Current Psychology
https://doi.org/10.1007/s12144-022-04186-5

Psychometric properties of interpersonal emotion regulation questionnaire in Turkish adolescents

Elcin Ray-Yol[1] · Ecem Yedidağ[2] · Meryem Söğüt-Kahramanlar[3] · Ahmet Berk Özdemir[4] · Ayse Altan-Atalay[4]

Accepted: 14 December 2022
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2022

Abstract

Interpersonal Emotion Regulation (IER) refers to a group of emotion regulation strategies through which people regulate their emotions by utilizing the presence of others. Studies focusing on IER have recently increased, probably due to the availability of a psychometrically sound IER measure, the Interpersonal Emotion Regulation Questionnaire (IERQ; Hofmann et al. *Cognitive Therapy and Research*, *40*(3), 341–356, 2016). The present study sought to examine the psychometric properties of the Turkish version of IERQ with a sample of Turkish adolescents. Results confirmed the four-factor structure of IERQ with a group of 269 adolescents between ages 14 to 17. Turkish adolescent version of IERQ showed adequate levels of reliability and construct validity through the subscales' significant correlations with dimensions of intrapersonal emotion regulation and social problem-solving. Adolescence is a period where close relationships with peers are initiated, and relying on peers at times of distress becomes prominent. The adolescent version of IERQ provides the opportunity to investigate IER patterns in adolescents, which is crucial for their psychological adjustment.

Keywords Interpersonal emotion regulation questionnaire · Turkish adolescents · Validity · Reliability

Emotion regulation (ER) refers to implementing cognitive or behavioural strategies to alter the duration, magnitude, and/or the nature of emotions experienced by either the self or the others (Gross, 1998). ER covers both intrapersonal and interpersonal processes. Intrapersonal ER refers to cognitive or behavioral strategies through which individuals modify their emotions themselves relying on their inner resources. Intrapersonal ER strategies include, but are not limited to, blaming others, positive reappraisal, acceptance, seeking distraction, and ignoring (Garnefski et al., 2001; Kraaij & Garnefski, 2019). Contrarily, interpersonal ER (IER) incorporates strategies that help individuals regulate the emotions of either the self (intrinsic) or others (extrinsic) through their interactions with others (Gross & Thompson, 2007) or utilizing the presence of others (Hofmann et al., 2016; Zaki & Williams, 2013). Previous studies have indicated age related changes in the utilization of different ER strategies (Sanchis-Sanchis et al., 2020) and highlighted adolescence as the period that has crucial importance for the development of ER capacities (Silvers, 2022). Adolescence is a developmental period where intimate interactions and relationships with peers are formed, and reliance on peers becomes prominent (Parker et al., 2006). Adolescents seek heightened approval, support, and feedback from their peers (Nesi et al., 2018), indicating the tendency to utilize social relationships to manage their negative emotional state. The current study, therefore, aims to validate the IER scale for adolescents to provide the opportunity to investigate IER patterns and their relationships with psychological adjustment among adolescents.

Recently, Hofmann et al. (2016) have proposed an IER model and constructed a psychometrically valid and reliable questionnaire (Interpersonal Emotional Regulation Questionnaire; IERQ) to measure IER strategies. This new model consists of four IER strategies through which individuals use other people to upregulate or downregulate their emotions via social interactions (Hofmann et al., 2016).

✉ Elcin Ray-Yol
raye@uoguelph.ca

[1] Department of Psychology, University of Guelph, 50 Stone Rd E, Guelph, ON N1G 2W1, Canada

[2] Department of Psychology, Erasmus University Rotterdam, Rotterdam, Netherlands

[3] Department of Psychology, Ibn Haldun University, Istanbul, Turkey

[4] Department of Psychology, Koç University, Istanbul, Turkey

Published online: 24 December 2022

The first strategy, the "enhancement of positive affect" (EPA), corresponds to approaching others when one is in a positive mood state to enhance their joy and happiness. The second strategy, "perspective taking" (PT), refers to receiving assurance from others to be reminded not to worry when one is in a negative mood state. The third strategy, "soothing" (S), involves seeking sympathy and comfort from others at times of distress. The last strategy, "social modeling" (SM), refers to observing and mimicking others' coping strategies to deal with stressful situations (Hofmann et al., 2016). Research on IERQ revealed that it is a reliable and valid instrument for the assessment of IER strategies. Even though IERQ has been translated into different languages such as Persian, German, and Turkish (Abasi et al., 2021; Gökdağ et al., 2019; Koç et al., 2019; Pruessner et al., 2020) and provides valuable information regarding the IER strategies, IER patterns among adolescent populations has yet to be explored. Examination of the use of IER strategies during this specific developmental period is crucial since adolescence is characterized by an increase in the importance of interpersonal relationships and more frequent use of others as a source of support (Bokhorst et al., 2010; Sadovnikova, 2016). Thus, the current study aims to investigate the psychometric properties of IERQ in an adolescent sample.

