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Articles

Development of the DERS-20 among the Italian population: a study for a short form of the Difficulties in Emotion Regulation Scale

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Abstract

The Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer 2004) is one of the most widely used measures to investigate individual differences in the ability to identify, accept and manage emotional experiences. This scale facilitates the understanding of the disorders underlying emotional dysregulation. However, its length may require a shorter version to create more flexible study protocols. The original scale has demonstrated good psychometric properties and has been shown to be a useful measurement instrument for emotion regulation. For this reason, i.e., to develop a short form, in *Study 1*, an Italian version of the DERS-36 (Sighinolfi et al., 2010) was administered to n = 520 subjects. Based on the strongest items from the six-factor structure, a 20-item form of the DERS was obtained, and reliability analysis showed good results both on scales and factors. In *Study 2*, the DERS-20 was administered to n = 262 subjects who also completed the DERS-36, the Emotional Regulation Questionnaire (ERQ), the Positive And Negative Affect Schedule (PANAS), and the Toronto Alexithymia Scale (TAS-20) to examine the construct validity. These findings replicate the good results of *Study 1* and confirm the reliability and validity of the DERS-20 construction.

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1. Introduction

One of the main focus areas for researchers interested in affective processes is understanding how emotion regulation works in people. In fact, emotion regulation and dysregulation are constructs that can describe and explain different psychopathologies (Tracy et al., 2014). Emotion regulation processes are involved in the diagnosis of psychological disorders such as depression, anxiety and borderline personality disorder (American Psychological Association [APA], 2013; Turk et al., 2005; Victor & Klonsky, 2016).

Gross (2001) defined emotion regulation as the processes by which people affect the emotions they experience, when they experience them, and how they live and express those emotions. This definition has been expanded by Gratz and Roemer (2004), who included some components that are deemed necessary for functional emotion regulation; among these, awareness, non-acceptance of emotional responses, the ability to engage in goal-directed behavior, and the ability to control behavior when experiencing negative emotions can be mentioned. The authors defined emotional dysregulation as the lack or absence of these abilities.

The original version of the Difficulties in Emotion Regulation Scale (DERS) created by Gratz and Roemer (2004) is a self-report measure developed to assess an individual's relevant difficulties in emotion regulation. This questionnaire allows one to obtain a measurement about the presence of potential difficulties on six scales: *non-acceptance of emotional responses* (Non-acceptance, 6 items), which indicates the tendency to experience negative secondary emotions in response to a negative emotion or to demonstrate a reaction of non-acceptance in regard to one's discomfort; *difficulties engaging in goal-directed behavior* (Goals, 5 items), which reflects difficulties in concentrating and performing a task when experiencing negative emotions; *limited access to emotion regulation strategies* (Strategies, 8 items), which reflects the belief that it is particularly difficult to regulate emotions once they have occurred; *impulse control difficulties* (Impulse, 6 items), which detects the difficulty in maintaining control when one feels negative emotions; *lack of emotional clarity* (Clarity, 5 items), which includes items that reflect the degree to which one can clearly understand what emotion they are experiencing; and *lack of emotional awareness* (Awareness, 6 items), which contains items underlying the tendency to pay attention to emotions and the relative ability to recognize them (for this reason, the answers must be reversed in calculating the score). Items are rated on a five-point Likert scale ranging from 1 (almost never) to 5 (almost always). The score is obtained by summing the corresponding items, and a higher score indicates greater difficulties in emotion regulation.

The DERS has been studied and has been used in a wide range of research projects: mostly as a cross-sectional measure of trait-like emotion dysregulation (e.g., Franklin et al., 2010), but also to longitudinally predict psychopathology (e.g., Scott et al., 2014). Comprehensive research supports the reliability and validity of the DERS, including work that has established the psychometric properties of the measurement in different languages and populations (Cancian et al., 2019; Fowler et al., 2014; Li et al., 2018; Ritschel et al., 2015). However, there is still some debate about the most adequate factor structure for the measure. Giromini and colleagues (2012) have found evidence to support the original six-factor structure of the DERS. In one study, a confirmatory factor analysis (CFA) suggested that the DERS-Awareness dimension may not represent the same higher-order emotion regulation construct as that of the other five

DERS dimensions, leading the authors to argue for this subscale's removal from the DERS (Bardeen et al., 2012); these authors acknowledged, however, that the Awareness subscale may have utility in and of itself.

