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Emotion Regulation Checklist (ERC): Preliminary Studies of Cross-Cultural Adaptation and Validation for Use in Brazil

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Abstract

The *Emotion Regulation Checklist* (ERC) is an instrument for the hetero-evaluation of the level of emotion regulation of children by means of two scales, Emotion Regulation (ER) and Emotional Lability/ Negativity (L/N). ER assesses the expression of emotions, empathy, and emotional self-awareness, while L/N assesses the lack of flexibility, anger dysregulation, and mood lability. The aim of this study is to perform the translation and cross-cultural adaptation of the ERC and investigate evidence of the validity of its Brazilian version. Two studies are conducted: Study I – Translation and cross-cultural adaptation of ERC for use in Brazil; and Study II – Investigation of evidence of the validity of the ERC. The sample includes 561 informants (parents and teachers) of children aged 3-12 years old. The exploratory factor analysis (EFA) assumptions are adequate, and the two-factor solution (ER and L/N) is shown to be the most adequate, explaining 57% of the variance (L/N α = .77 and ER α = .73). Subscale L/N is positively correlated with measurements of behavioral problems, while subscale ER is positively correlated with measurements of social skills. The present study provides the first evidence of the validity of the ERC for use in the Brazilian context.

Keywords: Adaptation, Emotion Regulation Checklist, validation.

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Emotion Regulation Checklist (ERC): Estudos Preliminares da Adaptação e Validação para a Cultura Brasileira

Resumo

O *Emotion Regulation Checklist* (ERC) é um instrumento de heterorrelato que se propõe avaliar o nível de regulação emocional de crianças por meio de duas subescalas, a saber, Regulação Emocional (RE) e Labilidade/Negatividade Emocional (L/N). A RE estima a expressão das emoções, empatia e autoconsciência emocional e a L/N avalia falta de flexibilidade, desregulação de raiva e labilidade do humor. Objetivou-se traduzir, adaptar e investigar evidências de validade da versão brasileira do ERC. Conduziram-se dois estudos: Estudo I: Tradução e Adaptação do ERC para a cultura brasileira; Estudo II: Investigação de evidências de validade do ERC. Participaram da pesquisa 561 informantes (pais e professoras) de crianças com idades de 3 a 12 anos. Os pressupostos para análise fatorial exploratória foram adequados e a solução bifatorial (RE e L/N) foi a indicada explicando 57% da variância (L/N α = 0,77 e RE α = 0,73). A subescala L/N apresentou correlações positivas com medidas de comportamentos problemáticos e a subescala RE apresentou correlações positivas com medidas de habilidades sociais. Os resultados suportaram primeiras evidências de validade do ERC para a cultura brasileira.

Palavras-chave: Adaptação, *Emotion Regulation Checklist*, validação.

Emotion Regulation Checklist (ERC): Estudios Preliminares de Adaptación y Validación de Cultura de Brasil

Resumen

El *Emotion Regulation Checklist* (ERC) es un instrumento de heterorrelato que propone evaluar el nivel de regulación emocional por medio de dos sub-escalas, Regulación Emocional (RE) y Labilidad/ Negatividad (LN). La RE mide la expresión de las emociones, empatía y autoconsciencia emocional y la L/N evalúa la ausencia de flexibilidad, desregulación de rabia y labilidad del humor. Se tuvo como objetivo traducir, adaptar e investigar evidencias de validad de la versión brasileña del ERC. Fueron realizados dos estudios: Estudio I: Traducción y Adaptación del ERC para la cultura brasileña; Estudio II: Investigación de evidencias de validad del ERC. Participaron en esta investigación 561 informantes (padres y profesores) de niños con edad de 3 a 12 años. Los presupuestos para el análisis factorial exploratorio fueron adecuados y la solución bifactorial (RE y L/N) fue la indicada explicando el 57% de la varianza (L/N α = .77 y RE α = .73). La sub-escala L/N presentó correlaciones positivas con medidas de comportamientos problemáticos y la sub-escala RE presentó correlaciones positivas con medidas de habilidades sociales. Los resultados dan soporte a las primeras evidencias de validad del ERC para la cultura brasileña.

Palabras clave: Adaptación, *Emotion Regulation Checklist*, validación.

Emotion regulation (ER) comprises the adequate management of emotional activation to achieve effective social functioning. It involves initiating, maintaining, modulating, or changing the occurrence, intensity, or duration of internal feeling states and emotion-related physiological reactions. ER consists of the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensity and timing features, to accomplish one's goals (Arango, 2007).

ER skills are relevant for a healthy socio-emotional life. The self-regulation of emotions increases the odds of peer acceptance and of having a well-adjusted social life (Lopes, Salovey, Côté, & Beers, 2005). ER allows indi-

viduals to reflect on conflict situations and to analyze them from the perspective of the others with whom they interact. ER is related to several dimensions of social functioning, such as empathy and prosocial behavior (Denham et al., 2012; Eisenberg, 2001). The absence of ER skills is usually found among children with behavioral problems (Andrade, 2013; Izard et al., 2008).

Different studies have used various instruments and methods to assess the ER construct. There are tasks to investigate how children identify and regulate emotions elicited by stories with emotional content and the recall of past experiences (Davis, Levine, Lench, & Quas, 2010; Oliveira, Dias, & Roazzi, 2003). ER can also be evaluated by analyzing the reactions of children to photographs, facial expressions, and/or drawings (Dias, Vikan, & Gravas, 2000) or by observing mother-child interactions (Friedlmeier & Trommsdorff, 1999). Additional approaches include interviews (see the studies by Cruvinel, 2009; Shipman, Edwards, Brown, Swisher, & Jennings, 2005), tasks involving delayed gratification (Supplee, Skuban, Shaw, & Prout, 2009; Trentacosta, & Shaw, 2009), and/or other types of tasks (Carthy, Horesh, Apter, Edge, & Gross, 2010; Kanske, Heissler, Schönfelder, Bongers, & Wessa, 2011). The monitoring of task-elicited emotions in children may be achieved through self-reporting, observation, brain imaging techniques, facial electromyography, and startle probe methods (Cacioppo & Gardner, 1999).

