Journal of Development and Social Sciences

www.Jdss.org.pk

RESEARCH PAPER

Translation, Cultural Adaptation and Validation of Behavioral-Emotional Reactivity Index for Adolescents

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PAPER INFO	ABSTRACT
	Measuring differentiation of self in terms of behavioral/emotional reactivity towards parents is important because of the complex parent-child connection. This needs a valid and reliable measure to assess the differentiation of self particularly in a relationship with parents. Behavior\Emotional Reactivity Index is such a tool that fulfills this purpose. The present study was carried out to culturaly adapt and translate BERI into the Urdu language and establish the psychometric properties of Urdu version. A sample of 303 adolescents of age (M = 16.07, SD = 1.77) was taken from different schools and colleges. Scale was split into Mother and father forms for the convenience of respondents. Findings supported the original factor structure of the BERI-original version. Higher-order factor analysis showed good fit indices with excellent alpha ranges (α= .91 to α=.80). BERI scores were compared for the adolescents who were securely attached with parents and insecurely attached with parents which showed a significant difference between the groups. BERI-Urdu version was found to be a valid and reliable measure in the Pakistani cultural context which gives researchers new directions to work with adolescents.

Introduction

The remarkably extended susceptible infancy stage is accountable for attachment patterns with caregivers (Bowlby, 1969) and the need persists in the life (Baumeister & Leary, 1995) which progressively become attachment styles (Hazan & Shaver, 1987). The challenge of preserving connection with care provider is shifted to establishing and maintaining an adult role in society enabling them to identify their thoughts and feelings by differentiating from others (Bowen, 1978). This pivotal aspect in human development is called Differentiation of Self which speaks of how people perform their roles in relationships (Kerr, 1984).

Multigenerational theorists emphasize the importance of differentiation of self for both familial and individual systems (Bowen, 1972; Skowron & Schmitt, 2003). This concept centers on the balance the individual strikes between autonomy and closeness in

his/her relationships and one of its important indicators is emotional reactivity (Bartle-Haring, Brucker & Hock, 2002). This emotional reactivity is the involuntary response an individual has to an emotion-evoking situation (Bartle-Haring & Sabatelli, 1995), and family systems theorists, echoing the general definition of emotional reactivity, liken this response to instinct (Peleg-Popko, 2002; 2004; 2005).

Looking at the importance of the concept of differentiation of self, Bartle-Haring and Sabatelli (1995) constructed a measurement tool that focused on the aspect of behavioral/emotional reactivity which was missing in existing measurement tools. The tool measures behavioral consequences of the emotions evoked during individuation / self-differentiation inhibiting scenario (Or simply emotion evoking situations defined by Bowen as times when the person gets angry, feels guilty or embarrassed).

Bartle-Haring and Sabatelli (1995) developed and validated Behavioral/emotional reactivity index based on Bowen's family system theory. To find the reliability and validity of BERI, they compiled data from three different studies and analyzed it for factor structure and other psychometric properties. The combined samples used for analyses comprised 454 respondents of age 17 – 25 years. The results of confirmatory factor analysis with higher-order revealed a fair model fit for the mother BERI and father BERI scores. Using the same combined samples, Cronbach alpha reliabilities for the overall scale scores were .93 and .93 for mother and father forms respectively. The reliabilities for reactive responses ranged from .88 to .91 for the mother subscales and .89 to .92 for the father subscales. Furthermore, the scores were found correlated with personal adjustment variables (i.e. self-esteem, conflict management, identity formation and interpersonal competence, greater autonomy, and detachment) and differentiation in the family.

Researchers have further provided evidence of the construct validity of the BERI (Bartle-Haring & Sabatelli, 1995). Data were drawn from college students. Stressful life events were also found connected with psychological distress; hence, there was an indirect relationship between emotional reactivity towards mother and psychological distress explained through the stressful events (Bartle-Haring et al., 2002; Bartle-Haring & Probst, 2004). Another study sought the relationship between indirect family factors, emotional reactivity and interpersonal competence in young adults. The data were collected from 685 college students (age mean = 20.2, *SD* = 2.87). Emotional reactivity as an individual factor, along with other family factors significantly predicted interpersonal competence (Dakin, 2006).

