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From the Laboratory to Daily Life: Preliminary Evidence That Self-Distancing Training Buffers Vulnerable Individuals Against Daily Rumination and Depression Over Time

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Experimental research indicates that self-distancing helps vulnerable individuals to cope with negative experiences. However, whether these findings generalize outside the laboratory is unknown. Here, we report the results of a proof-of-principle study (N = 111) that assessed whether teaching people how to self-distance during a brief (i.e., ~1 hr) computer-delivered, in-laboratory training session would facilitate adaptive coping in the short term and over time compared to a no treatment control and active control (relaxation) condition. Ten days following the intervention, vulnerable participants in the self-distancing group (but not the active control or no treatment control groups) displayed levels of rumination and negative affect that were on par with their less vulnerable counterparts. At 3 and 6 months after the training, vulnerable participants in both the self-distancing group and the active control group reported lower levels of depressive symptoms (but not rumination) compared to vulnerable participants in the no treatment control group. These findings provide preliminary evidence indicating that training vulnerable individuals to self-distance is beneficial. Future research is needed to replicate these findings with larger samples and to examine whether they generalize to clinical samples.

Keywords: self-distancing, depression, emotion regulation, intervention, rumination

Supplemental materials: https://doi.org/10.1037/cns0000323.supp

A great deal of research has focused on identifying the psychological mechanisms that determine when people's attempts to understand their emotions are helpful versus harmful (e.g., Nolen-Hoeksema et al., 2008). According to one line of work, the ability to self-distance, or "take a step back" from one's egocentric perspective of an event when trying to work through negative emotions helps promote adaptive emotion regulation rather than rumination (see Kross & Ayduk, 2011, 2017, for reviews). In the short term, self-distancing buffers against elevated physiological and subjective emotional reactivity when people reflect on negative experiences (Ayduk & Kross, 2010a, 2010b; Denny & Ochsner, 2014; Kross & Ayduk, 2008; Shahane & Denny, 2019; Wisco et al., 2015). In the long term, self-distancing buffers people against rumination and recurring negative affect (Ayduk & Kross, 2010a, 2010b; Kross & Ayduk,

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2008; Penner et al., 2016; Verduyn et al., 2012). Self-distancing promotes these benefits by reducing people's tendency to relive negative experiences, instead facilitating cognitive change by making "big picture" appraisals more accessible, which in turn allow people to make sense of their experience and reach closure (Haner & Rude, 2015; Kross et al., 2014; Trope & Liberman, 2010; also see Fujita et al., 2006).

Laboratory research has identified two approaches to inducing a self-distanced perspective. One approach targets mental imagery, for example, by cueing people to visualize and analyze autobiographical experiences from the perspective of a third-person observer or a "fly on the wall" (e.g., Denny & Ochsner, 2014; Finkel et al., 2013; Kross et al., 2005; Travers-Hill et al., 2017). A second approach leverages language by instructing people to reflect on the self using their own name and other nonfirst person pronouns such as you, she, he, or they (Kross et al., 2014). Reflecting on the self using one's own name and nonfirst person pronouns allows people to seamlessly take a step back, reasoning through their thoughts and feelings from the perspective of an outside observer (Kross & Ayduk, 2017; Orvell et al., 2019). Both of these approaches reliably increase how psychologically distanced an individual feels from an event (Kross et al., 2014). Importantly, neither experimental nor individual difference studies have found any empirical link between self-distancing and avoidance (see Kross & Ayduk, 2017, for review). Further, although both self-distancing and distraction down-regulate negative affect in the short term, only self-distancing continues to buffer against rumination because it initiates the process of cognitive change that alters the meaning of the stimulus in ways that decrease emotional reactivity (Ayduk & Kross, 2010a, 2010b; Kross & Ayduk, 2008).

Self-distancing shares theoretical overlap with elements of Acceptance and Commitment Therapy (ACT), which similarly aims to enhance psychological distance through various components, including "self-as-context," decentering, and cognitive defusion (e.g., Bernstein et al., 2015; Fresco et al., 2007). A "self-as-context" mindset, for example, involves recognizing that a person can observe the self and metacognitively reflect on the thoughts or emotions they are experiencing (Scott et al., 2016; Yu et al., 2017). "Decentering" involves the ability to observe one's thoughts from a detached perspective, recognizing that they are temporary representations of events that are contained in the mind, rather than reflections of objective reality (Scott et al., 2016; Yu et al., 2017). Self-distancing is distinct from these processes, however, in that it involves reducing a person's immersed self-perspective, *while* encouraging them to actively engage with their negative emotions to work through them. That is, an essential component of self-distancing is analyzing one's thoughts and feelings from a distance, in order to make sense of them, rather than merely observing them from a detached or metacognitive point of view.

Another important difference between self-distancing and ACT, both conceptually and in regards to their capacities to promote coping, is that ACT involves multiple components (i.e., acceptance, cognitive defusion, being present, self-as-context, values, committed action), which activate various causal pathways that contribute to its effectiveness (e.g., Gloster et al., 2020). In contrast, self-distancing activates a single causal mechanism—psychological distance—that promotes emotion regulation and coping. Further, unlike ACT, self-distancing interventions are often delivered in a single session, rather than across multiple sessions.

In this vein, several recent studies indicate that individuals can be trained in perspective-changing strategies through brief laboratory interventions. For example, in one intervention study, participants who received self-distancing training in four separate sessions showed reductions in negative affect and perceived daily stress compared to individuals who were trained to reinterpret negative stimuli, and to those who were given no training (Denny & Ochsner, 2014). Other intervention studies that train people in distancing and perspective broadening have led depressed and nondepressed individuals to report reductions in emotional reactivity and increases in well-being over the short term (Schartau et al., 2009; Travers-Hill et al., 2017). Similarly, an intervention that focused on training people to reappraise marital conflicts from a third-party perspective buffered couples against decreased marital quality over a 1 year period (Finkel et al., 2013). Finally, and most relevant to the present study, using an online protocol, Ranney et al. (2016) found that a brief self-distancing intervention decreased ill-being (e.g., anxiety) and increased well-being (e.g., life satisfaction) over a 2-week period.

