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Expressive writing - Who is it good for? Individual differences in the improvement of mental health resulting from expressive writing

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ABSTRACT

Objective: we examined individual differences in the effects of expressive writing. We hypothesized that moderate levels of neuroticism, low levels of experiential avoidance, and highly rated subjective severity would be linked to greater change in well-being post-writing.
Design: participants were randomly assigned to the expressive group (N = 104) who wrote about emotion-laden experiences, or the control group (N = 51) who wrote about everyday events. All completed the IES and BSI pre and 1, 3, and 6 weeks post-writing.
Results: overall, we replicated the seminal result, with greater reductions in IES scores in the expressive writing group. In addition, in the expressive group, as expected, participants with higher severity scores had greater reductions in BSI scores. Surprisingly, individuals with high rather than moderate neuroticism and high rather than low experiential avoidance scores also experienced more benefit.
Conclusions: participants who are more aware of, in touch with, and suffer more from negative feelings are those who gain the most from expressive writing. Based on this conclusion, clinical implications relevant to both psychotherapy patients and non-patients are suggested.

1. Introduction

Improvement in therapy through the use of self-expression has been a key component since the field of psychology was established [1–3]. L. S. Greenberg [4] writes that change in psychotherapy occurs "not through a process of insight or understanding alone … people must first arrive at a place before they can leave it" (p.14). Namely, there is no way around painful/traumatic episodes, people must "work through" them in order to change or heal. Here, we focus on one channel through which people can "work through" their issues, expressive writing (EW). Specifically we aim to better understand for whom EW is particularly beneficial.

Evidence for the benefits of EW has been accumulating using a brief written emotional expression task developed by Pennebaker (e.g., [5]). Pennebaker invited participants to write (for 15 min over four consecutive days) about their "deepest thoughts and feelings about a trauma or an upsetting experience", while control participants wrote about neutral topics. In comparison with the control condition, participants in the EW condition had significantly less health center visits in the six months following writing. Numerous studies have since demonstrated various long-term physical and mental health benefits of EW (see [6] for a review).

Several meta-analyses have been conducted to address how well the EW intervention works, in terms of physical or mental health improvements [7–10]. These meta-analyses have all found small significant overall effect sizes, together with a considerable amount of variability between findings (e.g., effects emerging only in healthy populations [9, 10] or only in medical/psychiatric samples [8]). Frattaroli [7], examining differences in designs of studies, reported some optimal conditions in which the EW effect emerges. These conditions included requiring at least three writing sessions of at least 15 min, giving examples of topics, and encouraging participants to write about more recent events. In eight studies that met these criteria, the overall effect size was larger. Moreove, Pennebaker [11] suggested that small N sizes as well as sample size variability between studies could account for some of the inconsistencies found in the EW literature, and could obscure potential moderators of EW.

Various explanations have been suggested as underlying the link between EW and improved health: disinhibition of emotions [12], cognitive adaptation and reorganization [13–16], exposure to aversive

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stimuli and re-experiencing events [17–21], and enhanced emotion regulation [22]. Some of these explanations may be regarded as complementary rather than contradicting, and indeed, inconclusive findings have been obtained in the various attempts to determine between them [21]. Moreover, as Smyth and Pennebaker write [23], different explanations may simply stem from different levels of analysis.

In view of the overlapping aspects between some of the theories mentioned, and the mixed results obtained in the EW literature, Pennebaker [24] argued that for people in need of inexpensive fast aid in dealing with emotional upheavals and stressors, it is more pressing to find out not why it works, but in which situations and for whom it works. The goal of the present study is to clarify which individual differences – specifically, personality characteristics and subjective severity of the event – are linked to the effectiveness of EW.

Findings are equivocal regarding personality characteristics that may moderate the beneficial effects of EW (e.g., [25]). One suggested hypothesis is that people who experience difficulty in feeling or expressing their emotions benefit more [7,10,23]. Nevertheless, the opposite hypothesis (occasionally referred to as the "matching hypothesis"), that people who tend to feel and express their emotions benefit more, has also been suggested and supported in various contexts (e.g., [26,27]).