In a literature review, Adrian, Zeman and Veits (2011) analyzed the methods used to investigate ER in children as a function of age. Those authors found that self-report methods were used with significantly greater frequency with adolescents and schoolchildren (6-12 years old) compared to younger groups (infants and preschoolers, with whom case observation was the most frequently used method). Other informants (parents, teachers or peers) were most frequently used in studies with small children and less frequently with adolescents.

The Emotion Regulation Checklist (ERC) stands out among the instruments used for the hetero-evaluation of ER in children. The ERC comprises 24 items that are assessed on a four-point Likert scale (1 = Never; 2 = Sometimes; 3 = Often; 4 = Almost Always). The ERC can be answered by adults well acquainted with the child, such as the father, mother, caregiver, or teacher. The ERC comprises two scales: one scale contains eight items to assess ER (i.e., the child's emotional self-awareness and occurrence of constructive emotional expressiveness); and the other scale contains 15 items that measure Emotional Lability/Negativity (L/N), including lack of flexibility, emotional activation, reactivity, anger dysregulation, and mood lability. The internal consistency of both scales has been shown to be adequate (L/N α = .96; ER α = .83), and the two scales are significantly correlated (r = -.50, p < .001). One single measurement of ER is generated from the overall scores in both subscales (α = .89; Shields & Cicchetti, 1997).

The ERC has been widely used for the hetero-evaluation (answered by parents and/or teachers) of ER and L/N in children. Although it was originally designed for children aged 6-12 years old (Shields & Cicchetti, 1995), it has also been applied to younger children (Morgan, Izard, & King, 2010; Shields et al., 2001; Shields, Ryan, & Cichetti, 2001). The ERC has been cross-culturally adapted in Turkey (Batum & Yagmurlu, 2007) and China (Chang, Schwartz, Dodge, & McBride-Chang, 2003).

The ERC has been used to investigate the ER skills in children concerning parenting (Chang et al., 2003; Ramsden & Hubbard, 2002) and attachment (Borelli et al., 2010), as well as the relationship between ER and aggressive behavior (Chang et al., 2003), academic success (Graziano, Reavis, Keane, & Calkins, 2007; Leerkes, Paradise, O'Brien, Calkins, & Lange, 2008), and social and behavioral functioning (Ganesalingam, Sanson, Anderson, & Yeates, 2006; Keane & Calkins, 2004; Martin, Boekamp, McConville, & Wheeler, 2010). Some studies have applied the ERC to investigate ER in children who are perpetrators or victims of bullying (Toblin, Schwartz, Hopmeyer Gorman, & Abou-ezzeddine, 2005) and to assess the impact of premature birth (Clark, Woodward, Horwood, & Moor, 2008) and neglect, maltreatment, and physical and/or sexual violence on children's

emotions (Kim & Cicchetti, 2010; Shields & Cichetti, 2001; Shipman et al., 2005).

The ERC was also used to measure ER in studies that assessed the impact of low socioeconomic status (Kidwell & Barnett, 2007; Kliewer, Reid-Quiñones, Shields, & Foutz, 2009) and physiological and cerebral parameters on the emotional status of children (Borelli et al., 2010; Ganesalingam et al., 2006; Kliewer et al., 2009). In addition, some studies used the ERC as the gold standard for validation of other instruments (Bulotsky-Shearer & Fantuzo, 2004; Gouley, Brotman, Huang, & Shrout, 2008; Zeman, Shipman, & Penza-Clyve, 2001; Zeman, Cassano, Suveg, & Shipman, 2010) or as pretest and posttest measurements in intervention programs (Izard et al., 2008; Pears, Fischer, & Bronz, 2007; Suveg, Kendall, Comer, & Robin, 2006).

As a function of its widespread use, the aims of the present study are to translate the ERC into Brazilian Portuguese, adapt its items to the understanding of adult Brazilians with a low educational level (complete primary education), and investigate evidence attesting to the validity of the Brazilian version of the ERC. To meet these goals, two studies have been conducted: one was devoted to the translation and cross-cultural adaptation of the ERC for use in Brazil, and the other to the investigation of evidence of its (factorial and convergent) validity.

Study I: Linguistic and Cultural Adaptation of the ERC

The aim of the first study was to translate and perform the cross-cultural adaptation of the ERC for the Brazilian reality. For this purpose, the original scale (Shields & Cicchetti, 1995) was procured from its original authors, who authorized its translation, adaptation, and validation for use in Brazil. The adaptation protocol used was based on Beaton, Bombardier, Guillemin, and Ferraz (2000), Cassepp-Borges, Balbinotti, and Teodoro (2010), Geisinger (1994), Oliveira and Bandeira (2011), and Sandoval and Durán (1998).

In step one, the original scale in English was independently translated into Portuguese by three translators, of whom two were English teachers and one a bilingual psychologist. These three versions were analyzed and compared by Reis and Sperb, resulting in a synthetic version comprising all 24 items. That version was presented to a three-expert panel whose members were selected based on the following criteria: (a) mastery of the English language; (b) field of expertise (cognitive-behavioral therapy for children); and (c) knowledge of ER. The experts were invited to participate voluntarily and were e-mailed a translation protocol containing information on the ERC, its American English and Brazilian Portuguese versions, and a form with a table to be filled out relative to five sets of data. The table rows listed all 24 ERC items in Portuguese; using a five-point Likert scale (1 = "very little"; 2 = "little"; 3: "average"; 4 = "much"; and 5 = "very much"), the experts were requested to grade in the first three columns the items' clarity ("Do you believe that the language used in each item is sufficiently clear, understandable, and adequate for teachers and parents having completed primary education? How much?"), practical pertinence ("Do you believe that the suggested items are relevant for that population? How much?"), and theoretical relevance ("Do you believe that the content of this item represents the behavior meant to be measured or any of its dimensions considering the theoretical framework used? How much?"), respectively. In column four, the examiners were requested to indicate the theoretical dimension that each item seemed to reflect ("To which dimension [factor] do you believe this item belongs? Indicate the dimension that best represents this item [L/N – lability/negativity or ER – emotion regulation]"). Finally, the examiners could make additional comments in column five (Cassepp-Borges et al., 2010; Oliveira & Bandeira, 2011).

