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Expressive writing to improve resilience to trauma: A clinical feasibility trial

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ABSTRACT

Background and purpose: Trauma is highly prevalent, with estimates that up to 90% of the U.S. population have been exposed to a traumatic event. The adverse health consequences of trauma exposure are diverse and often long-lasting. While expressive writing has been shown to improve emotional and physical health in numerous populations, the feasibility and potential effectiveness of a novel expressive writing program provided in a clinical setting to improve resilience is unknown. Our objective was to determine the feasibility and potential effectiveness of a 6-week expressive writing course provided in a clinical setting to improve resilience in individuals with a history of trauma.

Materials and methods: This prospective, observational trial of a 6-week expressive writing intervention (*Transform Your Life: Write to Heal*) was conducted in an academic outpatient integrative clinic. Eligible participants were a self-referred sample of 39 English-speaking adults who identified as having had a trauma, or significant emotional/physical upheaval, within the past year. Main outcome measures included: *Feasibility*: Enrollment, Retention in Program and Trial, Adherence. *Acceptability:* Adverse Events; Participant Ratings. *Primary Psychological Outcome:* Connor-Davidson Resilience Scale (CD-RISC). *Secondary Psychological Outcomes:* Perceived Stress Scale – 10 item (PSS-10); Center for Epidemiologic Studies Depression Scale (CES-D); Rumination Response Scale (RRS).

Results: All measures of feasibility including those related to enrollment, retention, and adherence support feasibility. All measures of acceptability including adverse events and participant ratings support the intervention as being safe, well-received and personally valuable. Resilience scores increased from baseline (64.3 ± 14.40) to post-intervention (74.2 ± 13.15), $t(37) = 4.61$, $p < 0.0005$; Cohen's $d = 0.75$. In addition, across the same period, Perceived Stress scores decreased close to a standard deviation (20.5 ± 7.43 to 14.3 ± 6.64), $t(37) = -4.71$, $p < 0.0005$, Cohen's $d = 0.76$; depression symptoms decreased (from 19.0 ± 13.48 to 12.7 ± 11.68), $t(37) = -3.21$, $p = 0.003$, Cohen's $d = 0.52$; and rumination scores decreased from 48.5 ± 12.56 to 39.8 ± 10.07), $t(37) = -5.03$, $p < 0.0005$, Cohen's $d = 0.82$. Effect sizes ranged from medium to large.

Conclusion: The *Transform Your Life: Write to Heal* program is feasible to offer in a clinical setting, was well-received by participants, and demonstrated preliminary findings of effectiveness. Our study suggests that this novel 6-week writing intervention including expressive, transactional, poetic, affirmative, legacy, and mindful writing prompts increases resilience, and decreases depressive symptoms, perceived stress, and rumination in an outpatient sample of those reporting trauma in the past year. The program appears suitable to be evaluated in a larger randomized controlled trial.

1. Introduction

An estimated 90% of the U.S. population has been exposed to a traumatic event [1]. Individuals who experience trauma are at higher risk for a wide range of significant psychological and health issues, including affect dysregulation, negative self-image, and problems with impulse control, aggression, somatization, dissociation, and substance abuse [2–4]. Expressive writing using the Pennebaker Paradigm is a well-established therapeutic intervention to enhance coping with stressful or traumatic events [5,6]. This study evaluates the feasibility

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and potential effectiveness of a novel expressive writing program delivered through an outpatient integrative medicine clinic to improve resilience in a sample with recent, but not immediate, history of trauma.

