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Giromini L; Velotti P; de Campora G; Bonalume L; Zavattini GC. Cultural Adaptation of the Difficulties in Emotion Regulation Scale: Reliability and Validity of an Italian Version. JOURNAL OF CLINICAL PSYCHOLOGY. 68 (9) pp: 989-1007.
DOI: 10.1002/jclp.21876

The publisher's version is available at:
http://doi.wiley.com/10.1002/jclp.21876

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Journal of Clinical Psychology

Cultural Adaptation of the Difficulties in Emotion Regulation Scale: Reliability and Validity of an Italian Version

Journal:	*Journal of Clinical Psychology*
Manuscript ID:	JCLP-11-0038.R2
Wiley - Manuscript type:	Research Article
Keywords:	emotional dysregulation, emotion regulation, adaptation, eating disorders

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Abstract

Objective: The aim of this study was to evaluate the reliability and validity of an Italian version of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). **Method:** Three studies were completed. First, factorial structure, internal consistency, and concurrent validity of our Italian version of the DERS were examined with a sample of 323 students (77% female; mean age 25.6). Second, test-retest analyses were completed using a different sample of 61 students (80% female; mean age 24.7). Third, the scores produced by a small clinical sample (*N* = 38; mean age = 24.2) affected by anorexia, binge eating disorder, or bulimia were compared to those of an age-matched, nonclinical female sample (*N* = 38; mean age = 24.7). **Results:** The factorial structure replicated quite well the six-factor structure proposed by Gratz and Roemer. The internal consistency and test-retest reliability were adequate and comparable to previous findings. The validity was good, as indicated by both the concurrent validity analysis and the clinical-nonclinical sample comparison. **Conclusions:** These studies provide further support for the multidimensional model of emotion regulation postulated by Gratz and Roemer and strengthen the rationale for cross-cultural utilization of the DERS.

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In the past two decades, emotion regulation (ER) has been seen as what underlies diverse symptom presentation. Elaborated emotion-dysregulation theories have been applied to depression (Gross & Muñoz, 1995), generalized anxiety disorder (McLaughlin, Mennin, & Farach, 2007; Mennin, Heimberg, Turk, & Fresco, 2005), alcoholism and substance abuse (Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Fox, Hong, & Sinha, 2008; Gratz, Bornovalova, Delany-Brumsey, Nick, & Lejuez, 2007), self-injury (Klonsky, 2009), suicide (Zlotnick, Donaldson, Spirito, & Pearlstein, 1997), eating disorders (Sim & Zeman, 2005, 2006; Whiteside, Chen, Neighbors, Hunter, Lo &, Larimer, 2006), borderline personality disorder (Glenn & Klonsky, 2009; Linehan, 1993), and post-traumatic stress symptoms (Tull, Barrett, McMillan, & Roemer, 2007). Despite this increased attention, there remains some confusion about what ER is (Gross, 2008). This is partly due to the several processes that underlie diverse emotion regulation acts as well as the lack of consistent, agreed-upon conceptualizations of ER.

Broadly defined, the construct of ER refers to the conscious or unconscious attempt of an individual to influence the expression and type of emotion he or she feels (Mauss, Bunge & Gross, 2007). ER also encompasses the extrinsic or intrinsic processes that are responsible for the monitoring, evaluation, and modification of emotional responses, including the ability to modulate and regulate behaviors when experiencing emotional distress (Gratz & Roemer, 2004; Thompson, 1994).

According to Gross and Thompson (2007), there are five points in time in which emotions could be regulated: situation selection, situation modification, attentional deployment, cognitive change, and response modulation. Each of the five ER strategies has received a great deal of interest by several researchers (Gross, 2008). Moreover, two ER strategies have received major attention: *cognitive reappraisal* and *expressive suppression*. The first consists of attempts to think about the situation as to alter its meaning and emotional

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impact; the second consists of attempts to inhibit or reduce ongoing emotion-expressive behavior (Gross, 1998).

An attempt to integrate all the features of emotion regulation and dysregulation into a unitary, multidimensional conceptualization was made by Gratz and Roemer (2004). The authors, after reviewing the relevant literature, described ER as "involving the (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situationally-appropriate emotion regulation strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands" (p. 42). On the basis of this conceptualization, Gratz and Roemer also proposed a multidimensional self-report measure – the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004. This scale includes six clinically-relevant domains of emotion dysregulation: nonacceptance of emotion responses (NONACCEPTANCE), lack of emotional awareness (AWARENESS), limited access to emotion regulation strategies (STRATEGIES), difficulties engaging in goal-directed behavior when emotionally aroused (GOALS), impulse control difficulties (IMPULSE), and lack of emotional clarity (CLARITY).

The Gratz and Roemer (2004)'s model of ER has recently received increased attention, and empirical findings have supported the validity and reliability of the DERS in different samples (Fox et al., 2007; Gratz, 2007; Gratz & Gunderson, 2006; Gratz, Lacroce, & Gunderson, 2006; Gratz & Roemer, 2004; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Gratz, Tull, Baruch, Bornovalova, & Lejuez, 2008; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; Tull & Roemer, 2007). Nonetheless, more research on this topic is needed, and the extent to which Gratz and Roemer's results can be generalized to samples from diverse cultural backgrounds remains an empirical question.

Adaptability of the DERS to an Italian Sample.