Relative to their clarity, 20 of the 24 ERC assertions (83.3%) were considered to be sufficiently clear, as the interexaminer concordance was absolute (all three examiners attributed scores "4" or "5" to each such items). In the remaining four items (16.7%), the interexaminer concordance was partial (only

two examiners agreed on each of these items). The examiners partially agreed that only item 11 was moderately clear (two examiners attributed a score of "3" and one examiner a score of "4"). The examiners partially agreed on the clarity of the remaining items. All the examiners' comments were assessed, and changes were made in the items following the suggestions made to improve their clarity.

The results relative to the practical pertinence of the items were similar to the results above: the interexaminer concordance with respect to adequate pertinence was absolute relative to 83.3% of the 24 items. In the remaining items, the interexaminer concordance was only partial, as two examiners rated the items as moderately pertinent but the third as fairly or poorly pertinent. In this case, the examiners' suggestions were also analyzed, and the relevant suggestions were used to make changes in the items.

Concerning the theoretical relevance of the ERC items to the scale, the examiners fully agreed on the relevance of 21 items (91.3%), while they partially agreed on the relevance of the remaining items (two examiners attributed a score of "4" or "5", and the third a score of "3" in all three cases). Once again, the examiners' comments and suggestions to represent the items better were taken into account. The greatest divergence concerned the measure in which the particular items represented their corresponding domains.

The version including the changes made based on the expert panel's suggestions was presented to and discussed by a focus group. The group members, who were selected by convenience sampling (Cozby, 2003), included four mothers aged 28 to 52 years old (mean - M = 35.8; standard deviation - SD = 11.1) who had attended secondary school or higher education. No changes were made in the ERC version following its application to the focus group.

The resulting version was applied to a convenience sample (Cozby, 2003) including 10 women with a mean age of 34 years old (SD = 6.6) and variable educational levels ranging from primary school to higher education. This step was included to investigate problems in the understanding of the items or in answering the instrument. As all the items were properly understood, no further changes were made to the scale.

The last step consisted of the back-translation of the Portuguese version of the ERC into English by a native English speaker who lives in the United States and is fluent in Portuguese. The back-translated version was sent to the authors of the original instrument, who assessed it and did not suggest any further change. As a result of the process described, the experimental Brazilian version of the ERC was obtained.

Study II: Validity and Reliability Evidence Investigation of the ERC Brazilian Experimental Version

The aim of the second study was to investigate the factor structure of the Brazilian version of the ERC and its psychometric properties (internal consistency and convergent validity).

Method

Participants

The current study utilized non probability sampling methods through convenience sampling (Cozby, 2003) that comprised 561 ERC forms answered for children aged 3-12 years old (M = 6.7, SD = 2.7). Approximately 51.7% of the questionnaires were answered by parents (total parents n = 290) and 48.3% by teachers (total teachers n = 271) of children residing in the following four Brazilian states: Paraná (PR: 51.7%), Bahia (BA: 26.2%), Minas Gerais (MG: 14.3%), and São Paulo (SP: 7.8%). The questionnaires relative to the children from PR were answered by their mothers and the questionnaires corresponding to the children from the remaining states by their teachers. Approximately 53.3% of the children were male. The answered questionnaires were used for exploratory factor analysis (EFA). The sample size was calculated based on a ratio of 20 cases per item (Hair, Black, Babin, Anderson, & Tatham, 2006). Table 1 describes the sample characteristics in detail.

Table 1
Sample Characterization of Study II

	Children Data				
	Paraná	**Bahia**	**Minas Gerais**	**São Paulo**	**Total**
Age					
Minimum-Maximum	5-12	3-6	3-6	3-6	3-12
M (*SD*)	8.7 (2.1)	4.6 (1.1)	4.4 (.9)	4.5 (1.1)	6.7 (2.7)
Gender					
Male *f* (%)	166 (57.2)	71 (48.3)	40 (50.0)	22 (50.0)	299 (53.3)
Female *f* (%)	124 (42.8)	76 (51.7)	40 (50.0)	22 (50.0)	262 (46.7)
	Respondents Data				
	Parents		**Teachers**		**Total**
Age					
Minimum-Maximum	20-59		20-30		20-59
M (*SD*)	36.2 (7.1)		26 (3.9)		36.1 (7.2)
Gender					
Male *f* (%)	7 (2.4)		0 (.0)		7 (2.4)
Female *f* (%)	283 (97.6)		5 (100)		288 (97.6)

As Table 1 shows, the sample from PR exhibits a older age range and greater variability of children and respondents. In addition, all the respondents from PR are the children's parents, while the respondents from the remaining states are the children's teachers. The results must be weighted taking these sample biases into account.

Instruments

Questionnaire comprising sociodemographic data to characterize the sample of mothers who participated in the study.

Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1995): comprises 24 items describing behaviors, the frequency of which is hetero-evaluated on a four-point Likert scale (1 = "Never" to 4 = "Almost Always"). The items are distributed across two scales: Emotion Regulation (ER) and Emotional Lability/Negativity (L/N). Data on the psychometric properties and validity of the ERC are available in Shields and Cicchetti (1995, 1997).

