Self-compassion induction enhances recovery from social stressors: Comparing adults with social anxiety disorder and healthy controls

Joanna J. Arch, Lauren N. Landy, Rebecca L. Schneider, Leonie Koban & Jessica R. Andrews-Hanna

Published online: 31 Jul 2018.

Submit your article to this journal

View Crossmark data

Routledge
Taylor & Francis Group

Check for updates

Self-compassion induction enhances recovery from social stressors: Comparing adults with social anxiety disorder and healthy controls

Joanna J. Arch[a], Lauren N. Landy[a], Rebecca L. Schneider[a], Leonie Koban[a] and Jessica R. Andrews-Hanna[b]

[a]Department of Psychology and Neuroscience, University of Colorado Boulder, Boulder, CO, USA; [b]Department of Psychology, Cognitive Science Program, University of Arizona, Tucson, AZ, USA

ABSTRACT

Background and objectives: This study evaluates the process and consequence of inducing self-compassion during recovery from social performance stressors. Though interest in self-compassion as an intervention target is growing, extant findings suggest that initially cultivating self-compassion can be challenging for those with high self-criticism and anxiety, common features of social anxiety disorder (SAD). **Design**: Quasi-experimental design. **Methods**: The current study evaluates the feasibility, content, and outcomes of a brief written self-compassion induction administered after consecutive laboratory social stressors, among adults with SAD ($n = 21$) relative to healthy controls (HC; $n = 35$). **Results**: Findings demonstrate the feasibility of employing a written self-compassion induction among adults with (and without) SAD, reveal group differences in written responses to the induction, and suggest that the SAD group benefitted more from the induction than the HC group, based on greater reductions in state anxiety and greater increases in self-compassion during stressor recovery. Greater use of negative affect words within written responses to the self-compassion induction, but not during general writing, predicted lower subsequent state anxiety across groups, by a medium effect size. **Conclusions**: Collectively, the findings support the feasibility and utility of cultivating self-compassion among adults with SAD.

Introduction

Social anxiety disorder (SAD) is characterized by high levels of self-criticism (Rapee & Lim, 1992), shame, fear of evaluation, and excessive self-control (Clark & Wells, 1995; Schlenker & Leary, 1982), perhaps stemming from a core belief that the self is deficient and fear that these deficiencies will be revealed to others (Moscovitch, 2009). Strikingly, levels of self-criticism in generalized SAD exceed levels of self-criticism in major depression or other anxiety disorders (Cox, Fleet, & Stein, 2004). Given their high self-criticism, people with SAD often engage in post-event processing (Brozovich & Heimberg, 2008; Clark & Wells, 1995; Helbig-Lang, von Auer, Neubauer, Murray, & Gerlach, 2016), in which they intensely, enduringly, and self-critically mentally review social events after they occur. Post-event processing functions to maintain negative beliefs about the self, negative predictions about future events, and retrieval of negative social memories (Brozovich & Heimberg, 2008).

Given these core features of SAD, self-compassion holds promise as a process to target during the post-event period to help those with SAD recover from social performance stressors. As defined by Neff (2003a, 2003b), self-compassion encompasses three interconnected dimensions: self-kindness (being kind and understanding towards oneself in instances of pain or failure, rather than harshly self-critical), common humanity (perceiving one's experience as part of the larger human experience rather than perceiving oneself as separate and isolated), and mindfulness (holding painful thoughts and feelings in balanced awareness rather than over-identifying with them). Trait self-compassion, as defined by Neff, correlated negatively ($r = -.54$) with psychopathology levels in a meta-analysis of 14 studies (Macbeth & Gumley, 2012). Thus unsurprisingly, adults with SAD report lower trait self-compassion than healthy controls (HC) (Werner et al., 2012). This latter study also found that within SAD, lower trait self-compassion predicted greater fear of negative and positive evaluation. Yet nascent evidence suggests that higher self-compassion in the context of stressful social events moderates negative emotions – findings with potential relevance to SAD. Leary, Tate, Adams, Batts Allen, and Hancock (2007) found that higher trait self-compassion buffered undergraduates against negative self-feelings when they imagined distressing social events and when they received ambivalent social feedback, especially among those low in self-esteem. In addition, Leary and colleagues developed a brief written approach to inducing state self-compassion that involves writing about a difficult social event from the perspective of the three dimensions of self-compassion proposed by Neff (2003a, 2003b). They found that completing this written self-compassion induction led undergraduates to acknowledge their role in social events associated with failure, humiliation or rejection, without becoming overwhelmed by negative emotions (Leary et al., 2007). Such benefits were not evident following self-esteem or expressive writing control conditions.

Other studies have explored the benefits of meditation-based self-compassion approaches for recovering from *in-vivo* social performance stressors. For example, Pace and colleagues (2009, 2010) found that six weeks of training in Tibetan *lojong* compassion meditation did not result in more adaptive biopsychological reponse to the Trier Social Stress Task (TSST; an intensive social performance stressor), but found that greater compassion meditation practice correlated with decreased TSST-related increases in subjective distress and IL-6, a proinflammatory cytokine. Subsequently, Arch et al. (2014) randomized undergraduate women to brief self-compassion meditation training (e.g., self-focused *metta* meditation), an attention control, or no-training control conditions prior to the TSST. Relative to the two control conditions, this study found that the brief self-compassion meditation training diminished sympathetic (salivary alpha-amylase) and subjective anxiety responses and increased cardiac parasympathetic responses to the TSST. A follow up moderator analysis (Arch, Landy, & Brown, 2016) demonstrated that within the compassion condition, women with higher baseline social anxiety reported less subjective benefit (e.g., higher subjective anxiety) during the TSST than those with lower social anxiety, but similar biological benefits (diminished salivary alpha-amylase); in contrast, baseline social anxiety levels did not affect subjective anxiety responses in the control conditions to the same extent. Further, women with higher and lower levels of trait self-compassion benefitted similarly from the self-compassion training, suggesting that benefits were fairly robust to baseline traits common in SAD samples (e.g., high social anxiety, low self-compassion).

Though most extant research focuses on unselected undergraduate samples, findings to date suggest that self-compassion holds promise for countering core features of SAD, particularly for promoting adaptive reflection upon and recovery from social performance stressors. Despite their low trait levels of self-compassion (Werner et al., 2012), we also reasoned that cultivating self-compassion might be more realistic for those with SAD than cultivating self-esteem, the most widely studied approach to positively relating to the self (Mann, Hosman, Schaalma, & De Vries, 2004). Self-esteem relies on downward social comparisons, and those with SAD already locate themselves at the bottom of the social hierarchy (Weeks, Rodebaugh, Heimberg, Norton, & Jakatdar, 2009). In contrast, self-compassion allows for the presence of perceived imperfections, failings, and difficult thoughts and feelings (Neff, 2003a, 2003b) – common experiences in SAD. On the other hand, clinical research using self-compassion interventions with highly self-critical, anxious, and depressed adults

suggests that they often avoid, resist, or fear self-compassion (Gilbert, McEwan, Matos, & Rivis, 2011) and report difficulty initially cultivating it, perhaps because their high levels of self-criticism impede its cultivation (Gilbert et al., 2011; Gilbert & Procter, 2006; Pauley & McPherson, 2010). Thus, prior to examining possible benefits of inducing self-compassion among adults with SAD, we first must establish the feasibility of having adults with SAD cultivate self-compassion (within a one-time laboratory induction) and evaluate whether they engage with the induction to the same extent as HC. In that SAD is characterized by intensive post-event processing of social events that likely slow recovery from those events (Brozovich & Heimberg, 2008; Clark & Wells, 1995; Helbig-Lang et al., 2016), we reasoned that the post-event period represented a strongly SAD-relevant context in which to evaluate the feasibility and outcomes of cultivating self-compassion. Further, extant studies (Arch et al., 2014; Pace et al., 2009, 2010) have cultivated self-compassion *prior* to social stressors, yet such stressors may be difficult to anticipate in real-world settings. In the probable case that such stressors occur unexpectedly, cultivating self-compassion *after* social stressors may be a helpful approach.