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Investigating the diverse components of the DERS in different cultures provides a unique opportunity to identify the quintessential features of ER. The more reliable and valid a scale is across different cultures, the higher is its relevance and importance in defining and measuring the construct. Yet, the DERS has only been adapted for and administered to a few diverse cultural backgrounds thus far, and few studies provide information on the cross-cultural adaptability of the DERS. Specifically, Dutch (Neumann, van Lier, Gratz, & Koot, 2010), Turkish (Ruganci & Gençöz, 2010), and Portuguese (Coutinho, Ribeiro, Ferreirinha, & Dias, 2010) versions have overall confirmed the factorial structure identified by Gratz and Roemer (2004), and shown good internal consistency and concurrent validity. An Italian version has obtained similar results, but the factorial structure of the original version has not been replicated by a confirmatory factor analysis (Sighinolfi, Norcini Pala, Chiri, Marchetti, & Sica, 2010). In regard to this aspect, however, it should be pointed out that the sample collected by Sighinolfi et al. (2010) was smaller ($N = 190$ vs. $N = 357$), older (mean age = 30.8, $SD = 9.7$ vs. mean age = 23.1, $SD = 5.7$) and more heterogeneous (e.g., participants were recruited in job-related contexts, at the university or in open psychology meetings) than the student sample collected by Gratz and Roemer (2004). Also, as stated by the Italian authors themselves (Sighinolfi et al. 2010, p. 159), the results obtained by a subsequent exploratory factor analysis were not much different from the original structure proposed by Gratz and Roemer. Indeed, although two items were removed from the analysis (i.e., item 17 and item 34) and the item composition of one factor (i.e., STRATEGIES) was slightly different from that obtained by Gratz and Roemer, the resulting six-factor model remained largely unchanged. The debate on the factorial structure of the DERS in Italy is not yet settled and more research on this topic is needed.

According to Terracciano, McCrae, and Costa (2003), many stereotypes suggest that Italians are characterized by an "affective volatility." More specifically, stereotypes indicate

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that Italians tend to be romantic, jealous, and short-tempered, speak loudly in public, communicate with hand gestures and facial expressions, have an exaggerated love of their mothers, and so forth. Although some indirect empirical support exists for these suppositions (McCrae, 2001; Terracciano, McCrae & Costa, 2003), little is known about ER in Italy and possible differences in ER between Italian and American cultures. In fact, the studies that examined ER cross-cultural differences primarily focused on the comparison between collectivistic and individualistic cultures (Hofstede, 2001), and from this perspective Italy seems to be more similar than different to North America (Nelson & Fuvish, 2004; Triandis, 1993). Hofstede and colleagues (Hofstede, 1980; Hofstede, Hofstede & Minkov, 2010), for instance, reported that Italy is one of the seven countries that have individualism as their highest dimension, and that individualism is a value shared by American, British, Dutch, French, and also Italian populations. Though this may or not be true, Italian populations may still have the "affective volatility" discussed above. Thus, more research on this topic is needed as well.

Investigating the adaptability of the DERS in an Italian population would broaden our knowledge of ER and its assessment in two ways. First, by administering the DERS to a large sample of Italians, Italian research and knowledge on ER would be expanded. Second, and most importantly, establishing the reliability and validity of the DERS also in Italy would provide support to Gratz and Roemer (2004)'s conceptualization of ER, strengthen cross-cultural utilization of the DERS, and make further cross-cultural comparisons possible.

For these aforementioned reasons, we conducted three studies. In study 1, we translated the DERS into Italian and investigated its factorial structure, internal consistency, and concurrent validity. In study 2, the test-retest reliability of our adapted version of the DERS was examined. In study 3, the construct validity of our version of the DERS was

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further investigated by comparing the DERS scores produced by a nonclinical sample to those of a clinical sample characterized by deficits in ER.

Study 1

It has been reported that cultures differ in terms of appraisals that lead to emotion (Matsumoto, Kudoh, Scherer & Wallbot, 1988; Mauro, Sato & Tucker , 1992; Roseman, Dhawan, Rettek & Naidu, 1995; Scherer, 1997a, 1997b), emotional expression (Matsumoto & Kupperbusch, 2001), and coping (Bjorck, Cuthbertson, Thuman & Lee , 2001; Cole, Bruschi & Tamang, 2002; Hwang, Scherer, Wu, Hwang & Li , 2002; Morling, Kitayama & Miyamoto, 2003; Taylor, Sherman, Kim, Jarcho & Takagi, 2004; Tweed, White & Lehman et al., 2004; VanderVoort, 2001; Yeh & Inose, 2002). According to the most recent empirical findings, however, such cultural differences in ER are mostly accounted for by individual differences in personality traits. What in the past appeared to be “cultural” may in fact have been group differences on personality traits among different cultures (Matsumoto, 2006). Neuroticism and Extraversion, in this sense, are the two most relevant personality traits. Individuals with higher scores on Extraversion are more likely to use cognitive reappraisal and less likely to use expressive suppression, while individuals with higher scores on Neuroticism are more prone to lack ER abilities (Matsumoto, 2006).

On the basis of these considerations, though little is known about ER in Italians, some hypotheses regarding the DERS scores within an Italian sample could be formulated by considering existing cross-cultural studies on personality traits. For example, given that Italians score higher than Americans on the Revised NEO Personality Inventory’s (NEO-PI-R; Costa & McCrae, 1992; see also Caprara, Barbaranelli, Hahn & Comrey, 2001) Neuroticism factor (McCrae, 2001), and that Neuroticism is associated with a lack of ER abilities, one may speculate that the mean values of the DERS in an Italian sample may be higher than those originally observed by Gratz and Roemer (2004). This would also be in

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agreement with the notion reported by Terracciano et al. (2003), according to which Italians may be characterized by “affective volatility”.

Factorial structure, internal consistency, and concurrent validity should not be affected by these potential mean differences. These psychometric properties are calculated through statistical analyses that are based on correlations, and differences in the mean values do not imply any changes in the correlation values themselves. In fact, other instruments that measure constructs related to ER have been adapted for Italian samples beforehand, and high congruence between the American and Italian versions was observed in terms of factorial structure, internal consistency, and concurrent validity. For instance, Bressi et al. (1996) worked on the Italian cross-validation of a measure of alexithymia, the 20-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994a, 1994b). A confirmatory factor analysis confirmed the factor structure of the original instrument, and both the internal consistency and the test-retest reliability resulted adequate. Similarly, Balzarotti, John, and Gross (2010) adapted the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), a measure of reappraisal and suppression. The two-scale ERQ structure was confirmed via confirmatory factor analysis, and good indices of internal consistency and concurrent validity were obtained. Also, Terracciano et al. (2003) evaluated an Italian version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), an instrument to assess Positive and Negative Activation. Again, high congruence between the American and Italian versions was obtained for factorial structure and construct validity.