A few studies examined the Big Five dispositional traits as possible personality moderators of the EW effect, and found mixed results (e.g., [28,29]). For example, participants high on neuroticism in Zakowski, Herzer, Barrett, Milligan, and Beckman's [29] study experienced less reduction in distress post-writing than participants lower on this trait, whereas Sheese, Brown, and Graziano [28] reported that neuroticism did not have an effect. These studies were similar in terms of their procedures, so that the difference in results is puzzling, and requires further exploration.

It may be possible that *moderate* levels of neuroticism are optimal for benefiting from EW. Zakowski et al. [29] found that high levels of neuroticism reduced the beneficial effects of expressive writing, and suggested that for individuals high on neuroticism, post-writing cognitive-emotional processing may be impaired, leading to less stress-related improvements. Conversely, if being high on neuroticism means being prone to negative emotions and to helplessness in coping with stress [30], being low on neuroticism may mean experiencing less negative emotions. Therefore, participants low on neuroticism may not experience *enough* negative emotions needed in order to undergo a meaningful process (e.g., [31,32]). Taken together, experiencing negative emotions to a certain optimal extent, not too much and not too little, may be crucial to the process of coming to terms with an emotion-laden experience.

An additional personality construct we focused on was experiential avoidance, (used interchangeably with psychological inflexibility). It has been shown that *how people respond* to their thoughts, feelings, and to events may be a greater factor determining their well-being than *how difficult their objective situation is* [33]. For example, adjustment to chronic pain is better predicted by the extent of experiential avoidance of pain than by the degree of the pain itself [34]. This phenomenon is one of the basic principles underlying different types of practices from both Eastern as well as Western cultures, defined as Mindfulness [35], metacognitive therapy [36], and acceptance and commitment therapy (ACT; [37]). These practices attempt to assist people in experiencing whatever exists at any given moment, namely, letting themselves be without attempting to alter their experience. The alternative is experiential avoidance: "the attempt to alter the form, frequency, or situational sensitivity of difficult private events (i.e., thoughts, feelings, and physiological sensations), even when doing so leads to actions that are inconsistent with one's values and goals (e.g., avoiding anxiety even when doing so prevents people from pursuing a long-held goal)" ([33], p. 678). The argument that interventions can transform one's experiential avoidance into a more flexible position implies that experiential avoidance can be changed, as opposed to the constant nature attributed to personality traits [38]. Nevertheless, when assessed explicitly, the construct of experiential avoidance was found not to change following EW [39,40]. Thus, given the equivocal status of experiential avoidance, in our study we treat it as a trait.

It is plausible that the greater the experiential avoidance, the worse the mental health outcome of EW, since one who tends to avoid experientially would be less willing to experience their emotions, would not be fully present in the moment both during and following engaging in EW. Therefore, it can be expected that avoidance would be manifested in an impairment of the processing of one's emotion-laden experience. Participants lower on experiential avoidance, on the other hand, may allow themselves to undergo a process through which their experiences may become more tolerable. Indeed, Reddy, Seligowski, Rabenhorst, and Orcutt [41] found that experiential avoidance following a traumatic experience predicted emotional suppression during EW. They also found an association between experiential avoidance following moderate exposure to a traumatic experience and higher post-traumatic stress symptoms, thus supporting the notion that experiential avoidance impairs mental health.

Lastly, we wished to explore the role of subjective severity of the event as a moderator. Early evidence suggested a positive association between writing about highly stressful and personal events, rated subjectively, and physiological outcome measures that involve the immune and autonomic systems (e.g. [26,42]). M. A. Greenberg and Stone [43] reported that EW participants who rated their stressful event as more severe had fewer self-reported physical symptoms in the following months than those who rated their experiences as less severe. Thus, it is possible that the subjective severity of the traumatic or stressful experience is linked to well-being outcomes so that the more one perceives one's experience as severe, the greater benefit one would gain from EW.

To summarize, our goal was to examine the effects of different factors on the success of EW. We hypothesized that moderate levels of neuroticism and low levels of psychological inflexibility will be linked to a greater change in well-being post-writing. We also hypothesized that the subjective severity of the stressful experience would be linked to well-being outcomes so that the more one perceives one's experience as severe, the greater benefit one would gain from writing.