The current study thus evaluates whether a brief written self-compassion induction speeds recovery following social performance stressors in the laboratory. We selected a written approach to cultivating state self-compassion rather than a meditation-based (Arch et al., 2014; Hofmann, Grossman, & Hinton, 2011) or imagery-based (Gilbert & Procter, 2006) approach because the written approach yields measurement outputs (e.g., written words) that can function as a manipulation check and be analyzed for content. Specifically, two groups, young community adults diagnosed with SAD and HC, underwent two consecutive social stressors in the laboratory – a public speaking paradigm in which they gave a speech in front of three live judges, followed immediately by a feedback paradigm in which they received feedback from the judges on their speech (see Koban et al., 2017). During recovery from the consecutive speech and feedback tasks, they completed a 10-minute written self-compassion induction adapted from Leary et al. (2007). Given research suggesting that adults with high anxiety and self-criticism have difficulty initially cultivating self-compassion (Gilbert et al., 2011; Gilbert & Procter, 2006; Pauley & McPherson, 2010), as noted above, we first evaluated the feasibility of using this written approach for inducing self-compassion among adults with SAD by comparing groups on written word count and content responsiveness to the self-compassion writing prompts. Based on previous work on the related topic of expressive writing, which has been used to process intense stressors (such as cancer; Stanton et al., 2002), we hypothesized that there would be no differences between the groups on indices of engagement with the self-compassion induction; that is, we hypothesized that it would be feasible to employ a written approach to induce self-compassion among adults with SAD. Second, we aimed to characterize how adults with *versus* without SAD responded to the self-compassion induction by comparing the two groups on semantic written content using the computerized text analysis software package Linguistic Inquiry Word Count (LIWC; Pennebaker, Booth, Boyd, & Francis, 2015). We hypothesized that the SAD group would employ more negative affect words (including anxiety words) and less positive affect words than the HC group, particularly in response to the self-descriptive, non-self-compassion-focused portion of the writing exercise (see *Methods* and Leary et al., 2007). Third, based on previous findings (Arch et al., 2016; Werner et al., 2012), we evaluated two competing hypotheses regarding which group would benefit more from the self-compassion induction, specifically: (1) that the SAD group would benefit *more* than the HC group from the self-compassion induction due to their lower trait self-compassion, creating greater need for such an intervention and more room for improvement, or (2) that the SAD group would benefit *less* from the self-compassion induction than HC, because self-compassion represents the opposite of their typically shameful self-view and negative post-event processing of social stressors and thus may be more difficult to induce (Gilbert et al., 2011; Gilbert & Procter, 2006; Pauley & McPherson, 2010). We evaluated "benefit" from the self-compassion writing exercise by: (1) examining whether (hypothesized) group differences in the use of negative and positive affect words during the non-self-compassion portion of the writing exercise diminished during the self-compassion writing portion; (2) comparing the groups on changes in state self-compassion before *versus* after the writing exercise; and (3)

comparing the groups on changes in state anxiety before *versus* after the writing exercise. Finally, to evaluate behavioral mediators of these effects, we examined relationships between LIWC-derived affective content of the self-compassion induction and subsequent changes in state anxiety and self-compassion.

Methods

Participants

Participants ($N = 56$) were recruited from the greater Boulder, Colorado community. All participants were initially screened over email for basic inclusion and exclusion criteria pertaining to the group (SAD vs. HC) about which they were inquiring. If basic criteria were met, they were diagnostically evaluated using the MINI International Neuropsychiatric Interview for DSM-IV (MINI; Sheehan et al., 1998), enhanced by more detailed questions to evaluate the anxiety disorders that were piloted previously (Roy-Byrne et al., 2010). All participants were required to be 18–40 years old[1] and physically healthy by self-report.

Eligibility criteria for SAD group participants ($n = 21$) additionally included: (1) meeting DSM-IV criteria for SAD on the enhanced MINI, (2) *not* meeting DSM-IV criteria for current major depressive episode, dysthymia, or other Axis I disorders (e.g. substance use disorders, psychotic disorders) except for other anxiety disorders. Eligibility criteria for HC group participants ($n = 35$) additionally included not meeting diagnostic criteria for any of the 18 psychological disorders assessed on the MINI, which included mood, anxiety, substance use, eating, and psychotic disorders. Additional ineligibility criteria for both groups included current or recent self-harm (within past 5 years), current suicidality (ideation, intent, or plan), suicide attempt in the past 5 years, recent head injuries, neurological disorders, and pregnancy.[2] Prescription medication use was required to be stable, and participants were asked not to take any additional medication on the day of the study prior to the study session.

Participants had a mean age of 24.70 years (SD = 5.11) with no differences between groups, $F (1, 54) = .62$, $p = .44$, $p\eta^2 = .01$. Regarding race and ethnicity, 69% of participants identified as white, non-Latino/a, 13% as Latino/a, 9% as Multiracial, 5% as Asian or Asian American, 2% as African American, and 2% as Other, with no differences between groups, $\chi^2(1) = .09$, $p = .76$, $\varphi = .04$ (comparing % of white, non-Latino and non-white or Latino). Participants attained a median of 4 years of college education (a bachelor's degree); group differences in education attainment (a categorical variable) did not reach significance, $\chi^2(3) = 6.94$, $p = .07$, Cramer's $V = .36$. Approximately two-thirds (66%) of the sample was female; group differences in gender were significant, $\chi^2(1) = 8.93$, $p = .003$, $\varphi = .40$, with more women in the SAD than HC control group. Consequently, we covaried gender in all analyses.

The University of Colorado Boulder Institutional Review Board approved this study and each participant voluntarily provided written informed consent prior to beginning the study.

Diagnostic screening

The MINI is a brief, structured, validated clinical interview (Sheehan et al., 1998) that assesses anxiety, mood, substance, and eating disorders, and screens for suicidality and psychosis. The MINI interviews were administered by clinical psychology doctoral students or post-baccalaureate research assistants who were extensively trained on the MINI, including achieving reliable diagnoses across 6 gold-standard training cases. For participant convenience, interviews were conducted by phone.

Measures

The widely-used *State-Trait Anxiety Inventory* (STAI-S; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) assessed state anxiety at baseline, speech anticipation, post-feedback task, immediately prior

to writing, and post-writing (approximately 6 minutes after writing). STAI-S has a range of 20-80, with current sample Cronbach α (at baseline) of .94.