Although mean value differences may become apparent, the validity and reliability of the DERS should carry over to Italy. Hence, aiming to investigate factorial structure, internal consistency, and concurrent validity of an Italian version of the DERS, we hypothesized that: (a) the factorial structure observed by Gratz and Roemer (2004) would be confirmed in our Italian sample; (b) the internal consistency would be adequate and comparable to the previous

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findings on the same subject; (c) the concurrent validity would support the construct validity of the instrument.

Method

The original version of the DERS was translated into Italian and administered, along with some other questionnaires, to a sample of Italian students.

In order to produce equivalent versions of a measure across different languages and cultures, several translation methods are used. One of the most common approaches is the "back translation" method (Brislin, 1980; Geisinger, 2003; Van de Vijver & Hambleton, 1996) in which the measure is initially translated from a source language (e.g., English) into a target language (e.g., Italian) by a bilingual individual and then back-translated into the source language (e.g., English) by a second bilingual individual in order to address possible inconsistencies. Another approach is referred to as the "double translation/double back-translation" method, which is quite similar to the "back-translation" method though it requires a greater number of independent translators (Kristjansson, Desrochers & Zumbo, 2003). Conversely, "forward-translation" involves a group of bilingual individuals directly focusing on both the source and the target language versions of a measure (Hambleton & Li, 2005). Finally, a variation of the "back translation" and "forward translation" approaches is the "review team" in which a team of individuals evaluates the translation at various steps of the translation process. Regardless of the specific approach, the primary goal of each method is to maximize the meaningful equivalence of the measure rather than to obtain a literal translation (Brislin, 1970; Hambleton & Li, 2005; Kristjannson et al., 2003).

Given that the "back translation" procedure is a widely-used, practical translation method, it was used for our study on the DERS. First, a bilingual researcher in Dynamic Psychology at the University of Milano-Bicocca translated the DERS from English into Italian. Then another bilingual individual (a professional translator) blind to the original

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questionnaire re-translated this version back to the original language. Finally, the two English versions of the DERS were compared to each other to review and resolve any arising inconsistencies.

The congruence between the two English versions was evaluated by a bilingual researcher in Dynamic Psychology at the University of Milano-Bicocca and by two Italian collaborators that are fluent in English and have lived in the United States for more than one year for research. Except for a few slight discrepancies (e.g., the back translation for "I believe that I will remain that way for a long time" resulted in "I think I will stay that way for a long time"), most of the items did not have any significant inconsistencies. After the first evaluation, another bilingual individual – blind both to the original version and to the first back translation – was asked to provide a new back translation for any inconsistent items (e.g., the Italian word for "work" sometimes is translated into English as "job", and the back translation for "getting work done" resulted in "to finish a job"). This final step confirmed that our Italian version of the DERS was consistent with the original English version.

Participants

The initial sample comprised of 351 Italian psychology students at the University of Milano-Bicocca. In order to be consistent with the first developmental study of the DERS (Gratz & Roemer, 2004), subjects with missing data on one or more item of the DERS were removed. The final sample consisted of 323 participants, ranging from 18 to 64 years of age with a mean age of 25.6 (*SD* = 8.6). Seventy-seven percent (*n* = 249) of the sample was female.

Procedure

During the 2007-2008 academic year, a large amount of students attending several different psychology classes at the University of Milano-Bicocca were informed about the opportunity to volunteer for this study. Eligibility criteria required that participants were

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Italian[1], that Italian was their first language, and that they were not currently receiving psychiatric therapy or taking any psychiatric medications. Each individual filled out a questionnaire with information on inclusion criteria prior to participant selection for the study. Extra credit points were given to students to compensate for their participation in the study.

Students who decided to volunteer were required to give written consent for participation and anonymously complete several questionnaires in a classroom setting. Seven appointments were planned over the academic year with an average of 50 participants per room. The average completion time was 60-90 minutes for all questionnaires, though the time limit was 120 minutes.

Measures

When we began this study, no instruments measuring difficulties in ER were available within the Italian context. Therefore, we decided (a) to administer the Toronto Alexithymia Scale (TAS-20; Bagby, Parker & Taylor, 1994a, 1994b) which has been adapted for an Italian population by Bressi et al., (1996), and (b) to adapt other questionnaires that had not yet been validated for the Italian population. The original versions of all questionnaires utilized in this study were the objects of previously published studies, those submitted for review, or those in preparation for review. Each participant completed the following self-report questionnaires:

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36 item self-report measure developed to assess clinically-relevant difficulties in emotion regulation. Items are scored on six scales: Nonacceptance of Emotional Responses (NONACCEPTANCE, 6 items); Difficulties Engaging in Goal-Directed Behavior (GOALS, 5 items); Impulse Control Difficulties (IMPULSE, 6 items); Lack of Emotional Awareness (AWARENESS, 6 items); Limited Access to Emotion Regulation Strategies (STRATEGIES, 8 items); and Lack of Emotional Clarity (CLARITY, 5 items). Participants are asked to

[1] According to the Italian Census Bureau (ISTAT, www.istat.it), the current ethnic make-up of the Italian population consists primarily of Italians (more than 90%), with the remaining portion including Europeans (around 4%, mostly Romanians and Albanians), North Africans (around 1%), and others.

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indicate how often each of the 36 items applied to them on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). Subscale scores are obtained by summating corresponding items. Gratz and Roemer (2004) reported an internal consistency of .93, a test-retest reliability of .88 during a 4- to 8-week interval, and a clear factor structure. The DERS predicts significant correlations with several criterion variables, including experiential avoidance and self-harm. Other empirical findings confirmed good construct validity and a high internal consistency with both clinical and non-clinical populations (Fox et al., 2007; Gratz et al., 2008; Johnson et al., 2008). The DERS has demonstrated sensitivity to changes due to successful therapeutic outcome (Gratz & Gunderson, 2006; Gratz, Lacroce, & Gunderson, 2006) and convergence with a behavioral measure of emotion dysregulation (Gratz, et al., 2006). Higher scores on the DERS indicate greater difficulties in emotion regulation.