The aim of our study is to develop and validate a short form of the Difficulties in Emotion Regulation Scale (DERS) that retains similar reliability, validity and factor structure while also allowing participants to avoid becoming overburdened, especially when the DERS is part of a test battery. In the development of research protocols, it is important to maintain a balance between the use of reliable measures, regardless of their length, as well as to avoid unnecessary cognitive effort for participants. Short forms of questionnaires are often developed with the dual aim of reducing the burden on participants while maintaining an adequate reliability from the original measure. In addition, research also suggests that the use of longer questionnaire batteries can impact data collection and quality; in fact, participants could be less willing to complete longer questionnaire batteries compared to shorter ones (Galesic & Bosnjak, 2009).

Based on this background, the current aim is to develop a reduced version of the DERS-36 that is both culturally valid in the Italian context and more accessible, for the reasons mentioned above.

Although shortened forms of the DERS-36 have been developed in different countries, the choice to develop a new version specifically for the Italian context stems from several assumptions. Emotion regulation, even though it is a universal construct, is affected by the cultural influence of an individual's place of belonging, for instance, the differences between Eastern and Western countries (Ramzan & Amjad, 2017; Stupar-Rutenfrans et al., 2017). While people may generally "want to feel better than worse" (Larsen, 2000), the way these emotions are regulated may differ from one culture to another. Modern literature has traced culture's influence on a wide range of emotional aspects, from emotional values to emotion regulation. Culture may be understood as a way for emotions to be shaped and then expressed. This has been further discussed in psychology by examining individualistic and collectivistic cultures (Matsumoto et al., 2008).

Culture has an impact on many aspects of emotions. The identification of which emotions are good or bad, when emotions are appropriate to be expressed, and how they should be shown are all affected by culture. Moreover, cultures affect emotions differently, which means that exploring cultural contexts is the way to understand emotions.

Although the previously validated short forms come mainly from a Western context and, therefore, are similar to an Italian form, the cultural features of each country could lead to differences between the various populations. There is extensive support for the construct

validity of the development of a short-form version of the DERS, both in an American sample (Kaufman et al., 2015; Victor & Klonsky, 2016) and in samples from different cultures, such as Sweden (Bjureberg et al., 2016), Brazil (Miguel et al., 2017), Persia (Mazaheri, 2015), and Finland (Westerlund & Santtila, 2018).

The validation of an instrument in the Italian context would make the measurements more reliable, particularly when considering the linguistic differences between the different countries. This short form, based on an earlier version of the original Italian translation of the DERS by Sighinolfi et al. (2010), has been validated in one sample. To the best of our knowledge, this is the first work that provides the development of a short form in the Italian context.

Two different studies that aimed to validate the DERS measure in the Italian context have been previously published (Giromini et al., 2012; Sighinolfi et al., 2010). In Sighinolfi et al. (2010), the 36-item DERS was administered to 190 people (69.5% women), and the results showed that a CFA did not replicate the original structure from the study of Gratz and Roemer (2004). In Giromini et al. (2012), in a sample of 323 subjects (77.1% women), the original structure from Gratz and Roemer (2004) was replicated in an acceptable way.

The studies presented in this article are based on these premises. Through the administration of the DERS-36 in an Italian sample, a series of confirmatory and exploratory analyses were carried out, with the aim of obtaining a short form that preserved the correct values of good fit and validity.

1.1 Aim of the study

The primary aim of this study is to develop a short form of DERS and to assess its psychometric properties. In line with the recommendations for the creation of short forms (Smith et al., 2000), independent samples were used for the development and validation of the short form. Once the items had been obtained, in a second study consisting of a second sample, two independent administrations of the short form and the original version of the DERS were carried out. In addition, the concurrent validity of the DERS-20 was examined to provide further information on the validity of this instrument.

In *Study 1*, the 36 items of the original DERS were administered to a sample of 520 subjects. Through a series of confirmatory and exploratory analyses, a scale of 20 items with good internal consistency and reliability was obtained. In *Study 2*, in a sample of 262 subjects, the strength of the DERS-20 was evaluated and compared with the 36-item version and with measures to regulate emotions, positive and negative affections and emotional functioning. The basic hypothesis is that both DERS scales, compared using the above instruments, give comparable results.

