIX J

WRITING PROMPTS

## General Writing Instructions

We'd like you to complete 4 writing exercises now. Each of the 4 writing exercises will take about 5 minutes to complete.

Please try to find or create a quiet place to write that is relatively free of distractions (such as other people interrupting your work and talking to you).

After you advance to the next screen and read the instructions, start writing in the text box below the words "Write now".

The text box will expand as you write so you will have plenty of space in which to write.

### Writing Intervention- Self-compassion writing condition

Writing Exercise #1: Bring to mind a recent difficult or stressful experience or a source of suffering that is present in your life. Bring awareness to the difficult thoughts, emotions and body sensations related to this experience and describe them exactly as they are. As you write, try to be accepting and non-judgmental of your experience. (Here is an example of something you might write: "I felt angry and impatient because she was being so slow... I started tapping my foot and felt my face get hot and my chest expand... I yelled at her to hurry up and I felt foolish afterwards...") Please write continuously about this experience for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer", and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If you feel bored or uncomfortable and don't know what to write, describe how you are feeling right now and what is preventing you from writing. Or write whatever comes into your head such as, "I don't know what to write... I don't know what to write..." just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen. Write now:

#### Writing Exercise #2:

Reflecting on your difficult experience, acknowledge what you (were or are) hoping for and needing. Write about the core need underneath your stress or suffering, such as a need for health, safety, love, appreciation, connection, or achievement. Write about how your distress makes sense.

As you did in the previous exercise, please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If you feel bored or uncomfortable and don't know what to write, describe how you are feeling right now and what is preventing you from writing. Or write whatever comes into your



head such as, "I don't know what to write... I don't know what to write..." just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen. Write now:

Writing Exercise #3: Write an anonymous letter to yourself in which you offer a message of common humanity. For example: "Dear Self: All humans make mistakes, fail sometimes, get angry and experience disappointment..." Do not address yourself by name or use your name in the letter.

As you did in the previous exercise, please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If you feel bored or uncomfortable and don't know what to write, describe how you are feeling right now and what is preventing you from writing. Or write whatever comes into your head such as, "I don't know what to write... I don't know what to write..." just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen. Write now:

Writing Exercise #4: Imagine a wise, compassionate person you trust or a compassionate figure from nature (such as a mountain, ocean, animal or tree) surrounding you with compassion. What would this compassionate figure say to you right now to help ease your suffering? Write down these compassionate words to yourself.

As you did in the previous exercise, please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If you feel bored or uncomfortable and don't know what to write, describe how you are feeling right now and what is preventing you from writing. Or write whatever comes into your head such as, "I don't know what to write... I don't know what to write..." just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen. Write now:

## Writing Intervention- Neutral writing condition

Writing Exercise #1: Please describe in detail how you spent your time this morning and/or yesterday morning. (For example, "After I heard my alarm go off, I rested in bed for about 10 minutes before I got up and turned off the alarm. Then I walked into the bathroom, looked at myself in the mirror, turned on the water in the sink to wet my toothbrush, squeezed Crest toothpaste on my toothbrush and brushed my teeth for about 2 minutes.") As you write, try to be objective and stick to your actual behaviors. You may experience feelings about what happened, or have opinions about the events during the course of writing, but do not think or write about them. Please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If at any time you run out of things to write, describe something you already wrote about in more detail. Or write: "I don't know what to write... I don't know what to write...", just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen.

Write now:

Writing Exercise #2: Please describe in detail how you spent your time this afternoon and/or yesterday afternoon. As you write, try to be objective and stick to your actual behaviors. You may experience feelings about what happened, or have opinions about the events during the course of writing, but do not think or write about them. As you did in the previous exercise, please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If at any time you run out of things to write, describe something you already wrote about in more detail. Or write: "I don't know what to write... I don't know what to write...", just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen.

Writing Exercise #3: Please describe in detail how you spent your time this evening and/or yesterday evening. As you write, try to be objective and stick to your actual behaviors. You may experience feelings about what happened, or have opinions about the events during the course of writing, but do not think or write about them. As you did in the previous exercise, please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If at any time you run out of things to write, describe something you already wrote about in more detail. Or

write: "I don't know what to write... I don't know what to write...", just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen.

