The Parental Bonding Instrument for adolescents in Saudi Arabia: psychometric properties and correlations with self-esteem, depression and bullying

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Abstract

The Parental Bonding Instrument (PBI)which developed by (Parker, Tupling, and Brown, 1979) is widely used by researchers and professionals to assess parent-adolescent relationships. The purpose of this study was to validate an Arabic version of the PBI for Saudi adolescents. Participants from intermediate and secondary schools were 156 boys and 145 girls from schools in Riyadh. The mean age for participants was 15.47 years old and the age range was 13 – 18 years. Methods used were back translation, assessment of semantic equivalence, face validity, analysis of internal consistency of sub-scales, analysis of the factor structure. Correlations were calculated between PBI and measures of self-esteem, depression and bullying to provide an estimate of concurrent validity. Results found good internal consistency for the Mother Care and Father Care subscales, but poor internal consistency for the Mother Overprotection and Father Overprotection subscales. Factor analysis resulted in 3 factors (care, encouragement of behavioural freedom and denial of psychological autonomy). Significant correlations with self-esteem, depression, bullying and victimisation of bullying were found. Conclusions were that the Care subscale is suitable for use with Arab adolescents but cultural factors impacted the suitability of the Overprotection subscale.

Key words: Parental Bonding Instrument, Saudi Arabia, adolescence, parents, care, overprotection, Self-esteem, Depression, Bullying.

1. Introduction

The quality of the relationship between parents and adolescents is widely considered to be important for optimal adolescents development and mental health (Bowlby, 1969; Parker, 1983; Phares, 2003; Yoo, Kim, Shin, Cho, Hong, 2006). Troubled relationship between parent and adolescents is basically indicator to the emotional and behavioural problems (Davidson & Cardemil, 2009), also it has negatively affected on psychological well-being on for adolescents such as, self-esteem, satisfaction with life, depression, and bullying (AL-Sharfi, Pfeffer, Miller, 2015). As Koiv (2012) stressed that insecure parent-child relationship is a risk factor for developing bullying behaviour or being a victim of bullying during adolescence. One of the most influential theories on the quality of parent-child relationships is Bowlby's attachment theory (Parker, 1983). Based on attachment theory, the Parental Bonding Instrument (PBI) was designed by Parker et al (1979) and is one of the most widely used instruments to measure parent-adolescents bonding among adolescents. It assesses the quality of relationships between adolescents and their parents during the first 16 years. The PBI has been translated into several different languages and validated for use in a range of different countries and cultures. For example, it has been translated and validated for Dutch, French, Greek, Japanese, Urdu, Chinese and Persian speakers (Arrindal, Hanewald, Kolk, 1989; Behzadi & Parker, 2015; Kitamura, & Suzuki, 1993, Liu & Fang, 2011; Moher, Preisig, Ferrero, 1999; Qadir, Stewart, Prince, 2005; Tsaousis, Mascha, Giovazolias, 2012).

The Japanese version of the PBI was validated by Kitamura and Suzuki (1993) through a process of translation to the Japanese language, back translation to the English language, and analysis of the factor structure. Also, they

examined the association of scores on corresponding items for parents and their adolescents. In addition, they investigated the effect of social desirability on participants' responses. The results showed corresponding scores between parents and adolescents, also there were no social desirability effects found for the Japanese version, and the factor loading patterns were similar that of the original PBI. The Brazilian Portuguese version of the PBI was validated by Hauck et al (2006). They used the Conflict Tactics Scales method (CTS2) which comprises three stages; evaluation of conceptual and item equivalence, evaluation of semantic equivalence, and evaluation of operational and functional equivalence. The results found that the Brazilian Portuguese version of the PBI was extremely suitable for use in Brazil. An Urdu version of the PBI was validated by Qadir et al (2005). Qadir et al used translation and back translation, calculated internal consistency and reliability using Cronbach alpha and a factor analysis to assess the structure of the PBI in Urdu.

From the above studies, it is evident that the PBI has been translated into several languages and is appropriate for use in a range of cultures. However, the original two-factor structure of 'care' and 'overprotection' has not always been replicated. For example, Qadir et al's results were found to be consistent with the three-factor structure of Care, Protection – Personal Domain and Protection – Social Domain identified by Cubis et al (1989) and the three factor structure of Care, Denial of Psychological Autonomy and Encouragement of Behavioural Freedom identified by Murphy et al (1997).