Taken together, these studies suggest that individuals can be taught to change the way they think about negative experiences, and that these shifts in perspective are associated with positive outcomes. However, research has not examined how perspective-changing interventions—particularly those deployed in a single session—influence emotion regulation processes on a day-to-day basis, or explored how such interventions affect the experience of depressive symptoms over extended periods of time. The present research addressed these issues.

Benefits of Self-Distancing for Emotionally Vulnerable Populations

For whom might self-distancing training be most beneficial? One hypothesis is that individuals high in emotional vulnerability, which we conceptualize as a broad, trait-like tendency to experience negative affect, may benefit the most from self-distancing because they are more reactive to negative events (Bolger & Schilling, 1991), more likely to engage in maladaptive rumination (Nolen-Hoeksema et al., 2008), and less likely to effectively regulate their emotions (Bolger, 1990; Nolen-Hoeksema, 1991). Critically, growing evidence shows greater benefits of self-distancing for individuals who are more prone to experiencing negative affect. For example, experimentally induced self-distancing reduced negative affect to a greater degree in participants with Major Depressive Disorder (vs. healthy controls; Kross et al., 2012), and among college students higher (vs. lower) in depressive symptomatology (Kross & Ayduk, 2009). Similarly, among parents of children with cancer, spontaneous self-distancing benefited caregivers with higher (vs. lower) levels of anxiety (cf., Kross et al., 2014; Wisco & Nolen-Hoeksema, 2011). Finally, evidence on the temporal dynamics of self-distancing has shown that among individuals higher in depressive symptomology, processing negative feedback from a self-distanced (vs. self-immersed) perspective led to faster declines in negative emotional reactivity (Résibois et al., 2018).

Overview of Present Research

We conducted an initial "proof-of-principle" experiment to examine whether self-distancing training helps people navigate stressors in daily life, and whether learning to adopt this perspective affects emotional functioning over a substantial period of time. We addressed these questions by developing a brief self-distancing intervention and assessing its impact on daily negative affect and rumination using Experience Sampling Methods (ESM) with both (a) momentary assessments repeated throughout the day and (b) end-of-day diary surveys over the course of a 10-day period following the training protocol (note that measures and results associated with the momentary assessments were less consistent and are reported in the Supplemental Materials). We additionally followed up with participants 3- and 6-month posttraining to assess the effect of self-distancing training on rumination and depressive symptoms over time.

We compared self-distancing training against both a no treatment control condition and an active control condition, which instructed participants to try to relax whenever they experienced distress. We focused on relaxation because it has been tied to psychological benefits (Deffenbacher & Stark, 1992; Goldfried & Trier, 1974; Hayes-Skelton et al., 2013; Ost, 1987), but does not include components of self-distancing. The inclusion of this active control group allowed us to equate participants in the self-distancing and active control conditions on their expectations of training efficacy, a methodological consideration that is often not included in psychological interventions (Boot et al., 2013). In this vein, participants in both the self-distancing and active control (relaxation) groups reported on their expectations regarding how helpful they expected their respective strategies to be for allowing them to cope with stressors in their daily life.

Hypotheses

The present study focused on the relationship between self-distancing training and negative emotionality, rumination, and depressive symptoms. On the basis of converging evidence (Kross & Ayduk, 2009; Kross et al., 2017; Résibois et al., 2018; Travers-Hill et al., 2017), we reasoned that the more emotionally vulnerable participants were, the more they would benefit from self-distancing training. Specifically, we predicted that emotionally vulnerable participants in the self-distancing condition would report lower levels of rumination and negative affect compared to their emotionally vulnerable

counterparts in the no treatment control condition and the relaxation condition during the 10 days following training. We expected vulnerable participants in the relaxation condition to report levels of rumination and negative affect that were on par or lower than those reported by those in the no treatment control group (as any training might be better than none).

Given prior work showing that self-distancing interrupts harmful cycles of rumination, and preexisting research on rumination as predictive of the onset of depressive symptoms, we also predicted that more emotionally vulnerable participants in the self-distancing condition would be buffered against increases in rumination and depressive symptoms over time compared to their counterparts in the no treatment and relaxation conditions (Kross & Ayduk, 2008; Nolen-Hoeksema, 2000). We again expected more vulnerable participants in the relaxation condition to report levels of rumination and depressive symptoms that were on par or lower than those reported by individuals in the no treatment control condition.

We considered two possibilities regarding the efficacy of self-distancing training for nonvulnerable individuals: First, that self-distancing may lead to similar outcomes for nonvulnerable individuals (i.e., a main effect of training). Second, that the training would not substantially impact nonvulnerable individuals (i.e., only a significant interaction between vulnerability and condition).

Method

Participants

Participants were recruited from two large public universities in the United States. As many participants as possible were recruited during a 6-month period. Because these data were collected in 2013, our sample size is considerably smaller than what is typical of new standards in the field. At the beginning of the study, there were 111 people (68 women and 43 men) enrolled, mean age = 23.55 years, SD = 7.21 (range: 18–61). The sample was predominately White (85.60%).

Procedure and Measures

Overview

Data were collected in multiple phases as part of a larger study that also aimed to address the effects of self-distancing on prosocial behavior (more information on this study is reported in the Supplemental Materials; also see Bruehlman-Senecal et al., 2016, Study 4 which reports findings that do not overlap with the present article). Below, we report data from all variables that are directly relevant to the measurement of trait emotional vulnerability, negative emotionality, rumination, and depressive symptoms, which are the foci of this article. This study was approved by the Institutional Review Boards at both universities where data were collected.

Time 1—Baseline Assessments

Participants completed a survey during an initial lab session which included measures of vulnerability and depression.

Individual Differences in Vulnerability. We focused on several well-established markers of trait differences in emotional vulnerability: neuroticism, anxiety, and rumination. We selected these measures because they constitute transdiagnostic risk factors for poor emotional well-being, depression, and anxiety (e.g., Andrews & Borkovec, 1988; Kotov et al., 2010; McLaughlin & Nolen-Hoeksema, 2011).

