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FlashReport

Not I, but she: The beneficial effects of self-distancing on challenge/threat cardiovascular responses

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HIGHLIGHTS

- We tested effects of manipulated self-distancing on later cardiovascular responses.
- Self-distancing led to cardiovascular responses consistent with greater challenge.
- Thus, self-distancing seems to promote favorable evaluations of resources/demands.
- Cardiovascular responses reflecting task engagement were unaffected.
- This suggests self-distancing did not lead to lower evaluations of self-relevance.

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ABSTRACT

Self-distancing has been shown to lead to benefits in the face of upcoming stressors, but the process by which this occurs remains unclear. We applied the cardiovascular measures of the biopsychosocial model of challenge/threat to test two plausible explanations: whether manipulating self-distancing (vs. a control condition) (1) makes a subsequent active-performance stressor seem less personally relevant, thereby leading to lower task engagement during task performance, and/or (2) promotes more favorable evaluations of personal resources relative to situational demands, resulting in greater challenge during performance. Participants who self-distanced by using non-first-person (vs. first-person) pronouns and their own name while preparing for a speech showed cardiovascular responses consistent with greater challenge while delivering the speech. Self-distancing did not, however, influence cardiovascular responses reflecting task engagement during the speech. Moreover, the effect of self-distancing persisted in the form of relative challenge during a second speech on an unrelated topic. These findings suggest self-distancing can lead to a positively valenced experience during active-performance stressors, rather than simply muted responses based on decreasing the stressor's self-relevance.

Research has demonstrated that the approaches people take in thinking about stressors can have important implications for how those stressors are experienced (such as in cognitive therapies; Hofmann & Smits, 2008; Teasdale et al., 2002). For instance, reflecting on a negative previous experience from a self-distanced or "fly on the wall" perspective has been associated with reduced rumination and symptoms of depression (Kross & Ayduk, 2008; Kross, Ayduk, & Mischel, 2005; Kross & Ayduk, 2009; Ayduk & Kross, 2010) and smaller cardiovascular changes from a resting baseline (Ayduk & Kross, 2008, 2010). Particularly relevant for our purposes, self-distancing can be beneficial when preparing for future stressors as well. Supporting this idea, recent research showed that participants who self-distanced by using their name and non-first-person pronouns (e.g., "you", "he", "she") while mentally preparing for an upcoming speech performed better, showed less distress during the speech, and ruminated less after the speech compared to those who used first-person pronouns (e.g., "I", "me"; Kross et al., 2014). However, the process by which self-distancing facilitates less negative outcomes in the face of upcoming active-performance stressors is not yet clear.

One possibility is that self-distancing makes active-performance stressors seem less personally relevant, because the events are perceived from a distance. That is, self-distancing may cause people to care less about the stressor or view it as less important. An alternative possibility, however, is that self-distancing instead leads people to evaluate more favorable resources to cope with the situation relative to demands. Seemingly consistent with this idea, in another study, Kross et al. (2014) found that participants who prepared for an upcoming speech using non-first-person (vs. first-person) pronouns reported that they expected the upcoming task to be less demanding and felt they would be better able to cope. However, this self-report approach

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is limited in several respects: (1) it depends on participants being both capable of and choosing to accurately self-reflect and report on their internal states; (2) participants' responses were assessed *before* delivering a speech (in fact, participants never actually delivered a speech in this study), which may not correspond to experiences *during* the speech itself; and (3) effects on self-relevance could also explain the observed pattern (i.e., a less important speech could seem less demanding and easier to cope with). In the current study, we used theoretically-based psychophysiological measures to assess responses that reflect evaluations of self-relevance and resources/demands in the moment, *while* completing a potentially stressful task (i.e., a motivated performance situation requiring active instrumental responses to reach a self-relevant goal).

In particular, we applied the biopsychosocial model of challenge/threat (BPSC/T; Blascovich, 2008; Blascovich & Tomaka, 1996; Seery, 2011, 2013) to test two plausible hypotheses: whether (1) self-distancing affects the evaluated personal relevance of task performance, and/or (2) self-distancing affects evaluations of relative personal resources versus situational demands during performance. According to the BPSC/T, *task engagement* occurs to the extent that an active performance goal is evaluated as self-relevant or subjectively important to a person, such as due to a monetary incentive (Seery, Weisbuch, & Blascovich, 2009) or the presence of an audience (Blascovich, Mendes, Hunter, & Salomon, 1999; see Seery, 2013 for additional discussion). Task engagement is thought to lead to heightened sympathetic-adrenomedullary axis activation, which in turn results in an increase in heart rate (HR) and ventricular contractility (VC; the left ventricle's contractile force) relative to pre-task resting baseline levels (Seery, 2011, 2013). Larger changes in HR and VC thus reflect greater task engagement (Blascovich et al., 1999; Seery et al., 2009). There is a larger body of research measuring HR than VC, and similar findings from different theoretical perspectives, such as the work of Fowles and colleagues (Fowles, Fisher, & Tranel, 1982; Tranel, Fisher, & Fowles, 1982; for a review, see Fowles, 1988), also support that greater incentive value leads to greater increases in HR (also see Richter & Gendolla, 2007). In the current study, participants were asked to give a speech after first preparing for the speech using either first-person or non-first-person pronouns (Kross et al., 2014). If self-distancing makes events seem less personally relevant, participants in the non-first-person pronoun condition should show cardiovascular responses consistent with lower task engagement during the speech than participants in the first-person pronoun condition.