Social Skills Rating System – Brazilian Version (SSRS-BR; Bandeira, Del Prette, Del Prette, & Magalhães, 2009): includes measurements of children's social skills, behavioral problems, and academic competence. It comprises three social skills scales, the first to be answered by children, the second by teachers, and the third by parents. Data on the psychometric properties and validity of the SSRS-BR are available in Bandeira et al. (2009).

Procedures

Authorization to conduct the study was requested from the administrators of public and private schools in towns in Western PR and in the BA, MG, and SP state capitals. Data in PR were gathered collectively in meetings for the notification of grades or in lectures held at the schools. The participants signed an informed consent form and were given the sociodemographic data questionnaire, the ERC, and instructions to answer both instruments. The study was approved by the human research ethics committee of the Institute of Psychology, Federal University of Rio Grande do Sul (*Universidade Federal do Rio Grande do Sul* [UFRGS]; no protocol number 21482/2011.) and complied with the corresponding ethical norms.

Relative to the children from BA, MG, and SP, their parents manifested agreement to participate through signing an informed consent form. The investigators contacted the

schoolteachers to invite them to participate in the study and deliver the ERC form. The instructions to answer the ERC were given to each participant on an individual basis, and the investigators made themselves available for further explanation. This step of the study was approved by the research ethics committee of the Federal University of Bahia (protocol number 057/2011).

Data Analysis

Given that the variables had an ordinal level of measurement and the multivariate normality assumption was violated (Mardia = 40.449, $p <$ .001; Mardia, 1970), robust exploratory factor analysis (EFA) was performed based on the items polychoric correlation matrix (Holgado-Tello, Chacón-Moscoso, Barbero-García, & Vila-Abad, 2010) using Minimum Rank Factor Analysis (MRF; Shapiro & Berge, 2002) as extraction method and Promin rotation (Lorenzo-Seva, 1999). MRF minimizes the residual common variance during factor extraction and allows interpreting the proportion of common variance explained by the retained factors (Lorenzo-Seva & Ferrando, 2006). To avoid overestimating the number of common factors, the Hull method was used for factor retention and interpretation in EFA (Lorenzo-Seva, Timmerman, & Kiers, 2011). The Hull method was shown to be the best for factor retention in EFA (see Damásio, 2012; Lorenzo-Seva et al., 2011). The Hull method was applied as follows: first, the range of factors to be considered was determined, for which purpose use of the Parallel Analysis (PA) rule has been suggested to establish the highest and lowest number of factors to be extracted (Lorenzo-Seva et al., 2011). Next, the goodness-of-fit of the series of factor solutions was assessed, followed by the computation of the degrees of freedom (*df*) of each model. The factor solution to be retained had the highest scree test value (st), which was calculated by means of an equation that assessed the relationship between the index of goodness-of-fit and the degrees of freedom of a model compared to a previous one (Damásio, 2012; Lorenzo-Seva et al., 2011). The analyses were performed using the software Factor version 9.2 (Lorenzo-Seva & Ferrando, 2006). Pearson's correlation was applied to the ERC and SSRS-BR scales (Bandeira et al., 2009) to assess the convergent validity of the ERC.

Results

To establish the factor structure of the ERC, three factor analyses were performed, one relative to the full study population and one each for the two groups of respondents (parents/teachers). All the investigated models showed that the ERC has a two-factor structure. The first factor systematically comprised items related to the L/N dimension, while the second factor comprised items related to ER. We observed that the EFA had shown similar results. A few items shifted to another dimension, always changing the sign of the factor loading. This fact allowed establishing an EFA for the full study population, as a function of the coherence exhibited by the data. Thus, only the results of the EFA performed relative to the full study population are described below.

The results of Bartlett's test of sphericity (x^2 = 3889.1; *df* = 276; $p <$ .001) and the Kaiser-Meyer-Olkin test of sampling adequacy (KMO = .872) indicated that the correlation matrix was factorable. The MRF extraction method identified six factors with an eigenvalue > 1. Nevertheless, the Hull method of factor retention showed that the two-factor solution best represented the data (see Table 2).

The first factor comprises items that reflected the L/N construct, while the second factor contains items related to the ER dimension. The factor structure found lends support to the theoretical model and provides evidence of the construct validity. All items exhibit adequate factor loading (≥ .30). Items 15, 19, and 23 are cross-loaded. Items 15 and 23 stand out because they exhibit positive loading on both factors. This finding suggests confusion in the interpretation of those items (i.e., they were alternatively considered as indicators of L/N or ER). It is be-

Table 2
Exploratory Factor Analysis of ERC (N = 561)

ERC items	EFA 24 items		EFA 23 items			
	L/N	ER	L/N	ER	*r**	α**
20: Impulsivity	.842	-	.833	-	.71	.83
14: Anger at limits	.820	-	.805	-	.73	.83
08: Outbursts of anger	.800	-	.803	-	.74	.83
13: Outbursts of enthusiasm	.707	-	.737	-	.65	.83
22: Intrusive enthusiasm	.698	-	.727	-	.62	.84
17: Over-ebthusiastic	.695	-	.771	-	.56	.84
24: Negative emotions at invitations to play	.660	-	.609	-	.57	.84
06: Frustration	.642	-	.627	-	.64	.83
02: Mood swings	.602	-	.588	-	.67	.83
10: Pleased to see others suffer	.442	-	.449	-	.52	.84
12: Crying and clinging to adults	.343	-	.327	-	.40	.85
09: Able to delay gratification	-.307	-	-.329	-	.51	.85
11: Excitation control	-.306	-	-.331	-	.46	.85
01: Happiness	-	.755	-	.782	.58	.72
03: Positive response to adult approaches	-	.733	-	.763	.65	.71
15: Talk about negative emotional states	.301	.680	.320	.695	.58	.73
18: Apathetic mood	-	-.656	-	-.686	.54	.73
07: Positive response to peer approaches	-	.628	-	.643	.59	.72
21: Empathy	-	.622	-	.558	.50	.74
05: Recovering from negative emotions	-	.512	-	.503	.59	.73
16: Sadness and apathy	-	-.459	-	-.489	.49	.74
19: Negative response to peer approaches	.359	-.410	.331	-.442	.51	.73
04: Can switch well of activities	-	.385	-	.352	.54	.74
23: Appropriate negative emotions to the demand	.330	.368				
Cronbach's Alpha	.848	.749	.848	.749		
Inter-factors correlation	-.459		-.490			
Common variance explained	54.45%		56.95%			