Neuroticism was measured with the 2-item Neuroticism subscale of the Ten Item Personality Inventory (Gosling et al., 2003; $M = 3.51$, $SD = 1.49$; $\alpha = .68$). Rumination was measured using the 5-item brooding subscale of the Ruminative Response Scale (RRS; Treynor et al., 2003; $M = 3.07$, $SD = .84$; $\alpha = .74$). We focused on the brooding subscale, rather than the reflection subscale, because it is consistently linked with maladaptive outcomes (Joormann et al., 2006; Treynor et al., 2003). Worry was measured using the 16-item Penn State Worry Questionnaire; Meyer et al., 1990; $M = 3.21$, $SD = .88$; $\alpha = .95$. The conditions did not differ at baseline on these scales (all $ps > .51$).

As expected, after z-scoring each scale, Time 1 neuroticism, anxiety, and brooding scores were correlated highly ($\alpha = .84$). An exploratory factor analysis with a Promax rotation further confirmed that these measures loaded onto one factor, explaining 76.33% of the variance. Thus, we averaged them to form a single measure of emotional vulnerability.

Depressive Symptoms at Baseline. A 20-item version of the Beck Depression Inventory (BDI; Beck et al., 1996) was used to assess depressive

symptoms. We omitted one item assessing suicidal thoughts. Participants responded with regards to how they had been feeling over the past week, which allowed us to measure symptomology. Items on this 4-point scale were summed, such that a higher score indicated higher levels of depressive symptoms ($\alpha = .89$, $M = 8.06$, $SD = 7.17$). There were no condition differences on this measure at baseline, $p > .76$).[1]

Time 2: In-Lab Training Protocol

At Time 2 (3.16 days, on average, after Time 1) participants returned to the lab and were randomly assigned to one of three conditions: self-distancing ($n = 37$), relaxation ($n = 37$), or no treatment ($n = 37$). The Supplemental Materials contains additional details describing the self-distancing and relaxation training protocols.

Self-Distancing Training. Participants were trained to adopt a self-distanced perspective when they "found themselves thinking about a source of stress over and over again in order to make sense of it" through two techniques, both of which have been shown to promote self-distance and predict beneficial outcomes in laboratory research (e.g., see Kross & Ayduk, 2017, for review). The first technique involved visualizing a stressor unfold from the perspective of a third-person observer, and was referred to as the "Fly on the Wall" technique. For example, a participant using this technique might envision a stressful experience from the point of view of a "fly-on-the-wall," such that they would picture their own self from a distanced, third-person perspective while reimagining the experience. The second technique was referred to as the "Pronoun technique" and involved utilizing non first-person language, such as one's own name and the pronouns "you" or "he/she" rather than the pronoun "I" to refer to the self in one's thoughts. For example, a participant named Miles might ask himself, "Why is *Miles* feeling this way?" instead of asking, "Why am *I* feeling this way?" (See Appendix B in the Supplemental Materials for full training script.)

After learning each technique, participants completed two practice trials while reflecting on negative autobiographical experiences that targeted discrete emotional experiences (e.g., anxiety, anger, betrayal). After each practice trial, participants reflected on several items designed to give them feedback on how effective they were at adopting a distanced point of view (see Supplemental Materials for additional details). Participants then reported on their overall efficacy implementing each technique (i.e., "Overall, how effective you were at implementing the Fly on the Wall/Pronoun technique?" 1—*Not at all effective*, 7—*Very effective*, Fly on the Wall: $M = 5.03$, $SD = 1.15$; Pronoun: $M = 5.11$, $SD = 1.39$).

Finally, participants formed five "implementation intentions" (which enhance self-regulation and goal attainment by linking goal-directed responses to specific situations; Gollwitzer, 1999; Gollwitzer & Sheeran, 2006) to use their just-learned strategies when encountering negative experiences in the coming weeks in daily life. Implementation intentions took the form of "When/then" statements (e.g., "When my friends don't follow plans, then I will use the Fly on the Wall Technique to understand why I am feeling that way.").

Relaxation Training. The relaxation training was identical in all regards to the self-distancing training, including forming implementation intentions, with one exception: Participants were instructed to try their best to calm themselves down and relax using whatever strategies they normally use. Similar to participants in the self-distancing training, participants in the relaxation condition also reflected on two items after each practice trial, one that assessed the extent to which they calmed themselves down (i.e., "As you thought about this event, to what extent did you calm yourself down?" 1—*Not at all*, 7—*Entirely*, $M = 4.93$, $SD = 1.21$), and another that asked them to report how far away they felt from the scene (i.e., "As you thought about your experience, how far away from the scene of the experience were you in your imagination?" 1—*Very close*, 7—*Very far*, $M = 3.15$, $SD = 1.36$). After completing the practice trials, participants reported how effectively they had implemented

[1] BDI is a state measure of depressive symptoms which is sensitive to short-term changes. In contrast, the TIPI, RRS, and the PSWQ were administered as trait measures of neuroticism, rumination, and anxiety during Time 1, baseline. Further, scree plots from an exploratory factor analyses with a Varimax rotation suggested a 2-factor solution, with neuroticism, anxiety, and brooding loading on the first factor (BDI communality = .26, all other scales >.77) and depression loading on the second factor (BDI communality = .96, all other scales ≤.30). These factors explained 82% of the variance (Factor 1 = 66%, Factor 2 = 15%).

the relaxation technique using the measure described above, $M = 5.08$, $SD = 1.27$.

No Treatment Control. Similar to participants in the two intervention conditions, participants reflected on a series of emotion-eliciting events from their own lives (e.g., anger, sadness, and anxiety eliciting events), but were simply instructed to reflect on how they would normally deal with these experiences. They were given no further instructions on how they should regulate their emotions when encountering stressors in their daily lives. Participants reflected on six experiences to keep timing relatively matched across conditions.

Expectancies. We attempted to control for expectations by presenting both the self-distancing and relaxation techniques as research-based strategies that could help individuals to cope with their emotions in daily life. Accordingly, at the end of the training, participants in the self-distancing and relaxation groups reported on their expectations regarding the effectiveness of their respective strategies (i.e., "How helpful do you think implementing the skills you learned during this session will be for your ability to cope with negative emotions between now and when you return to the lab?" (1—*Not at all helpful*, 7—*Very helpful,* $M = 4.38$, $SD = 1.37$); "How well do you think you'll be able to implement the skills you learned during this training session between now and when you return to the lab?" (1—*Not well at all*, 7—*Very well,* $M = 5.27$, $SD = 1.04$).