Expressive writing has been shown to improve emotional and physiological health in both clinical and non-clinical populations [7–10]. Perhaps the most well-studied framework of expressive writing is the Pennebaker Paradigm. A number of studies have shown this paradigm to be an effective therapy to improve emotional, psychological, and physiological health in those who have experienced trauma [11–15]. Characterized by a series of short prompts, the Pennebaker Paradigm asks participants to express their emotions about traumatic experience, and guides them through a series of steps that foster their ability to take four different perspectives: (1) a direct dive into expressive writing about the trauma itself; (2) a second opportunity to express further, and potentially deeper, emotions about the trauma; (3) an invitation to view the trauma from a new or different perspective; and (4) encouragement to create a cohesive story about the trauma that will help them move forward. A recent systematic review points out the "importance of modifying the traditional expressive writing protocol to enhance its efficacy" (p. 99) [16]. The novel program in this study, *Transform Your Life: Write to Heal* [5], does just that. It expands the Pennebaker Paradigm into a therapeutic framework that leverages 6 different writing styles. This novel approach recognizes that while a simple expressive writing sequence may be effective for a large number of people, more people may benefit from a broader spectrum of writing styles. Each style helps the participant find new vantage points from which to explore their traumas and cultivate healing. Like a kaleidoscope, this allows intervention participants opportunities to explore many ways of narrating their experience, including how they want to see it in the future. The program is designed to foster resilience: the capacity for individuals to successfully adapt and recover from adverse, stressful, or traumatic experiences [17]. However, this innovative program has yet to be formally evaluated. The present study aimed to determine the feasibility and potential effectiveness of providing this 6-week expressive writing course in an outpatient clinic to improve resilience in individuals with a history of trauma.

2. Materials and methods

2.1. Study design

This prospective, observational trial was fully approved by the Duke Health System Institutional Review Board in Durham, NC. All participants provided informed consent at the start of enrollment. The trial is registered at ClinicalTrials.gov identifier: NCT02510898.

2.2. Participants

Participants were recruited through flyers and e-announcements sent to the Duke Integrative Medicine email list serve beginning in November 2015. Eligible participants were at least 18 years of age, able to read and write in English, and self-identified as having had a physical or emotional trauma or significant upheaval within the past 12 months, but not within the 4 weeks prior to screening. Consistent with current evidence suggesting that exploration of deep emotions about a traumatic event may do more harm than good in the immediate days and weeks following the upheaval [18], the study protocol excluded individuals who reported trauma within the 4 weeks prior to screening, and required that they be provided referrals and resources as appropriate. Potential traumas included, but were not limited to: death of a loved one, divorce, job loss, personal injury or critical illness, or significant change in financial status. Although the program was provided at no cost to those who enrolled in the study, no incentives or compensation were offered for study participation. Baseline demographics are shown in Table 1.

Table 1
Baseline demographics (N = 39).

Variable	Number or Mean	% or SD
Age	55.08	13.27
Gender		
Male	8	20.51%
Female	31	79.49%
Race		
Caucasian	37	94.9%
African American or Black	0	0%
Asian	2	5.1%
American Indian or Alaska Native	0	0%
Native Hawaiian or Pacific Islander	0	0%
Other	0	0%
Not reported	0	0%
Ethnicity		
Hispanic or Latino	0	
Not Hispanic or Latino	38	100%
Not reported	1	0%
Marital Status		
Married	20	51.3%
Single	7	17.9%
Separated	0	0%
Divorced	10	25.6%
Widowed	2	5.1%
Current Living Situation		
With spouse/partner	21	53.8%
Alone	11	28.2%
With roommate	3	7.7%
With relative	4	10.3%
Employment Status		
Full-time	17	43.6%
Part-time	12	30.8%
Retired	8	20.5%
On disability	1	2.6%
Full-time homemaker	1	2.6%
Formal Education		
No high school diploma	0	0%
High school or equivalent diploma	0	0%
> high school, but < college degree	4	10.3%
College degree	11	28.2%
Graduate or professional degree	24	61.5%
Annual Household Income		
Less than $20,000	3	7.9%
$20,000 - $50,000	11	28.9%
$50,001 - $100,000	13	34.2%
$100,001 - $150,000	7	18.4%
More than $150,000	4	10.5%
Not reported	1	

2.3. Procedure

Interested participants were screened over the phone for eligibility. Immediately prior to the first class, eligible participants took part in a group informed consent process. They then completed a packet of questionnaires assessing resilience, perceived stress, depression symptoms, and rumination. Participants then participated in the 6-session *Transform Your Life: Write to Heal* program over 7 weeks in January–March 2016. At the very end of the final class, participants were asked to complete the post-program questionnaires again, and were required to do so within 4 weeks.

2.4. Intervention

2.4.1. Framework

Over a 6-week period, the *Transform Your Life: Write to Heal* program guides participants through a purposefully designed progression of 26 writing prompts. The program begins with expressive writing using the Pennebaker Paradigm, and ends with mindful writing. During each of the first 5 sessions, participants write in response to 4 prompts. In the last session, they write in response to 6 prompts. The design of these prompts requires the participant to utilize a specific type of

writing that moves them through an intentional progression of exploring and meaningfully narrating the trauma in a way that supports post-traumatic growth. Participants begin writing in a challenging, and sometimes emotionally overwhelmingly space, and evolve to a space of emotional equanimity and mindfulness.