2. Method

Study 1

Participants

A convenience sample of 526 participants, aged between 18 and 69 years and living within the same community, was recruited among university students, as well as by voluntary participation through national and online recruitment, according to the push-out method recruitment (Antoun et al., 2015). Anonymity and the right to refuse participation were guaranteed. Six participants decided not to give their consent to participate in the study. Thus, the final sample comprised 520 participants.

The characteristics of the sample were as follows: the average age was 28.43 years (SD = 12.00; range = 18-69), and 65.8% (n = 342) were female. The educational level was distributed as follows: 6.5% of the participants had a postgraduate degree, 12.7% had a second degree, 27.1% had a bachelor's degree, 49.6% had a high school education, and 3.7% had a middle school education. In order to explore the participants' medical history, we asked to provide an anamnestic information through a self-report questionnaire. (Table 1).

Table 1 Descriptive Statistics of Study 1 Sample (n = 520), Study 2 Sample (n = 262)

		Study 1			Study 2		
		N	M	SD	N	M	SD
Age		520	28.43	12.00	262	29.76	10.83
		Valid Percent			Valid Percent		
Sex	Male		34.2		Male	29.0	
	Female		65.8		Female	71.0	
	Total		100		Total	100	
Education	-				Elementary school	1.1	
	Middle school		3.7		Middle School	1.9	
	High school		49.8		High school	27.1	
	Bachelor's degree		27.2		Bachelor's degree	40.1	
	Second degree		12.7		Second degree	21.8	
	Post-graduate degree		6.6		Post-graduate degree	8.0	

Note. M = Mean; SD = Standard Deviation

Materials and procedure

The eligibility criteria required that the participants' first language was Italian and that they were over eighteen years old. The questionnaire was filled in using a tablet, which was supervised by the researchers. All subjects were informed about the aim of the research, and all were voluntary participants who gave their written informed consent.

The participants completed the full 36-item self-report DERS, which was an adapted Italian version of the Difficulties Emotional Regulation Scale (Sighinolfi et al., 2010). The subset of items used for the DERS-20 was taken from the full version; thus, the participants did not separately complete the DERS-20. Sighinolfi et al. (2010) translated the questionnaire from English into an Italian version: particular attention was given to the avoidance of colloquial expressions, slang or words that are difficult to understand or ambiguous. The original version was then translated back into English (back-translation) by a bilingual individual with an extensive knowledge of the psychological vocabulary. The back-translation was then sent to one of the authors (Kim Gratz) for comparison with the original version.

Data Analyses

Preliminarily, the distribution of the answers to the DERS-36 items was evaluated. The CFA was conducted (Table S1) to verify the correspondence between the data obtained and the factorial structure proposed by the authors (Gratz & Roemer, 2004). Once the values of the goodness of adaptation had been verified, an exploratory factor analysis (EFA) was carried out to identify the factorial structure in our sample. The analyses yielded a six-factor factorial structure (Table S2). On the basis of this factorial structure, the items with two specific characteristics were selected, namely, a main saturation value greater than 0.4 and the presence of secondary saturations that were lower than 0.3 or half of the value of the main saturation (Barbaranelli, 2006; Barbaranelli & D'Olimpo, 2007).

We obtained a 26-item structure on which an additional CFA and EFA were conducted to verify that the structure showed good fit indices and the presence of the original six-factor structure. The analysis showed a five-factor structure, from which five items were removed according to the same criteria as that previously applied. On the remaining 21 items, reliability analyses were carried out, which resulted in the further elimination of one last item (34), thereby yielding the final five-factor structure on which CFA (Table 2a; Table 2b) was conducted.

Jamovi (version 1.0.8 solid) was used to conduct the confirmatory factor analysis (CFA), while SPSS (statistical package version 25.0) was used for the remaining analyses.

Results

Some variables showed high values for skewness ($= 1.52$) and kurtosis ($= 1.79$), but these values were lower than 2.0 for skewness and 7.0 for kurtosis, which, according to Curran, West and Finch (1996), means that these values do not exceed nonnormality; thus, a maximum likelihood method CFA was subsequently conducted. No missing data were detected.

