Measuring emotion regulation in daily life – Validation and psychometric properties of the State Difficulties in Emotion Regulation Scale

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Abstract

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Multiple times per day, people experience emotions that they perceive as too intense, unpleasant, or inappropriate in their current context, and intent to regulate them. Yet, difficulties regulating emotions, especially those that are perceived as negative, are also common and an important transdiagnostic problem at the core of many mental disorders (CITE CLUDIUS, 2020). Typically, strengths and difficulties in emotion regulation have been considered as dispositional traits that hinder people to regulate their emotions in a comparable way across contexts and momentary factors (CITE ZIMMERMANN & IWANSKI, 2014; GRATZ & ROEMER, 2004). However, conceptualizing emotion regulation simply as traits ignores that only weak to moderate associations of momentary and general emotion regulation tendencies were found (CITE KOVAL, 2020) and flexibility in emotion regulation strategy selection according to situational demand, anticipated effectiveness and availability might be an important component of dealing with emotions (CITE ALDAO, SHEPPES & GROSS, 2015). Especially but not limited to a clinical context, we are often not interested in whether people have difficulties with their emotion regulation *in general*, but rather why people struggle with emotions *in a specific situation* with their emotions, for example during an argument with their significant other, but can successfully regulate their emotions in a different context, such as the workplace. Although a multitude of instruments to measure difficulties with emotion regulations exists, few instruments have been specifically designed to capture state-like difficulties in emotion regulation. Lavender et al. (2017) recently developed and tested a state-version of the widely used Difficulties in Emotion Regulation Scale (DERS; state version: S-DERS; CITE GRATZ, 2004). The S-DERS has been validated in a cross-sectional study and robustly captured changes in emotion regulation after a mood-induction (Lavender et al., 2017). However, it was not tested in daily life and associated contexts outside of a laboratory setting. In this pre-registered study, we therefore investigated the psychometric properties and construct validity of the S-DERS in the daily lives of young adults with six assessments for ten days. We will report multilevel factor structure, reliability, construct validity and change across a negative mood induction. We will also provide clinicians and researchers with psychometric sound short versions for future use.

# Difficulties in emotion regulation and mental health

Emotion regulation is typically conceptualized as the ability to regulate emotions in their intensity, duration, and type (CITE GROSS & THOMPSON, 2007). Many if not all mental disorders are associated with difficulties in regulating emotions, for example, deficits have been reported for adolescents with eating disorders (CITE PERTHES, 2021), depressed and anxious youth (ÖZLEM SCHÄFER, 2017), adult trauma survivors (CITE EHRING & QUACK, 2010), individuals with social anxiety (CITE RUSCH ET AL, 2017), and people with borderline personality disorder (CITE SORGI-WILSON, 2022). Gratz and Roemer (2004) provide a clinical-contextual framework that clusters typical difficulties in emotion regulation into six factors based on their widely used DERS questionnaire: Difficulties in a) emotional awareness, b) emotional clarity, c) acceptance of emotions, d) emotion modulation to meet contextual and goal-specific demands as well as e) impulse control problems and f) limited access to emotion regulation strategies. Emotional awareness is characterized by the ability to being attentive to one’s emotions and the acknowledgment of those as present, valid, and important even when being intense, negative, or inappropriate. A lack of emotional clarity is defined as being confused about one’s emotions or how a person is feeling. While the authors originally considered emotional awareness and clarity as one construct, factor analysis revealed that they should be considered as two separate latent factors (Gratz & Roemer, 2004). Both are conceptually related to alexithymia, which has been linked to several mental disorders and psychopathological symptoms in both experimental and cross-sectional studies (CITATIONS). Another clinically relevant factor in emotion regulation is the acceptance of initial emotional reactions, especially when negative, as their non-acceptance is considered linked to specific negative emotions such as shame, guilt, or anger, which then can be difficult to regulate or lead to problematic behaviors (ADD CITATION). For this reason, modern psychotherapy approaches consider emotional acceptance and mindfulness to one’s own emotions as an important skill in the treatment of disorders characterized by high emotion dysregulation (CITE LINEHAN; CITE HAYES). As most people are frequently experiencing negative emotions that they think are justified in a given context (e.g., anger when somebody jumped in line or being afraid while walking alone in the city at night), modulating the intensity instead of the quality of the emotion is an important skill to maintain goal-oriented behavior. Similarly, controlling initial impulsive behavior triggered by negative emotions that might not be adequate in a given context is also an important factor in successful emotion regulation, with which many people with mental disorders struggle, for example individuals with borderline personality disorder, substance use disorders, or eating disorders (CITATIONS NEEDED; E.G. PERTHES ET AL FOR EATING DISORDERS, SOMETHING FROM LINEHAN, SOME OTHER FOR SUD). Finally, the availability of emotion regulation strategies might be limited for people not only in general, e.g. by a mental disorder, but also in context-specific situations, such as when sleep-deprived, stressed or hungry.

The DERS has been extensively researched and generally showed good validity and reliability (Erez & Gordon, 2024; Raimondi et al., 2024; Gratz & Roemer, 2004; Bardeen et al., 2012), however, the awareness dimension might be measuring a distinct component of emotion regulation compared to the other dimensions of the DERS (Erez & Gordon, 2024; Bardeen et al., 2012; Tull et al., 2010). Difficulties in emotion regulation as measured with the DERS have been linked to a variety of mental disorders such as eating disorders (Brockmeyer et al., 2012), anxiety disorders and symptoms (Tull et al., 2009), post-traumatic stress disorder (Ehring & Quack, 2010), bipolar disorder (Miola et al., 2022) and borderline personality disorder (Salsman & Linehan, 2012). Recent research further underlined that the DERS total score is sufficiently accurate to predict social anxiety, generalized anxiety and depression and that participants above a DERS total score of 95 showed lower satisfaction with life, higher attachment insecurity and neuroticism (Erez & Gordon, 2024).

