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Development and Initial Examination of a Measure of Emotion Regulation Knowledge

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Many effective therapies targeting emotion dysregulation employ psychoeducation and skills training interventions, both of which presumably increase a person's accessible knowledge of processes that potentially facilitate or hinder emotion regulation processes, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which emotion regulation strategy would be ideal given the context (i.e., emotion regulation knowledge). Thus, emotion regulation knowledge may play an important role in emotion regulation functioning. Based on a review of the literature, no currently available measure directly assesses emotion regulation knowledge. The aim of the current study was to develop such an instrument. Development and initial validation of the Emotion Regulation Knowledge Scales (ERKS) occurred over two measurement development phases and a subsequent validation phase using two diverse samples. A pool of 77 items was developed and then reduced based on expert appraisals of each item. Exploratory structural equation modeling was used to identify an optimal factor structure of the ERKS and then, using a second sample, confirmatory factor analysis was applied to test whether the identified model would be confirmed. Initial construct validity of the ERKS was then assessed using a latent variables approach. Exploratory structural equation modeling supported a two-factor solution of the ERKS, which was confirmed in a second, independent sample. The two ERKS scales possessed good internal consistency and produced theoretically consistent correlations with measures of psychological distress and emotion dysregulation. The presented findings, combined with the potential utility of the ERKS in research and clinical settings, support early confidence that the ERKS is an internally reliable and valid measure of emotion regulation knowledge. However, future confirmatory research is necessary to support this claim.

Introduction:

Emotion dysregulation – deficits in the ability to monitor, evaluate, and accept or modify emotional experience in accordance with desired goals or use situationally appropriate strategies to modulate emotional responses (Gratz & Roemer, 2004) – can be a key factor underlying psychological distress. In fact, impaired emotion regulation is a diagnostic feature in the majority of all mental disorders (Gross & Levenson, 1997). In treating emotion dysregulation, many effective therapies regularly employ psychoeducation and skills training. These interventions presumably increase a person's accessible emotion regulation knowledge, a construct proposed to encompass a person's understanding of processes that potentially facilitate or hinder emotion regulation, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which strategy (or strategies) would be ideal given the situation. That is, increases in emotion regulation knowledge might be one component contributing to the improved emotion regulation observed when psychoeducation and skills training interventions are employed. Such a hypothesis is consistent with existing literature, which identifies knowledge as a precondition for action (Strube & Wender, 1993) and has empirically demonstrated a knowledge-action link, with researchers concluding that "it is not possible to act without knowledge" (Funke, 2017, p. 109). Unfortunately, no currently available measure directly assesses emotion regulation knowledge. Accordingly, the aim of the current study was to develop a brief, easily administered self-report measure of emotion regulation knowledge.

Potential Domains of Emotion Regulation Knowledge:

In developing a measure of emotion regulation knowledge, we primarily referred to the modal model of emotion generation, the process model of emotion regulation, and the extended process model (see Gross, 2015; Gross & Thompson, 2007), as well as Brown's (2016) Emotion Regulation Skills System to identify competencies foundational for effective emotion management. The modal model of emotion generation explains that emotions happen in a four-phase sequence: situation, attention, appraisal, and response. The process model includes "five families" of emotion regulation processes: situation selection, situation

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modification, attentional deployment, cognitive change, and response modulation (McRae & Gross, 2020). A lack of competency in one or more of these phases and/or processes is understood to facilitate emotion regulation problems, potentially resulting in patterns of over- or under-regulation (Gross, 2015; McRae & Gross, 2020). The extended process model (Gross, 2015) elaborates the process model and describes three stages of emotion regulation: identification, selection, and implementation, each of which contain sub-steps including perception, valuation, and action. Finally, the Emotion Regulation Skills System (Brown, 2016) is a DBT-informed approach to addressing emotion regulation deficits and proposes nine core emotion regulation skills that support the attentional deployment, appraisal, and reappraisal processes that help individuals execute goal-directed actions, identify, and manage risk, and modulate emotional responses.