Moreover, in order to address the methodological issues presented above, our study was conducted on a large sample size (N = 155). We believe this is the first large-scale study examining an Israeli population in Hebrew, and one of the few studies conducted with a large sample to date (others being, for example, [28]; with N = 546, and [44]; with N = 154). We also adopted Frattaroli's [7] optimal conditions mentioned above.

2. Method

2.1. Participants

Participants who completed the study included 155 (124 women) native Hebrew speakers who completed the study in Hebrew, all adults (aged 18–66). Twelve participants dropped out after the first or second session of the study. Participants were randomly assigned to either the EW group (N = 104, 84 women) or to the control group (N = 51, 40 women). They were recruited either online via the snowball method, or through the University Research Participation System. On average, participants were 28 years old (SD = 7.3). All were of Israeli Jewish background, most of them secular. Only nine participants had high school education level or less, all the rest were either undergraduate/graduate students or working full time after having received their academic degrees.

2.2. Measures

Writing task. Instructions were similar to the ones used by Pennebaker (e.g., [45]). Participants in the expressive condition were asked to

write their deepest thoughts and feelings about their most stressful or traumatic experiences, without restrictions regarding topic, repetitions, grammar, etc. They were given suggested topics or framings for writing, such as writing about the past, present of future, about romantic, familial, or social relationships, about who they were and who they would like to be, etc. In a pilot study, we tested four versions of a Hebrew translation of the instructions differing in their level of formality. We found no differences between versions, therefore we chose the most inviting version as the final one. Control writing participants were asked to write about neutral topics, and to stay as concrete and objective as possible. They were given a few topic suggestions focusing on their everyday events, for example, they were suggested to write about their series of actions in the day before writing, since the moment they got up. Instructions for both conditions did not vary between writing days.

Measures of well-being. The dependent variables in our study were two measures of wellbeing:

1. *Brief Symptom Inventory* (BSI; [46]), a self-report inventory including 53 items, each of which represents a symptom or a complaint (e.g., feeling lonely or depressed). Participants rated the degree to which they agree with each of the items regarding the preceding week using a scale of 0 (not at all) to 4 (very much). There are nine subscales: somatization, obsessive–compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. A total score across the nine subscales (global severity index (GSI)) was calculated. Higher scores reflect higher levels of symptoms and distress. The BSI is one of the most frequently used measures of psychiatric symptoms and has established reliability and validity [47], including with Israeli samples [48]. We measured responses to the BSI at four different time-points. Cronbach's alpha at each time-point ranged between 0.96 and 0.98 (measured on the different administration days separately) for the global score of the BSI.
2. *Impact of Events Scale* (IES; [49]). The IES can apply to any stressful event, referred to in the items as "it.'' It is comprised of 15 items, and can be divided into two subscales of intrusion (e.g., *'images related to it popped into your mind'*), and avoidance (e.g., *'tried not to think about it'*). Respondents indicate on a 4-point scale of 1 (never) to 4 (very often) the degree to which they agree with each statement regarding the prior 7 days. Internal reliability for this measure has been reported to range from 0.79 to 0.92 [50]. We measured responses to the IES at four different time-points. In our sample Cronbach's alpha ranged between 0.83 and 0.89 (measured on the different administration days separately).

Personality characteristics. Two of our moderating variables were well-known self-report questionnaires:

1. *NEO Five Factor Inventory* (NEO-FFI; [51], (to measure neuroticism)) is a 60-item self-report personality measure assessing the "Big Five" personality variables, namely, openness to experience, conscientiousness, extroversion, agreeableness and neuroticism. This version consists of a subset of the full version, so that 12 items represent each dimension. The NEO-FFI has acceptable reliability [52]. In the current study, for the neuroticism subscale, $\alpha = 0.87$.
2. *Acceptance and Action Questionnaire-II* (AAQ-II; [33], (to measure experiential avoidance)) is a 7-item self-report measure assessing psychological inflexibility (experiential avoidance). Sample items include *'emotions cause problems in my life', 'it seems like most people are handling their lives better than I am'* and *'I'm afraid of my feelings'*. Items are rated on a scale of one (never true) to seven (always true), with higher scores indicating greater psychological inflexibility. The AAQ has established good test-retest reliability, internal consistency, and validity [33]. In our sample $\alpha = 0.9$.