Toronto Alexithymia Scale (TAS-20; Bagby, Parker & Taylor 1994a, 1994b). Alexithymia is a multifaceted personality construct that represents a deficit in the cognitive processing of emotion. Currently, the TAS-20 is the most common measure of alexithymia. Participants are asked to rate 20 items on 5-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). The TAS-20 yields a total score and three subscale scores (i.e., Difficulty Identifying Feelings, Difficulty Describing Feelings, and Externally Oriented Thinking). In this study, we used the Italian version of the TAS-20 (Bressi et al., 1996) which showed good internal consistency (Cronbach's α of .75 and .82 in normal and clinical groups, respectively) and high test-retest reliability over 2 weeks (r = .86).

Given that higher scores on the TAS-20 indicate greater difficulties in the cognitive processing of emotion, positive correlations between the TAS-20 and the DERS were predicted.

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Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). The TMMS is a measure of emotional awareness and understanding that includes ability to regulate, clarify, and attend to feelings. In the original validation study, participants were asked to rate 48 items on a 5-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). According to the results of a factor analysis, Salovey et al., (1995) removed 18 items and offered directions for calculating a total score and three subscale scores (i.e., Attention to Feelings, Clarity of Experience of Feelings, and Repair of Emotions). This final 30-item version of the TMMS has shown adequate to good internal consistency, and high scores are associated with less depression and more life satisfaction (Martinez- Pons, 1997). Because no validated Italian versions of the TMMS were available, we adapted it using a back-translation procedure. No noteworthy inconsistencies between the original and the final back-translated version emerged. To examine the factorial structure, reliability, and validity of our Italian version of the TMMS, all 48 items were administered. The total score and three subscale scores were calculated using only the 30 items indicated by Salovey et al. (1995).

Given that the TMMS measures emotional awareness and understanding that includes ability to regulate, clarify, and attend to feelings, negative correlations between TMMS and DERS scores were predicted.

Scale of Dissociative Activities (SODAS; Mayer & Farmer, 2003). The SODAS is a relatively new measure which includes acting without awareness, a lack of perception of the inner experience, memory disruptions, and perceptions of unreality. Participants are asked to rate 35 items on a 5-point Likert scale ranging from 1 (*never)* to 5 (*very frequently*), and a total score is calculated by summating items. Mayer and Farmer (2003) reported that the SODAS has good internal consistency (alpha = .95) and test-retest stability during a 38-day interval (r = .77). Furthermore, the SODAS showed significant positive correlations with other measures of dissociation, including experience sampling measures in naturalistic

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environments. Because no validated Italian versions of the SODAS were available, we adapted it using a back-translation procedure. No noteworthy inconsistencies between the original and the final back-translated version emerged.

Given that dissociation and a lack of perception of inner experience are related to emotion dysregulation, we predicted positive correlations between the SODAS and the DERS.

Results

Factorial structure, internal consistency, and concurrent validity of our Italian version of the DERS were analyzed.

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DERS Scores

Descriptive statistics for males and females on the total DERS score as well as each subscale are shown in Table 1. No significant gender differences were found, and the DERS scores produced by our Italian sample were largely similar to those reported by Gratz and Roemer (2004). Two significant differences between our Italian sample and Gratz and Roemer (2004)'s original American sample were observed: Italian women scored significantly higher (M = 12.2; SD = 4.5) than American women (M = 10.8; SD = 4.4) on IMPULSE, $t(507) = 3.49$, $p < .005$, $d = .31$, and Italian men scored significantly lower (M = 14.4; SD = 3.6) than American men (M = 16.3; SD = 4.6) on AWARENESS, $t(169) = 2.96$, $p < .005$, $d = .44$.

Most of the scores presented low skew and kurtosis values. However, within the entire sample IMPULSE exhibited a slightly positive skew (skew = 1.2).

Correlations among the DERS subscales are shown in Table 2. As expected, the six subscales were correlated with one another. However, similar to Gratz and Roemer's findings (Gratz & Roemer, 2004), GOALS did not correlate with AWARENESS.

Factorial Structure

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To test whether the factor structure of the DERS found for U.S. students was replicated in our Italian sample, we conducted a confirmatory factor analysis (CFA).

According to Curran, West, and Finch (1996) as well as several other researchers (e.g., Muthen & Kaplan, 1985, 1992), nonnormality concerns arise in CFA with a skewness of 2.0 and kurtosis of 7.0. Given that no skew or kurtosis values exceeded these thresholds, robust CFA methods were not implemented. As for the structural model, a correlation matrix was used. Six latent variables were specified, corresponding to the six subscales of the DERS, which were allowed to correlate. Lisrel 8.50 (Jöreskog & Sörbom, 2001) was used for the analysis.

We focused on four fit indices: the comparative fit index (CFI), the nonnormed fit index (NNFI), the root mean square error of approximation (RMSEA), and the ratio of the value of chi-square to its degrees of freedom (χ^2 / df). CFI and NNFI values greater than .90 are thought to indicate *good* fit between a model and the data (Bentler & Bonett, 1980); RMSEA values of .05 are thought to indicate *close* fit, .08 *fair* fit, and .10 *marginal* fit (Browne & Cudeck, 1993); χ^2 / df values close to 2.00 or less are considered *good* while values under 5.00 are *quite promising* (Watkins, 1989).

According to these thresholds, the CFA performed on the Italian version of the DERS replicated quite well the factorial structure obtained by Gratz and Roemer (2004). The CFI and NNFI were not far from the threshold value of .90 (CFI = .86, NNFI = .84), the RMSEA was *fair* (RMSEA = .072; 90% confidence interval = .068 – .076), and the χ^2 / df was *quite promising* to *good* (χ^2 = 1547.0; df = 579; χ^2 / df = 2.67). Furthermore, all factor loadings were greater than .40, except for item 23 which yielded a factor loading of .37 (Table 3). Item 23 was kept in as its factor loading was only .03 points lower than a commonly-used threshold (.40) and its item-total and item-subscale correlations were relatively high (respectively, r = .46, $p < .001$ and $r = .54$, $p < .001$).

