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Review

Selection and implementation of emotion regulation strategies in major depressive disorder: An integrative review

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HIGHLIGHTS

- There is a large literature on emotion regulation (ER) in major depression (MDD).
- MDD is linked to aberrant habitual use of ER strategies based on self-reports.
- People with MDD can often effectively implement ER strategies under instruction.
- More laboratory and naturalistic emotion regulation research is needed.

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ABSTRACT

Emotion regulation (ER), broadly defined, has been implicated in mental health, including major depressive disorder (MDD). We review empirical studies examining selection and implementation of ER strategies in adults with current or past MDD. We focus on eight strategies (rumination, distraction, cognitive reappraisal, suppression, acceptance, savoring, positive rumination, dampening), organizing the review by research design: (1) self-reported habitual use (i.e., trait) of ER strategies, (2) spontaneous use of ER strategies in laboratory settings, (3) experimentally instructed ER strategies, and (4) use of ER strategies in naturalistic settings. Reviewed findings suggest that MDD is associated with unskillful selection of ER strategies—indexed by self-reported habitual use of ER strategies—but not impaired abilities to implement them; in fact, those with current MDD and MDD in remission show intact abilities to implement many ER strategies when instructed to do so. Additionally, the vast majority of research examines trait ER, while there is a dearth of laboratory and naturalistic studies using MDD samples. There are also discrepant findings on habitual use of ER strategies assessed by self-reports and spontaneous use of ER strategies in the lab. We discuss implications of reviewed findings and five areas for future research in emotion dysregulation in MDD.

1. Introduction

Major depressive disorder (MDD) is one of the most prevalent, disabling, and burdensome mental disorders (Eaton et al., 2012; Kessler & Bromet, 2013). The 12-month prevalence for experiencing a major depressive episode (MDE) for adults in the United States (US) is approximately 6.7% (National Institute of Mental Health, 2015). MDD is associated with impairments in various domains of functioning, including low education completion rate, unemployment, poor marital quality, and early mortality in part due to elevated risk for physical disorders and suicide (Kessler & Bromet, 2013). The economic burden associated with MDD in the US is estimated to be $210.5 billion in 2010, representing a 21.5% increase from 2005 (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015).

MDD is a mood disorder, and the two cardinal symptoms involve aberrations in affect (American Psychiatric Association, 2013): elevated negative affect and diminished positive affect. Additionally, compared to healthy controls, people with MDD are characterized by greater instability of negative affect (Houben, Van Den Noortgate, & Kuppens, 2015) and blunted reactivity to positive and negative laboratory stimuli (Bylsma, Morris, & Rottenberg, 2008). Considering these affective aberrations associated with MDD, some recent theoretical approaches aim to understand MDD from the perspective of emotion dysregulation (Campbell-Sills & Barlow, 2007; Gross & Muñoz, 1995; Kring & Werner, 2004). In fact, researchers speculate that those who are unable to successfully down-regulate negative affect are vulnerable to MDD (e.g., Gotlib & Joormann, 2010; Gross & Muñoz, 1995). Hence, difficulties with emotion regulation are likely risk and maintaining factors for MDD.

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Emotion regulation (ER) refers to a set of processes that influence how people experience and express emotions (Gross & Thompson, 2007). Emotion regulatory processes can alter various aspects of emotion, including frequency, intensity, duration, and stability of positive and negative emotions. Two factors that determine the success of ER are (a) skillful selection of ER strategies and (b) effective implementation of selected strategies to achieve ER goals (Gross & Jazaieri, 2014). As such, unsuccessful ER in those with MDD could be due to inappropriate choice of ER strategies based on the situational demands and/or lack of abilities to effectively implement the selected strategies.

In the current paper, we review peer-reviewed research examining eight ER strategies in adults with MDD. We focus on rumination, distraction, cognitive reappraisal, and suppression because they have been strategies examined most frequently in the MDD literature. Further, the habitual use of these strategies has been significantly associated with more (for rumination and suppression) or less (for cognitive reappraisal) depressive symptomatology (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Additionally, considering the effectiveness of mindfulness-based treatment for MDD, of which acceptance is a central component (Piet & Hougaard, 2011), we review research on the ER strategy of acceptance. Lastly, given recent interest in regulation of positive emotions (i.e., positive ER; Carl, Soskin, Kerns, & Barlow, 2013), we review the literature on three main positive ER strategies—savoring, positive rumination, and dampening.

For each ER strategy, we organize the review based on four types of study designs. First, we describe literature examining global self-report measures (i.e., *trait* ER). Self-report measures reflect individuals' habitual use of, or dispositional tendency to adopt, an ER strategy.