Based upon a review of emotion regulation literature and guided by the above models, we identified six domains of knowledge seemingly associated with a person's abilities to generate contextually-effective emotion regulation: 1) *Emotional-Cognitive-Behavioral Functioning* consists of knowledge about emotions, cognitive processing, and behavioral regulation that influence perception processes; 2) *Mindful Awareness* pertains to knowledge about attentional deployment (i.e., the process of concentrating and distracting attention) that affects contextual emotion regulation functioning; 3) *Cognitive Strategies* regards knowledge of the cognitive appraisal and reappraisal processes associated with adaptive functioning; 4) *Executing Goal Direct Actions* describes knowledge about modifying situations and initiating action in service of personal goals; 5) *Managing Risk* concerns knowledge about strategies related to choosing situations that enhance one's abilities to self-regulate and reach personal goals; and 6) *Response Modulation Activities* entails how to modulate emotional, cognitive, and behavioral responses once these occur.These six general domains served as an organizational framework during item development with the aim to generate a broad, yet focused, array of test items.

Measuring Emotion Regulation Knowledge:

Emotion regulation is a complex, multi-faceted process that, at times, seemingly relies on an individual's accessible knowledge of emotion regulation and specific skills, suggesting value in an instrument capable of explicitly measuring an individual's emotion regulation knowledge. Although there are several validated measures of emotion regulation used by clinicians and researchers focusing on specific emotion regulation strategies (e.g., Emotion Regulation Questionnaire; Gross & John, 2003), regulation expectations (e.g., Generalized Expectancy for Negative Mood Regulation Scale; Catanzaro & Mearns, 1990), and specific dimensions of emotion regulation wherein difficulties can occur (e.g., Difficulties in Emotion Regulation Scale; Gratz & Roemer, 2004), no readily available measure directly examines a person's accessible knowledge of how they could optimally regulate their emotions. Thus, the current study's goal was to develop a self-report measure of emotion regulation knowledge. This new instrument stands to have utility for both clinical practice and research.

Clinically, the ability to quantify a client's knowledge of how they could optimally regulate their emotions can help clarify the extent to which a client's poor emotion regulation is due to a lack of knowledge or alternative factors (e.g., impulsivity). Such clarification could be used by treatment providers when planning skills training and psychoeducation interventions, allowing them to strategically target areas of low knowledge or a client's specific misconceptions that may be inhibiting effectual emotion regulation, which, if addressed, can improve emotion regulation (Gross & Thompson, 2007; Gyurak et al., 2011). Beyond the potential clinical value, the ability to accurately measure emotion regulation knowledge could prove useful in ongoing research endeavors. Since the appropriate use of learned skills – such as emotion regulation skills– requires knowledge of those skills and when these skills should be used, and knowledge commonly precedes behavior change (Funke, 2017), a measure of emotion regulation knowledge might allow for earlier detection of emotion regulation-related treatment effects in psychotherapy research than currently available measures. Hence, an empirically validated measure of emotion regulation knowledge is warranted.

Methods:

The development and initial validation of the Emotion Regulation Knowledge Scales (ERKS; full measure and scoring instructions available at https://www.apnatoli.com/pubs-tools-instruments-media/instruments) occurred over two measurement development phases and a subsequent validation phase using two diverse samples. A detailed discussion of each phase is presented in sequential order below, with sample characteristics, procedure, and results described under the appropriate headings.

Measurement Development Phase 1: Item Development and Reduction

The ERKS was designed to be a brief, easily administered self-report test for measuring an individual's knowledge of emotion regulation and dysregulation processes, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which emotion regulation strategy might be ideal given the situation. The clinical utility of self-report tests (e.g., relatively easy to complete; time-efficient; require little training to properly administer, score, and interpret) and our specific goal to measure an individual's accessible knowledge (cf. implicit thoughts or unconscious cognitive biases) were justifications for use of the self-report format.