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Internal Consistency

To determine the internal consistency of the DERS items, Cronbach's α was calculated for the total DERS score and for each of the six subscales. Similar to Gratz and Roemer's findings (2004), the results indicated that the DERS has high internal consistency with a Cronbach's α of .92 for the total DERS score and α > .80 for five of the six subscales. The sixth subscale yielded a .77 for AWARENESS (see Table 4 for additional information on the internal consistency of each subscale). Also similar to Gratz and Roemer's findings (2004), item-total correlations ranged from r = .15 to r = .70, and thirty-four of the items had item-total correlations above r = .30.

Concurrent Validity

To provide data on the concurrent validity of the DERS, correlations between the DERS and other questionnaires were examined. All Cronbach's α values for the compared questionnaires were higher than .70 except for the Externally Oriented Thinking scale of the TAS, for which it was .68.

Correlations between the DERS and other constructs are shown in Table 5. As predicted, the total DERS score yielded high positive correlations with the total TAS-20 score ($r = .56$, $p < .01$) and with the SODAS ($r = .62$, $p < .01$), and yielded high negative correlations with the total TMMS score ($r = -.54$, $p < .01$).

Study 2

In order to assess the test–retest reliability of the DERS, a second sample was examined. As in study 1, we determined that while cultural differences in ER between Italy and North America may affect the mean values of the DERS, they should not affect its validity and reliability. Thus, we expected our Italian version of the DERS to yield adequate test-retest reliability.

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Participants

Participants were 61 Italian psychology students at the University of Rome – Sapienza who met the same eligibility criteria described in Study 1. Ages ranged from 20 to 60, with a mean age of 24.7 (*SD* = 5.8). Eighty percent (*n* = 53) were female.

Procedure

Before a psychology class, students were invited to complete a questionnaire. Upon giving their written consent, all class members decided to participate and complete our version of the DERS. After 4 weeks, the DERS was administered again in the same classroom setting before a subsequent lesson of the same psychology class. Test-retest reliability was investigated on the 61 students that were present at both of the administrations.

Results

The intraclass correlation coefficient (ICC) for the total DERS score was .78. The ICCs for the DERS' subscales ranged from .49 to .73. More specifically, the ICCs for the DERS' subscales were: .73 for NONACCEPTANCE; .72 for GOALS; .65 for IMPULSE; .68 for AWARENESS; .73 for STRATEGIES; and .49 for CLARITY. According to the suggested benchmarks (Cicchetti, 1994; Cicchetti & Sparrow, 1981; Fleiss, 1981), the test-retest reliability was *excellent* for the total DERS score, *fair* for CLARITY, and *good* for NONACCEPTANCE, GOALS, IMPULSE, AWARENESS, and STRATEGIES.

Study 3

To further investigate the construct validity of our version of the DERS, we compared the DERS scores of a nonclinical sample with a clinical sample characterized by deficits in ER. Thus, we administered the DERS to both a nonclinical sample and to a small clinical sample affected by anorexia, binge eating disorder, and bulimia.

Emotional problems and deficits in ER are thought to be a core feature of eating disorders (EDs): as compared to controls, individuals with EDs have more problems in ER

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and tend to have lower emotional awareness (Gilboa-Schechtman, Avnon, Zubery, & Jeczmien, 2006), demonstrate higher levels of alexithymia (see for example, Corcos et al., 2000; de Groot, Rodin, & Olmsted, 1995; Speranza, Corcos, Loas, Stèphan, Guilbaud, Perez-Diaz, et al., 2005; Taylor, Parker, Bagby, & Bourke, 1996), have more difficulty communicating feelings (Rizzuto, 1988), and experience more difficulties in recognizing facially-expressed emotions (Kucharska-Pietura, Nikolaou, Masiak, & Treasure, 2004; Zonnevijlle-Bender, van Goozen, Cohen-Kettenis, van Elburg, & van Engeland, 2002). A couple of recent studies have linked EDs and ER also using the DERS: Harrison, Sullivan, Tchanturia, and Treasure (2009) found that women with anorexia have more difficulties with emotional recognition and regulation than their nonclinical counterparts; Whiteside, Chen, Neighbors, Hunter, Lo, and Larimer (2007) found that binge eaters exhibit fewer ER skills than do controls. Moreover, according to several authors, symptoms of EDs may regulate negative affect (Abraham & Beaumont, 1982; Hayaki, Friedman & Brownell, 2002; Heatherton, & Baumeister, 1991; Herman & Polivy, 1988; Match & Simons, 2000; McCarthy, 1990), and ER problems may mediate the relationship between body dissatisfaction and bulimic symptoms such as binge eating (e.g., Leon, Fulkerson, Perry & Early-Zald, 1995; Sim, & Zeman, 2005; Stice, Nemeroff, & Shaw, 1996).

Given the association between EDs and emotion dysregulation, we expected that the DERS scores of our clinical sample would exceed those of a nonclinical sample matched by age and gender.

Method

Participants

The clinical sample was composed of 38 Italian women affected by either bulimia nervosa ($N = 22$), anorexia ($N = 10$) or binge eating disorder ($N = 6$). All diagnoses were made

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by expert clinicians that have been in practice for many years. Their ages ranged from 16 to 54 years (M = 24.2, SD = 8.7) and they had an average to high level of education.

The nonclinical sample was composed of 38 Italian women screened to ensure the absence of potential eating or other disorders that feature emotion dysregulation. Their ages ranged from 16 to 48 years (M = 24.7, SD = 8.1) and they had an average to high level of education.

Procedure

The participants in the clinical sample were recruited in either a public hospital (N = 20) or private clinic (N = 18). Before beginning the standard screening procedure, all patients were informed that they could also complete an additional questionnaire for research purposes in addition to the routine test battery. They were handed the DERS along with other questionnaires and documents (including a demographic form), with the instruction that if they wanted to participate in the research project they had to complete both the DERS and the informed consent. No one, among the patients contacted, refused to participate.