In summary, processes of assessing cultural validation used in previous research have involved language translation and back translation, assessing semantic equivalence, face validity, internal consistency and factor analysis. However, few studies have assessed the concurrent validity of the PBI. An exception is Qadir et al (2005) who assessed concurrent validity of the Urdu version with the clinical interview

schedule (CIS-R). They found significant correlations between low care scores and high overprotection scores on the PBI with mental disorders among adult women. Although not specifically assessed for concurrent validity, others have noted correlations between depression and PBI scores (Martin, Bergen, Roeger, Allison, 2004; Narita, Sato, Hirano, Gota, Sakado, Uehara, 2001) between self-esteem and PBI scores (Chen & Furnham, 2004) and bullying and PBI (Mitsopoulou & Giovazolias, 2013).

From reviewing the psychometric tests available for use in Saudi Arabia, there is a need for measures to assess the quality of the relationship between parents and adolescents. The aim of this study is to validate the PBI for use with Saudi adolescents. This cross cultural validation followed the steps used in previous cultural validations. This involved translation to the Arabic language, back translation, assessment of semantic equivalence and face validity, analysis of the internal consistency of the subscales, analysis of the factor structure of the PBI and assessment of concurrent validity. As previous researchers have found significant relationships between PBI scores and depression, self-esteem and bullying (Martin et al., 2004; Narita et al., 2000; Chen & Furnham, 2004; Mitsopoulou & Giovazolias, 2013), correlations between the PBI scores and measures of depression, self-esteem, bullying and victimization were used as an indication of concurrent validity. Thus, the two following questions can be asked:

1- Is the parental bonding instrument suitable to use with Saudi adolescents?
2- Are there correlations between parental bonding instrument for adolescents and measures of self-esteem, depression, bullying and victim as an indication of concurrent validity?

Methods

Following translation, data was collected in two phases. Phase one involved assessment of internal consistency. Phase two involved replication of the internal consistency assessment, as well as assessment of the factor structure and correlations with other measures. Ethical approval was granted by the University ethics committee.

Participants

Participants for phase one were 71 boys and 27 girls from schools in Riyadh. The mean age for participants was 15.25 years old and the age range was 13 – 18 years. Participants for phase two were 156 boys and 145 girls from schools in Riyadh. The mean age for participants was 15.47 years old and the age range was 13 – 18 years. All had parental consent to participate.

Measures

The Parental Bonding Instrument consists of two subscales to measure 'care' and 'overprotection'/'control' as perceived by adolescents. The care subscale includes 12 items and the overprotection subscale includes 13 items. Also, there are two versions, comprising 25 items for mother-adolescent bonding, and 25 items for father-adolescent bonding. Each of the scale items are rated 0 (very unlike) to 3 (very like) producing a maximum possible total score of 36 for the care dimension and 39 for the overprotection dimension. The original version is “retrospective” meaning that adults and older adolescents respond to the items for how they remember their parent’s treatment during their first 16 years.

The Rosenberg Self-Esteem Scale (Rosenberg, 1975) is the most widely used self-esteem measure, has been translated to more than 53 languages including Arabic (Sabry, Hessa, 2012). It consists of ten items about beliefs toward the self. Respondents are expected to rate how much they agree with each item on a four-point scale and the total scores of all items

calculated to show the degree of self-esteem. The Arabic version was used.

The Arabic version of the depression subscale from the Depression, Anxiety and Stress Scale (DASS21) developed by Lovibond and Lovibond (1996). It consists of 14 items to assess dysphoria, hopelessness, devaluation of life, self-depression, lack of interest/involvement, anhedonia, and inertia. Responses were scored on a four-point scale (0= Never, 1= sometimes, 2= often, and 3= almost always) and totalled to indicate the level of depression. The Arabic version of the scale was validated by Taouk and Lovibond (1996).

The Arabic bullying and victimization measure contains two subscales, bullying behaviour and being a victim of bullying. It was developed for Arabic cultures by Abu-Ghazal in Jordan (2009). The bullying behaviour scale consists of 34 items, scored on a 5-point scale and the victimization scale contains 30 items, also scored on a 5-point scale.

Procedures

The PBI items were translated from the English language to the Arabic language using back-translation. The verb tense was changed from the past to simple present tense in Arabic to make it suitable for adolescents with an age range from 13 to 18 years old. The translation was done by ten Arabic and English speaking psychologists including the first author. The items were then translated back into English to check that the original meaning was kept. This process was repeated until a satisfactory translation was achieved. The translators reported that the questionnaire was acceptable for the sample of adolescents and had good face validity.