# Difficulties in emotion regulation in daily life

For decades, research focused on general emotion regulation tendencies and considered difficulties with emotion regulation as trait-like features. Yet, recent studies have shown that difficulties in emotion regulation are context-dependent and vary across time. For example, participants report use of different emotion regulation strategies depending on emotionally intense contexts (Dixon-Gordon, Aldao & De Los Reyes, 2015). In a recent ecological momentary assessment study (EMA), depressed participants showed more difficulties in emotion regulation as characterized by greater brooding and more suppression instead of adaptive emotion regulation when retrieving everyday memories (Del Palacio-Gonzalez & O’Toole, 2022).

ADD SOME MORE EXAMPLES IF NEEDED

Regarding the six domains of difficulties in emotion regulation inherent to the DERS, meaningful variation across time and substantial differences between situation should be expected. For example, experimental research on emotional awareness and clarity showed that XYZ. This has been further corroborated in an EMA showing that emotional clarity increased from early to later hours throughout the day for healthy adolescents, but not for adolescents with anorexia nervosa (Kolar et al., 2017), also indicating that short-term changes in difficulties in emotion regulation can be meaningful clinical outcomes. Regarding impulse control difficulties and access to emotion regulation strategies, several EMA studies highlighted the dynamic components and contextual dependencies of these difficulties for example in individuals with borderline personality disorder, eating disorders, substance use disorders, and affective disorders (CITE EMA STUDIES HERE; MAYBE REVIEWS AVAILABLE), showing that engagement in impulsive disordered behaviors is not uniform across time, context, or internal states. Yet, most of the studies that assess emotion regulation in daily life or intend to manipulate emotion regulation experimentally rely on ad hoc created measures that have not been thoroughly investigated regarding their psychometric properties.

To provide researchers with a validated and reliable state self-report measure, Lavender et al. (2017) adapted the DERS to capture state-like difficulties in emotion regulation.

* Add info on adaptation process here
* Add studies that use the S-DERS
* Add 3-4 sentences on the new S-DERS thingy with negative/positive differences
* Add 2-3 sentences on what still lacks

# Our study

In this preregistered study, we aimed to evaluate the psychometric properties of the S-DERS for the use in EMA studies and to provide researchers with several short-forms that can be used for both clinical and research purposes. We therefore translated the S-DERS entirely into German, checked for overlap and differences with the German DERS (CITE EHRING) and mirrored Lavender et al.’s (2017) procedures to obtain factorial structure, reliability and validity of the S-DERS after a negative mood induction. We then proceeded to assess psychometric properties of the entire S-DERS in an EMA study. Finally, we computed several short-form versions of the S-DERS. Specifically, we preregistered the following hypotheses:

## Study Part 1 – Cross-sectional S-DERS validation

We tested the following hypotheses during a cross-sectional experimental study after a five minute negative mood induction to assess psychometric properties of the S-DERS.

*H1: Manipulation check*

The mood induction increases negative mood from pre to post administration.

*H2: Structural validity*

H2.1: We hypothesize that the cross-sectional factor structure after the mood induction will (a) support the four-factor structure found in Lavender et al. (2017) and (b) show a superior model fit when assuming correlated factors, compared to a higher-order one-dimensional emotion regulation difficulties factor.

H2.2: We expect the following relationships between S-DERS subscales, from largest to lowest association: (a) nonacceptance and modulate, (b) modulate and clarity, (c) nonacceptance and clarity, (d) awareness and clarity, and (e) awareness and nonacceptance / awareness and modulate.

*H3: Reliability*

Internal consistency metrics will be satisfactory ( > .80) for all scales except for the clarity scale (>.60), due to its brevity.

*H4: Convergent construct validity*

We expect positive association between the S-DERS and the respective trait DERS scales.

*H5: Criterion Validity*

We expect (a) a positive associations between the global S-DERS and psychopathology/neuroticism, (b) a positive association between the global S-DERS and affective reactivity to the mood induction and (c) positive association between S-DERS subscales and related constructs as follows: Nonacceptance with experiential avoidance, modulate with impulsivity, and awareness and clarity with mindfulness.

## Study Part 2 – S-DERS validation in daily life

Following, we tested the S-DERS psychometric properties in an EMA study and evaluated the following hypotheses.

*H1: State emotion regulation can be captured with the S-DERS*

There will be substantial variation on the S-DERS within-individuals.

*H2: Multilevel factor structure*

The S-DERS will have the same four-factor structure on a within- and between-subject level as identified in the cross-sectional study part 1.

*H3: Reliability*

Scales will be reliable in terms of sufficient internal consistency metrics on a between- and within-person level (> .80), with slightly suboptimal metrics (> .60) for the two item clarity scale.

*H4: Convergent construct validity*

We expect the person-mean of the S-DERS to be strongly correlated with the trait version of the DERS and more weakly (but significantly) with the S-DERS after the mood induction as measured in Study Part 1. We expect this pattern to hold for the subscales. We expect stronger correlations for momentary S-DERS following stressful events in daily life.

*H5: Association with mood*

More global state difficulties in emotion regulation will be associated with more negative momentary mood.

*H6: Association with stressful events*

Global state difficulties in emotion regulation will be associated with more severe stressful events.

*H7: Moderation of effect of stressful events on state emotion regulation difficulties*

The impact of stressful events on state emotion regulation difficulties will be moderated by trait emotion regulation difficulties, neuroticism, stress-related psychopathology, and state difficulties in emotion regulation after mood induction.