Similar to intrapersonal ER strategies, IER strategies were also proposed to play a role in the development of psychological problems (Gökdağ, 2021; Gökdağ & Naldöken, 2021). More specifically, Hofmann (2014) suggested that IER use is associated with greater vulnerability to emotional disorders since relying on external sources to manage difficult emotions may hamper the development of adaptive intrapersonal ER capacities, which are extremely crucial for resilience. However, empirical studies have indicated contradictory results in terms of the relationship between IER and psychological distress. Hofmann et al. (2016), for example, reported a positive association between frequent use of certain IER strategies (e.g., soothing, perspective taking, and social modeling) and psychological distress (e.g., anxiety). Likewise, a recent study conducted with Iranian adults yielded a positive correlation between the dimensions of IER and depression except for PT (Abasi et al., 2021), besides a positive relationship between soothing and social modeling dimensions of IER and anxiety. However, studies that used IERQ in Turkish samples did not support this pattern. Altan-Atalay and Saritas-Atalar (2019), for example, failed to find significant associations of depression with soothing and social modeling, in addition to a lack of significant relationships between enhancement of positive affect, perspective taking, and social modeling dimensions of IER and anxiety. Likewise, Gökdağ et al. (2019) found no association between dimensions of IER and psychological distress (i.e., anxiety, depression, and stress) except for the negative association of soothing. Similarly, both Koç et al. (2019) and Ray-Yol and Altan-Atalay (2020) reported only soothing subscale of IER to have a significant association with psychological distress. Additionally, studies have indicated significant positive associations only between soothing and social modeling dimensions of IER and fear of negative evaluation and social anxiety symptoms (Altan-Atalay & Ray-Yol, 2021; Akkuş & Peker, 2021). Akkuş and Peker (2021) also found that enhancement of positive affect was positively and soothing was negatively associated with negative mood regulation expectancies. Taken together, existing evidence indicates that frequently used IER strategies have the potential to play a role in the etiology of psychological disorders, and cultural context might influence the association between IER strategies and psychological disorders. However, it is important to highlight that there is not enough evidence of cultural differences regarding the association between IER strategies and psychological disorders.

In addition to psychological distress, evidence exists regarding the association of IER dimensions with intrapersonal ER strategies. For instance, all dimensions of IER indicated a positive relationship with reappraisal, positive reframing, denial, and venting (Hofmann et al., 2016). Likewise, another study found a positive association between reappraisal and dimensions of IER, except for soothing (Koç et al., 2019). The same study also reported the negative association of suppression with the enhancement of positive affect and soothing dimensions of IER (Koç et al., 2019). Gökdağ et al. (2019) found a positive association between soothing and maladaptive ER strategies (self-blame, rumination, other-blame, and catastrophizing). Similarly, Ray-Yol et al. (2020) demonstrated a positive relationship between social modeling and soothing dimensions of IER and maladaptive ER strategies.

Finally, despite the lack of direct empirical evidence, IER dimensions may also have associations with social problem-solving (SPS) capacity, which refers to a set of processes that people use to come up with solutions to problem situations (D'Zurilla et al., 2002). SPS subsumes both the individuals' problem orientation (appraisal regarding the manageability of the problem and the effectiveness of own resources at the face of the problems) and the affective, cognitive, and behavioral attempts at problem-solving. Among the factors of SPS, especially the negative problem orientation (NPO), which refers to the perception that one's problems are not soluble and one is not equipped with the skills to deal with the current problems (Zurilla et al., 2002), shows similarities with negative mood regulation expectancies. According to Hofmann (2014), heavy reliance on IER strategies at times of distress may have a negative impact on the individual's beliefs in their own potential for dealing with difficult emotions. Considering the results of studies revealing significant associations between IER dimensions and the negative mood regulation expectancies (individuals beliefs in their capacity

for dealing with difficult emotions) (Akkuş & Peker, 2021; Altan-Atalay & Ray-Yol, 2019; Altan-Atalay & Saritas-Atalar, 2019; Ray-Yol & Altan-Atalay, 2020), there is good reason to believe that IER dimensions will reveal similar associations with SPS.