Writing Exercise #4: Please describe in detail how you plan to spend your time tomorrow. As you write, try to be objective and stick to actual behaviors. You may experience feelings about what may happen, or have opinions about possible events during the course of writing, but do not think or write about them. As you did in the previous exercise, please write continuously for about 5 minutes. Set a timer for yourself before you begin. (You can click on: <http://www.google.com> - which will open a new window, search for "timer" and time yourself online. Or you can use a timer of your own.) Don't worry about spelling, grammar or sentence structure. If at any time you run out of things to write, describe something you already wrote about in more detail. Or write: "I don't know what to write... I don't know what to write...", just to keep your fingers moving and thoughts flowing. Please write until the time is up. Then press the ">>" icon below to advance to the next screen.

Write now:

APPENDIX K  
SUPPLEMENTAL TABLES

Table 8.

*Descriptive Statistics and Analysis of Duration to Complete Experiment and Average Character Count of Participants' Writing*

| Variable                | Group     | <i>n</i> | Descriptive Statistics |           |                |                | Analysis |           |          |
|-------------------------|-----------|----------|------------------------|-----------|----------------|----------------|----------|-----------|----------|
|                         |           |          | <i>M</i>               | <i>SD</i> | <i>Minimum</i> | <i>Maximum</i> | <i>t</i> | <i>df</i> | <i>p</i> |
| Days to Complete        | Control   | 102      | 31.46                  | 1.60      | 30             | 38             | 0.45     | 201       | 0.66     |
|                         | Treatment | 101      | 31.59                  | 2.55      | 30             | 45             |          |           |          |
| Hours to Complete       | Control   | 102      | 766.19                 | 40.30     | 720            | 934            | 0.60     | 201       | 0.55     |
|                         | Treatment | 101      | 770.57                 | 61.41     | 720            | 1102           |          |           |          |
| Average Character Count | Control   | 102      | 688.21                 | 304.75    | 101.00         | 1391.33        | -0.82    | 201       | 0.41     |
|                         | Treatment | 101      | 651.29                 | 336.95    | 72.08          | 1828.67        |          |           |          |

Table 9.

*Word Categories Expressed in Treatment and Control Groups' Writing Samples as Percentage of Total Word Count<sup>a</sup>*

| Linguistic Variable | Group     | Descriptive Statistics |          |           | Between Group Analysis |           |          |                  |
|---------------------|-----------|------------------------|----------|-----------|------------------------|-----------|----------|------------------|
|                     |           | <i>N</i>               | <i>M</i> | <i>SD</i> | <i>T</i>               | <i>df</i> | <i>p</i> | <i>Cohen's d</i> |
| Positive emotion    | Control   | 102                    | 1.68     | 0.89      | 15.15                  | 201       | <0.01    | 2.47             |
|                     | Treatment | 101                    | 3.86     | 1.15      |                        |           |          |                  |
| Negative emotion    | Control   | 102                    | 0.81     | 0.59      | 22.15                  | 155.85    | <0.01    | 4.54             |
|                     | Treatment | 101                    | 3.47     | 1.06      |                        |           |          |                  |
| Anger               | Control   | 102                    | 0.13     | 0.15      | 12.85                  | 120.85    | <0.01    | 4.33             |
|                     | Treatment | 101                    | 0.78     | 0.49      |                        |           |          |                  |
| Sadness             | Control   | 102                    | 0.16     | 0.23      | 12.95                  | 144.95    | <0.01    | 2.87             |
|                     | Treatment | 101                    | 0.82     | 0.46      |                        |           |          |                  |
| Certainty           | Control   | 102                    | 1.18     | 0.57      | 12.33                  | 191.33    | <0.01    | 1.96             |
|                     | Treatment | 101                    | 2.30     | 0.71      |                        |           |          |                  |
| Present Focus       | Control   | 102                    | 9.30     | 3.04      | 6.47                   | 201       | <0.01    | 0.78             |
|                     | Treatment | 101                    | 11.68    | 2.13      |                        |           |          |                  |
| "We"                | Control   | 102                    | 0.91     | 0.84      | -3.46                  | 174.24    | <0.01    | -0.42            |
|                     | Treatment | 101                    | 0.56     | 0.55      |                        |           |          |                  |
| "I"                 | Control   | 102                    | 11.53    | 2.44      | -8.86                  | 201       | <0.01    | -1.20            |
|                     | Treatment | 101                    | 8.59     | 2.28      |                        |           |          |                  |
| Social              | Control   | 102                    | 5.32     | 2.73      | 13.48                  | 201       | <0.01    | 1.93             |
|                     | Treatment | 101                    | 10.58    | 2.83      |                        |           |          |                  |

