



SHORT COMMUNICATION

# It's not what you think, it's *how* you relate to it: Dispositional mindfulness moderates the relationship between psychological distress and the cortisol awakening response



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Negative affect;  
Rumination;  
Acceptance

## Summary

**Objective:** The cortisol awakening response (CAR) is a natural metabolic response that can be potentiated by negative cognitive–emotional processes, including stress appraisals, negative affect, and rumination. Psychological distress and the CAR are not consistently related, however. Individual differences in aspects of dispositional mindfulness which reflect *how* people relate to negative thoughts and emotions may help explain such inconsistencies. We tested whether the tendency to (1) label and describe inner experiences and (2) accept negative thoughts and feelings without judgment moderated the association between psychological distress and the CAR.

**Methods:** Self-reported dispositional mindfulness, perceived stress, anxiety, negative affect, rumination, and the CAR were assessed among overweight/obese women. Regression analyses were conducted to examine whether dispositional mindfulness moderated the relationship between indicators of psychological distress and the CAR.

**Results:** While psychological distress was consistently positively related to the CAR, these associations were qualified by significant interactions with both components of dispositional mindfulness. Psychological distress was associated with the CAR at lower levels of dispositional mindfulness but not at higher levels.

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*Conclusion:* These findings are consistent with the idea that the tendency to describe and accept experiences may buffer the impact of psychological distress on physiological arousal. These metacognitive processes may be important moderators in unraveling the complex relationship between psychological distress and physiological stress reactivity. Further research is recommended to replicate this approach in other populations.

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## 1. Introduction

The cortisol awakening response (CAR) is a naturalistic indicator of hypothalamic–pituitary–adrenal (HPA) axis activation. Cortisol concentrations are low at night and rise in the early morning hours. The CAR is the increase or total amount of cortisol concentrations up to 45 min after awakening. The CAR has a slope steeper than the circadian rise of cortisol concentrations in the early morning hours suggesting that the CAR reflects psychophysiological processes unique to awakening (Wilhelm et al., 2007). Core identity and personality representations as well as anticipation of daily events are thought to become conscious upon awakening triggering HPA activation.

According to a meta-analysis, higher CARs are associated with increased appraisals of general life and job stress (Chida and Steptoe, 2009). However, negative affect, anxiety, and rumination are not reliably associated with the CAR (Chida and Steptoe, 2009; Zoccola and Dickerson, 2012). A lack of consistency across studies could be due to methodological issues, yet dispositional factors may moderate the relationship between psychological distress and the CAR and account for some of the observed inconsistencies.

Dispositional mindfulness is one potential factor that may moderate the association between psychological distress and the CAR. Dispositional mindfulness is the natural tendency to be aware of present-moment experiences in an accepting and nonjudgmental manner (Baer et al., 2004). The process of attending to internal experiences with mindful awareness entails a shift in relation to those experiences. Rather than identifying with thoughts and emotions as accurate reflections of “me” or “reality,” thoughts and emotions are experienced as passing mental events – which may or may not be valid – occurring in a larger field of awareness (Teasdale et al., 2002). This shift in perspective is thought to prevent escalation of dysfunctional cognitive and emotional patterns and allow for the occurrence of more adaptive responses. Therefore, mindfulness may promote well-being not just by changing the content of thought, such as reducing the frequency of negative thoughts or emotions, but also by shifting the relationship to negative thoughts and feelings themselves.

Dispositional mindfulness is associated with less psychological distress (Brown et al., 2007) and reduced HPA reactivity to a standardized laboratory stressor (Brown et al., 2012). Additionally, a mindfulness intervention reduced the CAR compared to a waitlist control condition in a subgroup of obese women (Daubenmier et al., 2011).

Here we examine whether components of dispositional mindfulness moderate the association between psychological distress and HPA activity. One component involves the ability to label or describe experiences (Baer et al., 2004).

The process of mentally or verbally labeling internal experiences may reduce identification with negative states. A second component involves accepting unwanted thoughts and feelings without judging them or oneself as good/bad or right/wrong. Individuals who tend to label or refrain from judging initial negative thoughts and emotions may have reduced emotional reactivity. In turn, such individuals may show attenuated activation of or quicker recovery from physiological stress responses. Therefore, *how* individuals relate to distressing thoughts and emotions may impact the duration or intensity of physiological stress reactivity.

In support of this theory, components of dispositional mindfulness have been shown to moderate the association between psychological risk factors and mental health outcomes. For example, neuroticism predicts depressive symptoms six years later among individuals with lesser tendency to label experiences but not among those with greater tendency, suggesting that the ability to describe inner experiences may protect against long-term negative effects of neuroticism (Barnhofer et al., 2011). However, to the best of our knowledge, no studies have investigated whether dispositional mindfulness moderates the relationship between psychological distress and indicators of physiological arousal, such as the CAR. In the current study, we predicted that (1) indicators of psychological distress, including perceived stress, negative affect, anxiety, and rumination would be positively related to the CAR, and that (2) mindfulness would be negatively related to the CAR, but also that (3) components of dispositional mindfulness, including the tendencies to describe inner experiences and accept them without judgment, would moderate the relationship between distress and the CAR. Specifically, we hypothesized positive relations between distress and the CAR at lower but not higher levels of dispositional mindfulness, as higher levels would presumably buffer the impact of psychological distress on the CAR.

## 2. Methods

### 2.1. Participants

This study was comprised of 43 of 47 women enrolled in a randomized trial of a mindfulness-based intervention at the University of California, San Francisco (UCSF) who had complete data on measures used in the present study (for more detailed description of the parent study see Daubenmier et al., 2011). All measures were collected at baseline prior to randomization. Pre-menopausal overweight and obese women with no history of diabetes, cardiovascular disease, or active endocrine disorder, not taking steroid medications, and with no prior meditation or yoga practice were

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