Even though the intrapersonal ER strategies have been extensively studied among adolescent populations (e.g., Schäfer et al., 2017; Shapero et al., 2016), there is a lack of psychometrically valid and reliable IER instruments that can be used among adolescents. Thus, validation of IERQ among adolescents aims to address the existing gap in IER literature by enabling ER researchers to examine the associations between IER and other constructs (e.g., problem orientation and psychological adjustment) that are critical in the adolescence phase. Moreover, as Turkish culture regards collectivistic values, Turkish adolescents are more likely to hold an interdependent self-construal where interdependence with others and interpersonal relationships are highly valued (Markus & Kitayama, 1991, 2010). In such a cultural context, adolescents are expected to be more sensitive to social inputs from their significant others, such as family members and peers, at times of distress (Liddell & Williams, 2019). The validation of the current scale will help to investigate the use of IER strategies and the effectiveness of engaging in IER strategies among Turkish adolescents. Hence, the main objective of the current study is to investigate the psychometric properties of IERQ in Turkish adolescents. More specifically, IERQ is expected to yield the same four-factor structure in adolescent populations. Also, the convergent validity of the scale will be assessed by examining its correlation patterns with measures of intrapersonal ER strategies, SPS, and psychological distress.

Method

Participants and procedure

The initial sample of the study consisted of 335 high school students from three different high schools in urban areas in Istanbul, Turkey. After excluding missing data and outliers, 269 (141 females, 128 males) remained in the final data set. The mean age for the girls and boys was 14.78 ($SD = .95$) and 14.80 ($SD = .90$) respectively. Only students who were native Turkish speakers were eligible to participate in the study.

Approval was obtained from the Research Ethics Board of the affiliated university and the Ministry of Education before data collection. The researchers contacted principals and counselling services of three high schools, one private and two state schools. Parental permissions were not obtained; however, students signed forms stating that they were aware that participation is based on volition and that their responses would be analyzed for scientific purposes. Students then filled out questionnaires via the paper-pencil method during class time under the supervision of school counsellors. At least one researcher was present at schools during the data collection to answer participants' inquiries. The completion of the survey took approximately 30 minutes.

Measures

Interpersonal Emotion Regulation Questionnaire (IERQ; Hofmann et al., 2016) IERQ is a measure composed of 20 items aimed at assessing four different interpersonal emotion regulation strategies, namely "enhancing positive affect," "perspective taking," "soothing," and "social modeling." Each subscale has five items rated on a 5-point Likert scale, and higher scores on the measure suggest a higher tendency to rely on interpersonal emotion regulation. The original scale showed an adequate internal consistency with alpha coefficients for each subscale ranging from .85 to .91. The subscales moderately correlated with other established emotion regulation, depression, and anxiety measures (Hofmann et al., 2016). The current study utilized the Turkish version of the measure adapted by Gökdağ et al. (2019). The Turkish version of the scale was validated among Turkish adults ($M = 26.63$) and included 20 items and four factors same as in the original scale. The subscales of the Turkish version of the scale indicated a good internal consistency with alpha coefficients ranging from .81 to .89. It also demonstrated strong convergent and discriminant validity.

Cognitive Emotion Regulation Questionnaire (CERQ) The CERQ (Garnefski et al., 2001) is a measure consisting of 36 items which assess the tendency to use five adaptive (acceptance, positive refocus, putting into perspective, positive reappraisal, and refocus on planning) and four maladaptive (self-blame, rumination, other-blame, and catastrophizing) cognitive emotion regulation strategies; with four items corresponding to each subscale. The items are rated on 5-point Likert scales, and higher scores on the subscales imply a greater inclination to use those emotion regulation strategies. The original measure showed satisfactory internal consistency, with alpha coefficients ranging between .68 and .86 for the subscales. The scale also demonstrated convergent and discriminant validity. The current study used the Turkish version of CERQ adapted by Tuna and Bozo (2012), yielding alpha coefficients of the subscales ranging between .71 and .82. Construct, criterion-related validity, and internal consistency properties were similar to the original measure.

Social Problem-Solving Inventory Revised (SPSI-R) The SPSI-R (D'Zurilla et al., 2002) is a measure consisting of 52 items to be rated on a 5-point Likert scale, aimed at

assessing five constructs related to individuals' SPS skills, such as negative problem orientation (NPO, with ten items), positive problem orientation (PPO, with five items), rational problem solving (with 20 items), impulsivity/carelessness style (with ten items), and avoidance style (with seven items). Higher scores on each subscale suggest a higher likelihood of possessing that attribute. The Turkish version of the scale (Eskin & Aycan, 2009) yielded alpha coefficients ranging from .92 to .67 and adequate concurrent and criterion-related validity.

Depression Anxiety Stress Scale (DASS) The DASS (Lovibond & Lovibond, 1995) consists of 42 items to be rated on a 4-point Likert scale ranging from 0 to 3, which assesses emotional distress in three subdimensions: depression (e.g., depressed mood, loss of self-esteem), anxiety (e.g., the anticipation of negative events), and stress (e.g., enduring state of high arousal). Higher scores on DASS suggest higher levels of emotional distress. Besides satisfactory discriminant and convergent validity, DASS revealed adequate levels of internal consistencies (.91 for depression, .81 for anxiety, and .89 for stress). The current study used the Turkish version of the scale (Bilgel & Bayram, 2010), which displayed internal consistency coefficients similar to the original scale (.92 for depression, .86 for anxiety, and .88 for stress). It also revealed sound construct and convergent validity.