In the first phase of measurement development, we created an initial pool of 77 items based on contemporary literature and organized using the six identified domains of emotion regulation knowledge listed above (approximately 12 items per domain). Professionals who were either scholars in the field of emotion regulation and/or clinicians with an active caseload treating individuals with emotion regulation difficulties were then consulted to assist in reducing the initial item pool. Thirteen experts were presented with a general description of the ERKS and definitions of the six identified domains of emotion regulation knowledge. Each expert was then asked to rate each of the 77 items on the basis of (a) how well a correct response would reflect an individual's knowledge about a given domain (or about emotion regulation in general) and (b) how likely the statement is to be understood by individuals with dual diagnosis (intellectual disability / mental illness) who are within the mild or moderate range of intellectual disability[1]. Responses ranged from 1 to 4, where 1 indicated *does not represent / will not understand* and 4 indicated *good representation / will understand*. Mean ratings ranged from 2.89 (*SD* = 0.78) to 4 (*SD* = 0) for representation and from 2.67 (*SD* = 0.50) to 4 (*SD* = 0) for understandability. Experts were also asked to provide feedback on each item, which was reviewed by the authors and used to make minor revisions to individual items when deemed appropriate. Thirty-six items – six items for each of the six identified domains – were selected based on the experts' feedback and numerous conversations between the authors. The results reported in the remainder of this paper made use of data collected using this refined 36-item version of the ERKS.

Measurement Development Phase 2: Factor Analysis

The second phase of measurement development used exploratory structural equation modeling (ESEM; Asparouhov & Muthén, 2009) to identify the optimal factor structure of the ERKS and then, using a separate sample, conducted a confirmatory factor analysis (CFA) to test whether the model identified in the ESEM would be confirmed.

Sample 1: Exploratory Structural Equation Modeling

Participants and Procedure:

As part of a larger data collection project, 360 participants (77% female) were recruited from a medium-sized university in the southern United States. This study was approved by the Institutional Review Board

[1] This question served two purposes. First, responses provided a metric regarding how clearly each item was estimated to be understood by individuals with a standardized level of cognitive difficulty, thus assuring that items rated as easily understood possess a relatively low probability of being misunderstood by most individuals. Second, responses provided a metric regarding how clearly each item was estimated to be understood by individuals from a specific population of interest, which was necessary for the second aim of the larger project (i.e., a measure accessible to the general population as well as to individuals living with cognitive challenges; data collection to address this second aim is being prepared).

of Sam Houston State University (#IRB-2020-202). Participation was restricted to individuals who were at least 18 years of age and English-speaking. No other restrictions were placed upon participation. All students received course credit for their participation. The sample averaged 20.49 years of age (*SD* = 3.83). Approximately 32% of participants self-identified as Hispanic or Latinx and the breakdown of the sample's race is as follows: 59% White or Caucasian, 26% Black or African-American, 2% Asian-American, 1% American Indian or Alaska Native, 5% mixed race, and 7% other.

Measure:

The 36-item version of the ERKS is a self-report inventory designed to measure an individual's knowledge of how they could optimally regulate their emotions. Items of the ERKS require respondents to indicate *True* if they believe an item's statement is true or *False* if they believe an item's statement is false or not true in their opinion, with the option to select *Not Sure* if they are unable to decide. This response scale was chosen for three important reasons: 1) previous studies show little to no improved external validity of psychological questionnaires when a true/false response format is replaced with a polytomous rating scale (e.g., Finn et al., 2015; see Lozano et al., 2008); 2) a true/false response format is viewed by responders to be easier than a multi-choice rating scale (Cox, 2011), increasing the clinical utility of the ERKS; and 3) including a *Not Sure* option may reduce non responding while also providing individuals a way to explicitly communicate their awareness of their lack of knowledge.

