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Microinterventions targeting regulatory focus and regulatory fit selectively reduce dysphoric and anxious mood

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ABSTRACT

Depression and generalized anxiety, separately and as comorbid states, continue to represent a significant public health challenge. Current cognitive-behavioral treatments are clearly beneficial but there remains a need for continued development of complementary interventions. This manuscript presents two proof-of-concept studies, in analog samples, of "microinterventions" derived from regulatory focus and regulatory fit theories and targeting dysphoric and anxious symptoms. In Study 1, participants with varying levels of dysphoric and/or anxious mood were exposed to a brief intervention either to increase or to reduce engagement in personal goal pursuit, under the hypothesis that dysphoria indicates under-engagement of the promotion system whereas anxiety indicates over-engagement of the prevention system. In Study 2, participants with varying levels of dysphoric and/or anxious mood received brief training in counterfactual thinking, under the hypothesis that inducing individuals in a state of promotion failure to generate subtractive counterfactuals for past failures (a non-fit) will lessen their dejection/depression-related symptoms, whereas inducing individuals in a state of prevention failure to generate additive counterfactuals for past failures (a non-fit) will lessen their agitation/anxiety-related symptoms. In both studies, we observed discriminant patterns of reduction in distress consistent with the hypothesized links between dysfunctional states of the two motivational systems and dysphoric versus anxious symptoms.

Major depressive disorder (MDD) and generalized anxiety disorder (GAD) are two of the most prevalent psychiatric disorders and leading causes of disability worldwide. Epidemiological studies find that MDD/GAD comorbidity occurs at least as frequently as MDD without GAD and much more frequently than GAD without MDD (e.g., Mineka, Watson, & Clark, 1998; Zbozinek et al., 2012). Most individuals with MDD also report a history of an anxiety disorder (Fava et al., 2000; Kaufman, Plotskey, Nemeroff, & Charney, 2000). GAD is highly comorbid, with 60–70% of GAD patients having a lifetime history of MDD (Carter, Wittchen, Pfister, & Kessler, 2001; Kessler, Guilherme, & Walters, 1999). That GAD/MDD comorbidity is the rule rather than the exception can be observed as early as adolescence (van Lang, Ferdinand, Ormel, & Verhulst, 2006), indicating that treatments should ideally be able to target both kinds of distress. Although existing interventions are efficacious, a significant proportion of MDD and GAD patients don't fully recover, and among those who do, most will experience relapse or recurrence (Moog & Bradley, 2005). There is increasing evidence that MDD and GAD are characterized by both common and unique underlying mechanisms (Krueger, Markon, Patrick, & Iacono, 2005). Nonetheless, there remains an urgent need for treatment innovations for MDD, GAD, and their comorbid states. In this manuscript we present two proof-of-concept studies, in analog samples, applying a well-validated behavioral science model to the clinical challenge of dealing with dysphoric and anxious symptoms.

1. Self-discrepancy, regulatory focus, and vulnerability to depression vs. anxiety

Effective goal pursuit behavior is fundamental to mental health and well-being (Elliot & Sheldon, 2005; Kahneman, Diener, & Schwarz, 1999). Central to life's pleasures and pains is success or

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failure in pursuit of approach and avoidance goals, including knowing when to keep what one is or has and when to change for something new. Surprisingly, however, there are relatively few interventions for mood and anxiety disorders based on the psychological principles that underlie approach and avoidance (Dozois, Seeds, & Collins, 2009; Holtforth, Pincus, Grawe, Mauler, & Castonguay, 2007; Karoly, 2010; Klinger & Cox, 2004). Such an alternative approach to reduction of dysphoric and anxious symptoms may provide a useful complement to existing cognitive-behavioral techniques.

The hedonic principle – that people approach pleasure and avoid pain – is the basic motivational assumption of theories across many areas of psychology (e.g., Atkinson, 1964; Festinger, 1957; Freud, 1952; Gray, 1982; Heider, 1958; Kahneman & Tversky, 1979). In spite of the wide applicability of this principle, however, its limitations have become apparent over the past several decades. The problem with the hedonic principle is not that it is wrong, but rather that its dominance has taken attention away from other principles that concern the *different ways* that people approach pleasure and avoid pain (Higgins, 1997) – different ways that influence the emotional and motivational consequences of perceived success and failure in goal pursuit. The two studies reported below examined the implications of differences in what constitutes "failure" in personal goal pursuit for developing targeted intervention techniques for MDD, GAD, and their comorbidity.