Note. ERC = Emotion Regulation Checklist; EFA = Exploratory Factor Analysis. L/N = Factor 1 "Lability/Negativity"; ER = Factor 2 "Emotional Regulation"; * Item-total correlation; ** Cronbach's Alpha if item deleted; "-" Factorial loading less than .300.

lieved that a part of the sample interpreted the word "negative" in those items as an unfavorable qualification, rather than placing it in its proper context, and/or did not properly understand the intended meanings. Nevertheless, because the factor loading of item 15 is borderline, the decision is made to count it in factor ER. By contrast, item 23 is excluded from factor counting. Item 19 is (reversely) counted in factor ER only, where its loading is greater.

Following the exclusion of item 23, a second factor analysis was performed as described above relative to the remaining 23 items to establish whether the behavior of the ERC would remain the same. The EFA assumptions were adequate (Bartlett: $\chi^2 = 3734.2$; $df = 253$; $p < .001$; KMO = .880), and once again the two-factor solution was the most indicated, explaining 57% of the variance. The factor loadings were adequate (Factor 1 – L/N: .33-.83; Factor 2 – ER: .35-.78). The correlation between items and total scale was moderate (L/N: .40-.73; ER: .49-.65). Item exclusion analysis showed that the exclusion of no item improved the internal consistency of the scales. Thus, the L/N scale comprised 13 items, with two items computed reversely, and the ER scale comprised 10 items, with three counted reversely. The factor structure found agreed with the one that was theoretically expected, thus providing evidence of the construct validity of the ERC. The internal consistency of the full (23-item) scale was shown to be adequate ($\alpha = .86$). Item exclusion analysis showed that the exclusion of no item from the full scale improved the consistency of the ERCs answered by parents and teachers.

To analyze the interexaminer reliability, the correlation of the scores attributed to the ERC scales by parents and teachers relative to a subsample of 38 children was assessed. The results did not attest to interexaminer precision (L/N: $r = .18$; ER: $r = .24$; total ERC: $r = .22$; statistical significance levels greater than .05). The paired sample *t*-test detected no difference in the mean ER scores attributed by parents and teachers (teachers: $M = 31.5$, $SD = 4.0$; parents: $M = 30.7$, $SD = 5.0$; $t[37] = -.871$, $p = .390$), but the mean L/N scores were significantly different (teachers: $M = 22.1$, $SD = 5.7$; parents: $M = 28.2$, $SD = 6.3$; $t[37] = 4.883$, $p < .001$), as was also the case with the overall score (teachers: $M = 74.4$, $SD = 8.7$; parents: $M = 67.5$, $SD = 9.5$; $t[37] = 3.741$, $p = .001$). These findings point to the need to elaborate norms of interpretation according to respondent type (parents or teachers).

This group of parents and teachers and also the 38 corresponding children answered the SSRS-BR. Table 3 describes the results of the correlation between the scores on the Brazilian version of the ERC and on the SSRS-BR per respondent type.

The results showed that parent-answered ERCs and SSRS-BRs exhibited evidence of validity. The L/N scale exhibited a positive correlation with hyperactive, externalizing, and internalizing behavior problems. The children attributed high scores on the L/N scale by their parents were assessed as exhibiting less self-control and civility and passive self-control skills. The children assessed by their parents as exhibiting adequate ER skills were considered to have better social skills, except for cooperation and passive self-control. The scores attributed by the teachers show that the L/N and ER scales were associated with responsibility in a negative and positive direction respectively. Relative to the children's self-assessment, only one feature exhibited a significant correlation with the ERC scores attributed by their parents: the parents attributed higher scores on the L/N scale to the children who self-perceived as less assertive. These findings denote that the convergent validity of the ERC seems to depend on the respondent type. Convergence was found in the parents' perception as reflected in both instruments. The convergence of the teachers' perception with respect to the children's emotion regulation capacity and social skills was only partial.

Due to the differences found as a function of the respondent type (parents or teachers), the ERC scores attributed by the teachers were compared per state of residence (BA, MG, and SP). The results showed that the scores on the L/N and ER scales and the overall ERC score were significantly different relative to the children from SP compared to the children from BA and MG only. The children from SP were rated as having better ER skills and less L/N compared to the children from BA and MG. Because the small sample size may have influenced these findings, the performance of broader normative investigations per region is suggested.

To investigate possible differences in the ERC scores as a function of gender, the results were compared taking the state of residence and respondent type into account. A significant

difference was not found in this regard among the children from PR and SP. The boys from BA exhibited less ER capacity, and the boys from MG were attributed higher average scores on the L/N scale and lower overall ERC scores. Table 4 summarizes these findings.