Training Efficacy: Pre- and Posttraining Affect Ratings. Participants responded to two items measuring positive and negative affect at the beginning and end of their training module: "How do you feel right now?" 1—*Not at all/slightly happy*, 5—*Extremely happy*, (pretraining: $M = 2.98$, $SD = 1.06$; posttraining: $M = 2.68$, $SD = 1.06$) and "How do you feel right now?" 1—*Not at all/slightly upset*, 5—*Extremely upset*" (pretraining: $M = 1.27$, $SD = .59$; posttraining: $M = 1.49$, $SD = .78$).

Time 3: Experience Sampling Methodology (ESM) Period

Approximately 1 day after training, all participants began a 10-day ESM period. Participants completed momentary assessments 5 times a day, as well as end-of-day daily diary surveys. On the last day of the ESM period, the diary included measures on participants' adherence to their respective strategies; these measures are described and reported in the Supplemental Materials. For the descriptive statistics reported below, multilevel variables were derived by first averaging within subjects across the 10 diary days, and then averaging across subjects, such that each subject contributes one value to this mean.

Daily Negative Affect. Participants' daily levels of negative mood were assessed (1 = *not at all* to 5 = *a lot*) with nine items (*angry*, *annoyed*, *anxious*, *discouraged*, *neglected*, *on edge*, *rejected*, *sad*, and *self-critical*) adapted from the Profile of Mood States (Cranford et al., 2006; $\alpha = .88$, $M = 1.94$, $SD = 0.53$).[2]

Daily Rumination. Participants rated (1 = *not at all* to 5 = *a lot*) two items adapted from the brooding subscale of the Ruminative Response Scale (Treynor et al., 2003): "I thought about the things that happened to me, wishing they had gone better" and "I thought to myself, "Why can't I handle things better?" ($\alpha = .83$, $M = 2.11$, $SD = 0.77$).

Time 4 & 5: Follow-Up Surveys and Long-Term Outcomes

Approximately three (Time 4) and six (Time 5) months after completing the ESM period, participants were sent a link to an online survey which included measures relevant to rumination and depression.

Rumination. Participants completed the Brooding subscale of the Ruminative Response Scale (Treynor et al., 2003) with respect to "how they [had] felt, thought and acted *in the past month*" (emphasis added). Unlike at baseline, where brooding was measured at the trait level, the instructions implemented at the follow-ups measured brooding as a state (3 months: $\alpha = .76$, $M = 2.96$, $SD = .74$; 6 months: $\alpha = .83$, $M = 2.85$, $SD = .81$).

Depressive Symptoms. Participants again completed the 20-item BDI (Beck et al., 1996)

[2] Daily positive affect was also measured. However, none of the analyses (run parallel to the negative affect index) yielded any significant effects for condition nor the condition × vulnerability interaction (only vulnerability negatively predicted positive affect). This is not surprising since the intervention trained participants in skills specifically relevant to down-regulation of negative affect. These analyses are reported in the Supplemental Materials.

with regards to how they had been feeling over the past week, Time 4 (i.e., 3-month follow-up): $\alpha = .91$, $M = 8.61$, $SD = 8.12$; Time 5 (i.e., 6-month follow-up): $\alpha = .93$, $M = 6.78$, $SD = 7.65$.

Results

Preliminary Analyses

Training Efficacy

There were no condition differences in positive, $F(2, 102) = .008$, $p = .992$, $\eta p^2 = .000$, or negative, $F(2, 103) = 1.28$, $p = .282$, $\eta p^2 = .024$, affect at the beginning of training. However, as expected, condition influenced affect immediately following the training sessions, positive: $F(2, 105) = 6.78$, $p = .002$, $\eta p^2 = .114$; negative, $F(2, 105) = 15.30$, $p < .001$, $\eta p^2 = .226$. Specifically, participants in the control group ($M = 2.00$) scored significantly higher on posttraining negative affect compared to the self-distancing ($M = 1.26$) and relaxation groups ($M = 1.19$; control vs. self-distancing: $t = -4.55$, $p < .001$; control vs. relaxation: $t = -4.97$, $p < .001$). Similarly, participants in the control group ($M = 2.19$) scored significantly lower on posttraining positive affect compared to the self-distancing ($M = 3.00$), and relaxation groups ($M = 2.86$; control vs. self-distancing: $t = 3.42$, $p = .001$; control vs. relaxation: $t = 2.86$, $p = .005$). Relaxation and self-distancing did not differ from one another on either measure ($ps > .50$). Thus, both the self-distancing and relaxation trainings were effective in reducing negative affect.

Expectancy Analyses

There was no difference in expectations between the self-distancing and relaxation groups, $ts \leq .38$, $ps \geq .70$, suggesting that expectations were matched across conditions in terms of how helpful participants expected the strategies to be. Expectancy was not correlated with any of the outcome variables, $rs \leq .189$, so it is not discussed further.

Descriptive Statistics and Attrition

Zero-order correlations among the key variables are reported in Table 1. There was considerable attrition over time (i.e., at the 6-month follow-up, there were 64 participants, whereas our N at Time 1 was 111), but it was not related to condition: $\chi^2(2) = 1.19$, $p = .551$ (see Figure 1 for details). Participants who responded to fewer than 40% of questions during the end-of-day surveys were excluded from those respective analyses following prior work (Koval et al., 2012; Verduyn et al., 2015). We additionally excluded two participants, one from the relaxation condition and one from the no treatment control condition, whose baseline data were not recorded. Aside from attrition and these exclusion criteria, all available data were analyzed at each respective time point.