In the CFA on the DERS-36 items, the six factors selected represented the six factors of the original DERS (Gratz & Roemer, 2004); the fit indices used to assess the goodness of the model were the root mean square error of approximation (RMSEA), the ratio of the value of chi-square to its degree of freedom (X^2/df), the comparative fit index (CFI) and the Tucker-Lewis index (TLI). The results showed a promising value. The CFI and TLI were not far from the threshold value of .90 (CFI = .85, TLI = .83), the X^2/df was quite promising ($X^2(579) = 2479$; $p < 0.01$), and the RMSEA was fair (RMSEA = .079).

Based on the EFA factor matrix, some items did not saturate in any factor in an acceptable way ($>.40$), such as items 3, 10, 15, 16, 23, 31, 35, and 36, while items 7 and 24 saturated more than .30 in their secondary saturation; therefore, these ten items were removed to maintain the solution's goodness (Barbaranelli, 2006; Barbaranelli & D'Olimpo, 2007). The model fit measures showed good values. The TLI was over the threshold value of .90 (TLI = .92), the X^2/df was ranked as being quite promising to good ($X^2(429) = 1110$; $p < 0.01$) and the RMSEA was between a close and fair fit (RMSEA = .055).

To obtain a shortened version of the DERS, a CFA was performed again, excluding items that did not meet the above inclusion criteria from the EFA. The indices of goodness obtained the range of a fair to a good fit (RMSEA = .06; SRMR = .56; CFI = .92; TLI = .91; $X^2/df = 3.31$). From the next EFA, a five-factor solution was obtained. Some items did not satisfy the established inclusion criteria; thus, items 1, 20, 22, 28, and 30 were excluded due to their high secondary saturation. To assess the internal consistency of our scale, a Cronbach's alpha test was performed. Cronbach's alpha was calculated for the total DERS score and for each of the subscales. The results indicated a high internal consistency, with an α of .89. The five subscales yielded an α of .77 for Non-acceptance, an α of .85 for Awareness, an α of .91 for Goals, an α of .90 for Impulse and an α of .54 for Clarity. For the Awareness factor and for the entire scale, item 34 impaired the consistency indices; therefore, this item was eliminated, and a 20-item solution was thus provided with a Cronbach's α of .90 (Table S3).

Table 2a. Confirmatory Factor analysis of DERS-20 (N=520)

Variable	Factor Loadings
NonAcceptance	
Item 11	.86
Item 12	.86
Item 21	.87
Item 25	.88
Item 29	.93
Awareness	
Item 6	.98
Item 2	.95
Item 8	.85
Item 17	.58
Goals	
Item 18	1.03
Item 13	.98
Item 33	.97
Item 26	1.02
Clarity	
Item5	.86
Item 4	.76
Item 9	.79
Impulse	
Item 14	.89
Item 32	.86
Item 27	.92
Item 19	.93

Note. CFA = Confirmatory Factor Analysis Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization.

Table 2b. Model Fit Statistic of Confirmatory Factor Analysis of DERS-20 (N=520)

Goodness of fit	
X ² (df)	450 (160) *
RMSEA	0.059
90% CI	[0.0526, 0.0655]
CFI	0.958
TLI	0.950

Note. RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index;

CI = confidence interval;

df = degrees of freedom;

* $p < .001$

Internal consistency of the descriptive analysis

The values of internal consistency (Cronbach's alpha) were calculated for each factorial scale and for the total. The results indicated that the DERS-20 has a good internal consistency ($\alpha = 0.90$) and that the five-factor scales also have a satisfactory consistency, with a value of α ranging between .84 and .92 (Table S3).

The descriptive statistics for general sample scores, by gender and by educational degree, are reported in Table 1.

Correlations between the factors

Regarding the correlation analysis between the factors, a Pearson's correlation analysis was conducted. Significant correlations resulted between Awareness and Goals ($r = -.16$) and Awareness and Clarity ($r = .098$); between Clarity and Goals ($r = .48$), Clarity and Non-acceptance ($r = .51$), and Clarity and Impulse ($r = .53$); between Goals and Impulse ($r = .65$) and Goals and Non-acceptance ($r = .51$); and between Impulse and Non-acceptance ($r = .52$) (Table 3).