The first style of writing follows the traditional Pennebaker Paradigm in helping individuals to dive deeply into their emotions around a particular traumatic experience, a dive whose depth and darkness is sometimes known only to the writer. The second writing style, transactional writing, then guides participants to cultivate compassion for self and others, and can help provide much-needed solace after difficult times. Third, participants use prompts for poetic writing that stems from a broad interpretation of Aristotle's Poetics: Poetic writing uses metaphor and narrative structure to express the human condition. In addition, the intentional use of specific poems cultivates mindfulness. Fourth, affirmative writing prompts are used to support participants to identify personal strengths and to begin to create narratives that affirm who they want to become in the future. Fifth, legacy writing invites an honest look at what individuals want to contribute to the world and to their loved ones. Legacy writing further amplifies values that may be especially important to them. Finally, mindful writing reinforces the concept of being aware and attentive, with therapeutic distance from what is observed that allows one to accept what is. The prompts for mindful writing were developed based upon the 7 qualities of mindfulness described by Jon Kabat-Zinn in *Full Catastrophe Living* [19]. While all expressive writing is mindful writing in that participants become aware of thoughts and feelings during writing, undergirding the process with particular attention to mindfulness qualities encourages writers to learn to obtain a more objective distance allowing them to manage their thoughts and feeling with non-judgment, loving-kindness, and compassion.

2.4.2. Logistics

The program was held in a workshop room at Duke Integrative Medicine, an integrative medicine clinic providing patient-centered primary care and a wide range of evidence-based complementary therapies. After signing in at the beginning of each class, participants sat 2 per table and were asked to quietly settle themselves. The facilitator described the procedure for the day's work with minimal instructions that were administrative in nature. Participants were given 15 min per each writing prompt, and the facilitator kept time, announcing when to move to the next task. Participants were also given 5 min to complete a post-writing survey at the end of each 15-min writing session. The survey implicitly encourages the participant to obtain some therapeutic distance in order to assess the writing exercise. If participant's schedules precluded attendance at a class, they were encouraged to write in response to the prompts, complete and return the post-writing survey to be used as data. The specific writing prompts and post-writing surveys used in each session are published in *Expressive Writing: Words That Heal* [5].

Participants were assured that their writing was solely for their benefit and personal processing, and no one else would ever view what they wrote unless they shared it themselves. No discussion was permitted between participants before, during, or after writing. The program facilitator asked participants not to speak to each other in order to respect each participant's privacy and allow for personal processing. At each session, participants were directed to take the first prompt and write according to the directions. One participant wrote using a keyboard with electronic notepad because he could not physically write with a pen; all other participants wrote in notebooks furnished for the study. All participants wrote their study identification number (rather than name) on each post-writing survey and left the surveys face-down for the facilitator at the end of the class. When the day's final writing assignment ended, participants placed their notebooks in a locked box on the desk in the front of the room and signed out.

2.4.3. Facilitator qualifications

The program facilitator for the pilot trial holds a Master of Arts in Teaching (English), a Master of Arts (English), and a Doctorate of Education with post-doctoral specialization in curriculum and instruction for post-secondary writing and literature. He has 34 years of experience designing and teaching expository and expressive writing in undergraduate and graduate settings, and has authored five books including Wellness & Writing Connections, and Expressive Writing: Words that Heal. The latter was co-authored with James Pennebaker, PhD and describes the program in this pilot trial in detail. In addition, the facilitator studied mindfulness with Jeff Brantley, MD and has had a personal meditation practice for over ten years. This training and practice enabled him to develop mindful writing as an additional writing style that is seminal to the program under study.

2.5. Measures

2.5.1. Feasibility

Feasibility was defined in 3 parts: 1) ability to meet enrollment goals in planned timeline; 2) retention across the course, defined as completion of the intervention [attendance to at least 4 of 6 (67%) classes] and completion of the study (provision of post-intervention data); and 3) adherence, defined as completion of at least 5 of the 6 (83%) post-writing surveys before the final post-intervention data collection. Ability to complete the session's post-writing survey required completion of all respective writing prompts, and was used as a proxy for completion of the writing.