The widely-used *Self-Compassion Scale* (SCS; Neff, 2003a) assessed trait self-compassion at baseline. We employed Neff's currently recommended scoring approach, which involves computing a grand mean of all 6 subscale scores. However, the findings remained the same when using the original scoring approach (Neff, 2003a). To assess state self-compassion, we employed a state version of the SCS (SCS-S) that was previously developed and piloted in the context of a social stress paradigm (Arch et al., 2014). The SCS-S modifies the trait SCS items to reference current experience following the speech performance rather than difficult or painful times generally, for example, changing "I'm disapproving and judgmental about my own flaws and inadequacies" to "Right now, I disapprove of and judge my own flaws and inadequacies" or changing "When something painful happens I try to take a balanced view of the situation" to "Following my performance, I am trying to take a balanced view of the situation." In both conditions, we administered the SCS-S immediately prior to the writing task and then again at the final assessment point for the study, which took place about 6 minutes after the self-compassionate writing to allow for more time between SCS-S assessments. Cronbach α for the baseline trait SCS in the current sample was .95, and for the twice administered SCS-S, .89 and .90.

The written responses to the self-compassion induction were transcribed verbatim into typographical form. Transcriptions associated with the initial descriptive question ("Describe how you felt and behaved at the time.") and the three self-compassion prompts (see *Tasks and Procedures*) were analyzed separately using LIWC 2015 software, an automated text analysis program that estimates the semantic properties of written language by referencing each word to a built-in dictionary organized by distinct conceptual categories (Pennebaker et al., 2015). LIWC counts the number of words in a passage within each category and converts this count to a percentage based on the total words in the passage.

Experimental conditions

Comparing the SAD and HC groups represented the main comparison of interest. However, we also employed a modest experimental manipulation for purposes of determining whether outcomes varied as a function of brief time alone versus participation in the self-compassion induction. Thus, following the speech and feedback tasks, participants were randomized to immediately receive the self-compassion writing exercise followed by a 5-minute sitting, eyes-open rest recovery (No-Wait condition), or to receive the 5-minute rest recovery first, followed by the self-compassion writing exercise (Wait condition). For resting recovery, participants were seated in a comfortable chair and told: "We would now like you to sit and relax here for 5 minutes. Please don't use your phone, read, etc … just relax."

Tasks and procedures

The study was conducted in a single session within the same 10 × 10 foot room in the first author's laboratory at the Department of Psychology and Neuroscience, University of Colorado Boulder. The two female experimenters were trained to follow a manualized study protocol. Speech judges were trained to follow a standard protocol, and consisted of one male and two female judges for each participant session.

Baseline Questionnaires. Following informed consent, we administered baseline questionnaires, including the SCS-S and STAI-S.

Speech Task (Social stressor 1). After baseline, participants were given instructions for a speech task adapted from the Trier Social Stress Test (Kirschbaum, Pirke, & Hellhammer, 1993). Specifically, participants were given 3 minutes to mentally prepare a speech, without writing anything down, about their ideal job and why they were well-suited for it, to be delivered in front of a panel of

judges. Three judges (e.g., confederates trained to play this role) then entered and sat at a table immediately across from the participant. One judge each was trained to convey a negative (cold), neutral (calm, expressionless), or slightly warm expression. The participant then was asked to speak for 5 minutes. During the speech, the judges used computer tablets or laptops to rate participants on 58 evaluative items, on a 0 to 100 scale, as accurately as possible while maintaining their appropriate demeanor. The 58 evaluative items involved the extent to which the judges agreed with statements such as: "She seemed uncomfortable", "She seemed thoughtful", "She was engaging", "She looked anxious." The items reflected the core fear domains in SAD proposed by Moscovitch (2009), which involve fear of others noticing perceived flaws in one's social skills and behaviors, appearance, character/ personality, and ability to control or conceal feelings of anxiety. All participants received a combination of negative, neutral, and positive ratings from the judges.

Self-Evaluation and Feedback Task (Social stressor 2). Immediately following the speech, participants completed a feedback task in which they were shown one of the judges' ratings on each of 58 evaluative dimensions, selected by an algorithm to reflect a similar balance of negative, neutral, and positive feedback for each participant (for more details, see Koban et al., 2017). Participants first rated themselves on a particular item, then received one judge's feedback on the same item (selected by the algorithm), and finally, rated how they felt about themselves and the judges. They then re-rated themselves on each item. The results of the feedback task are reported elsewhere (Koban et al., 2017).

Self-compassion written induction. The self-compassion written induction was adapted from Leary et al. (2007) to the specific context of the speech and feedback tasks. As in Leary et al. (2007), the written induction consisted of 5 writing prompts: the first prompt asked participants to recall and describe the speech and feedback tasks, the second prompt asked participants to describe their reactions to the task, and the third through fifth prompt targeted each of the three dimensions of self-compassion described by Neff (2003a, 2003b), as described in greater detail below. To introduce the written induction, participants were told:

> We now we have a written exercise for you to complete that involves thinking about the tasks that you just did. Please follow the instructions at the top and let me know if you have any questions. Please keep writing the whole time, as much as you're able, and I'll let you know when to stop. Please spend 5 minutes or less on the first two questions and then move onto the next, even if you haven't finished the first 2 questions.

The instructions at the top of the self-compassion writing page stated:

> We would like you to think about the experience you just participated in - the speech and judge feedback tasks. Most people experience these tasks as stressful, and might experience negative or unpleasant emotions.

> Please think back to a few minutes ago when you were completing these tasks. Do not continue until you have the speech and feedback experiences in mind.

The instructions then prompted, "Please tell us about this speech/ feedback experience in detail," followed by two writing prompts adapted from Leary et al. (2007), "Describe the task itself. Who was there? What happened?" (writing prompt #1) and "Describe how you felt and behaved at the time" (writing prompt #2). As noted above, we analyzed this second prompt separately from the self-compassion prompts that followed, because it provided a self-descriptive (yet not self-compassion-focused) prompt with which to compare the responses to the self-compassion prompts. We did not analyze the first prompt because it functioned to return participants to focusing on the speech and feedback tasks, rather than one's personal reaction to the tasks, and we were interested in the latter.

We next instructed: "We would now like you to think about your experience in a different way, and answer the following prompts", followed by three written self-compassion prompts (see Table 1) that asked participants to reflect on the speech and feedback tasks from the perspective of each of the three self-compassion dimensions proposed by Neff (2003a, 2003b). The first self-compassion prompt (writing prompt #3 overall) cultivated a common humanity perspective

Table 1. Randomly selected responses to the self-compassion writing prompts.