However, if self-distancing leads to differences in evaluations of resources relative to demands, participants should not show differences in task engagement as a function of condition; instead, differences in participants' responses along the bipolar continuum of challenge/threat should emerge. Given task engagement, *challenge* occurs when resources are evaluated as relatively high and demands are low; conversely, *threat* occurs when resources are evaluated as relatively low and demands are high. Challenge is thought to lead to the release of epinephrine, which dilates arteries supplying blood to muscles in the arms and legs and thereby facilitates the heart—the activity of which has increased with task engagement—in pumping more blood (Seery, 2011, 2013). In contrast, threat is thought to inhibit epinephrine release and thereby promote constriction of arteries and impeded blood flow, despite the heart's heightened activity. Challenge is thus marked by higher cardiac output (CO; the amount of blood pumped by the heart in liters per minute) and lower total peripheral resistance (TPR; an index of net constriction versus dilation in the arterial system) than threat. Supportive evidence for the interpretation of these cardiovascular responses in terms of challenge/threat comes from dozens of studies on a range of topics conducted in multiple laboratories (e.g., social facilitation, Blascovich et al., 1999; decision making, Kassam, Koslov, & Mendes, 2009; task performance, Moore, Vine, Wilson, & Freeman, 2012; social power, Scheepers, de Wit, Ellemers, & Sassenberg, 2012; social anxiety, Shimizu, Seery, Weisbuch, & Lupien, 2011; stigma, Townsend, Major, Sawyer, & Mendes, 2010; religious symbols, Weisbuch-Remington, Mendes, Seery, & Blascovich, 2005; for reviews, see Blascovich, 2008; Seery, 2013). If self-distancing promotes more favorable evaluations of resources/demands, participants in the non-first-person pronoun condition should show cardiovascular responses consistent with greater relative challenge during the speech than participants in the first-person pronoun condition.

We further explored two additional questions: whether (1) any effects of self-distancing pervade into a second, subsequent speech on an unrelated topic, and (2) positive versus negative feedback after the first performance moderates the effect of self-distancing. To test these ideas, participants were randomly assigned to receive either positive or negative feedback following their first speech, before completing a second speech.

1. Method

1.1. Participants

One hundred thirty-three undergraduates (68 women) participated in the study for partial course credit and had useable data in at least one of the two speech tasks. Of these, 132 had analyzable data for the first speech task, and 128 had analyzable data for the second speech task. This should have provided adequate power (0.80) to detect an approximate effect size of $\eta_p^2 = 0.06$.

In a typical challenge/threat study, approximately 10–15% of the sample may be lost due to recording problems. In addition to the 133 participants included in analyses across both speech tasks, 19 additional participants were excluded from all analyses: 9 due to missing blood pressure readings, 4 due to unusable impedance cardiography data, 3 due to participant withdrawal, 2 due to experimenter error, and 1 due to failure to properly complete study procedures. For the first speech, 1 other participant was excluded in addition to those described above due to missing blood pressure readings, for a total of 132 participants included in analyses. For the second speech, 5 other participants were excluded in addition to those described above: 4 due to missing blood pressure readings and 1 due to unusable impedance cardiography, for a total of 128 participants included in analyses. No other data were excluded.

1.2. Cardiovascular measures

Cardiovascular measures were recorded noninvasively, following accepted guidelines (Sherwood et al., 1990). We used the following equipment manufactured and/or distributed by Biopac Systems, Inc. (Goleta, CA): NICO100C impedance cardiography (ICG) noninvasive cardiac output module, ECG100C electrocardiogram (ECG) amplifier, and NIBP100A/B noninvasive blood pressure module. ICG signals were detected with a tetrapolar aluminum/mylar tape electrode system, recording basal transthoracic impedance (Z0) and the first derivative of impedance change (dZ/dt), sampled at 1 kHz. ECG signals were detected using a Standard Lead II electrode configuration (additional spot electrodes on the right arm and left leg, with ground provided by the ICG system), sampled at 1 kHz. The blood pressure monitor was wrist-mounted, collecting continual readings—every 10–15 s—from the radial artery of participants' nondominant arm. In combination, ICG and ECG recordings allowed computation of HR, VC (for presentational purposes, pre-ejection period reactivity $\times -1$), and CO; the addition of blood pressure monitoring allowed computation of TPR (mean arterial pressure $\times$ 80 / CO; Sherwood et al., 1990). Recorded measurements of cardiovascular function were stored on a computer and analyzed off-line with Biopac Acqknowledge 3.9.2 for Macintosh software, using techniques from previously published challenge/threat research with the same equipment configuration (e.g., Lupien, Seery, & Almonte, 2012; Seery, Leo, Lupien, Kondrak, & Almonte, 2013; Shimizu et al., 2011; also see Seery, Kondrak, Streamer, Saltsman, & Lamarche, 2016),