In this study, ERKS items were recoded so that *True* responses to correct statements (i.e., statements consistent with emotion regulation literature, such as Item 3) and *False* responses to incorrect statements (i.e., statements contradicting or inconsistent with emotion regulation literature, such as Item 10) were assigned a value of 3, *Not Sure* responses were assigned a value of 2, and *False* responses to correct statements and *True* responses to incorrect statements were assigned a value of 1. Thus, greater scores in every case indicated more responses that were consistent with the emotion regulation literature (i.e., greater knowledge). However, individual ERKS item scores should be understood as categorical variables and were treated as such in the following data analyses.

Procedure and Results:

Consistent with the number of identified emotion regulation knowledge domains that served as an organizational framework for item development, examination of a scree plot suggested no more than six factors. Thus, ESEM was used to evaluate the fit of one-, two-, three-, four-, five-, and six-factor models of the ERKS. ESEM was utilized instead of exploratory factor analysis due to concerns about the minimization of cross-loadings and correlated measurement effort as a result of reverse scored items (Asparouhov & Muthén, 2009). Weighted least squares with means and variances adjusted (WLSMV) estimation and geomin rotation were used; WLSMV is a robust estimator that does not assume variables are normally distributed and is best used for modeling categorical data (Brown, 2006). All factor analysis, except where indicated otherwise, were conducted using Mplus Version 8.0 (Muthén & Muthén, 2012-2018).

To determine the optimal factor structure of the ERKS, comparison of fit and information indices, interpretability of factors, and theoretical fit were examined. Fit and information indices were interpreted following conventional criteria for categorical data (Schreiber et al., 2006). Researchers use a range of factor loading cutoffs, with an average cutoff being .44 (Howard, 2015). Thus, the current study considered an item to adequately load onto a parent factor if a standardized factor loading of ≥.45 was obtained. Possibly problematic cross-loadings were indicated when an item loaded onto a second factor at .32 or greater (Costello & Osborne,2005), at which point the item was considered for removal. Lastly, factors containing fewer than three items are generally weak and unstable (Costello & Osborne, 2005), and a factor solution was eliminated in this study if one or more of its factors contained fewer than three items.

The one-factor solution produced several inadequate fit indices. A comparison of fit and information indices for the remaining factor solutions suggested the superiority of a six-factor model, $\chi^2(429) = 493.08$, $p = .017$, $\chi^2/df = 1.15$, comparative fit index (CFI) = 0.98, Tucker-Lewis index (TLI) = 0.97, and root mean

square error of approximation (RMSEA) = 0.02 (95% CI = 0.009 – 0.028), followed by the five-, $\chi^2(460) = 549.06$, $p = .003$, $\chi^2/df = 1.19$, CFI = 0.97, TLI = 0.96, RMSEA = 0.02 (95% CI = 0.014 – 0.030), four-, $\chi^2(492) = 634.22$, $p < .001$, $\chi^2/df = 1.29$, CFI = 0.95, TLI = 0.93, RMSEA = 0.03 (95% CI = 0.021 – 0.035), three-, $\chi^2(525) = 724.39$, $p < .001$, $\chi^2/df = 1.38$, CFI = 0.93, TLI = 0.91, RMSEA = 0.03 (95% CI = 0.026 – 0.038), and two-factor models, $\chi^2(559) = 1015.54$, $p < .001$, $\chi^2/df = 1.82$, CFI = 0.84, TLI = 0.82, RMSEA = 0.05 (95% CI = 0.043 – 0.052). Despite a significant chi-square test, which might be a product of a Type I error due to our sample size (Chen, 2007), each of these factor solutions (except the one-factor solution) were tolerably supported by the metrics reported based on conventionally accepted cutoff criteria for categorical data (Schreiber et al., 2006).

Three factors in the six-factor solution were composed of only two items each, eliminating the six-factor solution as an option. Similarly, the five-factor solution involved one factor composed of only two items, both of which also had high cross-loadings on another factor, while the remaining factors were composed of five to 14 items. Both the four- and three-factor models consisted of one factor containing multiple problematic cross-loading items. The first factor of the four-factor model was left with only two items that substantially loaded onto this factor without problematic cross-loadings. Except for one item (Item 8), all items loading onto the third factor of the three-factor solution substantially cross-loaded onto one of the other two factors. As a result, attempts were made only to confirm the fit of the two-factor model (see Table 1 for factor loadings). The content of the first factor was focused on dysregulation-directed knowledge (i.e., knowledge that would help an individual avoid dysregulation) and the content of the second factor was focused on regulation-directed knowledge (i.e., knowledge that would likely facilitate successful emotion regulation).