Severity Measurement. Our third moderating variable was *perceived severity* of the stressful experience which participants wrote about. This was measured by the following three questions that were asked a week post-writing: "To what extent (from 0 to 10) was the experience you wrote about traumatic for you, in comparison to your life events?", "To what extent (from 0 to 10) was the experience you wrote about traumatic in your opinion, in comparison to all possible traumatic life events?" and "Would you define/call what you wrote about a 'life changing event'?" These three rather different questions were selected in order to account for a full construct of severity perception. Yet, they were highly correlated (1st and 2nd questions: 0.79, 1st and 3rd questions: 0.72, and 2nd and 3rd questions: 0.73), and were added to create a single severity index ($\alpha = 0.9$).

Subjective Assessment of Writing: Participants were asked to rate the degree to which each writing session was meaningful to them immediately post-session. A week post-writing, participants were asked to rate the extent to which the writing exercise was valuable for them, and the extent to which they wrote about something that they had previously held back from discussing with others, on a scale of 0–10. Rivkin, Gustafson, Weingarten, and Chin [53] reported that participants in the EW condition rated both of these questions higher than control writing subjects. A week post-writing participants also rated the extent to which they feel what they wrote was personal and emotional.

2.3. Procedure

All participants completed consent and demographic forms, and then a battery of the personality and symptom inventories listed above, a week before commencing writing. Participants were asked to write on 3 occasions, with gaps of 3 days (on the 1st, 4th, and 7th days of week 1) for 20 min in the comfort of their own home (using the internet), in order to increase ecological validity. They were asked to write in a quiet time and place, with no disturbances. At the end of each writing session, participants rated the degree to which the session was meaningful to them. Participants filled out the symptom questionnaires again, 1 (in which they also answered post-intervention questions of the subjective assessment, and the severity questions), 3, and 6 weeks post-writing. After completing the 6 weeks follow-up, participants were paid (by cash or academic credit). Participants who dropped out received partial payment for their participation.

3. Results

Before commencing writing, we compared the EW and control groups on two demographic variables and initial levels of dependent measures. There were no between-groups differences regarding gender ($\chi^2_{(1,\,N=155)} = 0.732$, *ns*) education level ($\chi^2_{(1,\,N=155)} = 0.977$, *ns*), or pre-writing symptoms when taking the dropouts into account (IES: $t(165) = 1.146$, *ns*; BSI: $t(165) = 0.415$, *ns*), and in the groups' final state of pre-writing symptomology (excluding dropouts) as well (IES: $t(153) = 1.131$, *ns*; BSI: $t(153) = 0.464$, *ns*). Study dropouts were excluded from all other statistical analyses. Means and standard deviations of all study variables measured once are presented in Table 1.

3.1. Subjective Assessment of Writing

T-tests between the groups revealed that EW participants significantly rated their writings as more emotional ($t(153) = 10.7$, $p < 0.001$, Cohen's $d = 1.69$), personal ($t(153) = 10.2$, $p < 0.001$, Cohen's $d = 1.60$), more held back from previously discussing with others ($t(153) = 2.0$, $p < 0.05$, Cohen's $d = 0.35$) and more valuable ($t(130) = 5.2$, $p < 0.001$, Cohen's $d = 0.94$) than the control group. The EW group rated all writing sessions as more meaningful than the control group (for average meaning rating; ($t(149) = 7.9$, $p < 0.001$, Cohen's $d = 1.31$)).

Table 1
Means and standard deviations for all study measures measured once.