The participants in the nonclinical sample were recruited using a snowball strategy: Initial participants asked other people (relatives, friends, and acquaintances) to take part in a psychological study by completing questionnaires at home and possibly recruiting further participants. All volunteer participants were directly contacted by the authors, who administered them the assigned questionnaires and a demographic form. Any prospective participant that reported receiving psychiatric medications or was at risk for an eating disorders or other psychopathology (see below), his or her data was excluded from the analysis and other participants were recruited to replace them. This led to the exclusion of five persons before achieving the desired sample size.

To ensure that participants in the two groups were matched on age between-samples, four age ranges were included: 15-24, 25-34, 35-44, and 45-54 years of age. For every woman

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in the clinical group in one of these age ranges, there was one woman in the same age range in the nonclinical group.

Measures

In an effort to ensure the absence of an eating or other disorder that featured emotion dysregulation within the nonclinical sample, the nonclinical volunteers were administered two other questionnaires in addition to the DERS: the Eating Disorder Inventory (EDI-3; Garner, 2004) and the Symptom Checklist 90 (SCL-90; Derogatis, 1977).

Eating Disorder Inventory (EDI-3; Garner, 2004). The EDI-3 is a 91 item self-report measure developed to assess three eating disorder-specific scales and nine general psychological scales that are highly relevant (but not specific) to eating disorders. The EDI-3 also includes six composite scores: the Eating Disorder Risk scale, which is eating-disorder specific; the Ineffectiveness scale; the Interpersonal Problems scale; the Affective Problems scale; the Overcontrol scale; and the General Psychological Maladjustment scale. Garner (2004) reported that the Eating Disorder Risk scale's reliability ranges from .90-.97 (median = .94) across four diagnostic and normative groups. For the three Eating Disorder Risk scales, all reliability values are generally in the high .80s to low .90s across normative groups, and the test-retest stability coefficients are excellent. In addition, the EDI-3 produced adequate convergent and discriminant validity indices (Cumella, 2006) and excellent sensitivity and specificity indices (Clausen, Rosenvinge, Friborg, & Rokkedal, 2011).

For this study, the Italian version of the EDI-3 (Giannini, Pannocchia, Dalle Grave & Muratori, 2008) was used with the intent to identify for exclusion participants with potential eating disorders in the nonclinical group. Before achieving the desired sample size, two potential participants were excluded from the study because their scores on the Eating Disorder Risk scale were above the 85th percentile of Italian normative data.

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Symptom Checklist 90 (SCL-90; Derogatis, 1977). The SCL-90 is a 90 item self-report measure that is widely-used in both its original and Italian forms (Magni, Messina, De Leo, Mosconi & Carli, 1983) to assess a broad range of psychopathology symptoms (Derogatis, 1994). It includes nine dimensions: somatization; obsessive-compulsive; interpersonal sensitivity; depression; anxiety; hostility; phobic anxiety; paranoid ideation; and psychoticism. According to European validations of the instrument (Holi, 2003; Schmitz, Hartkamp & Franke , 2000), a global total score covering all 90 items – the Global Severity Index (GSI) – is a valid, reliable, and commonly-used criterion for screening psychopathology.

In this study, the GSI of the Italian version of the SCL-90 (Magni et al., 1983) was used to exclude potential psychopathology from the nonclinical group. Prior to achieving the desired sample size, four prospective participants (one of whom was also above the cut-off on the EDI-3) were excluded from the study because their GSI scores were equal to or greater than 1.

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Results

As expected, the total DERS score for the clinical sample (M = 111.6; SD = 24.8) was significantly higher than the total DERS score for the nonclinical sample (M = 73.6; SD = 16.1), $t(74) = 7.93$, $p < .005$, $d = 1.82$. Significant differences were also found for each DERS subscale (shown in Table 6). All comparisons remain significant even after Bonferroni's correction, and the 95% confidence intervals clearly demonstrate that the two groups produce distinct mean values on each subscale. Neither age nor education significantly differed between the clinical and nonclinical groups.

Discussion

The importance of emotion regulation (ER) in human wellbeing is acknowledged by several authors and Gratz and Roemer (2004) have recently proposed the DERS, a

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multidimensional self-report measure of difficulties in ER. To supplement the literature on the cross-cultural validity of this scale, we adapted the DERS for an Italian sample and evaluated its reliability and validity. Three studies were conducted to complete this task.

In study 1, we translated the DERS into Italian and investigated its factorial structure, internal consistency, and concurrent validity. According to our hypotheses, we expected the factorial structure obtained by Gratz and Roemer (2004) to be confirmed and show adequate internal consistency and concurrent validity.

The Italian data replicated quite well the factorial structure obtained by Gratz and Roemer (2004), thus confirming that ER is a multidimensional construct. As in Gratz and Roemer's original findings (Gratz & Roemer, 2004), GOALS did not correlate with AWARENESS. This may indicate that there is "a difference between being aware of emotional responses and having a clear understanding of the nature of these responses" (p. 47). All internal consistency alpha indices were adequate and comparable with those reported by Gratz and Roemer (2004) and by other validation studies (Coutinho, et al., 2010; Rugancı & Gençöz, 2010). The total DERS score was positively correlated with the total TAS-20 score, the total SODAS score, and negatively correlated with the total TMMS score, thus supporting the construct validity of the DERS. In addition, each of the subscales of the DERS correlated, both significantly and in the expected direction, with at least one of the other subscales that measured similar constructs. For example, the subscales obtaining the highest correlation values with the DERS subscale CLARITY were the TMMS subscale Clarity of Experience of Feelings and the TAS-20 subscale Difficulty Identifying Feelings. Examined together, these results confirm our hypotheses and support the reliability and validity of the DERS.

A couple of discrepancies between the results of this study and Gratz and Roemer's findings (Gratz & Roemer, 2004) warrant mentioning. First, while Gratz and Roemer (2004)

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report that in their sample men scored higher than women on AWARENESS, no gender differences were observed in our Italian sample. Second, women in our sample scored significantly higher than women in Gratz and Roemer's sample (2004) on IMPULSE, while men in our sample scored significantly lower than men in Gratz and Roemer's sample (2004) on AWARENESS. Given that the subscale AWARENESS is the source of score differences between Italian and American men and between American men and women, it is a possibility that AWARENESS is more affected by culture and personality traits than are the other five subscales. As this is pure conjecture at this point (these effects may also be due to translation inequities, different response styles, or sample characteristics), more research on this topic is needed.