Main Analyses

Analysis Approach

Our main models included fixed effects for treatment condition assignment (condition), participants' Time-1 z-scored emotional vulnerability, and the interaction between treatment condition and vulnerability. For ease of interpretation, all inferential statistics, estimated means, and slopes for the a priori analyses at the end-of-day and longitudinal assessments are reported in Table 2. In terms of main effects, in most cases, individual differences in vulnerability predicted outcomes in the theoretically expected direction (e.g., higher vulnerability predicted higher negative affect). We did not observe any main effects of training condition. Our primary focus in the remainder of this article is thus on examining the interaction between individual differences in vulnerability and condition in predicting our core outcomes.

We conducted two types of analyses to decompose interactions between condition and vulnerability. First, we examined mean differences at low (-1 *SD*) and high ($+1$ *SD*) levels of emotional vulnerability to see whether the training was more or less effective for more emotionally vulnerable individuals across different conditions. Second, we looked at whether the strength of the relationship (i.e., slope) between individual differences in emotional vulnerability and each outcome variable was significantly different across training groups (e.g., is the strength of the relationship between vulnerability and negative affect significantly weaker in the self-distancing group compared to the no treatment control group?)

Although the ESM period included both momentary assessments of affective outcomes

Table 1
Zero-Order Correlations Among Variables Collected at Each Time Point

	Baseline		Daily diary		Rumination at follow-up		Depressive symptoms at follow-up		Adherence outcomes		
Constructs	A	B	C	D	E	F	G	H	I	J	K
Individual differences											
A. Depression Symptoms	—										
B. Vulnerability	.52**	—									
Short-term outcomes: daily diary											
C. Negative affect	.37**	.50**	—								
D. Rumination	.37**	.43**	.82**	—							
Long-term outcomes: rumination											
E. 3 months	.40**	.53**	.44*	.39**	—						
F. 6 months	.38**	.41**	.34**	.41**	.65**	—					
Long-term outcomes: depressive symptoms											
G. 3 months	.51**	.31**	.20	.09	.42**	.17	—				
H. 6 months	.57**	.36**	.42**	.41**	.40**	.45**	.53**	—			
Adherence outcomes											
I. Manipulation check	.10	.15	.07	.13	−.03	.00	.01	.15	—		
J. Index of self-distancing	.09	−.08	−.07	−.06	.03	.26	.06	.08	.20	—	
K. Index of relaxation efforts	−.01	.09	.00	−.01	.19	.33*	.08	.15	.40**	.38**	—

Note. The Daily Diary began 3–8 days ($M = 4.11$ days, $SD = 1.83$) after baseline measures were taken. Follow-ups were conducted approximately 3 and 6 months after the daily diary had ended.
* $p < .05$, $t = p < .1$. ** $p < .01$.

(e.g., worry, global affect) and end-of-day reports (i.e., negative affect and rumination), preliminary analyses showed no significant effects of condition or condition × vulnerability interactions for the momentary assessments. Thus, for the sake of parsimony, we focus on end-of-day reports below, and report parallel analyses on the momentary assessments in the Supplemental Materials. The Supplemental Materials also report several additional exploratory analyses.

End-of-Day Reports of Negative Affect and Rumination (Time 3). Participants completed end-of-day diaries each day of the ESM period. This resulted in a two-level hierarchical structure with the 10 diary days nested within participants, requiring a two-level hierarchical linear model. The daily-varying, or Level 1, dependent variables were the composite measures of daily negative affect and rumination. The participant specific, Level 2 variables were participants' condition and their Time 1 *z*-scored level of vulnerability. Models included fixed effects for treatment condition assignment (condition), participants' Time 1 *z*-scored emotional vulnerability, and the interaction between treatment condition and vulnerability. Participant ID was treated as a random effect with varying intercepts. Since all fixed effects were Level 2, or participant ID level effects, we did not allow slopes to vary across participants.

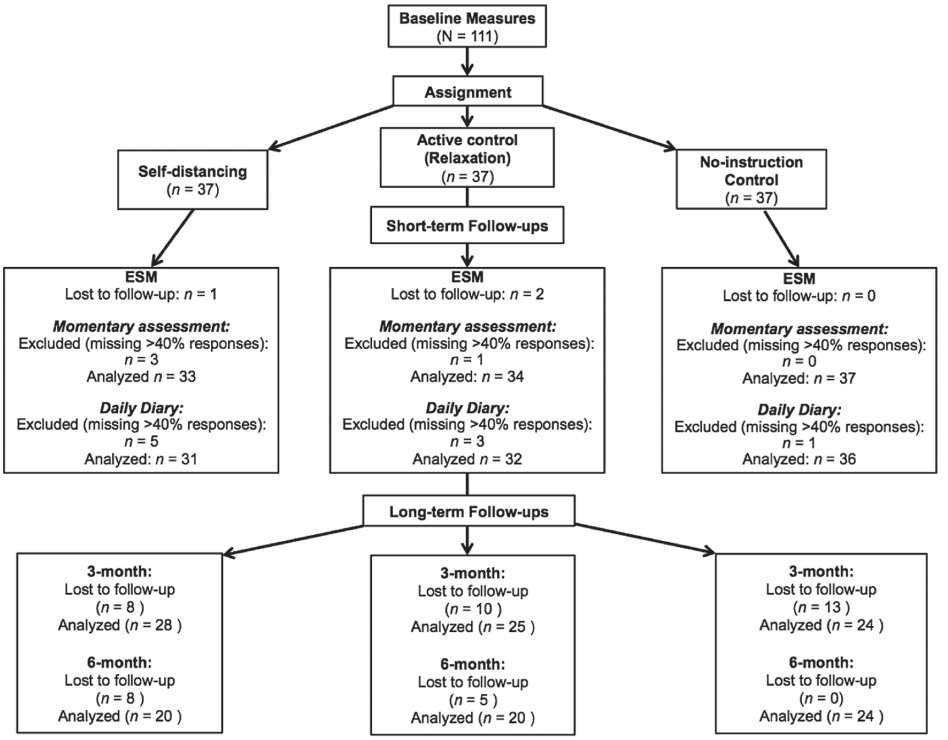
Negative Affect

Training condition interacted significantly with vulnerability ($p = .032$; see Table 2, Section A for omnibus tests). As Table 2, Section B shows, at low levels of vulnerability, there were no differences between any of the training conditions. However, at high levels of vulnerability (Table 2, Section C), participants in the self-distancing condition reported significantly less negative affect than those in the control condition ($p = .014$). There were no significant differences between vulnerable participants in the self-distancing versus relaxation conditions ($p = .156$) or between the relaxation versus control conditions ($p = .288$). Figure 2, Panel A illustrates these findings.