2.5.2. Acceptability

Acceptability was formally assessed in two ways: 1) by the number of adverse events reported (to indicate safety); and 2) by the average scores to a particular question on a brief post-writing survey. Specifically, following the exercises for each type of writing (expressive, transactional, poetic, affirmative, legacy and mindful writing), participants were asked to use a 0-to-10 scale to indicate "to what degree the writing [as] meaningful and valuable for you." In addition, acceptability of the intervention was assessed informally by the comments participants wrote on their post-writing surveys regarding the program.

2.5.3. Psychological outcomes

2.5.3.1. Primary outcome: resilience. The primary outcome was assessed with the Connor-Davidson Resilience Scale (CD-RISC), a validated 25-item scale that has been studied in a wide variety of populations, including those with a history of trauma [20].

2.5.3.2. Secondary outcomes. ***Depression symptoms.*** Depression symptoms were assessed using the 20-item Center for Epidemiological Studies Depression Scale - Revised (CESD-R), a common screening test that measures depressive feelings and behaviors within the past week [21].

Perceived stress. Perceived Stress was assessed with the 10-item Perceived Stress Scale (PSS-10), a well-known questionnaire used to evaluate responder's perceptions about their level of stress and their ability to cope with stress over the last month. Using a 4-point Likert-type scale, participants endorse the degree to which each item best reflects their thoughts and feelings within the past month. Results from this questionnaire have demonstrated acceptable levels of validity and reliability [22].

Rumination. Defined as “compulsively focused attention on the symptoms of one's distress,” [23] rumination was measured using the 22-item Rumination Response Scale (RRS).

Sociodemographics. Basic sociodemographic information was self-reported at baseline.

2.6. Data analysis

Enrollment, retention and adherence data were tracked by the research coordinator using an EXCEL spreadsheet. Other study data were collected directly from the participants, entered and managed by the research coordinator using REDCap electronic data capture tools hosted at Duke University. Statistical analyses were performed using SPSS V.22. Resilience, stress, depression and rumination data were normally distributed and all intervention analyses are per-protocol. Paired-sample t-tests were used to assess change over time, with statistical significance set at 0.05 (2-tailed) for each test. Effect sizes are mostly presented using Cohen's d [24]. In addition, a second calculation is performed for resilience to facilitate comparisons with relevant literature. The second manner of calculating effect size is as follows: ES = post-measure minus pre-measure divided by standard deviation of the difference.

3. Results

3.1. Sociodemographics

The sample was predominantly white (95%) and female (81%). All participants had education beyond high school, and more than 60% had a graduate or professional degree. Thirty-four percent had an annual household income of less than $50K. Table 1 provides additional details.

3.2. Feasibility

3.2.1. Enrollment

Eighty-one participants responded to the study advertisements and 47 were screened on the phone in order of their response to ensure eligibility requirements. Thirty-nine met study eligibility criteria, provided informed consent and were enrolled in the trial. The other 34 individuals were not screened because the study was full, and were notified and thanked over the phone for their interest in participating. While a three-month recruitment cycle was planned, the study filled in three weeks. See Fig. 1 for CONSORT Flow Diagram.

3.2.2. Study retention

Completion of the intervention measured by attendance was achieved by 38 of the 39 consented participants, or 97% of the sample. Final data collection was also achieved for 97% of the participants, with 38 of the 39 consented individuals completing the post-intervention data collection and allowing for per-protocol analyses.

3.2.3. Adherence

Thirty-six of the 39 participants (92%) completed 5 of the 6 post-writing surveys and were deemed adherent. Thirty-two of them (82%) completed all 6 surveys.

3.3. Acceptability

No adverse events were reported. Participant responses to the question, "to what degree was the writing meaningful and valuable for you" averaged 8.3 on a 0-to-10 point scale for all types of writing. See Table 2 for scores on specific types of writing. In addition, sample comments from participants are reported in Table 3 as an informal demonstration of the acceptability of the intervention.

3.4. Psychological outcomes

See Table 4 for primary and secondary psychological outcomes.