Self-Compassion Prompts	Social Anxiety Disorder Group	Healthy Control Group
We would now like you to think about your experience in a different way, and answer the following prompts: 1. Many psychologists suggest that, when you experience negative events such as the one that you experienced, you should remind yourself that everyone has these sorts of experiences. It's part of the human condition for people to struggle with adversity such as failure, humiliation, and rejection, and it helps to recognize that these experiences are a normal part of life. Write down ways in which other people also experience events that are similar to the one you described.	Going to school, making friends, applying for a job, there are many ways in which people are stuck in embarrassing, scary, and even troubling situations. Going to school is a big one, because that's where all of us Americans start with all of our anxieties, then comes friends, a subject I'm not great with. After that is employment and I'm dreading the thought of it. (S148) Job interviews and class projects, many other situations where they are on the spot. (S124) Speeches during work meetings. Experiments. Conferences. Interviews. School projects. (S114)	Public speaking is something most dread, speaking in front of a large group can be tough. I found this interest setting to be a bit different; in terms of pressure and all eyes on me. Maybe because of confinement. (S135) Being ill-prepared for public speaking can be a humiliating experience but given the circumstances, I think I do ok. It is normal for people. (S154) Other people can get freaked out at really small things and some people don't seem to care much about anything. A situation like performing in public can be anxiety-provoking for some (S105)
2. When these kinds of things happen, it also helps to treat yourself with kindness, much like you would treat a friend who had such an experience. Write a paragraph about the event, expressing understanding, kindness, and concern toward yourself for what you experienced, much like you might write a supportive letter to a friend who had experienced a similar event.	Blindsided by the task of decision-making and choosing a life calling and asked to speak on it, you could not have been better prepared for where you are. Of course you will make mistakes at some point! You need to learn but for the resources you were given you did your best. :) (S149) The event is over. I voluntarily did this. I wasn't forced like during school. I'm ok and can just move on. I'm not going to judge myself harshly. I'm very aware that I'm not good at public speaking and I don't think I will get better so I'm just accepting it. (S122) I am proud of myself for stepping up and completely the task. I maintained good eye contact and talked about something I truly love. Even if the "judges" weren't interested in my topic or could have cared less, I care and that's all that matters. (S100)	Dear XXX (kind self-nickname), I feel that you did your best with the situation given your current state of health and the limited the period you had to prepare/complete the speech. I know the subject of a career can bit a bit stressful for you and you overcame the problem, didn't fidget, smiled, made eye contact and did not give up. (S123) You weren't really prepared for it, and now it's all over. It's not like it will continue to affect you in any way, or that you have to interact with these people again. (S109) Lots of people would do far worse in a similar situation. And it's not like you were able to prepare in depth. And since this isn't something you have to do all the time and this is just for a study. In the grand scheme of things, it doesn't matter at all! (S116)
3. Although it's easy for people to get carried away their emotions when they experience negative events, you should instead be aware of your feelings, noticing them but not letting them overwhelm you. It helps to put psychological distance between yourself and your emotions -- to view them somewhat from a distance. Describe what you felt (or are feeling now) about the event in an objective fashion- detaching yourself from your emotions and describing them from the outside.	Now I feel-relief-so relieved there are no more speeches. I'm also feeling a lot more calm. I felt: nervous, anxious, stressed, stupid, tense, judged. (S122) The more time that passes the more I'm noticing critical thoughts creep up. I think I was less nervous and self-critical since I was aware this was a study, and was trying to keep a big perspective and not get too caught up in emotions. I am feeling somewhat self-critical about being judged as unlikeable, but am also proud that I was able to put anything together at all for the speech. (S124) Ashamed–stems from performing well in all aspects. Nervous–future: what will happen? Am I going to do this again. Embarassed x 2–don't cry, dummy! Anxious–paired with nervous. (S136)	This event did not invoke/evoke strong emotional response. Now I am struggling with a huge desire to go outside. I feel like I am missing on the warmth and sunshine. Working to be patient and know this experiment won't last forever, either. (S103) A lot of hyping up–thinking "this is gonna be great" before the speech and then "I rocked that" after. The tiny bit of negative feedback from the judges was more useful than anything else, and what didn't agree with my own perception of what I had done was kind of disregarded (at least consciously–it did seem to shift my answers for the second round of feedback). Having the judges unrelated to work helped. (S142) In the future, I'm not going to remember this experience, especially in like 20 years from now. What I do know is that I responded well to a difficult situation and handled it without getting angry or upset at myself. I also didn't wish the judges any ill, which shows good character in dealing with a hostile crowd. I will be successful in life, and I will earn some money from this soon and go see my girlfriend (and maybe get some ice cream =)) (S102)

Note: We used the www.random.org random number generator to select participant numbers for each prompt. Also note that self-compassion prompts 1–3 in this table corresponded to overall writing prompts #3–5 outlined in *Tasks and Procedures* section.

on the tasks by reminding participants that it is a normal part of being human to struggle with experiences such as "failure, humiliation and rejection" and asking them to write down ways that others experience similar events. The second self-compassion prompt (#4 overall) asked participants to cultivate self-kindness by writing a paragraph about the tasks that expressed kindness and understanding for themselves, like writing a supportive letter to a friend who had experienced something similar. The third self-compassion prompt (#5 overall) invited participants to notice and describe their feelings about the tasks from an objective perspective: "noticing [your emotions] but not letting them overwhelm you … view[ing] them somewhat from a distance." In that the three positive dimensions of self-compassion reflected in these writing prompts are conceptualized as interwoven and facilitative of one another (Neff, 2003a, 2003b, 2016), we analyzed the written responses to these three self-compassion prompts together. This had the further benefit of increasing the reliability of the textual analyses by increasing the number of words analyzed and reducing Type I error.

Participants had 10 minutes to complete the writing exercise without the experimenter in the room. After 5 minutes, the experimenter prompted them through an audio speaker to move beyond the first two questions to the next (e.g., self-compassion) section of the task if they had not done so already.

Statistical approach

Analyses were conducted in SPSS Version 24. We employed chi-square tests for categorical outcomes, univariate ANOVAs for between-group comparisons at a single timepoint, and repeated measures ANOVAs for between-group comparisons involving two or more timepoints. We covaried gender in all analyses. No participant was excluded by the authors at any stage of analysis. All participants had complete data with the exception of two participants (one from each group) who did not answer the non-self-compassion-focused writing prompt (#2, see *Tasks and Procedures*). Thus, except for analyses involving the non-self-compassion-focused writing prompt ($n = 54$), the analyses include all participants ($n = 56$).

Results

Baseline group differences and stressor manipulation check

To demonstrate that the speech and feedback tasks were perceived as stressful, we examined anxiety levels over the course of the experimental session. Thus, we conducted a repeated measures ANOVA to examine changes in state anxiety (STAI) across the baseline, speech anticipation, post-feedback task, immediately prior to writing, and post-writing periods, covarying gender. As expected, groups differed in state anxiety at baseline, $F (1, 54) = 57.27$, $p < .001$, $p\eta^2 = .52$, with the SAD group reporting higher baseline anxiety ($M = 44.67$, SD = 8.68) than the HC group ($M = 29.23$, SD = 6.52). Presented in Figure 1, the repeated measure ANOVA revealed a significant main effect of time, $F (4, 212) = 27.87$, $p < .001$, $p\eta^2 = .35$, such that state anxiety increased immediately following the speech task instructions, and did not return to baseline until the final (post-writing) recovery period. Further, a large main effect of group, $F (1, 53) = 46.05$, $p < .001$, $p\eta^2 = .47$, indicated higher anxiety scores throughout the session in the SAD than HC group. These main effects were modified by a group by time interaction, $F (4, 212) = 4.68$, $p = .001$, $p\eta^2 = .08$, demonstrating that the SAD group reported greater anxiety increases in response to the social stressors than the HC group, as expected. Due to the greater anxiety increases in SAD than HC, we checked to ensure that state anxiety increased specifically within the HC group, which it did: $F (4, 132) = 7.38$, $p < .001$, $p\eta^2 = .18$. In sum, as expected, both groups reported increased anxiety in response to the social stressors (the manipulation check), confirming the salience of the stressors within both groups. In addition, the groups differed in baseline levels of trait self-compassion, $F (1, 54) = 30.83$,
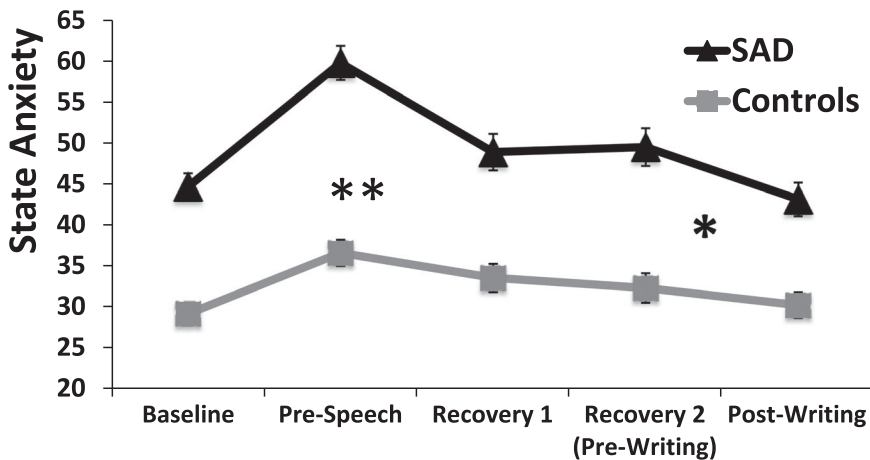
Figure 1. Group differences in state anxiety (on the *State-Trait Anxiety Inventory*).