Results

The data set was examined for missing values, and 68 participants were excluded due to missing data. Next, the data were screened for skewness (ranging between −.904 and .307), kurtosis (ranging between −.913 and .964), and outliers prior to the analyses. Responses from six more participants were deleted due to being either univariate or multivariate outliers. Confirmatory factor analysis was employed using AMOS (Byrne, 2016) to examine whether the data confirms the original factor structure. The model fit was assessed through the comparative fit index (CFI), chi-square/df ratio (CMIN/DF), root-mean square error of approximation (RMSEA), standardized root means square (SRMR), normed-fit index (NFI), and the adjusted goodness-of-fit statistic (AGFI). For the CFI, values higher between 0.95 and 1.00 show an excellent fit, but values between .90 and .95 indicate an acceptable fit (Costa & Sarmento, 2019; Hu & Bentler, 1999). The RMSEA index should be less than 0.05 for a good model fit; however, values less than 0.08 are also acceptable (Hooper et al., 2008; Hu & Bentler, 1999). The SRMR should be less than .10 (Beauducel & Wittmann, 2005). NFI value of .80 and above and AGFI values of .90 and above indicate acceptable fitting models (Hooper et al., 2008). Pearson's correlation was used to assess convergent validity using IBM SPSS 26, however based on Cohen's (1988) guidelines of Pearson's r, only the correlation coefficients above .30 will be evaluated as indicator of convergent validity since they are considered moderate to high correlations.

Confirmatory factor analysis

The results of CFA indicated an acceptable fit to the proposed factor structure (χ^2 (164) = 326.126, $p < 0.001$ χ^2 / df = 1.99, GFI = .90, AGFI = .89, NFI = .89, CFI=. 90, RMSEA = .06 (.05–.07), SRMR = .07), with factor loadings of items ranging between .42 and. 82 (see Fig. 1).

Reliability analysis

The Cronbach's alpha coefficient for the total scale was .86. Internal consistency coefficients of the subscales were .78, .63, .80, and .80 for enhancement of positive affect, perspective taking, soothing, and social modeling, respectively. In sum, the results indicated adequate internal consistency both for subscales and item-total scale in the adolescent sample based on criteria (above .60) suggested by Nunnally (1967).

Convergent validity

Evidence for the convergent validity of IERQ was obtained through a series of Pearson's correlations, which revealed that enhancement of positive affect has significant positive relationships with adaptive cognitive ER strategies (e.g., positive refocusing, $r = .20$, $p = .001$, positive reappraisal,

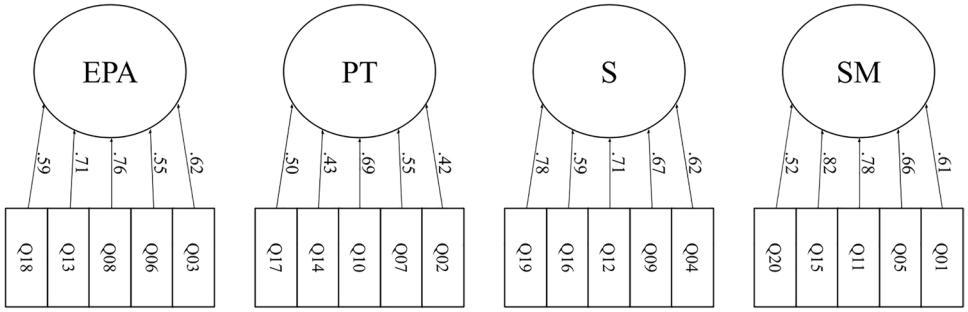

Fig. 1 CFA Solution for IERQ with Standardized Beta Coefficients. *Note*. EPA =Enhancing Positive Affect, PT = Perspective Taking, S=Soothing, SM = Social Modeling