Table 3
Correlations between ERC and SSRS-BR Subscales

Respondent	Subscales	Respondent					
		Teachers			Parents		
		L/N	ER	Total	L/N	ER	Total
Parents	**Social Skills**						
	Cooperation	.05	.24	.08	-.16	.29	.28
	Amiability	-.16	.30	.25	-.20	.46**	.39*
	Assertion	-.26	.28	.27	-.24	.56***	.46**
	Social Initiative / Resourcefulness	-.11	.16	.13	-.20	.50***	.39*
	Self-Control and Civility	-.05	.01	.04	-.55***	.46**	.59***
	Passive Self-Control	.12	-.11	-.11	-.62***	.29	.55***
	Problem Behaviors						
	Hyperactivity	.41*	-.31	-.47**	.64***	-.43**	-.60***
	Externalizing Problems	.40*	-.18	-.40*	.70***	-.38*	-.65***
	Internalizing Problems	.42**	-.16	-.32	.35*	-.56***	-.53***
Children	**Social Skills**						
	Responsibility	-.19	.04	.15	.03	.00	.04
	Empathy	-.11	-.07	.08	-.25	-.15	.06
	Assertiveness	-.05	.18	.19	-.40*	-.06	.19
	Self-Control	-.06	.13	.08	.04	.15	.08
	Problem Avoidance	-.13	.11	.20	-.22	-.13	.05
	Positive Feeling	-.08	.23	.14	-.15	-.00	.11
Teachers	**Social Skills**						
	Responsibility	-.73***	.59***	.72***	-.21	.13	.21
	Assertion	-.09	.20	.16	-.04	.02	.07
	Self-Control	-.11	.14	.13	-.06	.11	.14
	Self-Defense	-.08	.10	.12	-.08	-.13	-.01
	Peer Cooperation	-.15	.19	.24	-.24	-.14	.07
	Problem Behaviors						
	Externalizing	.80***	-.60***	-.77***	.23	-.24	-.28
	Internalizing	.06	-.30	-.21	.30	-.23	-.28

Note. ERC = Emotion Regulation Checklist; SSRS-BR = Social Skills Rating System – Brazilian Version. L/N = Lability/Negativity; ER = Emotional Regulation.
* p-value ≤ .05; ** p-value ≤ .01; *** p-value ≤ .001.

Table 4
Differences by Gender

State	Scale	Male *M* (*SD*)	Female *M* (*SD*)	Difference
Paraná	L/N	27.0 (5.7)	26.8 (5.7)	$t(288) = .388$. $p = .698$
	ER	31.3 (4.9)	32.0 (4.1)	$t(288) = -1.276$. $p = .203$
	Total	69.3 (8.5)	70.3 (8.3)	$t(288) = -.955$. $p = .341$
Bahia	L/N	23.9 (7.2)	21.6 (6.4)	$t(145) = 2.089$. $p = .038$
	ER	31.4 (4.1)	32.9 (3.7)	$t(145) = -2.344$. $p = .020$
	Total	72.5 (9.8)	76.3 (8.5)	$t(145) = -2.541$. $p = .012$
Minas Gerais	L/N	24.0 (7.0)	19.9 (5.1)	$t(78) = 3.054$. $p = .003$
	ER	32.1 (4.5)	33.5 (4.1)	$t(78) = -1.429$. $p = .157$
	Total	73.1 (9.5)	78.6 (7.5)	$t(78) = -2.874$. $p = .005$
São Paulo	L/N	17.4 (5.2)	17.5 (5.7)	$t(42) = -.055$. $p = .956$
	ER	36.8 (4.6)	36.0 (4.5)	$t(42) = .565$. $p = .575$
	Total	84.4 (9.3)	83.5 (9.6)	$t(42) = .303$. $p = .764$

Note. L/N = Lability/Negativity; ER = Emotional Regulation; *M* = Mean; *SD* = Standard deviation.

Finally, the correlation between scores on the ERC and the children's age was investigated, adjusted for gender, state of residence, and respondent type. A significant, albeit weak, correlation was found only among the children from PR in the scores on the ER scale ($r = -.12$, $p = .037$). The children were clustered into five age ranges (3-4, 5-6, 7-8, 9-10, and 11-12 years old), and the differences among the corresponding mean scores were investigated, while controlling the same effects. The results showed that the differences were not statistically significant.

Discussion

Factor Structure and Internal Consistency

Analysis of the factor structure of the Brazilian version of the ERC results in a two-factor model, which agrees with the theoretical and empirical model described in the literature (Batum & Yagmurlu, 2007; Melo, 2005; Shields & Cicchetti, 1998). Factor 1 comprises 13 items that are indicators of L/N. The L/N construct concerns culturally inadequate affective manifestations, strong reactivity and anger dysregulation, emotional intensity, and dysregulation of positive and negative emotions. Emotionally labile individuals are prone to bursts of anger, low tolerance to frustration, impulsiveness, and emotional variability, with fast shifts from positive to negative emotions (Shields & Cicchetti, 1997, 1998).

Factor 2 comprises 10 items related to the children's ER experience. The ER construct represents emotional self-awareness, a socially adequate expression of emotions, and empathy. Individuals with adequate ER are able to properly identifying and communicating their emotions and expressing and handling negative emotions in relation to their personal goals and contextual hints (Gross & Thompson, 2009; Shields & Cicchetti, 1997, 1998).

Although the ERC is widely used, few studies assessing its psychometric properties could be located in the literature (see, for instance, Ramsden & Hubbard, 2002; Toblin et al., 2005), but the factor structure they report (Melo, 2005; Shields & Cichetti, 1995) is similar to the one identified in the present study.

The internal consistency of the scales is shown to be adequate. Based on Anastasi and Urbina (2000), it may be concluded that, in addition to reliability indicators, there is evidence attesting to the construct validity of the ERC as a function of the correlation between the internal indicators of the scales.

Evidence of Construct Validity

The results of the present study provided evidence of partial construct validity. While the parents' perceptions with respect to the children's social skills and ER competence exhibited convergence, the results relative to the teachers' perceptions were less expressive, and even less so when the parents' and teachers' perceptions were compared to the children's self-assessments of their own social skills.