Notes.**$p = .001$ group by time interaction across the session; *$p = .045$ group by time interaction showing more anxiety reduction in the social anxiety disorder group (SAD) than healthy control group (Controls) for the Recovery 2 (Pre-) vs. Post-Writing periods. Standard error bars indicate ± 1 SE.

$p < .001$, $p\eta^2 = .36$, with the SAD group ($M = 2.68$, SD = .73) reporting significantly lower levels than the HC group ($M = 3.68$, SD = .61), as expected.

Feasibility of the written self-compassion induction

We examined feasibility and engagement with the written self-compassion induction among adults with SAD relative to HCs based on written word count and content responsiveness. We reasoned that the groups might respond differently to the descriptive, non-self-compassion-focused writing prompt (#2, see *Tasks and Procedures*) than to the self-compassion prompts (#3-5), and thus examined each separately. No group differences in word count emerged in response to the descriptive writing prompt that asked participants to "describe how you felt and behaved at the time" of the speech and speech feedback experience, $F (1, 52) = .17$, $p = .68$, $p\eta^2 = .00$, with the SAD group writing an average of 39.10 words (SD = 18.08), and the HC group writing an average of 36.94 words (SD = 18.77). In addition, no group differences in word count emerged in response to the three self-compassion writing prompts, $F (1, 54) = .24$, $p = .62$, $p\eta^2 = .01$, with the SAD group writing an average of 111.81 total words (SD = 35.05), and the HC group writing an average of 116.77 total words (SD = 37.15). Covarying gender did not alter these findings.

We defined content responsiveness as an attempt to directly respond to the content of the self-compassion writing prompts, that is, to generate a written response that was generally consistent with the aim of the prompt. For content responsiveness, independent ratings by authors J.J.A. and R.L.S. showed that 94.92% of the SAD group and 96.84% of the HC group written responses (summed across the three prompts) represented attempts to respond to the written self-compassion prompts. We employed a two-way random intra-class correlation to estimate absolute rater agreement for content responsiveness across the three self-compassion writing prompts, with the average measures ICC = .79, reflecting excellent inter-rater agreement. These combined indices demonstrated similarly strong participant engagement and general feasibility in employing the written self-compassion induction among adults with SAD relative to HC.

Group differences on textual analysis

As presented in Table 2, in response to both the descriptive writing prompt ("Describe how you felt and behaved at the time" of the speech/feedback tasks) and the self-compassion writing prompts,

Table 2. Group differences on textual analysis following the descriptive and self-compassion writing prompts.

LIWC variable	Social Anxiety Disorder Group Mean (SD)	Healthy Control Group Mean (SD)	Between-group p value (F test)	Effect size Partial η^2
How I felt and behaved writing prompt				
Negative emotion	9.08 (4.02)	4.15 (4.07)	<.001***	.28
Anxiety	7.07 (3.82)	3.44 (3.72)	<.001***	.23
Positive Emotion	2.19 (2.42)	5.65 (5.21)	.004**	.16
Self-compassion writing prompts				
Negative emotion	3.95 (2.47)	2.59 (1.92)	.01*	.12
Anxiety	2.30 (1.49)	1.23 (1.16)	.001**	.21
Positive Emotion	4.98 (2.82)	3.38 (2.07)	.003*	.16

Note: LIWC: Linguistic Inquiry Word Count; SD: standard deviation. Mean (SD) reflects raw means and standard deviations, without covariates. For the self-compassion writing prompts, there were $n = 21$ and $n = 35$, for the social anxiety group and healthy control group respectively. One missing data point was missing in each group for the "How I felt and behaved writing prompt". The F-tests covaried total written word count (for the particular prompt[s]) and gender.
*$p < .05$, **$p < .01$, ***$p < .001$.

the groups differed in the use of negative, anxious (a negative subtype), and positive emotion words in hypothesized directions. Specifically, the SAD group used more negative, more anxious, and less positive emotion words than the HC group across both sets of writing prompts, $ps \leq .01$, $p\eta^2 = .12$-.28, see Table 2. As a result of opposite patterns of group differences in negative *versus* positive emotion word use, groups did not differ in overall affect word use in response to the descriptive writing prompt, $F (1, 49) = .10$, $p = .75$, $p\eta^2 = .00$, or to the self-compassion writing prompts, $F (1, 49) = .23$, $p = .64$, $p\eta^2 = .01$. All analyses covaried gender and written word count[3].

Group differences in benefits of the self-compassion induction

Group by written content interactions. Covarying gender and word count, we next examined group differences between the descriptive *versus* self-compassion writing prompts, to evaluate whether writing in a self-compassionate way reduced group differences in written negative and positive emotional content. As Figure 2 presents, for negative emotion content, this hypothesis was supported: a repeated measures ANOVA showed that group differences in negative emotion content diminished between the descriptive and self-compassion writing prompts, $F (1, 49) = 5.54$, $p = .02$, $p\eta^2 = .10$. Similarly, group differences in anxiety-specific content approached diminishing between the descriptive and self-compassion writing prompts, $F (1, 49) = 3.61$, $p = .06$, $p\eta^2 = .07$. Group differences in positive emotion content did not diminish by writing prompt type, $F (1, 49) = 1.05$, $p = .31$, $p\eta^2 = .02$, that is, the SAD group continued to use significantly fewer positive words.

Group differences in changes in state self-compassion. Covarying gender and baseline (trait) self-compassion[4], a repeated measures ANOVA found a significant, moderate-to-large group difference in state self-compassion before *versus* after the self-compassion writing exercise, $F (1, 52) = 4.48$, $p = .04$, $p\eta^2 = .08$, such that the SAD group reported greater increases in self-compassion following the writing exercise than the HC group. Simple effects analyses revealed significant group differences in state self-compassion immediately prior to the writing exercise, $F (1, 52) = 9.37$, $p = .003$, $p\eta^2 = .15$, that were no longer significant following the writing exercise, $F (1, 52) = 1.70$, $p = .20$, $p\eta^2 = .03$, see Figure 3.