$r = .28$, $p < .001$, putting into perspective, $r = .23$, $p < .001$, and refocus on planning, $r = .26$, $p < .001$) in addition to positive problem orientation, $r = .26$, $p < .001$ and rational problem-solving style, $r = .24$, $p < .001$, which are adaptive SPS dimensions. Enhancement of positive affect also demonstrated significant positive associations with self-blame, $r = .13$, $p = .01$, and rumination, $r = .23$, $p < .001$, dimensions of maladaptive ER. Perspective taking, on the other hand, yielded positive associations only with ER strategies that are categorized as adaptive (e.g., acceptance, $r = .17$, $p = .017$, positive refocusing, $r = .31$, $p < .001$, positive reappraisal, $r = .26$, $p < .001$, and putting into perspective, $r = .38$, $p < .001$). Frequent use of this strategy by adolescents was also found to have links with positive problem orientation, $r = .19$, $p = .001$, impulsive/careless style, $r = .14$, $p = .015$, avoidance style, $r = .14$, $p = .015$, and rational problem-solving style, $r = .15$, $p = .013$. Soothing was positively associated with self-blame, $r = .21$, $p < .001$, catastrophizing, $r = .36$, $p < .001$, rumination, $r = .28$, $p < .001$, and other-blame, $r = .19$, $p = .001$, dimensions of maladaptive ER. This IER strategy was also linked to positive refocusing, $r = .15$, $p = .013$, and putting into perspective, $r = .18$, $p = .002$, dimensions of adaptive ER as well as indicated positive correlations with negative problem orientation, $r = .25$, $p < .001$, and impulsive/careless style, $r = .19$, $p = .001$, components of SPS. It is important to note that only the soothing dimension of IER demonstrated positive relationships with depression, $r = 15$, $p = .013$, stress, $r = .14$, $p = .015$, and anxiety, $r = 19$, $p = .001$. Lastly, social modeling was positively correlated with all components of adaptive ER as well as with dimensions of maladaptive ER except for other-blame. This IER strategy also yielded positive relationships with positive problem orientation, $r = .21$, $p < .001$, negative problem orientation, $r = .18$, $p = .002$, and rational problem-solving style, $r = .31$, $p < .001$ (see Table 1).

Discussion

Adolescence is a period during which social relationships become very influential in the individuals' well-being (Danneel et al., 2019). Accordingly, adolescents become more inclined to utilize social relationships in the regulation of their emotions. Therefore, the presence of a psychometrically sound IER scale for adolescents is pivotal. Considering this need, the current study investigated the psychometric characteristics of the IERQ among Turkish adolescents. Similar to the original version (Hofmann et al., 2016), the current results indicated a four-factor model, suggesting that IERQ harbors four different IER strategies, namely enhancement of

Table 1 Descriptive statistics, correlations of study variables with IERQ and their internal consistency scores

Variable	M	SD	SED	α	EPA	PT	S	SM
EPA	20.19	3.60	.23	.78	–	.14*	.45**	.37**
PT	13.62	3.60	.23	.63		–	.27**	.49**
S	15.22	4.63	.28	.80			–	.43**
SM	15.48	4.30	.26	.80				–
Self-blame	11.70	3.31	.20	.70	.13*	.07	.21**	.13*
Acceptance	12.10	3.38	.20	.58	.11	.17**	.15*	.15*
Rumination	13.73	3.64	.22	.74	.23**	.06	.28**	.27**
Positive refocusing	12.10	4.18	.25	.79	.20**	.31**	.15*	.18**
Refocus on planning	15.35	3.62	.22	.75	.26**	.02	−.02	.15*
Positive reappraisal	12.96	3.48	.21	.64	.28**	.26**	.11	.23**
Putting into perspective	11.78	3.65	.22	.69	.23**	.38**	.18**	.23**
Catastrophizing	10.56	3.82	.23	.70	−.04	.09	.36**	.20**
Other-blame	9.72	3.56	.21	.76	−.16**	.11	.19**	.06
PPO	16.38	3.99	.05	.65	.26**	.19**	.03	.21**
NPO	27.17	8.78	.04	.87	.10	−.01	.25**	.18**
Impulsive/careless style	24.23	7.28	.44	.81	−.05	.14*	.19**	−.01
Avoidance style	17.53	5.29	.32	.73	−.05	.14*	.10	.05
RPS	63.53	14.53	.90	.88	.24**	.15*	.08	.31**
Depression	15.52	10.53	.64	.92	−.06	−.01	.15*	.03
Anxiety	14.26	9.46	.57	.89	−.05	.09	.19**	.06
Stress	18.87	9.12	.56	.88	.05	−.07	.14*	.06

EPA Enhancing Positive Affect, *PT* Perspective Taking, *S* Soothing, *SM* Social Modeling, *RPS* Rational Problem-solving Style, *PPO* Positive problem orientation, *NPO* Negative problem orientation

* $p < .05$; ** $p < .01$

positive affect, perspective taking, soothing, and social modeling. Results also demonstrated that the adolescent version of the IERQ has satisfactory levels of internal consistency for the total scale and subscales.

Findings regarding the convergent validity of the adolescent version of IERQ revealed the complementary nature of intrapersonal and interpersonal ER strategies. First, the current results demonstrated that perspective taking has significant positive associations with positive refocusing and putting into perspective strategies of CERQ. This finding is meaningful given that perspective taking (utilization of others to be reminded not to worry and that other people have it worse), positive refocusing (trying to focus on pleasant and positive thoughts after a negative life event) and putting into perspective (relativizing the negative event by comparing it to others) include a change in the appraisal of a situation and share similarities in nature (Feliu-Soler et al., 2017).