Another interesting finding of study 1 is that the total DERS score of Italians was not significantly different from the total DERS score of Americans. From this point of view, the hypothesis that Italians may be characterized by "affective volatility" remains unsupported.

In study 2, we investigated the test-retest reliability of the DERS. According to our hypotheses, we expected the ICCs between test and retest to be adequate and comparable to previous findings on this subject (Gratz & Roemer, 2004; Ruganci & Gençöz, 2010). The results confirmed our hypotheses, showing that the test-retest reliability of the Italian version of the DERS is excellent for the total score and fair to good for the subscale scores.

In study 3, a construct validity analysis comparing clinical and nonclinical samples was conducted. We predicted the DERS scores (both total and subscale) of a clinical sample characterized by emotion dysregulation (i.e., a sample affected by EDs) would be significantly higher than those produced by a nonclinical, age–matched sample. As shown on table 6, the results confirm our hypotheses: individuals affected by EDs scored significantly higher on our Italian version of the DERS than did healthy controls. All effect size indices qualified as *large*

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effect sizes, which further supported the construct validity of the DERS and the association between EDs and deficits in ER.

Taken together, the results of these three studies indicate that the DERS is valid and reliable in an Italian context, thus supporting the cross-cultural adaptability of the DERS. The factorial structure replicated the six-factor structure proposed by Gratz and Roemer (2004), the internal consistency and test-retest reliability were adequate and comparable to previous findings, and the validity was good as indicated by both the concurrent validity analysis and the comparison between a clinical and a nonclinical sample.

Several limitations warrant mentioning, however. First, the clinical sample we used in study 3 was small ($N = 38$) and only focused on one specific clinical population, chosen in part because of the association between EDs and emotion dysregulation and in part because of our personal interest in EDs. Results, therefore, may not be applicable to other clinical diagnostic categories associated with emotion dysregulation. Future research with larger sample sizes and including other clinical populations is necessary. Second, the participants in the clinical and control groups of study 3 were taking the DERS under unique circumstances (i.e., part of an admission procedure for a treatment program vs. volunteer participation upon invitation of family or friends, respectively). Coupled with a possible selection bias due to the sampling procedure utilized for the nonclinical sample, this may have had a noteworthy effect on the results. Third, two of the three scales administered in study 1 to measure DERS-related constructs have not yet been cross-validated for Italian use. It should be noted, however, that: (a) these two instruments were translated with a back-translation procedure and obtained high internal consistency indices and (b) there is a lack of cross-validated instruments for Italian use and the fact that appropriate alternatives were not available is one of the reasons for this study. Fourth, divergent validity has not been addressed by this study. Fifth, given that in study 1 the participants answered a great deal of items concerning relatively similar concepts,

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potential respondent fatigue may have occurred. Despite the generous time limit given to participants completing questionnaires, several missing data were observed. Although the presentation order of the questionnaires was randomized and the participants should have been sufficiently motivated by the class credit they received, fatigue may have affected the results of study 1 on some level. Sixth, the factorial structure and test-retest analyses of study 1 and 2 only refer to student samples. Further examinations should consider analysis of clinical data as well as replication of our results.

Despite all these limitations, however, our investigation provides unique contributions to ER research for several reasons. First, all six components of ER proposed by Gratz and Roemer (2004) were valid and reliable. This provides further support for Gratz and Roemer (2004)'s model of ER, and suggests that each component of the model is important in defining and measuring ER. Second, the congruence between our results and other international findings provides support for cross-cultural utilization of the DERS and facilitates Italian research on ER. Third, the DERS scores of a clinical sample characterized by difficulties in ER were higher than those of a nonclinical sample, which provides further support for the utilization of the DERS in a clinical context, especially for ER assessment and treatment planning. Due to its multidimensional approach, the DERS allows the clinician to capture patient functioning in a number of ER content areas, assess his or her strengths and weaknesses, and identify relevant targets of therapy. For example, in cases of limited emotional awareness (i.e., high scores on AWARENESS) one might adopt exercises such as the analysis of emotions and cognitions in everyday emotion-inducing situations (Legenbauer, Vocks, & Ruddel, 2008). In cases of nonacceptance of emotional responses (i.e., high scores on NONACCEPTANCE), emphasizing a nonjudgmental acceptance of thoughts and feelings during the therapeutic process may be recommended (Hayes, et al., 1999; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). In all cases of deficits in ER (i.e., high scores on the total

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score), improving clients' capacity to tolerate and regulate emotions should be a critical therapeutic goal (Gutwill & Gitter, 1994; Kearney-Cooke & Striegal Moore, 1994). All these suggestions are applicable to individuals with EDs, in which the desire to escape from self-awareness is particularly relevant (Heatherton & Baumeister, 1991; de Groot and Rodin, 1998). Evidence supports the clinical value of incorporating emotion regulation training in the treatment of EDs (Telch, Agras, & Linehan, 2001).

On the basis of all these considerations, our findings provide further evidence supporting the utility, validity, and reliability of the DERS in Italy in both research and clinical settings.

Acknowledgments

We thank Gherardo Amadei, Margherita Lang, Laura Parolin, Angela Tagini, Laura Rivolta, Caterina Giovannini, and Paola De Cesare for their help with working on the translation of the questionnaires and collecting the data. We also heartily thank Harpreet Malla of the CLASS center at Alliant International University – San Diego for proofreading the manuscript.

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Table 1

Descriptive Statistics for DERS Scales Among Women (N = 249), Men (N = 74), and Entire Sample (N = 323).