Group	Age	Emotional	Personal	Held Back	Valuable	Meaning	Severity	Neuroticism	AAQ
EW (N = 104)	28.6 (8.2)	8.56 (1.6)	8.8 (1.5)	5.5 (2.9)	7.3 (1.9)	7.6 (1.7)	19.3 (6.3)	36.8 (8.9)	20.5 (8.3)
CO (N = 51)	25.7 (3.8)	4.6 (2.9)	5.1 (2.9)	4.5 (2.8)	5.1 (2.7)	4.8 (2.5)	4.9 (6.8)	36.5 (8.9)	21.6 (9.4)

EW = Expressive Writing group; CO = Control group; Emotional = emotional rating of writing; Personal = personal rating of writing; Held Back = previously held back from discussing with others rating; Valuable = valuable rating of writing; Meaning = averaged meaning rating of writing; Severity = subjected severity rating of event; Neuroticism = Neuroticism score on the NEO-FFI; AAQ = The Acceptance and Action Questionnaire.

3.2. Analytic strategy

Our data formed a multilevel structure. Level 1 data consisted of the different time points in which participants answered the symptom inventories (i.e., a week pre-writing, 1, 3, and 6 weeks post-writing). These data were nested within participants (Level 2). This data structure is appropriate for multilevel linear modeling (MLM) techniques which allow variability in intercepts and slopes among subjects [54]. We used restricted maximum likelihood estimation (REML) in all analyses as it adjusts for uncertainty about the fixed effects [55]. The best fitting models and covariance structures were chosen based on the lowest −2 LLC. All analyses were conducted using the mixed models module of SPSS version 23.

We included 4 time points: T0 (e.g., before writing), T1 (a week post-writing), T2 (3 weeks post-writing) and T3 (6 weeks post-writing). Three time effects served as independent variables in all our analyses: linear time, quadratic time (i.e., time raised to the power of 2) and cubic time (i.e., time raised to the power of 3). This allowed us to model linear and curvilinear change over time. The predictor variables in our basic models were Group (EW or control), linear time, quadratic time, and cubic time. Those models were used to predict IES and BSI scores at the different time points. We included all 2-way interactions between group and each time effect.

We then constructed models with the moderators. Each model included group and all time effects, and one of the following moderators: AAQ, neuroticism or severity. Thus, predictor variables in those models included group, one moderator (AAQ/neuroticism/severity), linear time, quadratic time and cubic time. In these models, we included all 2-way and 3-way interactions between group, the specified moderator, and each time effect. Each of the models was used once to predict BSI scores and once to predict IES scores. All variables were coded using either mean centering (for continuous variables) or effects coding (for categorical variables) to facilitate interpretation of coefficients [55].

3.3. Multilevel model

3.3.1. Predicting IES

We found a significant linear time*group interaction ($B = -0.08$, $SE = 0.19$, $t = -4.10$, $p < 0.001$, 95% CI = −0.11 to −0.04) indicating that reductions in IES scores were greater in the EW group ($\Delta_{T0\text{-}T3} = 5.97$) than in the control group ($\Delta_{T0\text{-}T3} = 1.78$). In addition, there was a significant cubic time*group interaction ($B = 0.00$, $SE = 0.00$, $t = 3.02$, $p = 0.003$, 95% CI = 0.000 to 0.003) which indicated that a significant yet different cubic trend was found for both groups (for the EW group: $B = 0.000$, $SE = 0.00$, $t = -6.78$, $p < 0.001$, 95% CI = 0.000 to 0.000; for the control group: $B = 0.000$, $SE = 0.00$, $t = -2.46$, $p < 0.05$, 95% CI = 0.000 to 0.000). In the EW group the rate of reduction in IES scores (which was $\Delta = 0.97$ between T0 and T1) increased significantly between T1 and T2 ($\Delta = 4.25$), and then decreased significantly between T2 and T3 (0.75), and in the control group the rate of reduction in IES scores (which was $\Delta = 1.55$ between T0 and T1) decreased significantly between T1 and T2 (with a slight elevation in scores; $\Delta = 0.04$), and then increased significantly between T2 and T3 ($\Delta = 0.27$). These results are presented in Fig. 1.

No models predicting IES that included the moderating variables showed them to have significant effects.

3.3.2. Predicting BSI

We found a significant linear time*group interaction ($B = -0.09$, $SE = 0.04$, $t = -2.26$, $p < 0.05$, 95% CI = −0.16 to −0.01) which indicated that while in the EW group reductions in BSI scores were significant over the course of time ($B = -0.17$, $SE = 0.05$, $t = -3.60$, $p < 0.001$, 95% CI = −0.27 to −0.08), in the control group they were not ($B = 0.003$, $SE = 0.05$, $t = 0.56$, $p = 0.955$, 95% CI = −0.10 to 0.11). These results are presented in Fig. 2.

