







dicating the extent to which each symptom bothered them in the last week on a Likert scale ranging from 0 ('not at all') to 4 ('extremely'). We used the SCL-90 to assess two global indices of psychopathology: i) the Global Severity Index (GSI) is an overall index of symptom severity and is the mean of all 90 items; and ii) the Positive Symptom Total (PST) is a count of all the items with non-zero responses and reveals the number of symptoms the respondent reports experiencing.

## Results

### Factorial structure of the Italian version

Given the relatively limited sample size and the availability of a clear four-factor model (Hofmann *et al.*, 2016), we decided to perform a confirmatory factor analysis (CFA) using the Maximum Likelihood (ML) estimator method. We relied on the same set of goodness-of-fit indices used by Hofmann and colleagues (2016). In addition to the typical chi-square statistic ( $\chi^2$ ; Bollen, 1989), we computed the root mean square error of approximation (RMSEA; values below 0.10 indicate adequate fit, while values below 0.06 indicate good or excellent fit; Browne

& Cudeck, 1993), the comparative fit index (CFI) and the non-normed fit Index (NNFI; for both of these indices, values greater than 0.90 indicate acceptable fit, while values greater than 0.95 indicate good or excellent fit; Bentler, 1990; Bentler & Bonett, 1980). The initial model, equal to that illustrated by Hofmann *et al.* (2016), showed an acceptable fit ( $\chi^2=437.79$ ,  $P<0.001$ ; RMSEA=0.061; CFI=0.93; NNFI=0.91). All standardized factor loadings were significant, ranging from 0.41 to 1.00 (all  $P<0.001$ ; see Table 2).

*Zero-order correlations.* We examined the zero-order associations between the IERQ subscales and demographic characteristics, intra-personal and interpersonal emotion regulation measures and self-reported symptoms of psychopathology (see Table 3). For each set of correlations, the Bonferroni correction for multiple comparisons was applied, by dividing the nominal alpha level (0.05) by the number of correlations computed. Only the correlations that survived the correction are reported and discussed below.

*Correlations with demographic variables.* In terms of demographic features, being female was associated with higher scores in the Enhancing Positive Affect subscale ( $P=0.002$ ), and education was positively correlated with

**Table 2. Factor loadings resulting from the confirmatory factor analysis (N=448).**

Items	Factors			
	SM	SO	EPA	PT
If I'm upset, I like knowing what other people would do if they were in my situation.	1.00	—	—	—
When I'm sad, it helps me to hear how others have dealt with similar feelings.	0.91	—	—	—
Seeing how others would handle the same situation helps me when I am frustrated.	0.76	—	—	—
Hearing another person's thoughts on how to handle things helps me when I am worried.	0.66	—	—	—
It makes me feel better to learn how others dealt with their emotions.	0.51	—	—	—
When I feel sad, I seek out others for consolation.	—	0.95	—	—
I look to others for comfort when I feel upset.	—	0.96	—	—
I look to other people when I feel depressed just to know that I am loved.	—	0.91	—	—
I look for other people to offer me compassion when I'm upset.	—	0.93	—	—
Feeling upset often causes me to seek out others who will express sympathy.	—	0.76	—	—
When I feel elated, I seek out other people to make them happy.	—	—	0.88	—
Because happiness is contagious, I seek out other people when I'm happy.	—	—	0.88	—
I like being in the presence of others when I feel positive because it magnifies the good feeling.	—	—	0.63	—
Being in the presence of certain other people feels good when I'm elated.	—	—	0.56	—
I like being around others when I'm excited to share my joy.	—	—	0.41	—
Having people telling me not to worry can calm me down when I am anxious.	—	—	—	0.90
When I am annoyed, others can soothe me by telling me not to worry.	—	—	—	0.83
It helps me deal with my depressed mood when others point out that things aren't as bad as they seem.	—	—	—	0.68
Having people remind me that others are worse off helps me when I'm upset.	—	—	—	0.66
When I am upset, others make me feel better by making me realize that things could be a lot worse.	—	—	—	0.66

SM, Social Modelling; SO, Soothing; EPA, Enhancing Positive Affect; PT, Perspective Taking.

the Soothing subscale, with higher scores in more educated participants ( $P=0.002$ ).

*Correlations with other interpersonal emotion regulation measures.* Demonstrating good convergent validity, all IERQ subscales were strongly and positively correlated with the subscales of the DIRE questionnaire which assessed interpersonal components of emotion regulation: namely, the Reassurance-Seek and Vent subscales (all  $P<0.001$ ). For intra-personal regulation, the Accept subscale was positively correlated with Perspective Taking ( $P=0.001$ ), whereas the Avoid subscale was positively associated with all IERQ subscales (all  $P<0.001$ ), with the exception of Soothing.