The existing literature on the concept of differentiation of self shows it is an important individual factor that influences interpersonal competence and several adjustment outcomes in adolescents (Eisenberg, Spinrad, & Smith, 2004; Lopes et al., 2004; Skowron, Stanley & Shapiro, 2009; Skowron, 2004). This influence remains intact regardless of the social and cultural dynamics. The concept of differentiation of self during adolescence strikes an important indicator of behavioral-emotional reactivity towards parents. Given the importance of differentiation of self in adolescents, the phenomenon is not yet explored in Pakistan. The majority of the studies in Pakistan have focused on

differentiation of self in adults (e.g. Sheikh, Koolaee, & Zadeh, 2013; Kamran & Malik, 2016; Malik & Idrees, 2018; Jafary, Alavi, Irajpour & Mehrabi, 2017; Riaz, Javed & Amjad, 2017) while research looking at the adolescent perspective is comparatively slim. Maybe this is due to the unavailability of an appropriate measurement tool. This deficiency led us to find relevant measures and the search terminated on BERI (Bartle-Haring & Sabatelli, 1995). The questionnaire was translated as a part of Ph.D. research work because this was the only available tool to assess the differentiation of self in adolescents in terms of parent-child relationships.

Moreover, Bowen (1978) declared his theory universal but very few researchers have explored the theory from a cultural perspective and even some have questioned its relevance to collectivistic cultures. However, both autonomy and relatedness have been identified as basic human needs, although autonomy has often been studies as conflicting with relatedness (Kagitcibasi, 2005). All cultures, to some extent, manage to meet basic human needs for autonomy and relatedness (Killen & Wainryb, 2000). Chung and Gale (2006) have explored the phenomenon in Korean and European American students. To illustrate the phenomenon concerning the parent-child relationship in Pakistani culture was essential. To the best of our knowledge, the present study is the first one to establish a psychometrically sound measure of differentiation of self in terms of a parent-child relationship.

Materials and Method

To translate BERI into Urdu language and ensure that the translated version is age-appropriate and psychometrically sound, the current study was conducted in two phases

Phase I: Translation and Adaptation of BERI.

International standard guidelines directed by MAPI Research Trust (Acquadro et al., 2012) were used to translate the scale. Before validating the BERI-Urdu version, the translated items were reviewed and qualitatively judged by experts in Pakistan to determine their suitability to ensure ecological validity. Upon review, all the scenarios of BERI seemed to be culturally unbiased except two situations in two different scenarios i.e. one situation in scenario 1 "by intruding in our personal affairs, like asking personal questions about the people we are dating ………" and the other situation in scenario 7 "Sometimes FATHERS can make us feel embarrassed or upset by………. like drinking too much. The religious, social, and cultural norms restrict people from drinking and dating in Pakistan. With the consent of the original author of the BERI (Bartle-Haring & Sabatelli, 1995) researchers in Pakistan, the situations were revised. Further, the index was split into mother and father forms. Both the forms included similar situations with a difference in thinking about the parent (either mother or father).

Pilot Testing

A total number of thirty-six bilingual adolescents (boys = 14, girls = 22) of 14-18 years (M = 14.58, SD = 1.610) age from 8th to 12th grades were drawn from two English

medium schools and one Public college. They were administered original and translated versions (both mother and father forms) of BERI with a gap of three weeks.

Results of pilot testing revealed that Cronbach alpha for both the versions was computed which was .83 and .87 for translated and original versions. The correlations between original and translated scales remained highly positively significant at $p< .001$ magnitude ranging from .66 to .89 for subscales and total scores. similarly, correlations were computed between mother and father forms for original and translated version as it was split as a part of this study which remained highly positively significant at $p<.001$, correlation magnitude ranged from .57 to .78 for subscales and total scores.

Phase II: Validation of BERI-Urdu version

This phase entailed validation and determining other psychometric properties of the BERI Urdu version.

Participants

In order to empirically evaluate the translated BERI, a sample (N=303, as a general rule of thumb, 10 observations per item to avoid any computation difficulties) was conveniently drawn from different schools and colleges. The sample was comprised of 147 (48.5%) boys and 156 (51.5%) girls of age 12-18 years ($M = 16.07$, $SD = 1.77$) from different Govt ($n = 150$, 49.5%) and private (n=153, 50.5%) institutes of 5th to 10th grade ($M = 10.32$, $SD = 1.37$). The participants belonged to both joint ($n = 185$, 61.1%) and nuclear (n=118, 38.9%) family systems.