3.3.3. Effects of moderators on BSI scores over time

When we entered *neuroticism* as a moderator, we found a significant 3-way interaction between linear time, group, and neuroticism ($B = -0.02$, $SE = 0.007$, $t = -2.29$, $p < 0.05$, 95% CI = −0.03 to −0.002). This effect indicated that in the EW group, participants with higher neuroticism scores had greater reductions in BSI scores than participants with lower neuroticism scores ($B = -0.01$, $SE = 0.005$, $t = -2.37$, $p < 0.05$, 95% CI = −0.02 to −0.002), while in the control group there was no significant relation between neuroticism scores and change in BSI scores ($B = 0.006$, $SE = 0.006$, $t = 1.095$, $p = 0.279$, 95% CI = −0.005 to 0.02).

When we entered *AAQ* as a moderator, we found a significant 3-way interaction between linear time, group, and AAQ ($B = -0.02$, $SE = 0.007$, $t = -2.85$, $p < 0.05$, 95% CI = −0.03 to −0.006). This effect indicated that in the EW group, participants with higher AAQ scores (more inflexibility) had greater reductions in BSI scores than participants with lower AAQ scores ($B = -0.01$, $SE = 0.005$, $t = -2.15$, $p < 0.05$, 95% CI = −0.02 to −0.009). In the control group there was no significant relation between AAQ scores and change in BSI scores ($B = 0.007$, $SE = 0.005$, $t = 1.31$, $p = 0.195$, 95% CI = −0.004 to 0.02).

When we entered *severity* as a moderator, we found a significant 3-way interaction between linear time, group and severity ($B = -0.02$, $SE = 0.01$, $t = -2.16$, $p < 0.05$, 95% CI = −0.40 to −0.002). This effect indicated that in the EW group, participants with higher severity scores had greater reductions in BSI scores than participants with lower severity scores ($B = -0.15$, $SE = 0.006$, $t = -2.43$, $p < 0.05$, 95% CI = −0.03 to −0.003), while in the control group there was no significant relation between severity scores and change in BSI scores

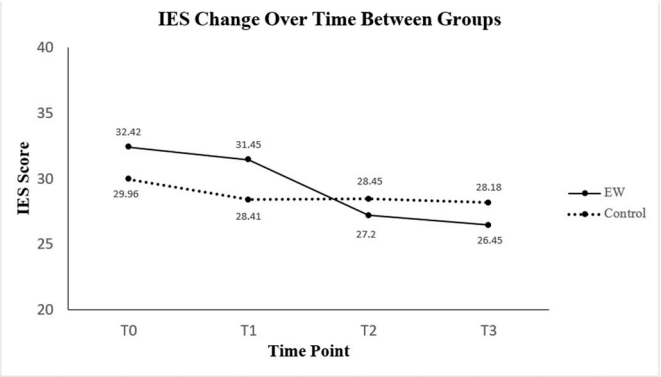

Fig. 1. IES = Impact of Events Scale. EW = Expressive writing group. Control=Control writing group. T0 = A week before writing. T1 = A week after writing. T2 = Three weeks after writing. T3 = Six weeks after writing.

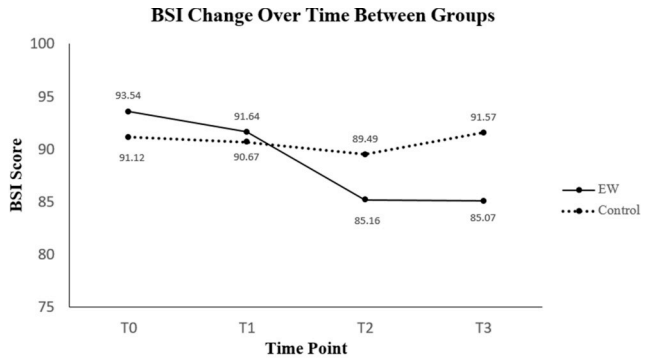

Fig. 2. BSI = Brief Symptoms Inventory. EW = Expressive writing group. Control = Control writing group. T0 = A week before writing. T1 = A week after writing. T2 = Three weeks after writing. T3 = Six weeks after writing.