Table 1. ESEM Standardized Factor Loadings of the Two-Factor Solution of the Emotion Regulation Knowledge Scales (ERKS)

Item		Factor 1	Factor 2
2.	It is impossible for me to reach my goals.	**.462**	.056
6.	I can change situations I am in.	**.606**	.061
9.	I can change my thoughts to help me reach my goals.	**.532**	.075
10.	I can't change situations I am in.	**.560**	.027
12.	Paying attention to my thoughts always makes me feel worse.	**.684**	-.194
16.	It is impossible to think about how to manage my feelings.	**.681**	-.040
25.	Nothing will help me feel better when I am very upset.	**.725**	-.009
26.	All situations are risky.	**.568**	.035
27.	Noticing my breathing increases my stress.	**.453**	-.043
29.	It is impossible to fix a mistake I made.	**.452**	.212
31.	It is impossible to create helpful thoughts in my mind.	**.621**	.089
32.	Avoiding everyone keeps me safe.	**.681**	-.007
35.	Ignoring my feelings always helps me calm down.	**.581**	.055
4.	I should use more coping skills when my feelings are strong.	-.232	**.612**
7.	I should leave a situation when it becomes too risky.	-.173	**.489**
11.	Some activities will help me focus my mind.	.241	**.583**
14.	I can still work towards my goals after a mistake.	.260	**.630**
17.	I can think more clearly when I am calm.	.004	**.716**
20.	Staying in risky situations helps me.	.116	**.566**
21.	It is best to ask people for things when I am calm.	-.089	**.738**
22.	Talking to people I trust can help me be safe.	.226	**.644**
23.	Some actions help me reach my goals and other actions do not.	.000	**.823**
28.	It is helpful to encourage myself with positive thoughts.	.265	**.587**
30.	Some of my thoughts help me reach my goals and some do not.	-.111	**.930**
33.	I can think well when I'm very angry.	-.093	**.488**

34.	Some activities will help me feel better.	.230	**.816**
1.	I can control my actions by paying attention to what I feel like doing.	.289	.281
3.	It is best to deal with problems when they are small.	-.007	.431
5.	Noticing how strong my feelings are can help me deal with them.	.388	.306
8.	I can talk well with others when I'm very mad.	-.479	.398
13.	It is best to always get strong feelings out.	-.111	-.345
15.	If I think about doing something, I have to do it.	.222	-.049
18.	I fix my problems best when I am very upset.	.089	.441
19.	Noticing my breath helps me focus.	.133	.019
24.	Expressing feelings will make them stronger.	-.111	.085
36.	Thinking about a problem over-and-over-again will help me feel better.	.020	.424

Note. Bolded values indicate the factor onto which the item loaded.

Sample 2: Confirmatory Factor Analysis:

Participants and Procedure:

A total of 523 participants (37% female) were recruited from Amazon Mechanical Turk (MTurk) and paid $1 to complete a short survey on emotions; this protocol was approved by the Institutional Review Board of the Justice Resource Institute, Inc. (#JRI IRB 2019-08). Research demonstrates crowd sourcing platforms, such as MTurk, produce data of equal (or better) quality as other sampling methods (Casler et al., 2013). Participation was restricted to individuals who were at least 18 years of age and was restricted to U.S. residents. No other restrictions were placed upon participation. The sample averaged 39.49 years of age (*SD*= 12.29) with ages ranging between 19 and 73. Five embedded attention-check items[2] were included in the survey. Four duplicate responders and 139 responders who failed more than two of the five (40%) embedded attention-check items were removed. The final sample consisted of 380 subjects (38% female), averaged 40.13 years of age (*SD* = 12.31) with ages ranging between 19 and 73. Breakdown of the final sample's ethnicity[3] did not notably differ from the original sample and is as follows: 74% White non-Hispanic, 8% African American, 7% Hispanic or Latinx, 7% Asian American, less than 1% American Indian or Alaska Native, 1% mixed ethnicity, and 3% preferring not to say.