To further understand the significant condition × vulnerability interaction, we examined whether the strength of the relationship between trait vulnerability and negative affect differed across the training conditions (Table 2, Section D). Vulnerability was positively related to negative affect in the control, $b = .44$, 95%

Figure 1

Flowchart Depicting Participant Attrition and Exclusion Criteria by Condition at Each Phase of the Study



CI [.26, .61], and relaxation, $b = .36$, 95% CI [.20, .53] conditions, and the strength of this relationship did not differ between these two groups ($p = .539$). However, the strength of this relationship was reduced in the self-distancing group, $b = .14$, 95% CI [−.02, .30], and significantly weaker compared to the control condition ($p = .013$) and marginally weaker compared to the relaxation condition ($p = .055$). These results suggest that self-distancing buffered people high in vulnerability against negative affect whereas the control and relaxation conditions did not.

Rumination

The interaction between training condition and vulnerability on end-of-day rumination was marginally significant ($p = .073$; Table 2, Section A). Nevertheless, we proceeded to unpack the pattern with simple slope analyses since an interaction was predicted a priori. Among participants low in vulnerability (Table 2, Section B), there were no significant differences between conditions. However, high vulnerability participants in the self-distancing condition reported significantly lower levels of rumination compared to those in the control condition ($p = .039$; Table 2, Section C and Figure 2, Panel B). Neither the self-distancing versus relaxation conditions ($p = .197$) nor the relaxation versus control conditions ($p = .428$) were significantly different from one another in rumination at high levels of vulnerability.

Next, we compared the strength of the relationship between trait vulnerability and rumination across conditions (Table 2, Section D). Vulnerability was positively related to rumination in the control, $b = .53$, 95% CI [.26, .80], and relaxation, $b = .50$, 95% CI [.24, .76] conditions, and the strength of this relationship did not differ across these two groups ($p = .876$). However, the strength of this relationship was reduced in the self-distancing group, $b = .15$, 95% CI [−.10, .40], and significantly weaker compared to the control condition ($p = .044$) and marginally weaker compared to the relaxation condition

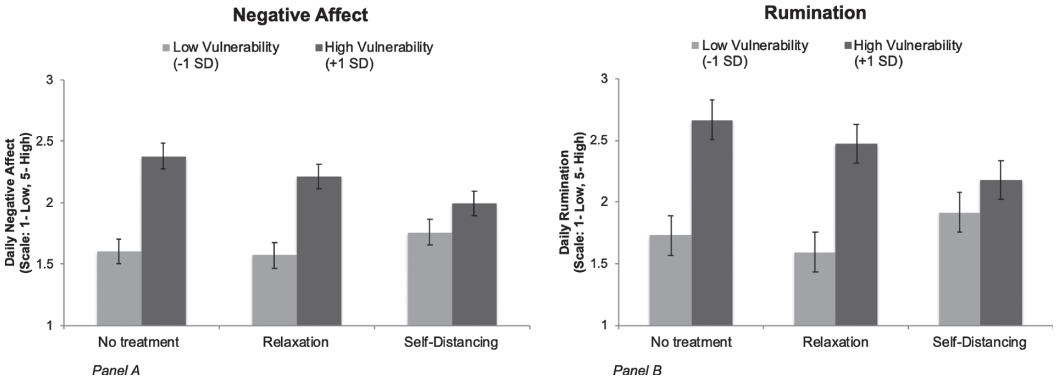
Table 2
Outcome Periods Predicted by Vulnerability, Training Condition, and Their Interaction

	Predictor variables									Estimated means						Slope of vulnerability		
	Section A									Section B			Section C			Section D		
	Vulnerability			Condition			Vulnerability × Condition			Low vulnerability participants (−1 *SD*)			High vulnerability participants (+1 *SD*)			β weight		
Outcomes	*F*	*p*	η_p^2	*F*	*p*	η_p^2	*F*	*p*	η_p^2	C	R	*SD*	C	R	*SD*	C	R	*SD*
End-of-day outcomes																		
Negative affect	41.90	<.001		0.66	.521		3.59	.032		1.61_a	1.57_a	1.76_a	2.37_a	2.21_{ab}	2.01_b	0.44_a	$0.36_{a\dagger}$	$0.14_{b\dagger}$
Rumination	26.86	<.001		0.64	.528		2.69	.073		1.73_a	1.60_a	1.92_a	2.66_a	2.47_{ab}	2.18_b	0.53_a	$0.50_{a\dagger}$	$0.15_{b\dagger}$
Longitudinal outcomes																		
Three-month rumination	26.48	<.001	.272	0.40	.671	.011	0.52	.596	.014	2.33_a	2.54_a	2.65_a	3.33_a	3.24_a	3.32_a	0.57_a	0.40_a	0.38_a
Six-month rumination	10.20	.002	.150	2.20	.120	.071	0.07	.933	.002	2.21_a	2.53_a	2.74_a	2.95_a	3.09_a	3.37_a	0.42_a	0.31_a	0.36_a
Three-month BDI	0.09	.768	.001	0.31	.733	.009	3.56	.034	.092	5.38_a	11.99_b	8.24_{ab}	$12.58_{a\dagger}$	$7.03_{b\dagger}$	$7.74_{b\dagger}$	$4.11_{a\dagger}$	-2.83_b	$-0.28_{b\dagger}$
Six-month BDI	0.03	.865	.001	1.35	.267	.045	3.62	.033	.113	5.35_a	8.16_b	6.79_a	11.90_a	3.25_b	6.12_b	$3.74_{a\dagger}$	-2.80_b	$-0.38_{b\dagger}$

Note. C = No treatment control condition; R = relaxation condition; *SD* = self-distancing condition.
For each column reporting estimated means and slope coefficients (unstandardized), numbers in each row with different subscripts or a dagger (†) differ significantly from one another at $p \leq .05$. $^{\dagger}p < .10$. All fixed effects are reported with the no treatment control condition as the reference group.
Measures of effect size are provided for the longitudinal outcomes. Effect sizes are not provided for end-of-day outcomes because linear mixed models were used to estimate effects, and there are not agreed upon conventions for how to obtain standard effect sizes for fixed effects given the way that variance is estimated.