Table 3. Correlations between factors of DERS20 in Study 1

	1	2	3	4	5
1. NonAcceptance	-				
2. Goals	.51**	-			
3. Clarity	.51**	.48**	-		
4. Awareness	.055	-.16**	.098*	-	
5. Impulse	.52**	.646**	.53**	0.009	-

Note. * $p < .05$. ** $p < .01$.

Study 2

Participants

The participants for *Study 2* ($n = 262$) were recruited among university students, as well as by voluntary participation through national and online recruitment. The characteristics of the sample were as follows: and average age of 29.76 years ($SD = 10.83$; range = 19-81), and 71.0% ($n = 186$) were female. The educational level was distributed as follows: 8.0% of the participants had a postgraduate degree, 21.8% had a secondary degree, 40.1% had a bachelor's degree, 27.1% had a high school education, 1.9% had a middle school education, and 1.1% had an elementary school education (Table 1).

Materials and procedure

The eligibility criteria required that the participants' first language was Italian and that they were over eighteen years old. The questionnaire was filled in using a tablet, which was supervised by researchers. All subjects were informed about the aim of the research, and all were voluntary participants who gave their written informed consent.

The participants completed both the DERS-36 and the DERS-20 scale; the Positive and Negative Affect Schedule (PANAS) by Terracciano et al. (2003); the Emotional Regulation Scale (ERQ) by Balzarotti et al. (2010); and the Toronto Alexithymia Scale (TAS-20) by Bressi et al. (1996).

The PANAS is one of the most frequently used instruments to evaluate positive activation (PA) and negative activation (NA). The PA scale reflects the level of positive engagement, i.e., the extent to which a person feels enthusiastic, excited, active and determined; the NA scale reflects a general dimension of negative engagement and subjective discomfort that includes a wide range of unpleasant effects, including fear, nervousness, guilt and shame. The PANAS scales show great psychometric properties and have been translated into several languages. In this study, we used the Italian version of the PANAS (Terracciano et al., 2003), which showed good internal consistency (Cronbach's α was .72 for PA and .83 for NA using the trait time instructions). The test-retest correlations were .77 for PA and .72 for NA using the trait time instructions.

The ERQ measures cognitive reappraisal and expressive suppression, which are two strategies for regulating emotions that are recognized as being particularly important in the management of emotions. The questionnaire is a 10-item self-report instrument that consists of two scales: Reappraisal (6 items) and Suppression (4 items). The Italian version of the ERQ (Balzarotti et al., 2010) has been used in this study; the ERQ showed good internal consistency (Cronbach's α of .84 for the Reappraisal scale and .72 for the Suppression scale), and the test-retest reliability across 2 months was .67 for Reappraisal and .71 for Suppression.

The TAS-20 is the most common measure of alexithymia, a multifaceted personality construct that represents a deficit in the cognitive processing of emotion. Participants are encouraged to evaluate 20 items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The TAS-20 results in 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 in healthy sample) 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. Jamovi (version 1.0.8 solid) was used to conduct the confirmatory factor analysis (CFA), while SPSS (statistical package version 25.0) was used for the remaining analyses.

Data Analyses

Confirmatory factor analyses (CFAs) were computed for the DERS-20 using the items selected through *Study 1*. The factor loadings of both the DERS were compared with those resulting from the confirmatory analysis, and the reliability of each subscale was also compared. Confirmatory analyses were conducted using the maximum likelihood (ML) estimation procedure in Jamovi (version 1.0.8 solid). ML is the most commonly used method for CFA.

To evaluate the concurrent validity of the DERS-20 with the other measures, the intercorrelations among subscales within the DERS-36 and the DERS-20 were computed; the outcome provided information about how well the DERS-20 can be used to approximate the original version. Additionally, the correlations between the original DERS, the short form, the PANAS, the ERQ, the TAS-20 and their subscales have been conducted (Table 4).

Results

A CFA was conducted on DERS-20 to verify the goodness of the structure yielded from *Study 1*. The fit measures obtained showed acceptable results: the CFI and TLI values were over the threshold value of .90 (CFI = .92, TLI = .91), the X^2 was quite promising ($X^2(160) = 503$; $p < 0.01$), the SRMR was good (SRMR = .05), and the RMSEA index was = .09 (ideally $\leq .08$); thus, the fit measures were similar in statistical significance and magnitude to those in *Study 1*.