Furthermore, the soothing dimension is positively associated with catastrophizing. Catastrophizing, as a maladaptive cognitive emotion regulation strategy, is only paying attention to negative aspects of the events in addition to speculating worst future outcomes. (Domaradzka & Fajkowska, 2018). Previous studies showed a similar trend in the association between soothing and catastrophizing. For instance, Gökdağ et al. (2019) demonstrated that soothing was associated with depression, anxiety, and catastrophizing. It is argued that people struggling with negative emotional state cannot manage their emotions by themselves. Eventually, they start looking for other people's help to find relief, resulting in a vicious cycle (Gökdağ et al., 2019). In other words, people dwelling on negative aspects of experiences may rely more on other people's comfort and sympathy to regulate their anxiety. However, the use of safety people may serve as an avoidance strategy and perpetuate the maladaptive thinking process in the long run. Therefore, finding that soothing has positive associations with catastrophizing is meaningful.

Next, an examination of the associations between IERQ dimensions and measures of psychological distress indicated weak associations, which are in line with the previous studies on adult populations (Koç et al., 2019). Among the IERQ dimensions, only soothing demonstrated significant positive associations with depression, stress, and anxiety. More specifically, adolescents who tended to use soothing more frequently reported elevated anxiety, depression, and stress levels. People relying on soothing may perceive themselves as incompetent in coping with stressful situations (Altan-Atalay & Ray-Yol, 2021; Ray-Yol & Altan-Atalay, 2020), which is also supported by the significant association between soothing and NPO. As a result, they may perceive the problem as unsolvable or uncontrollable and have difficulty actively dealing with their problems, eventually making them vulnerable to anxiety and depression.

Although this study provides concrete evidence for the psychometric validity and reliability of IERQ among Turkish adolescents, it suffers from several limitations that should be considered for future studies. First, given the importance of divergent validity for standardization studies, this study does not include any other questionnaire for assessing the divergent validity of IERQ. Additionally, we could not perform a test-retest reliability analysis which is important for the internal validity of the results. Our data were generally based on non-clinical adolescents who do not have diagnosed emotional disorders, limiting the external validity of the present findings for the clinical population. Our data were solely gathered through self-reports of adolescents who are susceptible to memory biases and social desirability. Another shortcoming is the relatively low internal consistency of the perspective taking dimension. Lower reliability for perspective taking subscale may be explained through the specific characteristic of adolescents. Although earlier reports indicate perspective taking to show significant increases in adolescence (Hall et al., 2021), a significant decrease was observed in the the adolescents use of this strategy in the last decade (Konrath et al., 2011), which may partially explain the relatively low reliability coefficients. For the current study the low internal consistency indicates that the study results should be investigated with caution. Additionally, the cross-sectional design of the study does not yield causal relationships but only correlational linkages.

As a recommendation for future studies, additional scales for perceived social support and perspective-taking should be used to test the divergent validity of IERQ among Turkish adolescents. Moreover, there is a need for further assessment of convergent validity through examination of the assessment between IER dimensions and certain aspects of interpersonal relationships such as reassurance seeking and use of humor. Considering the study's cross-sectional design, longitudinal studies may yield a more precise direction among study variables. Additionally, Turkish adolescents from diverse backgrounds should be included in the sample to increase the generalizability of the results. Lastly, a test-retest reliability analysis is needed to ensure the internal validity of the study. Overall, the present study demonstrated that the Turkish version of IERQ is a promising and well-validated instrument for Turkish adolescents.

Data availability The dataset generated during and/or analysed during the currennt study are available from the corresponding author on reasonable request.

Declarations

Ethics approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the Koc University ethical committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent to participate Informed consent was obtained from all participants.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Abasi, I., Hofmann, S. G., Kamjou, S., Moradveisi, L., Motlagh, A. V., Wolf, A. S., ... & Saed, O. (2021). Psychometric properties of interpersonal emotion regulation questionnaire in nonclinical and clinical population in Iran. *Current Psychology*, 269. https://doi.org/10.1007/s12144-021-02191-8

Akkuş, K., & Peker, M. (2021). Exploring the relationship between interpersonal emotion regulation and social anxiety symptoms: The mediating role of negative mood regulation expectancies. *Cognitive Therapy and Research, 46*, 287–301. https://doi.org/10.1007/s10608-021-10262-0

Altan-Atalay, A., & Ray-Yol, E. (2019) *Interpersonal emotion regulation strategies and negative mood regulation expectancies: Moderating effect of adaptive cognitive emotion regulation.* [Poster presentation]. World Conference of Behavioral and Cognitive Therapies, Berlin, Germany.