Measures:

In addition to the ERKS, participants of Sample 2 completed the following two measures:

Kessler Psychological Distress Scale (K10; Kessler & Mroczek, 1994).

The K10 was developed to measure nonspecific psychological distress using questions about a heterogeneous set of cognitive, behavioral, emotional, and psychophysiological symptoms. Respondents use a 5-point Likert scale to rate 10 questions in reference to how they have been feeling over the past 4 weeks. These ratings are summed to produce a total score, ranging from 10 to 50, that is representative of an individual's level of psychological distress, with higher scores indicating higher levels of psychological distress. Multiple studies (Andrews & Slade, 2001) have demonstrated strong associations between elevated K10 scores and a current mental disorder diagnosis, as well as other indicators supporting the instrument's validity. The K10 has shown adequate internal consistency (α ranging from .92 to .93) and has been found to perform similarly across sociodemographic subsamples (Kessler et al., 2002). Comparable and acceptable levels of internal consistency reliability were obtained in the current study for the K10, with a Cronbach's α (unstandardized) coefficient of .93 and a McDonald's (1999) ω coefficient of .93.

Modified Difficulties in Emotion Regulation Scale (MDERS; Bardeen et al., 2016).

The MDERS is a 29-item self-report measure of difficulties in emotion regulation that was modified from Gratz and Roemer's (2004) original 36-item measure to address its psychometric limitations. Like the

[2] Attention-checks consisted of two items instructing participants to select a specific response and three items presented participants with a statement that had only one logical response, such as responding "True" to the statement "Tuesday comes after Monday."

[3] Unlike the student sample, race and ethnicity were not asked about separately during this data collection.

original, the MDERS uses a 5-point Likert scale to evaluate how often each item pertains to the respondent. Two of the original measure's six dimensions (Awareness, Clarity) were found by Bardeen et al. (2016) to represent the same latent construct and, thus, the MDERS provides scores for only five dimensions of emotion dysregulation: *Identification* (Id; lack of awareness and clarity of emotion), *Nonacceptance* (N; nonacceptance of emotional responses), *Impulse* (Im; impulse control difficulties), *Goals* (G; difficulty engaging in goal-directed behavior), and *Strategies* (S; perceived access to effective emotion regulation strategies). Scores on each scale are calculated by summing items that comprise that scale, with higher scores representing greater difficulty in the given domain. The MDERS has evidenced good convergent and criterion validity (Bardeen et al., 2016). Internal consistency was found to be adequate for scores on the MDERS's total scale (α = .97) and for MDERS's five subscales, with Cronbach's α coefficients ranging from .88 to .95 (Bardeen et al., 2016). Comparable and acceptable levels of internal consistency reliability were obtained in the current study for the MDERS total score (α = .98; ω = .98) and for each of the subscales, with Cronbach's α (unstandardized) coefficients ranging from .93 to .95 and McDonald's (1999) ω coefficients ranging from .93 to .95.

Results:

CFA with WLSMV estimation was used with Sample 2 to test the two-factor model of a 26-item ERKS. As is often the case, fit indices were not unanimous – some fit indices indicated good fit, RMSEA = 0.05 (95% CI = 0.043 – 0.055), χ^2/df = 1.90 and the remaining fit indices were very closely approaching levels indicating good fit, $\chi^2(298)$ = 567.67, p< .001, CFI = 0.93, TLI = 0.93. As conventional cutoff values constitute only rough guidelines and are not considered strict rules (Marsh et al., 2004), these results can be seen as suggesting an adequate fit of the model. All items, except for Items 4, 6, and 33 loaded at ≥ .45 onto their respective factors (see Table 2). Acceptable levels of internal consistency reliability were obtained for both scales of the ERKS, with Cronbach's α (unstandardized) coefficients of .84 and .79 and McDonald's (1999) ω coefficients of .84 and .81, respectively. Given these findings, the criterion-related validity of both scales was examined.