3.4.1. Primary outcome: resilience

CD-RISC scores increased from baseline (64.3 ± 14.40) to post-intervention (74.2 ± 13.15), $t(37) = 4.61$, $p < 0.0005$. This mean increase of 10.0 ± 13.33 points, 95% CI [5.6, 14.4], produced a large effect size (Cohen's $d = 0.75$).

3.4.2. Secondary outcomes

Perceived Stress Scale (PSS-10) scores decreased from baseline (20.5 ± 7.43) to post-intervention (14.3 ± 6.64), $t(37) = -4.71$, $p < 0.0005$. The mean decrease of −6.1 ± 8.03 points, 95% CI [-8.8, −3.5] demonstrated a large effect size (Cohen's $d = 0.76$).

CESD-R scores decreased from baseline (19.0 ± 13.48) to intervention (12.7 ± 11.68), $t(37) = -3.21$, $p = 0.003$. The mean decrease of −6.2 ± 11.98 points, 95% CI [-10.2, −2.3], revealed a medium effect size (Cohen's $d = 0.52$). Sixty-one point five percent (61.5%) of participants scored at least 16 at baseline, while 26.3% of participants did so post-intervention.

Rumination Response Scale (RRS) scores decreased from baseline (48.5 ± 12.56) to post-intervention (39.8 ± 10.07), $t(37) = -5.03$, $p < 0.0005$. The mean decrease of −8.6 ± 10.58 points, 95% CI [-12.1, −5.2], revealed a large effect size (Cohen's $d = 0.82$).

4. Discussion

We report outcomes for a structured 6-week program that significantly extends the Pennebaker Paradigm. This program, *Transform Your Life: Write to Heal,* is feasible to offer through an academic outpatient clinic, and was well-received by participants. We further show that the program significantly improved a number of important psychological variables in a population with a fairly recent history of general trauma; improvements were observed in resilience, depression symptoms, perceived stress, and rumination.

The program was highly feasible by all defined measures, and was well-accepted by participants. Enrollment targets were reached in 3 weeks, a full 7 weeks before the ending of the planned recruitment period. Moreover, 97% of participants completed the study and 97% completed the intervention. In addition, 92% were deemed adherent to the intervention, completing at least 20 of the 26 writing exercises in response to the structured prompts, and responding to at least 5 of the 6 respective post-writing surveys.

The program was also quite acceptable to participants. There were no adverse events reported, and participant feedback on the post-writing surveys consistently indicated that the writing exercises were personally meaningful and valuable to them. Anecdotally, many participants reported finding themselves writing about traumas that had happened much further in the past than the “qualifying” trauma that had happened in the previous 12 months. The fact that the program allowed them to process whatever arose, including layered trauma from many years ago, is also a significant plus. The participant quotes in Table 3 speak for themselves about the power of this work.

All of the psychological variables measured improved across the program, with consistently medium to large effect sizes. Prime among these was enhanced resilience, the ability to successfully adapt and recover from adverse, stressful, or traumatic experiences. The Cohen's d effect size for CD-RISC scores in our pilot is considered large [24]. Likely due to the uncontrolled design of the trial, our effect sizes are greater than the effect sizes for other psychological variables seen in several key meta-analyses [25–27], and consistent with the seminal meta-analysis of randomized experiments using Pennebaker's written emotional expression paradigm [28]. The latter found positive effects in healthy individuals for general functioning (5 studies; Cohen's $d = 0.33$) and for psychological well-being (9 studies; Cohen's $d = 0.66$). The meta-analytic literature on the impact of expressive writing is equivocal, likely due to a number of factors including: 1) whether or not health and psychological variables are aggregated together [25]; 2) the meta-analytic trial inclusion criteria (e.g., trial design, length of outcome tracking, specificity of outcome) and methodology (including use of Hedge's correction for inclusion of small trials);