Altan-Atalay, A., & Ray-Yol, E. (2021). Interpersonal and intrapersonal emotion regulation strategies: How do they interact and influence fear of negative evaluation? *Current Psychology, 649*. https://doi.org/10.1007/s12144-021-01810-8

Altan-Atalay, A., & Saritas-Atalar, D. (2019). Interpersonal emotion regulation strategies: How do they interact with negative mood regulation expectancies in explaining anxiety and depression? *Current Psychology, 41*(1), 379–385. https://doi.org/10.1007/s12144-019-00586-2

Beauducel, A., & Wittmann, W. W. (2005). Simulation study on fit indexes in CFA based on data with slightly distorted simple structure. *Structural Equation Modeling, 12*(1), 41–75. https://doi.org/10.1207/s15328007sem1201_3

Bilgel, N., & Bayram, N. (2010). Turkish version of the depression anxiety stress scale (DASS-42): Psychometric properties. *Archives of Neuropsychiatry/Noropsikiatri Arsivi, 47*(2), 118–126. https://doi.org/10.4274/npa.5344

Bokhorst, C. L., Sumter, S. R., & Westenberg, P. M. (2010). Social support from parents, friends, classmates, and teachers in children and adolescents aged 9 to 18 years: Who is perceived as most supportive? *Social Development, 19*, 417–426. https://doi.org/10.1111/j.1467-9507.2009.00540.x

Byrne, B. M. (2016). *Structural equation modeling with AMOS: Basic concepts, applications and programming (3rd edition)*. Routledge.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Costa, V., & Sarmento, R. P. (2019). Confirmatory factor analysis: A case study. arXiv Preprint arXiv:1905.05598. Retrieved from https://arxiv.org/ftp/arxiv/papers/1905/1905.05598.pdf

D'Zurilla, T. J., Nezu, A. M., & Maydeu-Olivares, A. (2002). *The social problem-solving inventory-revised (SPSI-R): Technical manual*. MHS.

Danneel, S., Colpin, H., Goossens, L., Engels, M., Leeuwen, K. V., Noortgate, W. V. D., & Verschueren, K. (2019). Emotional school engagement and global self-esteem in adolescents: Genetic susceptibility to peer acceptance and rejection. *Merrill-Palmer Quarterly, 65*(2), 158–182. https://doi.org/10.13110/merrpalmquar1982.65.2.0158

Domaradzka, E., & Fajkowska, M. (2018). Cognitive emotion regulation strategies in anxiety and depression understood as types of personality. *Frontiers in Psychology*, *9*, 856. https://doi.org/10.3389/fpsyg.2018.00856

Eskin, M., & Aycan, Z. (2009). The adaptation of the revised social problem-solving inventory into Turkish: A reliability and validity analysis. *Turkish Journal of Psychology, 12*(23), 11–13.

Feliu-Soler, A., Reche-Camba, E., Borràs, X., Pérez-Aranda, A., Andrés-Rodríguez, L., Peñarrubia-María, M. T., ... & Luciano, J. V. (2017). Psychometric properties of the Cognitive Emotion Regulation Questionnaire (CERQ) in patients with fibromyalgia syndrome. *Frontiers in Psychology*, *8*, 2075. https://doi.org/10.3389/fpsyg.2017.02075

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences, 30*(8), 1311–1327. https://doi.org/10.1016/S0191-8869(00)00113-6

Gökdağ, C. (2021). How does interpersonal emotion regulation explain psychological distress? The roles of attachment style and social support. *Personality and Individual Differences, 176*, 110763. https://doi.org/10.1016/j.paid.2021.110763

Gökdağ, C., & Naldöken, B. (2021). Kişilerarası duygu düzenlemenin kişilik özel-likleri ve psikopatoloji belirtileriyle ilişkisi. *Klinik Psikiyatri Dergisi, 24*(1), 41–52. https://doi.org/10.5505/kpd.2020.79106

Gökdağ, C., Sorias, O., Kiran, S., & Ger, S. (2019). Adaptation of the interpersonal emotion regulation questionnaire to the Turkish language and investigation of its psychometric properties. *Turkish Journal of Psychiatry, 30*(1), 57–66. https://doi.org/10.5080/u23067

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271–299. https://doi.org/10.1037/1089-2680.2.3.271

Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–24). Gilford Press.

Hall, H. K., Millear, P. M. R., Summers, M. J., & Isbel, B. (2021). Longitudinal research on perspective taking in adolescence: A systematic review. *Adolescent Research Review, 6*(2), 125–150. https://doi.org/10.1007/s40894-021-00150-9

Hofmann, S. G. (2014). Interpersonal emotion regulation model of mood and anxiety disorders. *Cognitive Therapy and Research, 38*, 483–492. https://doi.org/10.1007/s10608-014-9620-1

Hofmann, S. G., Carpenter, J. K., & Curtiss, J. (2016). Interpersonal emotion regulation questionnaire (IERQ): Scale development and psychometric characteristics. *Cognitive Therapy and Research, 40*(3), 341–356. https://doi.org/10.1007/s10608-016-9756-2

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modeling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods, 6*(1), 53–60.