Table 2. Confirmatory Factor Structure and Factor Loadings of the Emotion Regulation Knowledge Scales (ERKS)

Scale		Beta	*SE*	β
Dysregulation-Directed Knowledge		α = .839; ω = .840		
25.	Nothing will help me feel better when I am very upset.	1.00	-	.75
2.	It is impossible for me to reach my goals.	.92	.08	.69
6.	I can change situations I am in.	.57	.08	.43
9.	I can change my thoughts to help me reach my goals.	.69	.09	.52
10.	I can't change situations I am in.	.87	.07	.65
12.	Paying attention to my thoughts always makes me feel worse.	.95	.08	.71
16.	It is impossible to think about how to manage my feelings.	.97	.08	.73
26.	All situations are risky.	.93	.09	.70
27.	Noticing my breathing increases my stress.	.84	.08	.63
29.	It is impossible to fix a mistake I made.	1.15	.08	.86
31.	It is impossible to create helpful thoughts in my mind.	1.11	.08	.83
32.	Avoiding everyone keeps me safe.	.73	.08	.54
35.	Ignoring my feelings always helps me calm down.	.82	.08	.61
Regulation-Directed Knowledge		α = .787; ω = .806		
30.	Some of my thoughts help me reach my goals and some do not.	1.00	-	.74
4.	I should use more coping skills when my feelings are strong.	.38	.11	.28
7.	I should leave a situation when it becomes too risky.	.68	.09	.50
11.	Some activities will help me focus my mind.	.97	.10	.72
14.	I can still work towards my goals after a mistake.	1.03	.09	.75

17.	I can think more clearly when I am calm.	.99	.09	.73
20.	Staying in risky situations helps me.	1.05	.10	.77
21.	It is best to ask people for things when I am calm.	.98	.09	.72
22.	Talking to people I trust can help me be safe.	1.02	.08	.75
23.	Some actions help me reach my goals and other actions do not.	1.02	.09	.75
28.	It is helpful to encourage myself with positive thoughts.	.99	.08	.73
33.	I can think well when I'm very angry.	.46	.10	.34
34.	Some activities will help me feel better.	1.07	.09	.79

Note. Beta = unstandardized beta; β = standardized beta; α = Cronbach's alpha (unstandardized); ω = McDonald's omega.

Validity:

Preliminary investigation into the criterion-related validity of the ERKS involved a latent variable approach to estimate correlations between the two ERKS scales, represented as latent variables, and (H_1) psychological distress (measured by the K10) and (H_2) emotion dysregulation (measured by the MDERS) in Sample 2. Observed indicators for the K10 and MDERS were added to the two-factor model of the ERKS. Overall results indicated significant negative correlations between both ERKS factors and all measures of psychological distress and emotion dysregulation (see Table 3).

Table 3. Means, Standard Deviations, and Correlations Between ERKS Scales and Measures of Psychological Distress and Emotion Dysregulation

	1	2	3	4	5	6	7	8	9
ERKS Dk	—								
ERKS Rk	.74*	—							
K10 Total	-.63*	-.41*	—						
MDERS Total	-.71*	-.53*	.75*	—					
MDERS Id	-.68*	-.57*	.58*	.82*	—				
MDERS N	-.63*	-.48*	.66*	.91*	.71*	—			
MDERS Im	-.65*	-.52*	.67*	.91*	.74*	.78*	—		
MDERS G	-.46*	-.26*	.63*	.83*	.52*	.69*	.72*	—	
MDERS S	-.69*	-.47*	.76*	.92*	.68*	.81*	.82*	.76*	—
Mean	—	—	20.90	65.42	12.26	13.66	12.40	13.47	13.63
(SD)			(8.61)	(26.63)	(5.94)	(6.19)	(6.38)	(5.08)	(6.60)