Group differences in changes in state anxiety. Covarying gender and baseline state anxiety, a repeated measures ANOVA found no reductions in state anxiety during initial stressor recovery following a 5-minute rest period compared to back-to-back state anxiety assessment (e.g. the wait vs. no-wait writing condition, see *Methods*), $F (1, 51) = 1.55$, $p = .22$, $p\eta^2 = .03$, suggesting no anxiety reductions following brief resting recovery alone. However, examining changes in state anxiety before *versus* after the self-compassion writing exercise revealed a significant group by time interaction, $F (1, 52) = 4.23$, $p = .05 [.045]$, $p\eta^2 = .08$, demonstrating greater reductions in state anxiety
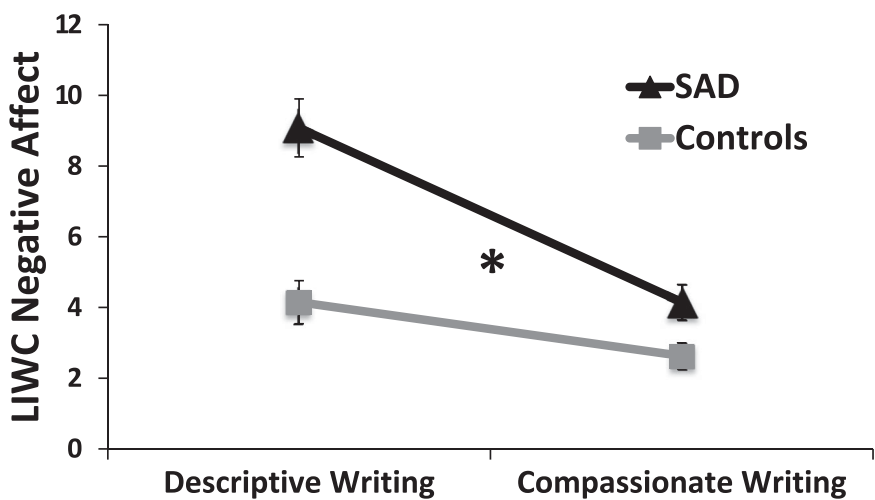
Figure 2. LIWC-generated negative affect words as a percent of total words at pre- and post-self-compassion induction.

Notes. *p = .02 group by time interaction showing more negative affect word reductions pre- to post-written induction for the social anxiety disorder group (SAD) than healthy control group (Controls). Standard error bars indicate ± 1 SE.
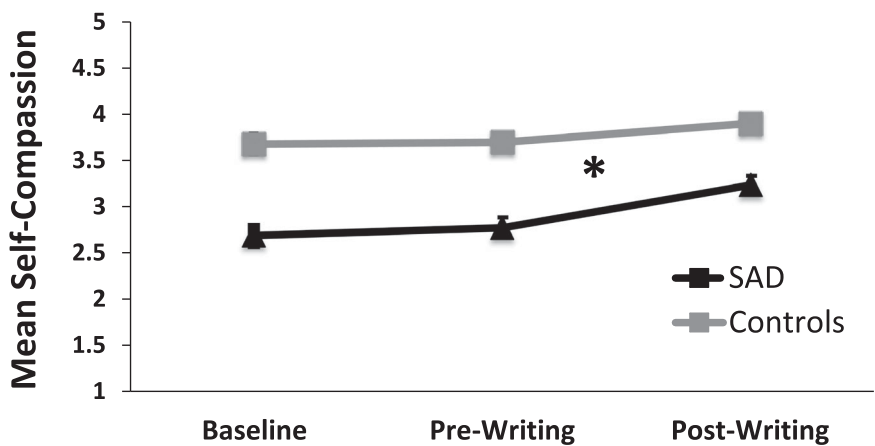

Figure 3. Self-compassion scores on the SCS across the session.

Notes. Baseline represents Trait self-compassion whereas Pre- and Post-Writing represent *State* self-compassion mean scores. *p < .05 group by time interaction showing greater increases in state self-compassion pre- vs. post-writing for the social anxiety disorder group (SAD) relative to the healthy control group (Controls). Standard error bars indicate ± 1 SE.

over time in the SAD than HC group, see Figure 1. The group by time interaction held when covarying the wait vs. no-wait writing condition, $F (1, 51) = 5.29$, $p = .03$, $p\eta^2 = .09$.

Relationship between textual analyses and outcomes

We next evaluated whether written responses to the self-compassion prompts predicted post-writing state self-compassion and anxiety. Covariates included pre-writing levels of the outcome variable, group, gender, and when significant, word count. For consistency with the $p\eta^2$ effect sizes reported above, we employed ANOVA rather than regression.

State self-compassion predicted by writing content. Across groups, negative affect LIWC word count in response to the self-compassion writing prompts did not predict subsequent state self-

Table 3. Summary of findings for group comparisons.

Hypothesis Social Anxiety Disorder (SAD) vs. Healthy Control (HC) groups	Relevant Outcomes	Hypothesis Supported?
1. SAD and HC will engage to a similar extent in the self-compassion written induction	- Word count - Coded content responsiveness	1. Yes for both
2. SAD group will employ more negative affect (including more anxious) and fewer positive affect words during writing than HC	LIWC affect word count for: - Negative affect - Anxiety-related - Positive affect words	2. Yes for all
3. Competing hypotheses that: 　(1)　the SAD group will benefit *more* than the HC group from the self-compassion induction 　**versus** 　(2)　the SAD group will benefit *less* from the self-compassion induction than HC	- LIWC word counts for negative and positive affect for initial vs. self-compassionate writing - State self-compassion before vs. after the induction - State anxiety before vs. after the induction	Hypothesis (1) was supported across all outcomes (except LIWC positive words) Hypothesis (2) was not supported

compassion, $p = .10$ [.097], $p\eta^2 = .05$, though reflected a pattern of greater negative affect word content predicting higher subsequent self-compassion. Across groups, positive affect word count in response to the self-compassion prompts did not predict later state self-compassion, $p = .24$, $p\eta^2 = .03$.

State anxiety predicted by writing content. Across groups, negative affect LIWC word count in response to the self-compassion prompts predicted subsequent state anxiety levels, $p = .04$, $p\eta^2 = .08$, such that higher negative affect word content predicted lower subsequent state anxiety levels. Positive affect word count did not predict subsequent anxiety levels, $p = .58$, $p\eta^2 = .01$. To ascertain if the link between negative affect written content and state anxiety was specific to the self-compassionate writing (as opposed to descriptive writing), we evaluated whether responses to the non-self-compassionate, descriptive writing prompt (#2) also predicted subsequent state anxiety levels, which it did not, $p = .58$, $p\eta^2 = .01$. Thus this link was specific to self-compassionate writing.

Table 3 summarizes the findings for the between-group hypotheses.