<sup>a</sup>Means were calculated by averaging each participant's writing over the three waves, and then calculating the mean for the treatment and control groups.

Table 10

*Repeated Measures ANOVAs for Participants with History of Psychiatric Emergency and Mental Health Professional Visits, Baseline to Post-Test*

| Measure | Analysis         | Analysis |           |          |                            |
|---------|------------------|----------|-----------|----------|----------------------------|
|         |                  | <i>F</i> | <i>df</i> | <i>p</i> | <i>Partial Eta Squared</i> |
| SCS-SF  | Within Subjects  | 7.40     | (1,89)    | 0.008    | 0.08                       |
|         | Between Subjects | 2.06     | (1,89)    | 0.155    | 0.02                       |
|         | Time*Group       | 1.40     | (1,89)    | 0.239    | 0.02                       |
| PCS     | Within Subjects  | 3.04     | (1,89)    | 0.085    | 0.03                       |
|         | Between Subjects | 3.77     | (1,89)    | 0.055    | 0.04                       |
|         | Time*Group       | 0.44     | (1,89)    | 0.511    | 0.01                       |
| RDQ-r   | Within Subjects  | 43.64    | (1,89)    | 0.000    | 0.33                       |
|         | Between Subjects | 3.78     | (1,89)    | 0.055    | 0.04                       |
|         | Time*Group       | 0.51     | (1,89)    | 0.477    | 0.01                       |
| CHIPS   | Within Subjects  | 31.84    | (1,89)    | 0.000    | 0.26                       |
|         | Between Subjects | 0.53     | (1,89)    | 0.470    | 0.01                       |
|         | Time*Group       | 0.00     | (1,89)    | 0.963    | 0.00                       |

Table 11

*Repeated Measures ANOVAs for Participants with History of Psychiatric Emergency and Mental Health Professional Visits, Post-Test to 1-Month*

| Measure | Analysis         | Within Group Analysis |           |          |                            |
|---------|------------------|-----------------------|-----------|----------|----------------------------|
|         |                  | <i>F</i>              | <i>df</i> | <i>p</i> | <i>Partial Eta Squared</i> |
| SCS-SF  | Within Subjects  | 5.37                  | (1,89)    | 0.023    | 0.06                       |
|         | Between Subjects | 1.45                  | (1,89)    | 0.232    | 0.02                       |
|         | Time*Group       | 1.95                  | (1,89)    | 0.166    | 0.02                       |
| PCS     | Within Subjects  | 3.31                  | (1,89)    | 0.072    | 0.04                       |
|         | Between Subjects | 3.98                  | (1,89)    | 0.049    | 0.04                       |
|         | Time*Group       | 0.62                  | (1,89)    | 0.433    | 0.01                       |
| RDQ-r   | Within Subjects  | 5.62                  | (1,89)    | 0.020    | 0.06                       |
|         | Between Subjects | 0.96                  | (1,89)    | 0.330    | 0.01                       |
|         | Time*Group       | 1.68                  | (1,89)    | 0.198    | 0.02                       |
| CHIPS   | Within Subjects  | 2.16                  | (1,89)    | 0.146    | 0.02                       |
|         | Between Subjects | 0.54                  | (1,89)    | 0.464    | 0.01                       |
|         | Time*Group       | 0.00                  | (1,89)    | 0.984    | 0.00                       |