Measures

Behavioral & Emotional Reactivity Index (Bartle-Haring & Sabatelli, 1995); provides a means of assessing a critical aspect of differentiation of self by focusing on how young adults behaviorally respond to the emotion-evoking situations that evolve out of their relationships with parents. The index is comprised of a series of 10 scenarios depicting various parental behaviors that might prove annoying or psychologically and/or emotionally uncomfortable for adolescents and young adults. The response options include (a) *withdrawal* (e.g., by leaving the room or the house to get away from the parent); (b) *shut out* (psychological withdrawal, e.g., finding a way to "shut out" the parent by watching television, reading a book, or pretending not to listen); (c) *counterattack* (e.g., lashing out at the parent or trying to get back at the parent by bringing up past mistakes); and (d) *losing it* (emotional overload, e.g., crying, becoming irrationally upset, and/or enraged). Both mother and father forms are used.

The Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg 1987) was used to determin attachment of adolescents with their parents. The 25-item IPPA is a 5-point Likert scale rating from 1(never true) to 5 (always true), yielding three broad relationship qualities: the degree of mutual trust; (α = .74); quality of communication (α =

.76), and the extent of anger and alienation (α = .65); and an overall attachment score (α = .87).

Procedure

After getting formal approval from the authors of original and translated versions of the scale and finalizing the BERI Urdu version, different schools and colleges (both Govt and Private sector) were scrutinized to initiate data collection. The authorities of respective schools were approached with permission letters to access the required participants who were then provided with informed consent. The willing research participants were assured about the confidentiality of information. The measurement tools were administered in a group setting with at least ten participants in each group. The participants were asked to read the instructions carefully and select the most appropriate response without being concerned about any right or wrong choices. All the group proceedings were done in a separate room from their classrooms. They were given the freedom to quit at any stage of data collection if they felt uncomfortable. They were encouraged to complete the tools without leaving any items unfilled.

Results and Discussion

Data were analyzed using Linear Structural Relations (LISREL), Version 8.08, Analysis of Moment Structures (AMOS) Version 21 (IBM, 2014) and Statistical Procedures for Social Sciences (SPSS), Version 24 (IBM, 2016). Three hundred and nine adolescents took part in the present study. There were six missing values in the data. The sample size was enough for the study objectives as per the globally accepted criteria of 10 participants per parameter. The values were missing at random so the participants who left missing responses were excluded as it did not cause any substantial loss of statistical power of the data.

BERI data was evaluated for univariate outliers before running the CFA analysis. Evaluation of absolute values for each case of data set, there were 15 outliers i.e. >3.29 (Field & Wilcox, 2017). All the outliers were included in analyses as they were real responses of the participants rather data entry errors. thus, the exclusion was unsupported. The final dataset included three hundred and three participants.

The model was tested with LISREL using both data sets i.e. mother form and father form respectively. A robust maximum likelihood minimization function (Yuan & Bentler, 2000) was used as an estimator. The goodness of fit was evaluated with the Standardized Root Mean Square Residual (SRMR <.08), Root Mean Square Error of Approximation (RMSEA<.08) and its 90% confidence interval (90% CI), Comparative Fit Index (CFI ≥.90), Adjusted Goodness of Fit Index (AGFI > .80), Parsimonious Normed Fit Index (PNFI ≥ 0.95), Non-Normed Fit Index (NNFI ≥ 0.95) and cmin/df < 3 = Good; <5 sometimes acceptable (Klin, 2016; Soleimani et al, 2016).

Figure 1 is the hypothesized model for this analysis which presents how response options for every scenario are considered to load on the respective subscales that construct

four factors i.e Physical Withdrawal, Counterattack, Psychological Withdrawal, and Emotional Overload which are further hypothesized to load on a higher-order factor i.e. general emotional reactivity. Furthermore, measurement errors among the four response categories on each scenario are considered interrelated, to control for any effect due to the scenario itself.