Discussion

To our knowledge, this represents the first study to evaluate the feasibility and outcomes of a self-compassion induction (of any kind) among adults with SAD or to compare their responses to HC. Given the tendency for adults with SAD to engage in intense post-event processing (Brozovich & Heimberg, 2008; Clark & Wells, 1995; Helbig-Lang et al., 2016), we evaluated the extent to which inducing self-compassion enhanced r*ecovery* from social stressors and whether this differed by group. First, we demonstrated the feasibility of employing a written self-compassion induction among adults with SAD during recovery from social stressors, relative to a HC group. Second, by analyzing written responses, we characterized how adults with and without SAD responded to the written self-compassion induction, supporting our hypothesis that the SAD group would employ more negative and less positive affect words than the HC group. Third, we evaluated competing hypotheses about which group would benefit more from the self-compassion induction and found evidence that the SAD group benefitted more than the HC group. Convergently, we showed that group differences in using negative affect words were lower during self-compassionate writing than general descriptive writing ("Describe how you felt and behaved at the time"). Finally, we examined relationships between affective word content during self-compassionate writing and subsequent changes in state anxiety and self-compassion. Across groups, we found that greater negative affect word use

during self-compassionate writing, but not descriptive writing, predicted subsequent reductions in state anxiety. This finding supports the notion that writing about negative emotions from a self-compassionate perspective, rather than writing in general, drove reductions in state anxiety during stressor recovery.

From a feasibility perspective, the findings indicate that both the SAD and HC groups similarly engaged with the written self-compassion induction. Based on coding their responses, both groups generally responded to the self-compassion writing prompts in thoughtful and relevant ways. Finding that adults with SAD used less positive and more negative affect words than adults without SAD may reflect the fact that the SAD group reported higher anxiety throughout the study, particularly in response to the social stressors, thus creating more negative experiences to process in writing. Willingness to write about negative affect from a self-compassionate perspective was important in that greater negative affect word use – but not greater positive affect word use – predicted lower subsequent anxiety. However, compared to descriptive writing, self-compassionate writing also reduced group differences in negative affect word use. We thus observed a paradox: group differences in negative affect content diminished during the self-compassion induction yet remained important across groups for benefitting from the induction. If this finding replicates, it suggests that although self-compassionate writing reduced negative affect content for the SAD group, it remained helpful to process negative emotions about social stressors from a self-compassionate perspective. This finding is consistent with a review of expressive writing findings (Pennebaker, 1997) in which use of a *moderate* level of negative affect words predicted the greatest health benefits. Very high levels of negative affect words during expressive writing – as employed by the SAD group during the descriptive part of the written exercise – has been associated with worse health outcomes. Reducing the frequency of negative affect word use in the SAD group may have facilitated benefitting from the self-compassion induction. Speculatively, during self-compassion writing, participants also may have used negative and anxiety-related words in a different way than before – by validating and shifting perspective on them rather than merely naming them. As LIWC is not sensitive to context, future work could hand-code responses to evaluate this possibility. In contrast with findings from the expressive writing literature (see Pennebaker, 1997), more positive affect word use was not associated with greater benefit from the writing exercise. However, unlike many expressive writing studies, current outcomes were evaluated within the same session as the writing exercise (and benefits were not focused on physical health).

Regarding who benefitted more from the written self-compassion induction, the SAD group demonstrated greater increases in state self-compassion and reductions in state anxiety following the induction than the HC group, by medium effect sizes. This finding is consistent with one of two competing hypotheses: that the SAD group would benefit more from the self-compassion induction than the HC group. We found no evidence for the alternative hypothesis that the SAD group would benefit less than the HC group from the self-compassion induction. This finding is important because previous work (Gilbert et al., 2011; Gilbert & Procter, 2006; Pauley & McPherson, 2010) has suggested that groups high in shame, self-criticism, and anxiety – core features of SAD – often have difficulty engaging with or responding positively to initial attempts to cultivate self-compassion. Our findings suggest that within the current context – a written self-compassion induction during recovery from laboratory social performance stressors – adults with SAD engaged with and benefitted from the self-compassion induction, to the same or greater extent as the HC group. Current findings are consistent with previous work demonstrating the efficacy of brief self-compassion instructions in reducing depressed mood among depressed and previously depressed adults (Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Ehret, Joormann, & Berking, 2018). Future work should investigate the ease with which those with SAD engage with various ways of cultivating self-compassion, including those based on writing (Leary et al., 2007), imagery (Gilbert & Irons, 2004), and meditation (see Hofmann et al., 2011), to evaluate the possibility that written self-compassion inductions, such as the one used currently, offer an easier pathway to engagement. Another possibility is that the SAD group benefitted more because they had more "room to improve" on the

outcomes. However, during recovery, state anxiety did not diminish following brief resting recovery alone, but diminished significantly following the self-compassion induction – a finding that supports the efficacy of the self-compassion induction specifically.

Study limitations

This study had several limitations. First, we manipulated timing of the self-compassion induction by randomizing participants to receive it immediately after the socially stressful laboratory tasks or to rest for 5 minutes and then receive the induction. As noted, we found no state anxiety reductions following brief resting recovery alone. However, the 5-minute resting period may not have provided a sufficiently long comparison as it was not matched for time with the 10-minute written induction. Future work should compare a self-compassion-facilitated stressor recovery to a longer natural recovery by allowing for a greater rest period, randomizing participants to receive the self-compassion induction or not, and using a descriptive writing-only control group. Second, future studies should consider counterbalancing the descriptive and self-compassion writing prompts, to reduce risk of order effects. Third, although we covaried gender in all analyses and the groups were matched on other key sociodemographic variables, the findings should be replicated in a fully gender-matched sample. Finally, this study had a modest sample size and thus findings should be interpreted with caution pending replication in larger samples.

Conclusions

In the context of recovery from social performance stress, this study demonstrated the feasibility of employing a written self-compassion induction among adults with (and without) SAD. Findings also showed that the SAD group employed more negative and less positive affect words during self-compassionate writing than the HC group; across groups, greater use of negative affect words predicted greater subsequent anxiety reductions. Following self-compassionate writing, the SAD group realized greater reductions in state anxiety and increases in state self-compassion, suggesting that they benefitted more from the induction than the HC group. Collectively, these findings point toward the feasibility and promise of employing written self-compassion inductions among adults with SAD. Further investigation is now needed to evaluate the sustained effects of such inductions and to distinguish the most efficacious pathways to inducing self-compassion within SAD.

Notes

1. This age range was used because this study served as a behavioral foundation for a subsequent fMRI study. Thus we matched the age of the current sample to the sample we recruited for the fMRI study, in which it is common to limit the age range due to age-related brain changes.
2. The non-pregnancy requirement pertained to the psychophysiological measurements that were taken throughout the study, which will be reported elsewhere.
3. Due to mixed practices in previous LIWC research, we also analyzed without covarying word count and the findings remained the same.
4. We covaried baseline (trait) self-compassion due to group differences on this variable. Without this covariate in the model, the group by state self-compassion interaction grew stronger, $F (1, 53) = 5.69$, $p < .05$, $p\eta^2 = .10$.