Figure 2

Interaction Between Training Group and Baseline Vulnerability to Predict Daily Rumination (Panel A) and Daily Negative Affect (Panel B)



Note. Simple effects were examined 1 standard deviation above and the below the mean in models where vulnerability was entered a continuous variable. Bar graphs depict the estimated (i.e., predicted) marginal means for vulnerability at 1 standard deviation above and below the mean from these models. Error bars indicate ±1 standard error of the mean.

($p = .058$). These results suggest that the self-distancing training buffered people high in vulnerability against rumination whereas the control and relaxation conditions did not.

Longitudinal Assessments of Rumination and Depressive Symptoms (Time 4 and 5)

To examine the long-term effects of the training, we predicted ruminative tendencies and depressive symptoms at 3- and 6-month follow-ups from trait vulnerability, training condition, and their interaction. For the depression analyses, we controlled for participants' baseline (Time 1) depressive symptoms to assess changes in depressive symptoms over time. We did not control for Time 1 rumination because rumination was measured at the trait (rather than state) level at Time 1 and was included in the individual differences in emotional vulnerability composite.

Analyses were conducted separately for the two follow-ups to make use of all available data at each time point, but we describe them together below to minimize redundancy in reporting. Given the considerable attrition over time (3-month $n = 77$, 6-month $n = 64$), these analyses should be treated as preliminary evidence that the effects of self-distancing training may persist over time. Means and inferential statistics are reported in Table 2.

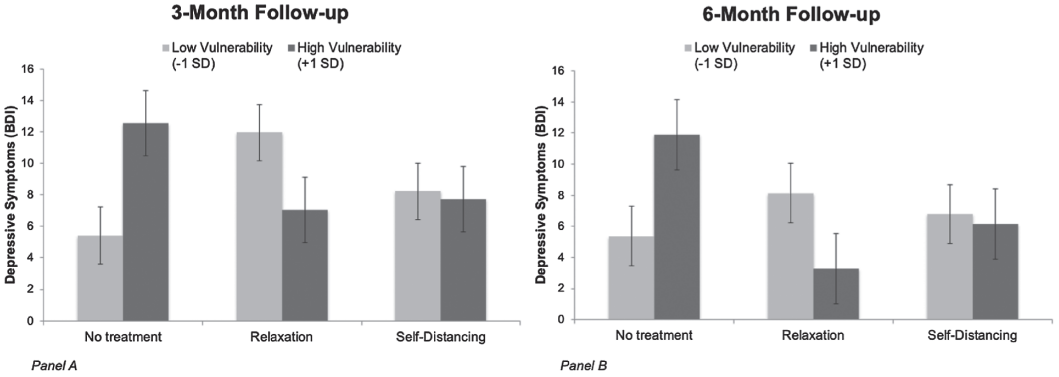
Rumination Over Time. There were no significant condition × vulnerability interactions at either time point (all $ps \geq .120$, Table 2, Section A). Although the interactions were not significant, pairwise tests and simple slopes are included in Table 2 for consistency in the exposition of the data across outcomes.

Depression Symptoms Over Time. Condition interacted significantly with vulnerability at both time points (3 months: $p = .034$, 6 months: $p = .033$; Table 2, Section A). To unpack these interactions, we first examined differences between conditions at high and low levels of vulnerability. For participants high in vulnerability (Table 2, Section C), depression levels in the self-distancing and relaxation conditions were marginally lower than in the control condition at 3 months (self-distancing vs. control: $p = .070$; relaxation vs. control: $p = .057$) and significantly lower at 6 months (self-distancing vs. control: $p = .026$; relaxation vs. control: $p = .002$, respectively). The self-distancing and relaxation conditions did not differ from one another at either time point ($ps > .23$). At low levels of vulnerability (Table 2, Section B), there were no differences in depression between the training conditions at either time point, except that nonvulnerable participants in the relaxation group reported higher depressive symptoms at the 3-month follow-up compared to those in the control group ($p = .048$).

To better understand the meaning of the significant condition × vulnerability interaction, we also examined whether the strength of the

Figure 3

Interaction Between Condition and Baseline Vulnerability to Predict Depressive Symptoms 3-Month Posttraining (Panel A) and 6-Month Posttraining (Panel B)



Note. Simple effects were examined 1 standard deviation above and the below the mean in models where vulnerability was entered a continuous variable. Bar graphs depict the estimated (i.e., predicted) marginal means for vulnerability at 1 standard deviation above and below the mean from these models. Error bars indicate ±1 standard error of the mean.

relationship between trait vulnerability and depression differed across the training conditions (Table 2, Section D). Vulnerability was positively related to depression in the control condition at both follow-ups, 3 months: $b = 4.11$, 95% CI [.52, 7.70]; 6 months: $b = 3.74$, 95% CI [.57, 6.92]. In contrast, the relationship between vulnerability and depression in the self-distancing condition was negative, 3 months: $b = -.28$, 95% CI [−3.12, 2.75]; 6 months: $b = -.38$ 95% CI [−3.41, 2.65], and marginally different from the positive relationship observed in the control condition (3 months: $p = .060$; 6 months: $p = .057$).

Similar to self-distancing, the relationship between vulnerability and depression in the relaxation condition was negative at both follow-ups, 3 months: $b = -2.83$, 95% CI [−6.88, 1.23]; 6 months: $b = -2.80$, 95% CI [−6.91, 1.31], and significantly different than the positive relationship observed in the control condition (3 months: $p = .011$, 6 months: $p = .012$). Slopes in the self-distancing and relaxation conditions were not different at either time point (3 months: $p = .277$, 6 months, $p = .299$). Figure 3, Panels A and B illustrates these results, showing that highly vulnerable individuals in the self-distancing and relaxation groups more closely resembled their low vulnerability counterparts at both follow-ups compared to highly vulnerable individuals in the control group.