Figure 1
Four factors of BERI (both Mother& Father versions) with a higher order factor and correlated measurement error within each scenario (Scenario 1 errors correlated as an example).
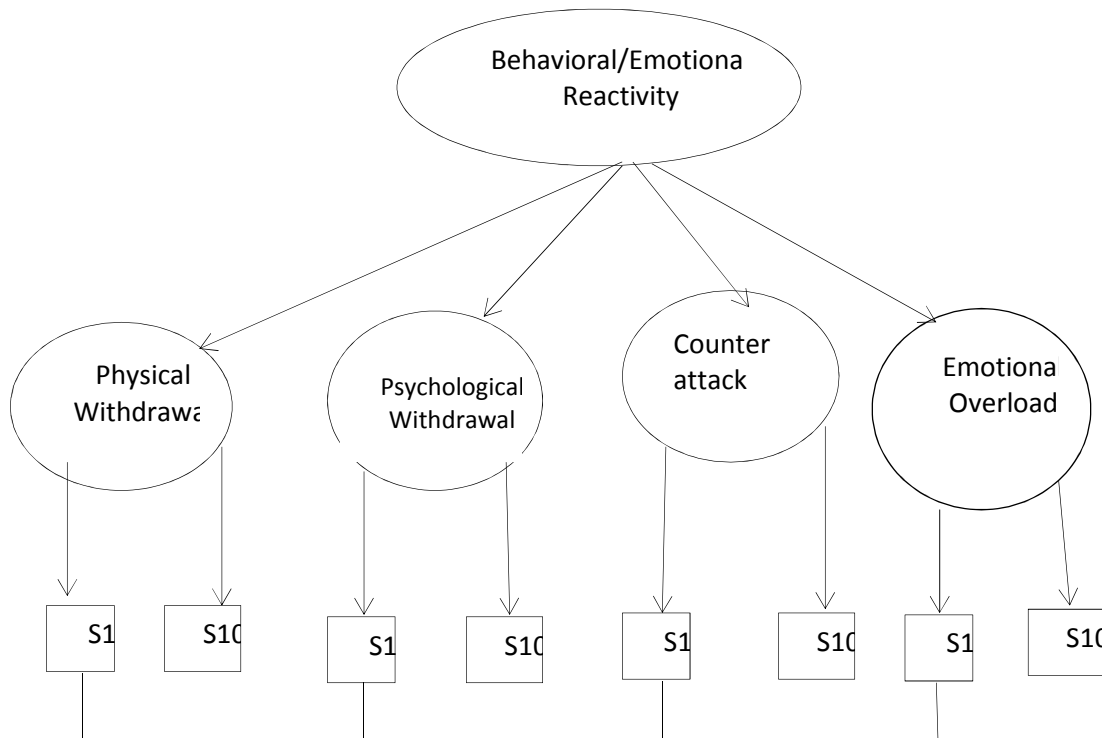

Table 1
Confirmatory factor analysis of higher factor model of Behavioral/Emotional Reactivity Index (BERI) both Mother and Father Versions (N = 303)

	Mother BERI			Father BERI		
	Factor Loadings (t values)	Composite Reliability	Error covariance	Factor Loadings (t values)	Composite Reliability	Error covariance
Physical Withdrawal		**.80**			**.87**	
1	.52 (….)		.67	.77 (….)		.97
2	.55 (6.78)		.80	.64 (8.50)		.78
3	.55 (6.36)		1.03	.78 (10.36)		.84

4	.65 (6.94)	1.03	.69 (8.69)	.85
5	.65 (7.16)	.89	.87 (10.24)	.60
6	.65 (7.27)	.85	.73 (9.45)	.67
7	.52 (6.16)	1.04	.71 (9.04)	.76
8	.64 (6.98)	.96	.78 (9.42)	.76
9	.61 (6.80)	1.00	.70 (8.71)	.87
10	.76 (7.62)	.90	.73 (9.28)	.73
Factor loading on higher order factor	.75 (5.91)	.44	.77 (8.21)	.41
Counterattack	**.82**		**.89**	
1	.38 (….)	.63	.59	.45
2	.47 (5.69)	.66	.56 (9.59)	.49
3	.55 (6.08)	.64	.65 (10.36)	.48
4	.50 (5.76)	.72	.56 (9.02)	.60
5	.55 (6.05)	.67	.66 (10.50)	.46
6	.53 (6.23)	.50	.57 (9.54)	.52
7	.55 (6.14)	.60	.64 (9.96)	.48
8	.58 (6.30)	.56	.71 (11.16)	.40
9	.60 (6.24)	.63	.61 (10.09)	.48
10	.58 (6.32)	.53	.63 (10.25)	.48
Factor loading on higher order factor	.32 (3.52)	.90	.53 (6.76)	.72
Shutout	**.80**		**.85**	
1	.54 (….)	.72	.51	.43
2	.51 (6.56)	.78	.61 (7.67)	.58
3	.52 (6.71)	.76	.53 (6.72)	.82
4	.53 (6.53)	.85	.58 (7.22)	.71
5	.59 (7.07)	.76	.66 (7.98)	.52
6	.53 (6.82)	.72	.62 (7.62)	.61
7	.51 (6.47)	.83	.62 (7.55)	.64
8	.57 (7.32)	.62	.55 (7.36)	.59
9	.52 (6.75)	.73	.66 (7.72)	.63
10	.57 (7.26)	.63	.68 (8.06)	.52
Factor loading on higher order factor	.66 (5.68)	.56	.70 (6.90)	.51
Loose it	**.83**		**.86**	
1	.48 (…..)	.43	.35 (…..)	.59
2	.50 (8.19)	.48	.48 (6.07)	.47
3	.50 (8.52)	.40	.52 (5.84)	.70
4	.53 (8.39)	.49	.45 (5.71)	.59
5	.62 (9.32)	.39	.47 (5.99)	.49
6	.55 (8.90)	.39	.64 (6.56)	.40
7	.51 (7.99)	.54	.64 (6.47)	.48
8	.56 (8.42)	.53	.66 (6.36)	.60
9	.54 (8.30)	.52	.56 (6.02)	.66
10	.52 (8.10)	.53	.51 (5.95)	.59
Factor loading on higher order factor	.47 (5.78)	.78	.35 (3.81)	.87