Second, we review laboratory studies that measure spontaneous use of each strategy (i.e., *spontaneous* ER). These types of studies usually involve a mood induction task aimed to induce certain emotions (e.g., sadness) in participants. During or following the mood induction, participants are typically instructed to freely regulate their emotions. Then they are asked to report the extent to which they have used different ER strategies during the regulation phase by completing a self-report measure assessing distinct ER strategies.

Third, we review laboratory studies focused on the effects of *experimentally instructed* ER strategies on mood. In these studies, participants report their mood states before and after an experimentally instructed ER task that focuses on a particular ER strategy. Researchers assess mood changes to indicate the effects of the strategy on mood. When the ER task is preceded by or conducted during a mood induction, we note it. For strategies that are intended to improve mood (i.e., increase positive affect and/or decrease negative affect), this mood change can be viewed as an index of how effectively one uses the strategy. For this reason, these studies provide information about participants' abilities to implement different ER strategies when instructed to do so. For example, people with MDD may experience difficulties with ER due to inappropriate selection of ER strategies but can implement these strategies as successfully as healthy controls when instructed.

Finally, we review studies that examined ER strategies in everyday settings (*naturalistic* ER) using the experience sampling method (ESM; Csikszentmihalyi & Larson, 1987). ESM can increase ecological validity and reduce the recall biases inherent to retrospective self-report measures and daily diary studies (Stone et al., 1998). To date, there are only two studies that met our criteria to be included in the review (see details below), and both involved rumination. Consequently, only the Rumination section includes a review of naturalistic ER.

There are two recent review papers examining multiple ER strategies in relation to depression, broadly defined (i.e., Aldao et al., 2010; Joormann & Stanton, 2016), and we do not duplicate their efforts. The breadth of Aldao et al. (2010) focused on a broader range of psychopathology, which included depressive symptomatology. In contrast, we focus our review on the ER of people with diagnosed MDD. Like Aldao et al., we review research examining self-reported ER strategies, but we also review three additional types of study designs, including two that are laboratory-based and one that is naturalistic. Of note, the current review does not include neuroimaging research (see Joormann & Stanton, 2016 and Rive et al., 2013, for reviews of neural correlates of ER in depressive psychopathology). Although Joormann and Stanton (2016) included studies using various designs, they did not include naturalistic studies or always explicitly note the study designs. In fact, no reviews to date have systematically differentiated and compared these methodologies of measuring ER in MDD. By doing so, we aim to clarify whether results provide similar conclusions across methodologies.

The current review only includes studies that had at least one MDD group (current or remitted) and one nondepressed control group, which allowed for between-group comparisons. All group differences we describe in this review—unless otherwise noted—always refer to differences between groups that were statistically significant in the original studies. We focus our review on studies that assessed psychiatric disorders using well-validated diagnostic interviews (e.g., SCID-IV; First, Spitzer, Gibbon, & Williams, 1996). We exclude research assessing psychiatric disorders using self-report measures and applying clinical cutoffs because doing so can lead to a greater number of false positives and false negatives of MDD than do diagnostic interviews (see Bredemeier et al., 2010, for a discussion). To provide a thorough background of each ER strategy, however, we briefly describe their associations with depressive symptoms when we introduce each strategy. Finally, we use specific terms throughout the paper to describe the MDD and control group samples; these are detailed in Table 1.

2. Rumination

Rumination has received the most attention compared to other ER strategies; it refers to repetitively focusing on the nature and the consequences of one's feelings (Gross & Thompson, 2007). Rumination was first proposed in Nolen-Hoeksema's (1987, 1991) response styles theory as a dispositional tendency (i.e., trait) to "repetitively [focus] on the fact that one is depressed; on one's symptoms of depression; and on the causes, meaning, and consequences of depressive symptoms" (Nolen-Hoeksema, 1991, p. 569). Since then, a large body of research has found that trait rumination is associated with higher levels of depressive symptoms (for reviews, see Aldao et al., 2010 and Nolen-Hoeksema

Table 1
Definitions of various types of participant groups.

Participant types	Operational definitions
MDD participants	People with
Current MDD	MDD who are experiencing a current MDE.
RMD	MDD whose MDE is in remission.
Control groups	People who
Healthy controls	have no current or past history of mental health disorders.
Never-depressed controls	have no current or past MDEs but it is unclear whether they have or have had other psychiatric disorders.
Currently nondepressed controls	are not in a current MDE but whose past history of MDD is either: • heterogeneous (i.e., with and without past MDD); or • unknown (i.e., past history of MDD was not assessed).

Note. MDD = major depressive disorder; MDE = major depressive episode; RMD = remitted depression.