Self-discrepancy theory (SDT; Higgins, 1987) was developed to conceptualize how problems in self-regulation of personal goal pursuit contribute to mood and anxiety disorders. SDT identified two types of personal goals or self-guides: hopes and aspirations (*ideal* self-guides) versus duties and obligations (*ought* self-guides). The theory predicted that when individuals failed to meet their ideals, they would suffer from dejection/dysphoria, whereas when individuals failed to meet their oughts, they would suffer from agitation/anxiety. According to SDT, what produces these different emotional syndromes are the different psychological situations that people experience depending on which type of self-guide they are using. When events are construed in reference to ideals (hopes and aspirations), we experience success as a *gain* and failure as a *non-gain*. This gain/non-gain construal triggers emotions such as happiness, joy, and satisfaction when we succeed and sadness, frustration, and disappointment when we fail. In contrast, when events are construed in reference to oughts (duties and obligations), we experience success as a *non-loss* and failure as a *loss*. This loss/non-loss construal triggers emotions such as calmness and quiescence when we succeed and worry, guilt, and anxiety when we fail (Higgins & Tykocinski, 1992; Strauman, 1992).

SDT provided an integrative translational model linking self-regulatory cognition with the basic science literature on motivation and emotion. Over the last two decades, numerous studies have found support for its predictions (for reviews, see Higgins, 1998, 2001). In addition, SDT recognized that specific situations could influence whether a person's ideals or oughts were more accessible at that moment. Whichever type of self-guide was more accessible would determine whether that particular situation was construed in reference to the person's ideal or ought guides, which in turn would determine which affective experiences resulted. Evidence for such *emotional variability across situations* as a function of the accessibility of ideal and ought guides from contextual priming has also been found in numerous studies (e.g., Andersen & Baum, 1994; Shah, 2003; Strauman & Higgins, 1987).

Regulatory focus theory (RFT; Higgins, 1998) is a more general model of self-regulation which built upon SDT by distinguishing between a *promotion system* that is concerned with nurturance, advancement, and fulfilling hopes (ideals) and a *prevention system* that is concerned with security, safety, and fulfilling duties (oughts). RFT emphasizes that promotion failure and prevention failure, along with their accompanying affective and motivational experiences, were psychological *states*. If either the promotion or prevention system were activated in any specific situation and a personally significant failure were to occur in that situation, then acute system-specific distress would also occur: dejection/dysphoria in the case of promotion failure and agitation/anxiety in the case of prevention failure (Idson, Liberman, & Higgins, 2000). In contrast to the behavioral activation/inhibition systems, which operate as "bottom-up" systems in response to cues for *spatio-temporal* approach and avoidance, respectively (Depue & Collins, 1999; Watson, Wiese, Vaidya, & Tellegen, 1999), the promotion and prevention systems are "top-down" socialization-based systems for *strategic* approach (eager strategies) and avoidance (vigilant strategies) in response to activation of generalized goals or concerns (Strauman & Wilson, 2010). Indeed, there is evidence from functional neuroimaging studies to suggest that these two sets of approach/avoidance systems have distinguishable neural activation correlates (Strauman et al., 2013).

As had been postulated originally in SDT, promotion and prevention goal failure are associated with specific affective and motivational consequences. Depression is associated with actual:ideal discrepancy, a promotion system failure, whereas anxiety is associated with actual:ought discrepancy, a prevention system failure (Strauman & Higgins, 1988; Strauman, 1989, 1992). But RFT makes additional predictions about the antecedents and consequences of personal goal pursuit. Promotion failure is experienced as the absence of a positive outcome (a non-gain), whereas prevention failure is experienced as the presence of a negative outcome (a loss). Recent mechanism-focused research on RFT has found that when the promotion system is active, what matters to individuals at that moment is to *advance* from a current status quo "0" to attain a better "+1" state – to make progress (e.g., Brodscholl, Kober, & Higgins, 2007; Zou, Scholer, & Higgins, 2014). In contrast, when the prevention system is active, what matters to individuals at that moment is to *maintain* a safe status quo "0" and not fall to a worse "-1" state (e.g., Brodscholl et al., 2007; Scholer, Zai, Fujita, Stroessner, & Higgins, 2010).

This mechanistic distinction is important because it clarifies the critical difference between an active promotion state versus an active prevention state in what makes unsuccessful goal pursuit distressing; i.e., *what constitutes a "failure."* What is critical is not just the particular kind of personal goal that the individual is pursuing (e.g., ideal vs. ought) but also the *meaning of the individual's current state "0."* In the prevention system, "0" is positive and it is moving below "0" that is a failure. In contrast, in the promotion system, remaining at "0" is a failure and moving from "0" to "+1" is positive. The critical nature of this distinction is revealed by considering what happens when individuals construe themselves as being in a *worse* ("-1") state compared to the status quo "0" – a set of circumstances in which individuals with depressive and/or anxious symptoms regularly find themselves. Although being in a worse state is clearly negative within both systems, *how to make things better presents a different challenge for promotion* versus *prevention*. When individuals are in a prevention state, any behavioral option that gets back to the safe status quo "0" state is desirable – that is, the psychological mandate is to get back to "0" (Scholer et al., 2011). However, in a promotion state there is no value in simply getting back to "0" because it still constitutes a failure (Zou et al., 2014). Thus, RFT suggests that helping people who are construing themselves as failing in personal goal pursuit requires *creating different interventions for a prevention failure* versus *a promotion failure*. Furthermore, the many individuals who experience both dysphoric and anxious symptoms are likely to be experiencing two different kinds of perceived failure at different