The ER capacity tends to be reflected in social interactions. ER skills exhibit a relationship with various indicators of the quality of social interactions with peers. Children attributed high scores on the ER scale are viewed more favorably by their peers and perceive themselves as more sensitive and prosocial in their interpersonal relationships (Lopes et al., 2005). Emotion dysregulation has been shown to be associated with psychological maladaptation, typically being moderated by the children's degree of engagement in social interactions (Rubin, Coplan, Fox, & Calkins, 1995).

Based on the results of the present study and on the fact that the ERC is answered by an adult relative to the behavior of a child for whom he or she is in some way responsible (parents, relative, teachers, etc.), it is clear that the scale scores are influenced by the respondent's experience and knowledge of the child. Thus, the ERC reflects not only the child's behavior but also the respondent's perception. The same holds true with other instruments for hetero-evaluation, such as the Child Behavior Checklist (CBCL; see, e.g., Rocha, Ferrari, & Silvares, 2011).

Taking these differences in the respondents' perceptions into account, a strong correlation is found between the scores attributed by the parents on the ERC scale and the SSRS-BR. This finding points to the scale content validity according to the parents' perceptions. The results of the present study show that the children evaluated as having adequate ER capacity are kinder, more assertive, and more self-assured in their social interactions. They also exhibit greater capacity for self-control. The children attributed higher scores on the L/N scale are more prone to hyperactive behaviors and externalizing and internalizing problems. In agreement with these findings, the literature indicates that children with externalizing behaviors tend to present high levels of anger, sadness and failure in self-control. In addition, they have shown difficulty in controlling their negative feelings expression. In other hand, children with internalizing problems tend to be sad, exhibit low impulsiveness, and have difficulty regulating emotions such as sadness and anxiety (Eisenberg et al., 2001). ER may help high-risk children reduce their behavioral problems in early childhood (Hill, Degnan, Calkins, & Keane, 2006).

When the assessment of ER and L/N is made by teachers, ER capacity is positively associated with responsibility. Responsibility alludes to actions indicative of commitment to activities and people in the school environment, for example, complying with the teacher's instructions and engaging in tasks (Bandeira et al., 2009). Thus, children able to regulate their emotions tend to exhibit greater academic success, even when the effect of other cognitive variables, such as school performance and academic self-efficacy, is controlled (Gumora & Arsenio, 2002).

Still regarding the evaluation performed by teachers, the results indicate an inverse relationship between ER capacity and externalizing behaviors. Externalizing behavior problems are characterized by physical or verbal aggression, the transgression of rules, and low self-control of anger, which are manifested directly in the environment (Bandeira et al., 2009). Rocha et al. (2011) found greater concordance in the information relative to externalizing behaviors as a function of their phenomenological nature. The manifestations of externalizing behavior problems are easily observable because they

are directed to the environment. The fact that a significant relationship between ER indicators and internalizing behaviors in the evaluations performed by the teachers is not found may thus be due to the phenomenological manifestation of this type of behavior.

Finally, concerning the children's own self-perceptions, the only relationship found is an inverse correlation with the parents' perceptions relative to assertiveness and L/N. The children who self-perceived as more assertive are considered by their parents as having fewer problems in the L/N domain. In general, ER skills tend to exhibit a positive correlation with social competence (Lopes et al., 2004). A negative correlation was found between sympathy and negative emotionality (stress, anger, and frustration; Eisenberg et al., 1996).

Study Limitations

The aim of the present article is to report the preliminary results relative to the cross-cultural adaptation and validation of the ERC for use in Brazil. Thus, once corrected, the limitations of the present study may contribute to a more accurate estimation of the psychometric properties of the Brazilian version of the ERC. The lack of proportion of the mean age of the children per respondent type and state of residence do not allow improving the precision of the interpretation of the results. Control of those variables would allow assessing the effects of the children's age and respondent type (parents *versus* teachers) on the ERC scores with greater precision. The regional differences also may not be subjected to conclusive analysis due to the lack of control of variables for age and respondent type, as well as the small size of the samples in all four states assessed. The lack of external criteria for sample selection and its non-randomized nature do not allow the results to be interpreted more precisely. In addition, the lack of criterion groups does not allow the discriminating power of the ERC scales to be assessed. The use of an instrument for screening and classification of contrasting groups, such as the CBCL, may contribute to the assessment of the discriminating power of the ERC.

Final Remarks

The analysis of the psychometric properties of the ERC relative to its factor structure confirmed its two-dimensional nature, converging towards the theoretical factors Emotion Regulation (ER) and Lability/Negativity (L/N). As expected, the ERC scales were associated with several dimensions of the social behavior of children, such as assertiveness, self-control, and civility and passive self-control skills. The ERC also exhibited a relationship with hyperactive, externalizing, and internalizing behaviors. Those associations were indicative evidence of the convergent validity of the ERC.

The differences in the ERC scores as a function of the respondent type, geographical area, and children's gender suggested that these factors should be taken into consideration in the standardization of the interpretation. The internal consistency of the ERC and its subscales was adequate. The results of the present study indicated that the ERC may be an important method for assessing the emotion regulation capacity of children, thus enlarging the stock of instruments available in Brazil.

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Appendix

Emotional Regulation Checklist (ERC) – Versão Brasileira

Emotional Regulation Checklist Original version Shields & Cicchetti,1995[1]	Emotional Regulation Checklist Versão brasileira Reis et al., 2016[2]

Informação da Criança **Data:** ___/___/_____

Nome da criança: _____

Data de nascimento: ___/___/_____ **Idade:** _____ **Sexo:** ( ) M ( ) F

Escola: _____

Prof.: _____ **Série:** _____

Informação do Respondente

Nome: _____

Data de nascimento: ___/___/_____ **Idade:** _____ **Sexo:** ( ) M ( ) F

Relação com a criança: ( ) Mãe ( ) Pai ( ) Prof. ( ) Outra: _____

Escolaridade:
( ) Não alfabetizado ( ) 2º grau incompleto ( ) 3º grau completo
( ) 1º grau incompleto ( ) 2º grau completo
( ) 1º grau completo ( ) 3º grau incompleto

Instrução:

Por favor, leia as afirmações e coloque uma cruz (X), ou um círculo (O) na opção que melhor identifica aquilo que acontece com a criança que você está avaliando. Se você acha que a criança apresenta bastante do comportamento descrito na sentença marque "3" (muitas vezes) ou "4" (quase sempre), caso contrário, marque "1" (nunca) ou "2" (algumas vezes). Utilize a legenda para marcar as sentenças conforme você acha que os comportamentos descritos acontecem com a criança.