($B = 0.002$, $SE = 0.004$, $t = 0.35$, $p = 0.728$, 95% CI = −0.007 to 0.01).

4. Discussion

Since the 1980's, numerous studies have demonstrated various long-term physical as well as mental health benefits of expressive writing (e.g., [3,5,56]). We replicated this (in terms of mental health), showing that participants in the EW group had greater reductions in psychological symptoms as well as intrusive thoughts and avoidance regarding the event/period they wrote about, in comparison to the control group.

Our goal was to characterize the individuals for whom EW is most beneficial. We hypothesized that participants with moderate levels of neuroticism would be the ones most benefiting from EW. This was based on a combination of Zakowski et al.'s [29] findings showing worse outcomes for participants high on neuroticism, and the hypothesis that being too low on neuroticism would result in worse outcomes, because participants must experience a minimal amount of negative emotions in order to undergo a meaningful process (e.g., [31,32]). Our results show that, indeed, participants with low neuroticism scores showed lower well-being outcomes than the other participants. However, we found that higher levels of neuroticism were related to greater reductions in psychological symptoms in the EW group. Thus participants with higher levels of neuroticism benefited more than participants with moderate levels of neuroticism.

A possible source of difference between our findings and those of Zakowski et al. [29] may be that their participants were cancer patients, while ours were from the general population. Thus, although ambiguous results emerged with respect to the effects of EW for cancer patients in general (e.g. [57–59]), it may be that highly neurotic individuals from this particular population differ from highly neurotic individuals from the general population. Being a cancer patient is an additional stressor. Thus, for the highly neurotic individuals in Zakowski et al.'s study, EW may have been too overwhelming emotionally for it to be effective, since underregulated emotion may also impede productive processing of emotions and events (e.g., [60,61]). In line with this reasoning, our highly neurotic participants may have been sufficiently in touch with their negative emotions while not overwhelmed by them.

We also hypothesized that low levels of psychological inflexibility (i.e., experiential avoidance) would be linked to a greater change in well-being post-writing. Our hypothesis was based on the notion that "working through" via EW, and thus improving in terms of well-being following it, requires allowing oneself to be in touch with their unfolding experience and process rather than avoid it. In contrast to our hypothesis, we found that for participants in the EW group, the greater the experiential avoidance, the greater the improvement in psychological symptoms. At first glance, this finding could be interpreted as indicating that participants high in experiential avoidance found the EW intervention as a safe space to finally start processing their emotions, namely, that writing about the event may have functioned as a mild exposure for those who usually avoid their emotions and attempt at altering whatever arises in their moment-to-moment experience. Yet, these participants are mostly the same participants high on neuroticism, discussed with regards to the previous finding (the correlation between neuroticism and experiential avoidance scores was 0.753) – and most of these people are thus prone to feeling negative feelings, and therefore, they are by definition not experiential avoiders. Hence, one possible explanation for this counterintuitive finding may lie in the validity of the AAQ-II [33]. Wolgust [62] has suggested that items of the AAQ-II were strongly related to items measuring distress (in terms of factor loading), rather than to items measuring experiential avoidance. For example, in the AAQ-II one item is: *"I worry about not being able to control my worries and feelings"*, while a distress item from Wolgast's study is: *"I often feel depressed, worried or anxious."*, and an item from the same study measuring acceptance/non-acceptance, namely, experiential avoidance, is: *"When I feel depressed, worried or anxious, I **do not** try to avoid these feelings"*. Based on Wolgast's study and our results, we feel safe to interpret our finding as showing that the more distressed people were, the better they got. In other words, what we measured using the AAQ-II was the extent to which participants were in touch with their negative feelings and suffering from them (similar to what was measured using the neuroticism scale, and indeed, as mentioned, they were highly correlated), and not the extent to which participants were willing to stay in touch with and work through their negative emotions. To summarize this point, we argue that our hypothesis regarding experiential avoidance was not validly tested. In order to examine it, we suggest that future research use Wolgast's questions measuring acceptance in order to assess experiential avoidance – at least with non-clinical populations (used both in our and Wolgast's study).