*Correlations with intra-personal emotion regulation.* Few correlations were found between the IERQ subscales and intra-personal emotion regulation strategies, suggesting that intra-personal and interpersonal components of emotion regulation did not overlap. With respect to the ERQ, Reappraisal was positively and significantly correlated with the Perspective Taking ( $P<0.001$ ) and Enhanc-

ing Positive Affect ( $P=0.002$ ). Instead, Suppression was not associated with any IERQ subscale.

*Correlations with difficulties in emotion regulation.* Several interesting correlations between the DERS and IERQ subscales were observed. First, the total DERS score and most of its subscales were significantly correlated with the IERQ subscales measuring Enhancing Positive Affect, Soothing and Social Modelling (see Table 3; all  $P<0.001$ ). In almost all cases, the correlations were positive, indicating that participants having higher scores on the IERQ subscales experienced more difficulty regulating emotions. In the case of Awareness, however, the correlations were negative, suggesting that participants having higher scores in the IERQ subscales had significantly less difficulties in being aware of their emotions. Concerning the other IERQ subscales, Perspective taking showed a slightly different pattern of results, with only a positive association with the Non-Acceptance subscale.

*Correlations with symptoms severity and level of psychopathology.* To investigate the relationship between the

**Table 3. Zero-order correlations. The asterisks indicate the correlations that survived the Bonferroni correction.**

	IERQ Enhancing Positive Affect (EPA)	IERQ Perspective Taking (PT)	IERQ Soothing (S)	IERQ Social Modelling (SM)
<b>A</b>				
<b>M (SD)</b>	<b>(<math>\alpha=0.81</math>)</b>	<b>(<math>\alpha=0.78</math>)</b>	<b>(<math>\alpha=0.85</math>)</b>	<b>(<math>\alpha=0.82</math>)</b>
Age	0.03	0.08	-0.07	-0.08
Gender (1=female)	0.14**	-0.07	-0.01	-0.01
Education	-0.02	0.06	0.15**	0.05
IERQ EPA	-	0.29**	0.35**	0.30**
IERQ PT	0.29**	-	0.52**	0.60**
IERQ S	0.35**	0.52**	-	0.64**
IERQ SM	0.30**	0.60**	0.64**	-
ERQ Reappraisal	0.14**	0.21**	-0.01	0.12
ERQ Suppression	-0.05	0.08	-0.09	-0.06
DERS Total	0.12	0.07	0.29**	0.19**
DERS Non-acceptance	0.18**	0.15**	0.25**	0.22**
DERS Goals	0.15**	0.07	0.27**	0.22**
DERS Impulse	0.17**	0.12	0.29**	0.20**
DERS Awareness	-0.20**	-0.11	-0.16**	-0.20**
DERS Strategies	0.11	0.01	0.33**	0.19**
DERS Clarity	0.02	0.02	0.11	0.09
DIRE Reassurance-Seek	0.27**	0.25**	0.61**	0.48**
DIRE Vent	0.17**	0.22**	0.40**	0.30**
DIRE Accept	0.06	0.16**	0.02	0.07
DIRE Avoid	0.22**	0.22**	0.08	0.17**
SCL-90 GSI	0.10	0.02	0.17**	0.15**
SCL-90 PST	0.08	0.06	0.16**	0.13*

SM, Social Modelling; S, Soothing; EPA, Enhancing Positive Affect; PT, Perspective Taking. \*\* $P<0.001$ .

IERQ and psychopathology, we tested the correlation between the Global Severity Index (GSI) and the Positive Symptom Total (PST) of the Symptom Checklist-90-Revised (Derogatis *et al.*, 1977) with the IERQ subscales Enhancing Positive Affect, Soothing and Social Modelling. The Soothing and Social Modelling factors resulted positively associated with both the SCL-90-GSI and SCL-90-PST (all  $P < 0.006$ ). No significant correlations were found for the Perspective Taking and Enhancing Positive Affect factors.

## Discussion and conclusions

In the present study, we developed an Italian version of the IERQ (Hofmann *et al.*, 2016) and investigated its psychometric properties and association with psychopathology. Results provided a first confirmation of the fact that the Italian IERQ is a reliable and valid self-report measure suitable for the assessment of IER. The confirmatory factor analysis of the Italian version produced a satisfactory replication of the four factor structure illustrated by Hofmann *et al.* (2016), including: Enhancing Positive Affect (*i.e.* inclination to look to others to enhance feelings of happiness and joy), Perspective Taking (*i.e.* using others to be reminded not to worry and that there are people who are in a worse condition), Soothing (*i.e.* looking to others for feelings of comfort and sympathy) and Social Modelling (*i.e.* observing other people to see how they deal with that given situation). With respect to reliability, internal consistency coefficients of all subscales were comparable to those obtained using the original version. Finally, the correlations with other measures revealed the validity and the clinical relevance of the questionnaire.