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55. https://doi.org/10.1080/10705519909540118

Koç, M. S., Aka, B. T., Doğruyol, B., Curtiss, J., Carpenter, J. K., & Hofmann, S. G. (2019). Psychometric properties of the Turkish version of the interpersonal emotion regulation questionnaire (IERQ). *Journal of Psychopathology and Behavioral Assessment, 41*(2), 294–303. https://doi.org/10.1007/s10862-019-09732-3

Konrath, S. H., O'Brien, E. H., & Hsing, C. (2011). Changes in dispositional empathy in American college students over time: A meta-analysis. *Personality and Social Psychology Review, 15*(2), 180–198. https://doi.org/10.1177/1088868310377395

Kraaij, V., & Garnefski, N. (2019). The behavioral emotion regulation questionnaire: Development, psychometric properties and relationships with emotional problems and the cognitive emotion regulation questionnaire. *Personality and Individual Differences, 137*, 56–61. https://doi.org/10.1016/j.paid.2018.07.036

Liddell, B. J., & Williams, E. N. (2019). Cultural differences in interpersonal emotion regulation. *Frontiers in Psychology, 10*, 999. https://doi.org/10.3389/fpsyg.2019.00999

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the Beck depression and anxiety inventories. *Behaviour Research and Therapy, 33*(3), 335–343. https://doi.org/10.1016/0005-7967(94)00075-u

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224–253. https://doi.org/10.1037/0033-295X.98.2.224

Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspect. Psychological Science, 5*, 420–430. https://doi.org/10.1177/1745691610375557

Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 1-a theoretical framework and application to dyadic peer relationships. *Clinical Child and Family Psychology Review, 21*(3), 267–294. https://doi.org/10.1007/s10567-018-0261-x

Nunnally, J. C. (1967). *Psychometric theory*. McGraw-Hill.

Parker, J. G., Rubin, K. H., Erath, S. A., Wojslawowicz, J. C., & Buskirk, A. A. (2006). Peer relationships, child development, and adjustment: A developmental psychopathology perspective. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Theory and method* (pp. 419–493). John Wiley & Sons.

Pruessner, L., Holt, D. V., Gölz, R., Sevcenko, N., Hofmann, S. G., & Backenstrass, M. (2020). Psychometrische Eigenschaften der deutschsprachigen Version des Interpersonal Emotion Regulation Questionnaire. *Diagnostica, 66*(1), 62–73. https://doi.org/10.1026/0012-1924/a000239

Ray-Yol, E., & Altan-Atalay, A. (2020). Interpersonal emotion regulation and psychological distress: What is the function of negative mood regulation expectancies in this relationship? *Psychological Reports, 125*(1), 280–293. https://doi.org/10.1177/0033294120968086

Ray-Yol, E., Ülbe, S., Temel, M., & Altan-Atalay, A. (2020). Interpersonal emotion regulation strategies: can they function differently under certain conditions?. *Current Psychology*, *41*, 2364–2371. https://doi.org/10.1007/s12144-020-00771-8

Sadovnikova, T. (2016). Self-esteem and interpersonal relations in adolescence. *Procedia-Social and Behavioral Sciences, 233*, 440–444. https://doi.org/10.1016/j.sbspro.2016.10.181

Sanchis-Sanchis, A., Grau, M. D., Moliner, A. R., & Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Frontiers in Psychology, 11*, 946. https://doi.org/10.3389/fpsyg.2020.00946

Schäfer, J. Ö., Naumann, E., Homes, E. A., Tuschen-Caffier, B., & Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *Journal of Youth and Adolescence, 46*, 261–276. https://doi.org/10.1007/s10964-016-0585-0

Shapero, B. G., Abramson, L. Y., & Alloy, L. B. (2016). Emotional reactivity and internalizing symptoms: Moderating role of emotion regulation. *Cognitive Therapy and Research, 40*(3), 328–340. https://doi.org/10.1007/s10964-016-0585-0

Silvers, J. A. (2022). Adolescence as a pivotal period for emotion regulation development. *Current Opinion in Psychology, 44*, 258–263. https://doi.org/10.1016/j.copsyc.2021.09.023

Tuna, E., & Bozo, Ö. (2012). The cognitive emotion regulation questionnaire: Factor structure and psychometric properties of the Turkish version. *Journal of Psychopathology and Behavioral Assessment, 34*(4), 564–570. https://doi.org/10.1007/s10862-012-9303-8

Zaki, J., & Williams, W. C. (2013). Interpersonal emotion regulation. *Emotion, 13*(5), 803–810. https://doi.org/10.1037/a003383

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.