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Standardized loadings and the respective t values are given in table 4 along with covariance. To provide a scale for each of the factors that represented the response categories, the loading of the first item in each subscale was set to 1; therefore, the standardized loading is reported for the respective items but t values could not be computed.

Table 2
Goodness of fit indices for BERI Mother and Father Forms Urdu version (N = 303)

	Cmin /df	RMSEA	RMSEA lower CI	RMSEA higher CI	CFI	AGFI	SRMR	PNFI	PCLOSE
Mother Form	1.69	.047	.04	.051	.93	.81	.07	.79	.69
Father Form	1.65	.044	.03	.049	.96	.82	.07	.86	.88

Cmin = minimum discrepancy function, df = Degree of freedom, RMSEA = Root Mean Square Error of Approximation, CFI = Comparative Fit Index, AGFI = Adjusted Goodness of fit index, SRMR = Standardized Root Mean Square Residual, PNFI = Parsimonious Normed Fit Index

Although Chi-square value for mother version $\chi2$ (736) = 1242.58, $p < .001$ and for father version χ^2 (736) = 1214.42, $p < .001$ revealed a poor fit but cmin/df values for both models were found acceptable. The rest of the goodness of fit indices as per the criteria of cut-off scores provided an adequate fit to the data. No modifications were required to be made as the hypothesized model had acceptable fit.

The internal consistency of the measurement tools was evaluated using Cronbach's alpha coefficient (Cronbach, 1951). Alpha values ≥ .70 are considered adequate (Hair, Anderson, Babin, & Black, 2010) and ≥.80 satisfactory (Nunnally, 1994). Overall, the internal consistency of BERI (Urdu version) Mother & Father Forms is satisfactory. Split half reliability coefficients with Spearman-Brown correction for Mother Form was .83 (split-half correlation .71) and for father version, it was .91 (split-half correlation .83) which is in the acceptable range. The composite reliability of the subscales of mother and father versions are adequate as a cutoff value for CR is .70. CR values higher than .6 also indicates adequate construct validity of a scale (Fornell & Larcker, 1981).

To establish discriminant validity of the translated scale, two distinct groups based on the parent-child attachment were formed. Researches indicate paternal attachment a significant correlate of behavioral and emotional reactivity towards parents. A difference in BERI scores was computed for the adolescents who were securely and insecurely attached with parents.

Table 3

Mean, standard deviation, and t-values of more secure and less secure groups on BERI Mother and Father forms   (N = 303)

DV's	Attachment Styles						
	More Securely Attached	Less Securely Attached			95% C.I		
	M(SD)	M(SD)	t	df	LL	UL	Cohen's d
BERI F	123.64 (19.71)	128.93(18.23)	-2.42**	290.51	-9.60	-.98	0.3
BERI M	123.18 (15.57)	125.68(16.44)	-1.36	297.31	-6.13	1.12	0.2

*p< .01

The research participants were categorized as "More Secure" and "Less Secure" in attachment with mother and father using a median split. They were compared on the scores of Self-differentiation further. The results are given in the table below. IPPA Mother Form was compared with BERI Mother Form and IPPA Father Form was compared with BERI Father Form. Results revealed that both the groups significantly differ on the self-differentiation further revealing that those who are more securely attached with fathers scored low on behavioral and emotional reactivity (indicating high self-differentiation) as compared to the other group with a small effect size. Similarly, those who were more securely attached with mothers scored low on behavioral and emotional reactivity (indicating high self-differentiation) as compared to the other group with a small effect size.