Legenda: 1. Nunca | 2. Algumas vezes | 3. Muitas vezes | 4. Quase sempre

[1] Shields, A. M., & Cicchetti, D. (1995). *The development of an emotion regulation assessment battery: Reliability and validity among at-risk grade-school children*. Paper presented at the biennial meeting of the Society for Research on Child Development, Indianapolis.

[2] Reis, A. H., Oliveira, S. E. S., Bandeira, D. R., Andrade, N. C., Abreu, N., & Sperb, T. M. (2016). Emotion Regulation Checklist (ERC): Preliminary studies of cross-cultural adaptation and validation for use in Brazil. *Temas em Psicologia, 24*(1), 63-82.

Emotional Regulation Checklist (ERC) – Versão Brasileira

1. Nunca	*2. Algumas vezes*	*3. Muitas vezes*	*4. Quase sempre*

1. É uma criança alegre.	1	2	3	4
2. Apresenta grande variação de humor (o estado emocional da criança é difícil de ser previsto, pois ela muda rapidamente de bem humorada para mal humorada).	1	2	3	4
3. Responde de forma positiva a iniciativas de adultos de se aproximar de forma neutra ou amigável.	1	2	3	4
4. Troca bem de uma atividade para outra (não fica ansiosa, irritada, angustiada ou excessivamente empolgada quando passa de uma atividade para outra).	1	2	3	4
5. Recupera-se rapidamente de episódios de aborrecimento ou angústia (por exemplo, não permanece quieta ou mal humorada, ansiosa ou triste após eventos emocionalmente estressantes).	1	2	3	4
6. Frustra-se facilmente.	1	2	3	4
7. Responde de forma positiva a iniciativas de seus pares de se aproximar de forma neutra ou amigável (pares são crianças da mesma idade ou colegas).	1	2	3	4
8. É propensa a explosões de raiva / birra.	1	2	3	4
9. É capaz de adiar gratificação (por exemplo, suporta a espera por uma recompensa).	1	2	3	4
10. Sente prazer com o sofrimento dos outros (por exemplo, ri quando outra pessoa se machuca ou é punida; gosta de provocar os outros).	1	2	3	4
11. Consegue controlar a empolgação em situações emocionalmente estimulantes (por exemplo, não se empolga excessivamente em situações de brincadeiras de alta energia, ou não fica muito agitada em contextos inapropriados).	1	2	3	4
12. É chorona ou gosta de ficar "agarrada" com adultos.	1	2	3	4
13. É propensa a explosões inadequadas de animação e entusiasmo.	1	2	3	4
14. Responde com raiva ou de forma zangada quando os adultos lhe impõem limites.	1	2	3	4
15. A criança consegue dizer quando está se sentindo triste, com raiva ou zangada, com medo ou assustada.	1	2	3	4
16. Parece triste ou apática.	1	2	3	4
17. É excessivamente empolgada ao tentar envolver outros na brincadeira.	1	2	3	4
18. Mostra humor apático (fisionomia é vaga e inexpressiva; a criança parece ausente emocionalmente).	1	2	3	4
19. Responde de forma negativa a aproximações neutras ou amigáveis feitas por pares (crianças ou colegas da mesma idade) (por exemplo, pode falar com um tom de voz com raiva ou responder com medo).	1	2	3	4
20. É impulsiva.	1	2	3	4
21. É empática com os outros. Mostra preocupação quando os outros estão chateados ou angustiados.	1	2	3	4
22. Demonstra entusiasmo que os outros consideram inapropriado, intrusivo ou intrometido.	1	2	3	4
23. Mostra emoções negativas apropriadas (raiva, medo, frustração, angústia) em resposta a atos hostis, agressivos ou intrusivos dos pares (crianças ou colegas da mesma idade).	1	2	3	4
24. Demonstra emoções negativas quando está tentando engajar os outros em brincadeira.	1	2	3	4

Emotional Regulation Checklist (ERC) – Versão Brasileira

Apuração:

1. Registre o escore dado na coluna da esquerda para cada item.
2. Registre os escores para cada subescala. Para a apuração das subescalas alguns itens precisam ser invertidos. Eles estão sinalizados com a abreviação (Inv). Considere a inversão dos itens da seguinte forma (1 = 4, 2 = 3, 3 = 2 e 4 = 1), sempre tendo como referência o escore registrado na primeira coluna da esquerda. Preencha somente os espaços em branco.
3. Some o total para cada subescala.

Item	Escore	L/N	RE	RE Total
1				
2				(Inv)
3				
4				
5				
6				(Inv)
7				
8				(Inv)
9		(Inv)		
10				(Inv)
11		(Inv)		
12				(Inv)
13				(Inv)
14				(Inv)
15				
16			(Inv)	(Inv)
17				(Inv)
18			(Inv)	(Inv)
19			(Inv)	(Inv)
20				(Inv)
21				
22				(Inv)
23				
24				(Inv)
Total:		∑ =	∑ =	∑ =

Interpretação:
Ainda não foram conduzidos estudos normativos.

Permissão para uso do instrumento:
Não há necessidade de solicitar permissão para o uso do presente instrumento. É exigido, contudo, que o devido crédito seja concedido aos seus autores. O presente artigo deve ser utilizado para a citação do instrumento, e esta nota assegura a permissão para sua utilização.