Table 12

*Repeated Measures ANCOVAS for Participants with History of Mental Health Professional Visits but No Psychiatric Emergency Visits, Baseline to Post-Test<sup>a</sup>*

| Measure | Type of Analysis | Analysis |           |          | Partial Eta Squared |
|---------|------------------|----------|-----------|----------|---------------------|
|         |                  | <i>F</i> | <i>df</i> | <i>p</i> |                     |
| SCS-SF  | Within Subjects  | 2.16     | (1,88)    | 0.145    | 0.02                |
|         | Between Subjects | 2.04     | (1,88)    | 0.157    | 0.02                |
|         | Time*Group       | 1.38     | (1,88)    | 0.243    | 0.02                |
| PCS     | Within Subjects  | 1.76     | (1,88)    | 0.189    | 0.02                |
|         | Between Subjects | 3.65     | (1,88)    | 0.059    | 0.04                |
|         | Time*Group       | 0.40     | (1,88)    | 0.527    | 0.01                |
| RDQ-r   | Within Subjects  | 9.91     | (1,88)    | 0.002    | 0.10                |
|         | Between Subjects | 3.80     | (1,88)    | 0.054    | 0.04                |
|         | Time*Group       | 0.54     | (1,88)    | 0.465    | 0.01                |
| CHIPS   | Within Subjects  | 7.91     | (1,88)    | 0.006    | 0.08                |
|         | Between Subjects | 0.47     | (1,88)    | 0.495    | 0.01                |
|         | Time*Group       | 0.00     | (1,88)    | 0.953    | 0.00                |

<sup>a</sup>All analyses used 'gender' as covariate.

Table 13

*Repeated Measures ANCOVAS for Participants with History of Mental Health Professional Visits but No Psychiatric Emergency Visits, Post-Test to 1-Month<sup>a</sup>*

| Measure | Type of Analysis | Analysis |           |          | Partial Eta Squared |
|---------|------------------|----------|-----------|----------|---------------------|
|         |                  | <i>F</i> | <i>df</i> | <i>p</i> |                     |
| SCS-SF  | Within Subjects  | 1.91     | (1,88)    | 0.170    | 0.02                |
|         | Between Subjects | 1.44     | (1,88)    | 0.234    | 0.02                |
|         | Time*Group       | 1.91     | (1,88)    | 0.171    | 0.02                |
| PCS     | Within Subjects  | 4.06     | (1,88)    | 0.047    | 0.04                |
|         | Between Subjects | 3.93     | (1,88)    | 0.050    | 0.04                |
|         | Time*Group       | 0.71     | (1,88)    | 0.401    | 0.01                |
| RDQ-r   | Within Subjects  | 6.09     | (1,88)    | 0.016    | 0.07                |
|         | Between Subjects | 1.02     | (1,88)    | 0.316    | 0.01                |
|         | Time*Group       | 1.53     | (1,88)    | 0.219    | 0.02                |
| CHIPS   | Within Subjects  | 3.25     | (1,88)    | 0.075    | 0.04                |
|         | Between Subjects | 0.46     | (1,88)    | 0.497    | 0.01                |
|         | Time*Group       | 0.01     | (1,88)    | 0.940    | 0.00                |

<sup>a</sup>All analyses used 'gender' as covariate.



APPENDIX L  
IRB APPROVAL



APPROVAL: EXPEDITED REVIEW

Craig LeCroy  
Social Work, School of  
520/884-5507  
Craig.Lecroy@asu.edu

Dear Craig Lecroy:

On 11/15/2016 the ASU IRB reviewed the following protocol:

|                     |  |
|---------------------|--|
| Type of Review:     | Initial Study  |
| Title:              | Expressive writing   |
| Investigator:       | Craig Lecroy   |
| IRB ID:             | STUDY00005254  |
| Category of review: | (7)(b) Social science methods, (7)(a) Behavioral research  |
| Funding:            | None   |
| Grant Title:        | None   |
| Grant ID:           | None   |
| Documents Reviewed: | <ul style="list-style-type: none"><li>• instructions to participants, Category: Participant materials (specific directions for them);</li><li>• follow up assessment, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li><li>• questionnaire day 4, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li><li>• QUESTIONNAIRE 1, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li><li>• Final Protocol revised, Category: IRB Protocol;</li><li>• consent form, Category: Consent Form;</li></ul> |

The IRB approved the protocol from 11/15/2016 to 11/14/2017 inclusive. Three weeks before 11/14/2017 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 11/14/2017 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the “Documents” tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc:

Debra Urken