Regarding the scale's validity, several key elements emerged. Namely, clear and strong correlations emerged between the IERQ factors and the interpersonal subscales Vent and Reassurance-Seek of the theory-based questionnaire DIRE (Dixon-Gordon *et al.*, 2018). These results account for strong convergent validity of the IERQ with another IER measure.

With respect to intra-personal regulation, we observed a relative independence between interpersonal and intra-personal components of emotion regulation. Regarding the correlations with the ERQ, Suppression was not associated with any of the IERQ factors, whereas Reappraisal was correlated with Perspective Taking, Enhancing Positive Affect and Social Modelling. In the case of intra-personal subscales of the DIRE questionnaires, the adaptive strategy Accept was associated only with the subscale Perspective Taking, whereas the maladaptive strategy Avoid was positively associated with all the IER subscales, with the exception of Soothing. Taken together, these results account for a relative independence from IER from intra-personal regulation strategies, resulting in questions regarding the nature of interpersonal regulation.

The relationships of IERQ subscales with existing measures also provide some insight into the nature of IER as measured by the IERQ. When considering the implications of IER research for emotional disorders conceptualization and treatment, early models of IER have started from the hypothesis of a positive adaptive value of IER as a mediator factor in the widely described negative association between depression and social support (Christensen & Haynos, 2020; Dagnino *et al.*, 2017; Marroquín, 2001). Subsequent contributions, instead, have observed negative consequences of IER in perpetuating psychopathological symptoms, such as with exaggerated dependency on others to regulate one's own emotions (Hoffman, 2014). This would be also in line with the idea of individual development as a transition from a complete dependence on other (caregiver) to be regulated, to a progressive independence in emotion regulation (Barthel *et al.*, 2018). The data of the present study may contribute to this debate on the nature of interpersonal emotion regulation in several directions. First, the observation of significant correlations between Soothing and Social Modelling with self-reported psychopathology would clearly account for a negative adaptive value of such strategies. In line with this hypothesis, both strategies also strongly correlated with the difficulties in IER evaluated with the DIRE questionnaire (Dixon-Gordon *et al.*, 2018; Messina *et al.*, 2022, in press). In the case of Perspective Taking, instead, we did not observe significant associations with psychopathology, and observing positive correlations with the intra-personal regulation strategies of Reappraisal (evaluated with the ERQ) and Accept (evaluated with the DIRE questionnaire) which are considered effective strategies for regulating emotions and associated with better health outcomes (Aldao *et al.*, 2010; Berking & Wupperman, 2012; Faustino *et al.*, 2020; Werner & Gross, 2010). The factor Enhancing Positive Affect showed a similar pattern of no association with psychopathology but showed a less clear association with positive aspects of emotion regulation. In sum, the prevalent emerging impression is that IER can be maladaptive or adaptive depending on the specific adopted strategy and future studies should clarify the adaptive value of specific IER strategies.

Despite the relevance and merits of this study, some limitations should be acknowledged. First, it should be noted that our research represents a first step towards a complete validation study, since we did not investigate the ability of the model to predict new data. Second, although the sample was large, it was made exclusively of native white Italian individuals, with a bias toward females. Most importantly, the sample was composed of non-clinical subjects, and the investigation in clinical samples would be important in order to draw conclusions regarding the adaptive/maladaptive value of IER strategies. Finally, all measurements for this study relied on self-report data.

In sum, IERQ can extend actual emotion regulation



assessment by including interpersonal processes. Considering both the intrapersonal and interpersonal sides of emotion regulation may offer a more complete view of how emotions are treated in healthy and clinical populations. Many psychological disorders are characterized by abnormal social emotional experiences, with some individuals experiencing excessive avoidance or excessive relying on others to sooth their affective states. In the context of psychotherapy, for example, interpersonal influences of emotion regulation are clearly observable in phenomena such as patients' overreliance or underuse of the therapist (Talia *et al.*, 2019) or of the group (Di Riso *et al.*, 2011; Marogna & Caccamo, 2014) to regulate emotions. We hope that by expanding the IERQ to the Italian language, that we can continue to shed light on such processes and work towards better understanding emotion regulation from an interpersonal point of view.

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