The correlations among the DERS-20 scales ranged from .04 to .79, while the correlations among the DERS-36 scales ranged from .02 to .88. These findings indicate a similar performance for the two scales. Table S4a reports the descriptive statistics and reliability of the DERS-36 and the DERS-20. The Cronbach's alpha coefficients for the DERS-20 total scale and its six subscales all exceeded .88 and ranged from .88 to .94. We then computed the within-measure correlations among subscales for the DERS-36 and the DERS-20 (see Table S4b). The subscale correlations for the DERS-20 ranged from .18 to .86, and the correlations among the DERS-36 scales ranged from .13 to .88, indicating a similar performance for the two scales. The correlations between the DERS-36 and the DERS-20 (ranging from .70 to .85 for the subscales and $\alpha = .89$ for the total scores) indicated a strong correspondence in the two versions (Table S4a).

The correlations for the DERS-36 and the DERS-20 with several outcome variables, including those of the PANAS, the ERQ, and the TAS-20, are presented in Table 4 and Table S5.

Table 4. Comparisons of concurrent validity for the DERS-36 and DERS-20

	1	2	3	4	5	6	7	8	9	10
1. Ders-20	-									
2. Ders-36	.892**	-								
3. Panas_Pos_Aff	-.400**	-.474**	-							
4. Panas_Neg_Aff	.644**	.681**	-.270**	-						
5. ERQ_RS	-.201**	-.271**	.394**	-.123*	-					
6. ERQ_SU	.402**	.341**	-.210**	.267**	.030	-				
7. TAS_F1	.661**	.624**	-.245**	.571**	-.064	.343**	-			
8. TAS_F2	.460**	.400**	-.202**	.320**	-.029	.574**	.549**	-		
9. TAS_F3	.392**	.292**	-.261**	.113	-.279**	.328**	.296**	.372**	-	
10. TAS_TOT	.660**	.577**	-.305**	.446**	-.158*	.525**	.818**	.808**	.703**	-

Note. * $p < .05$. ** $p < .01$.

Discussion

Emotion regulation has been defined as the set of conscious or unconscious strategies, used to increase, maintain or decrease one or more components of an emotional response (Gross, 2001).

According to Gyurak and colleagues (2011) two types of emotion regulation have been studied: implicit and explicit one. The implicit involves the automatic evocation of the emotion regulation by the stimulus, and the absence of explicit instructions; instead, the explicit regulation requires conscious effort with insight and awareness implication. Emotion regulation has been considered as involved in decision-making processes that lead towards the goal of achieving a desired emotional state (Etkin et al., 2015).

Gross (2015) considered the process of emotion regulation stems through three stages, which corresponds to three valuation systems. The first stage is the identification one: emotion is detected and valued as adequately negative or positive to activate emotion regulation, this leads to an internal representation of the emotion regulation goal. Subsequently, the selection stage guides the choice of the suitable strategy (e.g. cognitive, physiological resources). These stages converge into the implementation stage, processing the appropriate action for the situation.

During these stages, emotion regulation difficulties may arise; therefore, it is important to develop new instruments that can be quick, well-validated and widely used. From the original 36-item scale, a shortened form of the DERS was created for the Italian population (Table S6).

The aim in developing a short form of the DERS, although it is a useful and validated instrument, is to create a valid instrument with adequate power to measure the underlying constructs, although having a smaller number of items.

The purpose is an attempt to remove similar and duplicate items from the original scale (DERS-36) to avoid possible boredom and frustration in participants, especially when used within battery of tests. Therefore, it remains necessary to obtain a shortened form which can explain the measured construct through a selected number of items.

Although the DERS focuses more on the negative emotions underlying emotion regulation, it is still one of the most efficient and widely used measurement instruments, and it is useful for epidemiological studies. Thus, another reason why it seems useful to create a short form of the scale is the possibility of its use for clinical or research purposes in association with other tests and questionnaires. Obtaining a shorter instrument allows its combined use in extensive studies of different aspects of an individual's emotions or, more generally, an individual's functioning.