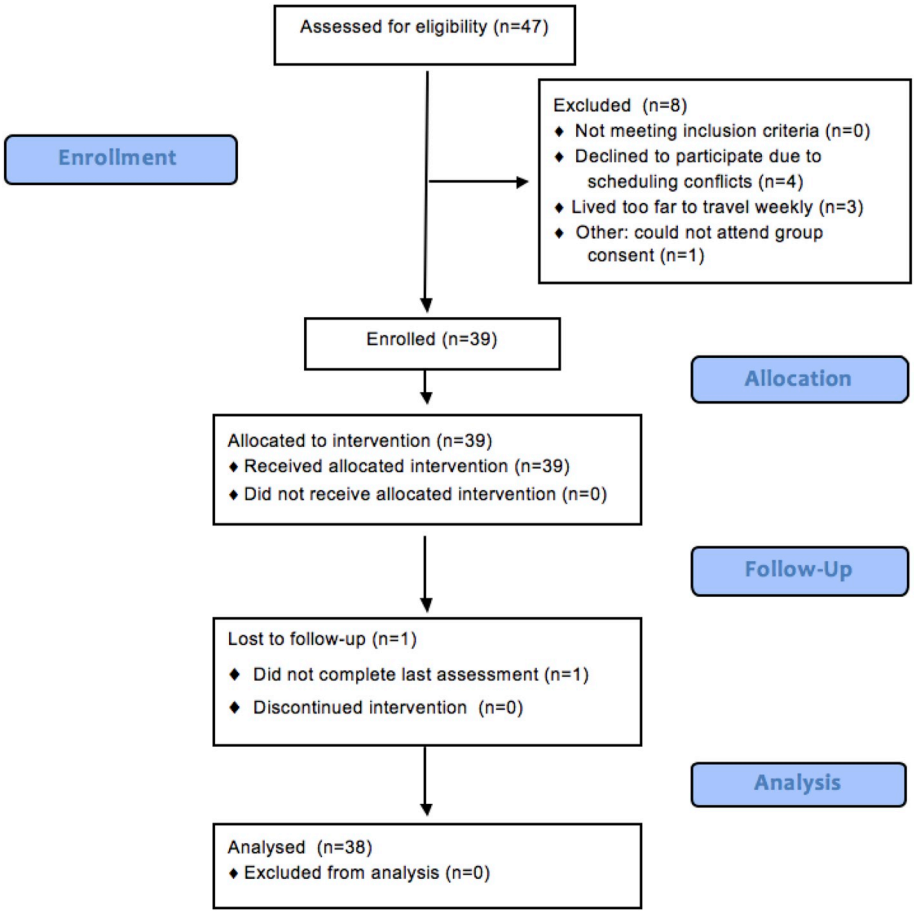

Fig. 1. CONSORT Diagram/Patient flow.

and 3) the specific samples studied (e.g., healthy populations versus clinical populations; all clinical populations versus a specific diagnostic group). There is also another likely contributor to the ambiguous outcomes from meta-analytic trials that to our knowledge, has not yet been studied: that of measuring positive emotion related variables rather than negative emotions and symptoms. For example, a 2016 meta-analysis of RCTs assessing expressive writing in patients with breast cancer found that outcomes for depression, anxiety and fatigue favored expressive writing, but the effect sizes were not significant. However, they also found that the effect size for quality of life was significant [16]. In other areas of psychology, positive emotions have been found not only to down-regulate the physiological and psychological adverse impact of negative emotions central to anxiety, depression, and stress-related disorders, but also to promote psychological well-being and resilience [29]. Positive emotions have specifically been shown to promote approach-oriented behaviors and facilitate the acquisition of internal resources, both central concepts in healing from trauma [29,30]. In addition to measuring negative outcomes including depression, stress and rumination, we intentionally chose as our primary measure the positive psychology construct of resilience. It is possible that positive emotion and well-being variables behave differently than symptom lists or negative emotion variables in response to expressive writing.

Finally, to put our findings into additional context, we compared them to a 3–6 month randomized pharmacologic-based trial in patients with PTSD that showed an average effect size of 0.72, with the largest effect size for any single medication studied being 1.06 [31]. In this pharmacology trial, the authors calculated effect sizes as post-measure minus pre-measure divided by standard deviation of the difference [24,31]. Our effect size for CD-RISC scores, when calculated in the same manner, is 4.62, a considerably larger effect. In addition, CESD-R scores showed a 32.6% decrease in mean depressive symptom scores, with a medium Cohen's d effect size of 0.52. Furthermore, 35% of the participants who began the program with a score indicative of a likely clinical depression ended the program no longer meeting this criterion. Improvements in perceived stress and rumination were also in the large range (Cohen's d: 0.76–0.82). We offer this information to suggest that *Transform Your Life: Write to Heal*, with an expansion of the Pennebaker Paradigm, may provide a useful short-term non-pharmacological treatment strategy to improve resilience in patients with fairly recent trauma.