Our last hypothesis concerned subjective severity of the stressful event or period one wrote about. We hypothesized that EW participants who write about more subjectively severe events would gain more from writing in terms of well-being improvement. This hypothesis was supported. To our knowledge, only a few studies have previously tested this hypothesis (e.g., [43]). In our view, this finding suggests that people who write about more subjectively severe or traumatic events are more willing to (and actually do) engage in a meaningful process in their writing. We believe that participants' higher ratings of severity may be an indication that they are more motivated to "work through" their issues, and are not avoiding their most painful emotion-laden experiences, allowing themselves to be in touch with their painful experience in the present moment (of writing and after writing). Once their emotions are activated, they may work on and process the negative events more thoroughly, and improve more than participants who rate their chosen events as less severe, in terms of well-being following writing (e.g., [31,32]). Having said that, it is important to note that since participants in our study were asked to rate their subjective severity of the event *they wrote about*, post-writing, the two groups differed greatly (as expected, since their instructions varied) in terms of their subjective severity ratings. This means that in the expressive group subjective severity ratings were much higher than in the control group. For that reason, we cannot rule out the possibility that the finding regarding severity was found significant due to regression to the mean.

Several strengths of the study should be noted, namely, adopting Frattaroli's and Pennebaker's [7,11] suggestions for an optimal EW design mentioned above. Our main limitation, on the other hand, is the homogeneity of our sample. As mentioned, the sample is consisted of eighty percent women. However, it should be noted that Frattaroli's meta-analysis described above found no relation between gender and effects following EW [7]. Moreover, our study was conducted in a highly educated community sample rather than a treatment seeking sample, therefore the sample is likely characterized with higher functioning than the general population. Thus, caution is called for in interpreting the data as a clear and unequivocal benefit for high distress and high neuroticism. In fact, it is possible that there is a difference between our

sample's neuroticism and distress scores (as measured by the AAQ-II) and those scores in the general population. In our study the participants were willing, motivated, and able to take part in the process. This type of self-selection may differentiate them from people who were not willing to do so, in that our participants have more strength and perhaps may have had lower symptomology (as was found in [63]). This is in line with our assumption that there exists an emotional threshold above which expressive writing is no longer effective – as may be seen in Zakowski et al.'s [29] study mentioned above, and as has been suggested by Pennebaker and Smyth [56] – at least not on its own, and additional mental resources are needed.

5. Conclusions

Taken together, we argue that participants who are more aware of, are more in touch with, and who suffer more from their negative feelings (higher on subjective severity, neuroticism and distress) gain most from EW. These people are in greater pain, and as such may have greater motivation to change, and to work through their issues. In a recent commentary, Rude and Haner [64] conceptualized their ideas for suggested moderators of the EW paradigm similarly, by claiming that it is exactly those things that should be tested as moderators: people's *ability* to engage in EW – based on their coping style and ability to tolerate emotions (which we attempted but could not examine using AAQ-II), their *motivation* and their *need* to undergo a meaningful process via EW. Hence, we suggest that future research is needed to further explore these constructs.

Moreover, the present study fine-tunes existing data regarding EW efficacy in the sense that it implies which people are more inclined to benefit from expressive writing, at least as a stand-alone intervention for non-clinical populations. As a consequence, better screening for EW candidates is made possible. In addition, though prematurely, since moderators may vary across populations and since our results did not address EW during therapy, present findings may aid therapists in deciding which patients are more likely to benefit from EW during therapy – since the intervention was found beneficial as a supplement during different types of therapies in general (e.g., [65]). In addition, since people who are more in touch with and who suffer more from their negative feelings were found to benefit more following EW, it may be suggested to people who are wait-listed for psychotherapy. At the certain point in time during which these people decide and act on turning to therapy, they may be in great pain and distress, and may also have sufficient strength (as evident by their attempt to start therapy) to successfully undergo EW.

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Anonymous review

The authors request the review of their manuscript be anonymous.

Declaration of competing interest

The authors declare no conflict of interest.

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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.2019.101064.

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