For these reasons, in *Study 1*, the validity and reliability of the DERS were evaluated by assessing the consistency of the items to the original structure. Through a series of EFA and CFA analyses, a five-factor structure composed of 20 items was obtained (Table 2a). Of the six factors from the original structure, the items from the Strategies factor showed secondary saturations that were too high to be accepted (Barbaranelli, 2006; Barbaranelli & D'Olimpo, 2007). This result could suggest a poor ability to measure the Strategies factor within the Italian context. Indeed, the items of the Strategies factor saturated both on the Goals and the Awareness factor.

The values of the internal consistency (Cronbach's alpha) for the total scale were calculated ($\alpha = .90$), which also resulted in an adequate internal consistency for the five factorial scales, with values of α ranging between .84 and .92 (Table S3). The total scale's alpha had a value that is good, which means that the scale's reliability can be considered solid; the consistency of each factorial scale has alpha ranges from questionable to good, but this is could be due to the few numbers of items, as confirmed within the literature (Barbaranelli, 2006; Barbaranelli & D'Olimpo, 2007).

The correlations in *Study 1* showed that the Clarity factor is strictly related to the limited access to emotion regulation strategies, the difficulties engaging goal-directed behaviors, the difficulty in controlling impulses and the non-acceptance of emotional responses. Since a lack of control, self-confidence, impulse-control and focus ability play an important role in emotion regulation, we expected a strong correlation of these factors with emotional clarity. The results show a positive correlation between all these factors.

Interesting correlations were found with the Awareness dimension. Indeed, the lack of awareness affects the ability to engage goal-directed behaviors; moreover, a negative correlation was found between awareness and emotion regulation strategies, demonstrating that subjects with lower abilities to recognize their own emotions experience particular difficulties in accessing emotion regulation strategies. Non-acceptance showed a positive correlation with controlling impulses related to an altered emotional state, meaning that subjects who experience negative secondary emotions in response to their negative emotions demonstrate reactions of non-acceptance in regard to their discomfort, especially when emotions have occurred.

In *Study 2*, the concurrent validity of the instrument was examined using the ERQ and the PANAS positive affect score to measure the divergent validity, while the TAS-20 and the PANAS negative affect score were used to measure the convergent validity.

The total DERS-20 score was positively correlated with the total TAS-20 score, thus endorsing the validity of the DERS-20 construction. In addition, each of the subscales the DERS-20 were correlated, both significantly and in the expected direction. For example, the subscales that obtained the highest correlation values with the DERS-20 Clarity subscale were the TAS-20 scales. These results support our hypothesis and confirm the reliability and validity of the DERS-20 (see Table S5).

The correlations that have been established between the PANAS and the DERS-20 show how both instruments work in the expected directions. In fact, the DERS construct is linked to a difficulty in overcoming negative emotions and to their permanence in the individual; on the other hand, the presence of positive emotions is related to the ability to regulate one's own negative emotions. These results confirm the validity of the construction of the DERS-20 (Table S5).

There were some significant correlations between the ERQ subscales and the DERS-20 dimensions, which were substantial and more significant between the ERQ suppression dimension compared to the reappraisal dimension. This outcome may reflect the general, perceived maladaptively of expressive suppression compared to the reappraisal factor. These results support our hypothesis and suggest the validity of the measure. An interesting correlation was also found between the ERQ scales and the Awareness and Non-acceptance subscales (Table S5). A possible reason for this correlation is that individuals who have difficulty regulating their emotions need to use more strategies to neutralize their emotions than do other individuals and have an intrinsic lack of awareness and poor coping skills. Therefore, emotion regulation seems to be a mechanism allowing to cope with environmental demands, providing information about external situations or internal states (Jarymowicz & Imbir, 2015).

With regard to the limits of the present work, it is important to note that *Study 1*, which has a larger sample, lacks a comparison between the DERS-36 and the other measures to conduct a concurrent analysis that could confirm the validity of the construct in the Italian context as well. Future studies should include a separate sample from a clinical population to allow the investigation of the utility of the DERS-20 as a clinical outcome measure and examine, for example, whether scores are sensitive to therapeutic change.

Despite all the limitations, however, this study provides a reliable and validated version of a useful instrument for understanding the regulation of emotions in a nonclinical sample.

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