Scale	Women (N = 249)				Men (N = 74)				Entire Sample (N = 323)			
	Mean	SD	Skew	Kurtosis	Mean	SD	Skew	Kurtosis	Mean	SD	Skew	Kurtosis
NONACCEPTANCE	12.4	4.4	.9	.6	12.4	4.6	.6	-.5	12.4	4.5	.8	.3
GOALS	14.7	4.4	.3	-.5	14.6	4.4	.2	-.3	14.6	4.4	.2	-.4
IMPULSE	12.2	4.5	1.2	1.4	11.6	3.8	1.0	1.2	12.1	4.3	1.2	1.5
AWARENESS	14.5	4.1	.3	-.2	14.4	3.6	.1	.1	14.5	4.0	.3	-.1
STRATEGIES	17.1	6.3	.8	0	17.2	5.9	.9	1.2	17.1	6.2	.8	.2
CLARITY	10.3	3.3	1.0	1.5	10.6	3.4	.5	.7	10.4	3.3	.9	1.3
TOTAL	81.1	18.8	.6	.7	80.8	17.8	.3	.3	81.1	18.5	.6	.6

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Table 2

Correlations Among Subscales of the DERS (N = 323).

	NONACCEPTANCE	GOALS	IMPULSE	AWARENESS	STRATEGIES	CLARITY
NONACCEPTANCE	–					
GOALS	.35**	–				
IMPULSE	.52**	.56**	–			
AWARENESS	.12*	-.03	.15**	–		
STRATEGIES	.59**	.56**	.57**	.12*	–	
CLARITY	.34**	.21**	.35**	.52**	.33**	–

Note. * p < .05; ** p < .01.

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Table 3

Factor Loadings for DERS Items Obtained From CFA among Italian Students (N = 323).

NONACCEPTANCE	
Item 29	.76
Item 21	.84
Item 12	.74
Item 11	.69
Item 25	.77
Item 23	.37
GOALS	
Item 26	.89
Item 18	.88
Item 13	.85
Item 33	.73
Item 20	.47
IMPULSE	
Item 32	.81
Item 27	.79
Item 14	.87
Item 19	.87
Item 3	.55
Item 24	.46
AWARENESS	
Item 2	.86
Item 6	.81
Item 10	.47
Item 17	.40
Item 8	.65
Item 34	.45
STRATEGIES	
Item 16	.76
Item 15	.75
Item 31	.62
Item 35	.75
Item 28	.76
Item 22	.52
Item 36	.76
Item 30	.72
CLARITY	
Item 5	.70
Item 4	.51
Item 9	.62
Item 7	.80
Item 1	.85

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Table 4

Internal Consistency Reliability Analyses for DERS Subscales (N = 323).

Subscale	No. of items	Cronbach's alpha	Range of item-total correlations	Range of interitem correlations	Mean interitem correlation
NONACCEPTANCE	6	.83	.54 – .82	.22 – .73	.51
GOALS	5	.87	.64 – .89	.36 – .81	.58
IMPULSE	6	.86	.64 – .86	.29 – .80	.52
AWARENESS	6	.77	.59 – .80	.20 – .71	.37
STRATEGIES	8	.89	.63 – .81	.35 – .69	.50
CLARITY	5	.83	.64 – .84	.34 – .70	.49

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Table 5

Concurrent Validity Analyses for the DERS.

	DERS TOTAL	DERS NONACCEPTANCE	DERS GOALS	DERS IMPULSE	DERS AWARENESS	DERS STRATEGIES	DERS CLARITY
TAS-20 (*N* = 310)							
DIF	.64**	.50**	.28**	.50**	.41**	.43**	.56**
DDF	.37**	.22**	.13*	.15**	.42**	.22**	.50**
EOT	.27**	.16**	.01	.13*	.51**	.09	.31**
TOTAL	.56**	.38**	.19**	.35**	.57**	.33**	.59**
TMMS(*N* = 305)							
ATTENTION	-.16**	-.07	.04	.05	-.49**	-.04	-.26**
CLARITY	-.57**	-.37**	-.23**	-.35**	-.52**	-.31**	-.73**
REPAIR	-.47**	-.31**	-.25**	-.30**	-.17**	-.56**	-.25**
TOTAL	-.54**	-.33**	-.19**	-.26**	-.58**	-.37**	-.60**
SODAS (*N* = 279)							
TOTAL	.62**	.45**	.45**	.56**	.23**	.49**	.42**

Note. TAS-20 = 20-item Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; TMMS = Trait Meta-Mood Scale; ATTENTION = Attention to Feelings; CLARITY = Clarity of Experience of Feelings; REPAIR = Repair of Emotions; SODAS = Scale of Dissociative Activities; * $p < .05$; ** $p < .01$.

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Table 6

Comparison Between Clinical (N = 38) and Nonclinical Age–Matched (N = 38) Female Samples

DERS Scale	Sample	M	SD	Confidence Interval (95%)		t	df	p	d
				Min	Max				
NONACCEPTANCE	Nonclinical	11.2	3.7	10.0	12.4	7.93	74	<.005	1.17
	Clinical	17.7	7.0	15.4	20.1				
GOALS	Nonclinical	13.6	4.4	12.1	15.0	5.09	55.5*	<.005	.95
	Clinical	18.1	5.2	16.4	19.8				
IMPULSE	Nonclinical	11.6	3.4	10.4	12.7	4.13	74	<.005	1.39
	Clinical	18.3	5.9	16.3	20.2				
AWARENESS	Nonclinical	14.0	3.7	12.8	15.3	6.08	59.3*	<.005	.96
	Clinical	18.6	5.6	16.8	20.5				
STRATEGIES	Nonclinical	14.1	5.0	12.5	15.8	4.18	64.3*	<.005	1.69
	Clinical	24.6	7.1	22.2	26.9				
CLARITY	Nonclinical	9.2	2.6	8.3	10.0	7.35	74	<.005	1.49
	Clinical	14.9	4.8	13.4	16.5				
TOTAL	Nonclinical	73.6	16.1	68.3	78.9	6.50	57.7*	<.005	1.82
	Clinical	111.6	24.8	103.5	119.8				

Note. * Since omoschedasticity could not be assumed, Welch-Satterthwaite method was used to adjust degrees of freedom.

For Peer Review