Discussion

The main focus of this research was to translate the Behavioral and emotional Reactivity Index (Bartle-Haring & Sabatelli, 1995) into the Urdu language for the adolescent population of Pakistan further determining the psychometric properties of the translated version. Another important idea was to split the index into mother form and father form where respondents were able to respond to emotion-evoking situations for mother and father on separate forms.

Confirmatory factor analysis with higher-order was done for the present data set. The higher-order analysis makes sense conceptually when we consider that many phenomena are considered to exist in a hierarchical structure and want to attain a higher degree of generalization (Thompson, 1990). Whenever primary factors are correlated, extracting higher-order factors from an inter-factor correlation matrix is vitally important to understand data from a different perspective (Navruz, Capraro, Bicer & Capraro, 2015). The present model was tested with LISREL using both data sets i.e. mother form and father form respectively. A robust maximum likelihood minimization function (Yuan & Bentler, 2000) was used as an estimator. The fit indices revealed the model as a perfect fit which is in line with the findings of Bartle-Haring & Sabatelli (1995). These findings are also in line with Bowen's family system theory which views the family as an emotional unit and uses systems thinking to describe the complex interactions in the unit. The connectedness and reactivity make the functioning of family members interdependent (Bowen, 1978).

Inter item correlations were also computed for BERI both mother and father versions that ranged from .40 to .58 for both the versions which show that they measure

the similar underlying construct. The internal consistency for mother (α =.86) and father (α = .91) versions support the argument that the BERI Urdu version can be used with adolescents (Nunnaly, 1978; George & Mallery, 2003).

To establish discriminant validity of the BERI-Urdu version, attachment with parents was used to form distinct groups in the present sample. Attachment to parents has been found to discriminate delinquents from non-delinquent among 12- to 17-year-olds (Redondo, Martin, Fernandez, & Lopez, 1986). The sample was divided based on their attachment with parents categorizing as "more securely attached" and "less securely attached" with mother and father. This categorization has already been used by Armsden, McCauley, Greenberg, Burke, & Mitchell (1991) using the Inventory of Peer and Parent Attachment (Armsden & Greenberg 1987). Both the groups significantly differ on the behavioral/emotional reactivity towards parents. The mean comparison showed that the more securely attached group was higher on the differentiation of self (a negative indicator of BERI) as compared to the less securely attached group. These findings are in line with the attachment theory which states that secure attachment with a primary caregiver is seen as the core factor of healthy development (Bowlby, 1969). This attachment is a bond that brings parent and child together to provide a "secure base" for the autonomous development of the child (Stinson, 2016).

Convincingly, the BERI (Mother and Father Form) Urdu version is a comprehensive, reliable, and valid tool to be used with adolescents to measure the behavioral /emotional reactivity towards parents undermining the concept of differentiation of self in Pakistani culture.

Implications

The study has theoretical and practical implications. On theoretical grounds, it has provided a theoretical strength for the Bowen's family system by validating he concept in different culture. The practical implication is that it provided a valid and reliable measure for self-differentiation in adolescents. It may be useful to identify adolescents with problematic parent-child relationships. Family therapists may seek guidance to plan interventions to eradicate negative developmental outcomes. The current study may also provide directions to researchers to make them realize the importance of differentiation of self in family settings.

Limitations and future directions

The cross-sectional data were used in this study which limits the test-retest and predictive validity of the tool. Future research should include longitudinal data to see how the differentiation of self develops in adolescents and further into adulthood. Furthermore, invariance across gender could not be tested for the BERI Urdu version. Gender roles have also not been kept into consideration. Specific gender roles and expectations in any culture are important elements concerning the cross-cultural validity of Bowen's Family Systems theory (Sadeghi, Barahmand & Roshannia, 2020). Future researchers especially those who are interested in the sociology of gender should focus on holistic phenomenon.

Additionally, a convenient sampling technique has been used to draw a sample which limits the external validity of the measure. One may extend this work by including a diverse sample to enhance its external validity.

Conclusion

Recapitulating the above, BERI was translated into Urdu language using the standardized procedure, and finalized version was empirically evaluated by administering on the selected sample. To check the construct validity, confirmatory factor analysis with a higher-order factor was conducted which revealed a fair model fit as the original version of the scale. Reliability coefficients were taken from Cronbach alpha and split-half method which remained in an acceptable range. The discriminant groups formed based on attachment with parents were significantly different on the BERI Urdu version (both Mother & Father Forms) and the findings are supported by existing literature. Despite the limitations, the BERI Urdu Version is a reliable and valid tool that researchers can use to measure differentiation of self in terms of the parent-child relationship among adolescents in Pakistan.

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