Discussion

We began by asking whether self-distancing training could help people adaptively navigate stressors in their daily lives in the short term and over time. These findings provide preliminary evidence suggesting that there is value in this idea.

Specifically, over the course of the 10-day daily diary period, self-distancing training led to lower levels of rumination and negative affect for emotionally vulnerable individuals compared to their counterparts in the no treatment control condition. In terms of long-term outcomes, vulnerable individuals in the no treatment control condition reported increases in depressive symptoms over time, whereas those in the self-distancing condition were buffered against these increases 6 months posttraining. Given the considerable attrition for the longitudinal analyses, these findings should be treated as preliminary.[3] Nonetheless, the effects on depressive symptoms conceptually replicate prior work finding that self-distancing is particularly effective for individuals who are high in depression or anxiety (Kross & Ayduk, 2009; Kross et al., 2012, 2017; Penner et al., 2016; cf., Wisco & Nolen-Hoeksema, 2011). Moreover, they extend

[3] A post hoc power analysis revealed that we achieved 48% power to detect an effect with $\alpha = .05$, underscoring the need for future research to replicate the long-term results.

previous work by demonstrating that self-distancing training buffers vulnerable individuals against symptoms of depression over time, controlling for their baseline levels.

What might explain the effects of self-distancing training on depression over time? Given previous research showing that self-distancing reduces rumination, which is a precursor to depression, our theoretical expectation was that reductions in daily rumination might explain the buffering of depressive symptoms over time for vulnerable individuals in the self-distancing condition, at least in part. In fact, as Table 1 indicates, daily rumination and depressed affect were positively related to depression at the 6-month follow-up, consistent with this possibility. However, the mediation analyses formally testing rumination as a mechanism were not statistically significant (see Supplemental Materials). Therefore, it is possible that mechanisms other than or in addition to rumination (e.g., self-efficacy, improved interpersonal relationships) may be at play. Nevertheless, given prior research, the role of rumination (as well as other potential mediators such as negative affect) should be investigated using larger samples.

Finally, it is noteworthy that the effects of self-distancing for vulnerable individuals were more robust for the end-of-day assessments compared to the momentary assessments (reported in the Supplemental Materials). This underscores the value of adopting a multimethod approach, which can provide insight into how psychological processes may unfold over time. These findings also suggest that the effects of adopting a self-distanced perspective may be most pronounced and best captured when people deliberately reflect on their negative emotions (as they were instructed to do during the end-of-day diary assessments) rather than when assessed through moment-to-moment fluctuations in affect over the course of the day.

Implications and Future Research

Participants in the self-distancing condition did not report reductions in rumination over time, although they did report reductions in depressive symptoms. One reason for this could be methodological differences in the way these questionnaires were framed: For depressive symptoms, participants were asked to reflect on how they had been feeling over the past *week,* whereas for rumination, they were asked how they had been feeling over the past *month.* It is possible that the shorter time frame cued by the BDI was more sensitive to changes in symptomology, or that the retrospective nature of the state rumination measures led to greater noise.

In terms of why individuals high in vulnerability did not accrue any benefits from relaxation training compared to the no treatment control group in the short term, but did show significant declines in depressive symptoms 3 and 6 months after the training, it is possible that participants in the relaxation condition improved in their ability to relax over time and/or began to use this strategy to habitually manage stressors. Alternatively, the mechanism underlying these benefits may be increases in self-efficacy regarding emotion regulation and/or a sense of control over one's reactions and circumstances.

The present study raises multiple questions for future research. Given that both the self-distancing and relaxation trainings were beneficial in buffering emotionally vulnerable individuals against depressive symptoms, future research could explore whether training individuals on *multiple* coping strategies (e.g., distancing, relaxation, others) would enhance well-being above and beyond the effect of each individual strategy (Bonanno & Burton, 2013). Additionally, strategies may differ in terms of their ease of implementation and effectiveness. For example, the pronoun technique may be easier to use in vivo than the fly on the wall technique. Self-distancing and relaxation may also differ in their effectiveness depending on the situation. Self-distancing, which is a form of reappraisal, may be most beneficial to deal with uncontrollable stressors but could be harmful if used in situations where the person can exert primary control (Haines et al., 2016; Troy et al., 2013). In sum, future research should examine when, and for whom, self-distancing versus relaxation may be more effective

Another related avenue for future research involves the heavy-handedness of the intervention. The present intervention was delivered in a one-time laboratory session. However, it is possible that more intensive trainings, where individuals are given the opportunity to practice the strategies in real life (rather than inside the laboratory) and reflect on the strategies' efficacy and/or seek feedback, may enhance the efficacy of the intervention. Future interventions might also include "boosters" that remind participants of the techniques they have learned and their plans

for using them to navigate stressors in daily life (i.e., in our case, participants' "if-then" plans). Indeed, analyses reported in the Supplemental Materials which examined whether participants in the self-distancing condition spontaneously adopted a more distanced perspective when recalling negative events at the 3- and 6-month follow-ups, compared to baseline, indicated that there was no change in self-perspective over time. This supports the need for boosters. To the extent that a more involved training with booster sessions provides additional opportunities for techniques to be incorporated into people's coping repertoires, such approaches may lead to increased efficacy of the intervention for people both low and high in vulnerability.

Finally, the findings from the present study suggest that people who are more emotionally vulnerable may benefit the most from self-distancing interventions. Future research should directly test this hypothesis by recruiting samples of individuals who are more emotionally vulnerable, or at-risk for clinical depression or anxiety, and directly comparing them to a sample of non-emotionally vulnerable control participants.

Concluding Comments

The self-distancing and relaxation trainings were delivered in a one-time laboratory session. The fact that they had a significant impact on depressive symptoms 6 months later underscores the value of translating basic science research to interventions. Yet, given the small sample sizes, particularly for the long-term outcomes, as well as the multiple comparisons that were conducted to fully explicate the condition × vulnerability interactions, future research should replicate these effects. Future research should also examine whether these effects generalize to individuals who have been clinically diagnosed with depression and anxiety.

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