Note. ERKS = Emotion Regulation Knowledge Scales; Dk = Dysregulation-directed knowledge scale; Rk = Regulation-directed knowledge scale. Psychological distress was measured using the K10. Emotion dysregulation was measured using the MDERS and MDERS subscales; MDERS = Modified Difficulties in Emotion Regulation Scale. MDERS subscales: Id = Identification, N = Nonacceptance, Im = Impulse, G = Goals, S = Strategies. ERKS scales are represented as latent variables.*$p < .001$

Discussion:

The present study identified and then confirmed a two-factor model of the ERKS, with the first factor (or scale) measuring dysregulation-directed knowledge and the second factor (or scale) measuring regulation-directed knowledge. The two ERKS scales possessed good internal consistency and produced theoretically consistent (negative) correlations with measures of psychological distress and emotion dysregulation, offering preliminary support for the criterion-related validity of these scales. All told, this article demonstrates initial confidence that the ERKS is an internally reliable and seemingly valid measure of emotion regulation knowledge. However, further research is necessary before this claim can be made more assertively. Furthermore, although the current study has a number of strengths, it is not without its

limitations. First, our samples included student and community samples, and findings may not generalize to clinical populations. Nevertheless, these samples were a suitable starting point for scale construction. Secondly, findings demonstrating the criterion-related validity of the ERKS were based solely upon theoretically consistent correlations with other self-report outcome measures. Multimethod assessment and diverse research designs should be used in future evaluations of the ERKS.

The need for further investigations notwithstanding, the development of the ERKS has implications for both practice and research. Many approaches to psychotherapy rely heavily on emotion regulation in sessions or as a target of intervention. The ERKS may help practitioners at each stage of treatment delivery. At the outset of treatment, the ERKS can assist in the identification of potential deficits in emotion regulation knowledge, information that might be valuable for identifying important treatment targets. Administration of the ERKS mid-treatment when progress has slowed or stalled may help the practitioner test whether a client's lack of emotion regulation knowledge could be interfering with current treatment. In such cases, the practitioner may also wish to use the client's responses to individual items to guide psychoeducation. Finally, the ERKS may serve as a worthwhile tool for monitoring changes in emotion regulation knowledge over the course of treatment and upon treatment termination. Monitoring changes may assist the practitioner in targeting treatment interventions in dynamic ways, adjusting treatment to a client's evolving needs, or serve as a tangible source of motivation, confidence, or hope for the client during termination.

Emotion regulation is a burgeoning area of research (Piotrowski, 2021), yet more investigations focusing on understanding the complex emotion regulation processes in life contexts are needed (Bonanno & Burton, 2013; Gross, 2015; McRae & Gross, 2020). Although available emotion regulation measures illuminate functioning problems, what an individual knows about optimal emotion regulation has not been directly measured. The ERKS allows for the collection of information about an individual's emotion regulation knowledge, providing researchers and clinicians a novel instrument to use when exploring this ostensibly critical component of emotion regulation functioning.

Conclusion:

In conclusion, the current study provides initial evidence supporting the ERKS as an instrument for measuring an individual's accessible knowledge of processes that potentially facilitate or hinder emotion regulation processes, how different skills can help regulate emotional experiences, at what point emotion regulation strategies should be used, and which emotion regulation strategy would be ideal given the context. The ERKS shows theoretically meaningful inverse relationships with measures of emotion dysregulation and a significant negative relationship with concurrent psychological distress. Future studies using multi method assessment and diverse research designs are necessary to further investigate the validity of the ERKS, as are explorations of its psychometric properties when used with clinical populations. Nonetheless, the presented findings, combined with the potential utility of the ERKS in research and treatment settings, permit an initial enthusiasm and warrant sufficient interest to pursue future evaluations of this new measure.

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