Acknowledgements

Funding

References

Arch, J. J., Brown, K. W., Derek, D. J., Landy, L. N., Brown, K., & Laudenslager, M. L. (2014). Self-compassion training modulates alpha-amylase, heart rate variability, and subjective responses to social evaluative threat in women. *Psychoneuroendocrinology*, *42*, 49–58. doi:10.1016/j.psyneuen.2013.12.018

Arch, J. J., Landy, L. N., & Brown, K. W. (2016). Predictors and moderators of biopsychological social stress responses following brief self-compassion meditation training. *Psychoneuroendocrinology*, *69*, 35–40. doi:10.1016/j.psyneuen.2016.03.009

Brozovich, F., & Heimberg, R. G. (2008). An analysis of post-event processing in social anxiety disorder. *Clinical Psychology Review*, *28*, 891–903. doi:10.1016/j.cpr.2008.01.002

Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 69–93). New York: Guilford Press. doi:10.1016/j.jad.2003.12.012

Cox, B. J., Fleet, C., & Stein, M. B. (2004). Self-criticism and social phobia in the US national comorbidity survey. *Journal of Affective Disorders*, *82*(2), 227–234. doi:10.1016/j.jad.2003.12.012

Diedrich, A., Grant, M., Hofmann, S. G., Hiller, W., & Berking, M. (2014). Self-compassion as an emotion regulation strategy in major depressive disorder. *Behaviour Research and Therapy*, *58*, 43–51. doi:10.1016/j.brat.2014.05.006

Ehret, A. M., Joormann, J., & Berking, M. (2018). Self-compassion is more effective than acceptance and reappraisal in decreasing depressed mood in currently and formerly depressed individuals. *Journal of Affective Disorders*, *226*, 220–226. doi:10.1016/j.jad.2017.10.006

Gilbert, P., & Irons, C. (2004). A pilot exploration of the use of compassionate images in a group of self-critical people. *Memory (Hove, England)*, *12*, 507–516. doi:10.1080/09658210444000115

Gilbert, P., McEwan, K., Matos, M., & Rivis, A. (2011). Fears of compassion: Development of three self-report measures. *Journal of Psychology and Psychotherapy*, *84*(3), 239–255. doi:10.1348/147608310×526511

Gilbert, P., & Procter, S. (2006). Compassionate mind training for people with high shame and self-criticism: Overview and pilot study of a group therapy approach. *Clinical Psychology and Psychotherapy*, *13*(6), 353–379. doi:10.1002/cpp.507

Helbig-Lang, S., von Auer, M., Neubauer, K., Murray, E., & Gerlach, A. L. (2016). Post-event processing in social anxiety disorder after real-life social situations – an ambulatory assessment study. *Behaviour Research and Therapy*, *84*, 27–34. doi:10.1016/j.brat.2016.07.003

Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011). Loving-kindness and compassion meditation: Potential for psychological interventions. *Clinical Psychology Review*, *31*, 1126–1132. doi:10.1016/j.cpr.2011.07.003

Kirschbaum, C., Pirke, K. M., & Hellhammer, D. H. (1993). The "Trier Social Stress Test" – a tool for investigating psychobiological stress responses in a laboratory setting. *Neuropsychobiology*, *28*, 76–81. doi:10.1159/000119004

Koban, L., Schneider, R. L., Ashar, Y., Andrews-Hanna, J. R., Landy, L. N., Moscovitch, D. A., … , Arch, J. J. (2017). Social anxiety is characterized by biased learning about performance and the self. *Emotion*, *17*, 1144–1155. doi:10.1037/emo0000296

Leary, M. R., Tate, E. B., Adams, C. E., Batts Allen, A., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology*, *92*, 887–904. doi:10.1037/0022-3514.92.5.887

Macbeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review*, *32*(6), 545–552. doi:10.1016/j.cpr.2012.06.003

Mann, M. M., Hosman, C. M., Schaalma, H. P., & De Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research*, *19*(4), 357–372. doi:10.1093/her/cyg041

Moscovitch, D. A. (2009). What is the core fear in social phobia? A new model to facilitate individualized case conceptualization and treatment. *Cognitive and Behavioral Practice*, *16*, 123–134. doi:10.1016/j.cbpra.2008.04.002

Neff, K. D. (2003a). The development and validation of a scale to measure self-compassion. *Self and Identity*, *2*(3), 223–250. doi:10.1080/15298860309027

Neff, K. D. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*(2), 85–101. doi:10.1080/15298860309032

Neff, K. D. (2016). The Self-Compassion Scale is a valid and theoretically coherent measure of self-compassion. *Mindfulness*, *7*(1), 264–274. doi:10.1007/s12671-015-0479-3

Pace, T. W. W., Negi, L. T., Adame, D. D., Cole, S. P., Sivilli, T. I., Brown, T. D., … , Raison, C. L. (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*, *34*(1), 87–98. doi:10.1016/j.psyneuen.2008.08.011

Pace, T. W. W., Negi, L. T., Sivilli, T. I., Issa, M. J., Cole, S. P., Adame, D. D., & Raison, C. L. (2010). Innate immune, neuroendocrine and behavioral responses to psychosocial stress do not predict subsequent compassion meditation practice time. *Psychoneuroendocrinology*, *35*(2), 310–315. doi:10.1016/j.psyneuen.2009.06.008

Pauley, G., & McPherson, S. (2010). The experience and meaning of compassion and self-compassion for individuals with depression or anxiety, *Psychology and Psychotherapy: Theory, Research and Practice*, *83*(2), 129–143. doi:10.1348/147608309X471000

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, *8*(3), 162–166. doi:10.1111/j.1467-9280.1997.tb00403.x

Pennebaker, J. W., Booth, R. J., Boyd, R. L., & Francis, M. E. (2015). *Linguistic inquiry and word count: LIWC2015*. Austin, TX: Pennebaker Conglomerates. http://www.LIWC.net.

Rapee, R. M., & Lim, L. (1992). Discrepancy between self- and observer ratings of performance in social phobics.. *Journal of Abnormal Psychology*, *101*, 728–731. doi:10.1037/0021-843X.101.4.728

Roy-Byrne, P., Craske, M. G., Sullivan, G., Rose, R. D., Edlund, M. J., Lang, A., … , Stein, M. B. (2010). Delivery of evidence-based treatment for multiple anxiety disorders in primary care: A randomized controlled trial. *Journal of the American Medical Association*, *303*, 1921–1928. doi:10.1001/jama.2010.608

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization model. *Psychological Bulletin*, *92*, 641–669. doi:10.1037/0033-2909.92.3.641

Sheehan, D. V., Janavs, J., Baker, R., Harnett-Sheehan, K., Knapp, E., Sheehan, M., … , Lepine, J. P. (1998). Mini international neuropsychiatric interview, English version 5.0.0. *Journal of Clinical Psychiatry*, *59*(Suppl 20), 24-57.

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory, STAI (form Y)*. Palo Alto, CA: Mind Garden.

Stanton, A. L., Danoff-Burg, S., Sworowski, L. A., Colliins, C. A., Branstetter, A. D., Rodriguez-Hanley, A., … , Austenfield, J. L. (2002). Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients. *Journal of Clinical Oncology*, *20*, 4160–4168. doi:10.1200/JCO.2002.08.521

Weeks, J. W., Rodebaugh, T. L., Heimberg, R. G., Norton, P. J., & Jakatdar, T. A. (2009). "To avoid evaluation, withdraw": fears of evaluation and depressive cognitions lead to social anxiety and submissive withdrawal. *Cognitive Therapy and Research*, *33*(4), 375–389. doi:10.1007/s10608-008-9203-0

Werner, K. H., Jazaieri, H., Goldin, P. R., Ziv, M., Heimberg, R. G., & Gross, J. J. (2012). Self-compassion and social anxiety disorder. *Anxiety, Stress, and Coping*, *25*, 543–558. doi:10.1080/10615806.2011.608842