Expressive writing is a low-cost, easily-accessible intervention, with high adherence and acceptability for participants. Further, the program appears to help participants process their recent traumas and improve

Table 2
Acceptability Ratings: Meaningfulness and Value of the Writing Exercises. Participants used a scale of 0–10 to answer, "To what degree was the writing meaningful and valuable for you?"

Type of Writing	Expressive	Transactional	Poetic	Affirmative	Legacy	Mindful	Overall Average
Average Rating	8.67	8.45	6.92	8.78	8.68	8.15	8.28
N for that rating	39	38	38	36	37	33	37

Table 3
Participant Comments regarding each session of the Writing Intervention.

Writing Style	Participant Comment
Session 1: Expressive Writing	• "It's interesting that the more I write, the less sad I feel. More emotionally settled than happy. A bit hopeful." • "This was useful - it felt like an opportunity to 'tidy up' and close the loop on the emotional experience. It's helpful to feel like you've acknowledged the pain that's there and also found a healthy perspective on it." • "This process was very new to me and it felt great to express thoughts that come out differently written as in my own head. I find it difficult to express myself verbally and am hopeful this strategy will allow an outlet to my deeper feelings."
Session 2: Transactional Writing	• "This writing assignment was enlightening. Focus on others' feelings and emotions for something I caused brought clarity to me. I realize that as I look for closure - for healing - it may help this person too if I ask for forgiveness. It has the potential to heal me (not just me!) and this other person too. Powerful!" • "I found it extremely valuable to take on the perspective of someone in a support role for another having gone through my experience. I realize that if I can feel this compassion for a loved one, then I can direct it toward myself. I also was reminded that what happened to me was not my fault, and was not a failure on my part, so my anger does not need to be focused on my own body." • "The writing process allowed me to explore forgiveness more fully than other times I've worked on forgiveness - not a replacement for other approaches, but an important complement."
Session 3: Poetic Writing	• "This was a great writing experience. It felt wonderful to take an issue that I struggle with daily, saddle the horse to drive out this demon, and giving myself permission to let it go - forever, after exhausting the beast." • "This writing was fun and showed me how funny and expressive I can be ('everyone' tells me so, but I've avoided delving there). It also allowed me to see that my body, and in this case, my legs, want more from me. As physical as I am, I am being called to be more physical - in a more mindful and self-nurturing way."
Session 4: Affirmative Writing	• "I realize that I have been obsessing over a negative situation & now I can choose to think about something positive instead & that will make me feel better & much more peaceful even when I find myself with the person who is involved in the negative situation. I have a choice to make, positive or negative." • "This assignment was incredibly helpful & beneficial process. Above anything else it is a great reminder of how my own thoughts prevail over my circumstances & how I can determine how I choose to live." • "The process of using the positive experience to overwhelm the bad experiences of the week and my ongoing pain and challenges was extremely valuable. I'm supposed to practice diffusion w/these negative thoughts or my therapist tells me this is useful, but I hadn't realized the impact this can have on a negative thought until now. Being able to overlay my happy, comedic, playful experience or upsetting experiences from this week made them less upsetting and important."
Session 5: Legacy Writing	• "I want to say that I was thinking while walking up to the front entrance today that I feel much less traumatized than I did a month ago. Whether it's because things have changed in my life or it's being part of the study, I couldn't say. But 'something' is working and making a difference. This was a useful assignment that I fulfilled in a heartfelt way. I got to a deeper level of honesty, compassion and gratitude than I've previously done. I feel better!" • "I see the value in this assignment. I know that there have been many joyful times in my life. I just have trouble remembering them. I think of all the writing exercises that this one might be most valuable to me if I engaged in it regularly." • "It is so easy to forget how powerful a good and positive memory can be. It disarms anger and frustration, and reminds us of our capacity to feel joy. I found myself, as I was writing, curious to see if I will ever experience such profound joy again, rather than lamenting that I may not. I found I did not need to recall how I felt or what I thought; simply writing about the events of the experience brought the feelings back."
Session 6: Mindful Writing	• "The best part of this exercise was the opportunity to write about the beauty of living as me. Accentuating the gift of being - the six steps by Zinn to return to this place of peace, wholeness, simplicity, beauty. Expansion and invitation to LIVE unfettered and open - what gift. The beauty of accepting life as life presents herself in each moment. Gift passed onto others miraculously and mysteriously." • "I felt that this was a very valuable exercise to work through the feelings of past trauma. It also helped me to realize how far I've come in the journey of healing." • "Absolutely an unexpected wonderful end to the experience over the weeks & by far my favorite part… The very last session gave voice, an instrument or vehicle for feeling deeply felt emotions I feel about both, even tears of release of pent up loss/pain, & being present, changed accepting in the present. I felt love. I experienced an inner light. Tears welled in my eyes without reliving pain or grief. The writing caught me unsuspecting, surprising myself."

their psychological status. This psychological processing may actually tap into specific mechanisms that warrant further study. For example, while we did not have the power to assess this in our pilot trial, the large improvement in rumination suggests that it may be a mechanism in the healing process.

While this first evaluation of the *Transform Your Life: Write to Heal* program shows that the program is well-suited to address fairly recent traumas (from the previous year but not the previous 4 weeks), it is important to underline that our study participants were processing traumas that were concluded. The results should not be extrapolated to those with actively occurring or immediately recent traumas. Concern about actively processing an immediately prior or ongoing trauma is reviewed by critics of the "diffusing" technique of the Critical Incident Stress Debriefing (CISD) model. They note that talking about a trauma while it is fresh and/or still unfolding may actually do more harm than good [32,33]. In addition, at least one study has reported potentially harmful effects of expressive writing for adults in the immediate wake of marital separation [34].

Despite the positive results of our study, there are at least four limitations. First, the relatively small sample size and homogeneous population of mostly white, female, highly-educated American participants may limit the generalizability of our results. Accordingly, a recent study of expressive writing in Chinese-American breast cancer survivors showed that writing about cancer facts was more helpful than

Table 4
Psychological outcomes.

Construct (Measure)	Pre (Mean ± SD)	Post (Mean ± SD)	Difference[a] (Mean ± SD)	95% CI for Differences	p-value
Resilience (CD-RISC)	64.3 ± 2.34	74.2 ± 2.13	10.0 ± 2.16	5.59 to 14.36	$p < 0.0005$
Depression Sxs (CESD-R)	19.0 ± 2.19	12.7 ± 1.90	−6.2 ± 1.94	−10.18 to −2.30	$p = 0.003$
Perceived Stress (PSS-10)	20.5 ± 1.21	14.3 ± 1.08	−6.1 ± 1.30	−8.77 to −3.49	$p < 0.0005$
Rumination (RRS)	48.5 ± 2.04	39.8 ± 1.63	−8.6 ± 1.72	−12.11 to −5.15	$p < 0.0005$

[a] Negative CESD-R, PSS-10, and RRS difference scores indicate improvement over time. Positive values for CD-RISC indicate improvement over time. CI = Confidence Intervals; Sxs = symptoms.

expressive writing of emotions, challenging implicit assumptions that psychosocial interventions tested in largely white populations can be directly generalized to other populations [35]. Second, it is significant that the sample represented a highly educated sector. It is possible that this highly educated group was well-positioned to process their traumas through expressive writing but we cannot assume that this would be true for all other sectors of the population. Hence, it will be quite important to replicate the trial with more socio-demographically diverse, and less educated groups. Third, as the study is a prospective pilot trial, we did not have a control group and the passage of time or other aspects of natural healing may contribute to the findings. Finally, those individuals who chose to participate in the study were likely already interested in writing as an intervention, and this bias may have also influenced the results.

5. Conclusions

This is the first trial to document that the 6-week *Transform Your Life: Write to Heal* program is feasible to implement in an outpatient setting, and was well-received by participants who have experienced fairly recent trauma. Participants of the program significantly improved their resilience, depression symptoms, perceived stress and rumination. The relative ease and low-cost of implementing the program has important implications for translational work. Specifically, the program may be an important part of trauma-informed care that is relevant to a wide segment of the general population, and can be easily delivered in healthcare settings. Further studies are warranted to examine its effect in RCTs with more ethnically and educationally diverse samples, and with diagnostic groups with specific emotional and physical health challenges. Additionally, 6-month and 1-year follow-up will be critical towards evaluating the longer-term impact.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ctcp.2018.12.005.

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