Following translation, a panel of experts (Saudi psychologists) assessed the translation, the relevance of the items and the face validity of the instrument for use with Saudi adolescents. The experts were four counselling psychologists,

two clinical psychologists, two developmental psychologists, and two educational psychologists. The psychologists were given a copy of the PBI in Arabic and asked to rate the suitability, including the language, of each item for the Saudi adolescent sample using a 5-point percentage scale from 20 – 100 (AL-Tariri, 1997). The mean ratings were calculated for each item. The cut-off score of 85% was used for accepting the item as suitable for use with Saudi adolescents (Cusin, Yang, Yang, Fava, 2009). Mean ratings were high for each item and ranged between 92 and 98. It was concluded that the translation was good and that linguistic equivalence and face validity was achieved.

In Saudi Arabia, schools are segregated by gender, which meant that the researcher was unable to administer questionnaires in female schools. So teachers and school counsellors were enlisted to administer and collect the questionnaires from the participants. An explanation of the research was provided in writing to teachers, parents and participants. An opportunity for asking questions was included. The counsellors and teachers asked the participants for their consent and told them that they do not have to participate if they do not want to and that they do not have to complete all the questions if they do not want to. Participants were informed that the questionnaires were not related to school work, their teachers would not read what they say and that there are no right or wrong answers. Participants were identified by a participant code number. No names or other personal identifiers were recorded on the questionnaires. School and parental consent was kept separate to the questionnaires sheets.

The translated Parental Bonding Instrument was distributed to 98 adolescents (71 males, 27 females) in school for the initial internal consistency assessment. Also, the Arabic translation of the Parental Bonding Instrument, self-esteem measure, depression scale, bullying and victimisation

scales were administered to 301 adolescents (156 males and 145 females) in during the second phase of data collection and analysis.

Results

Phase one internal consistency results

The internal consistency of the PBI was assessed by calculating the Cronbach alpha for each subscale of the mother and father versions. Also Pearson correlations were calculated between each scale item and the total score. Cronbach's alpha for each version of the PBI were .68 for the mother version and .69 for the father version. Cronbach's alpha for each subscale were .84 for Mother Care, .87 for Father Care, .52 for Mother Overprotection and .52 for Father Overprotection. Although internal consistency for the Mother Care and Father Care subscales was good, internal consistency for both the Mother Overprotection and Father Overprotection subscales was poor.

The correlations between items and the total for the 12 Care subscale items ranged from .471 ($p < .001$) to .891 ($p < .001$) for the mother version and .468 ($p < .001$) to .728 ($p < .001$) for the father version. The item total correlations for the Protection subscale ranged from .240 ($p = .017$) to .518 ($p < .001$) for the mother version and from .107 ($p > .05$) to .613 ($p < .001$) for the father version. When the Cronbach alpha results and the correlations are considered together, internal consistency for the Mother Care and Father Care subscales was good. For the Overprotection dimension, all correlations were statistically significant except for item 23 "was overprotective of me" in the father version. When the Cronbach alpha results and the correlations are considered together, internal consistency for the Overprotection subscales was poor.

After inspecting item 23, it was thought that this item had been translated to have a positive meaning in the Arabic version while in the original English language version it has a negative meaning (overprotection or control) between parents and adolescents. In other words, parental monitoring for their children's life in all details is an optimal act according Saudi culture, and not a negative act as implied in the original version. Consequently, the first author consulted with the team of translators and expert psychologists in order to improve the translation and consequently improve the meaning in the Arabic language. This required retesting the internal consistency of the scale again with the revised translation.

Phase two internal consistency assessment

Cronbach's alpha for each version of the PBI were .69 for the mother version and .70 for the father version. Cronbach's alpha for each dimension of the PBI were .85 for Mother Care, .91 for Father Care, .70 for Mother Overprotection and .71 for Father Overprotection. The Care dimension showed good internal consistency in both the mother and father versions. Also, the Overprotection dimension showed improved internal consistency in both versions. For the Care dimension, correlations between each scale item and the total score ranged from .51 and .69 for the mother version and .63 and .77 for the father version. For the Overprotection dimension, correlations between each scale item and the total score ranged from .25 and .60 for the mother version and .35 and .60 for the father version. All correlations were statistically significant after Bonferroni corrections (p = .05/13 = 0.003). When the Cronbach alpha results and the correlations are considered together, internal consistency for the Mother Care and Father Care subscales was good and internal consistency for the Mother Overprotection and Father Overprotection subscales was improved.

Factor analysis

A principal axis factor analysis was conducted with varimax rotation on all 25 items for the mother and father versions separately. For the father version, the Kaiser-Meyar-Olkin measure verified the sampling adequacy and factorability for the analysis, *KMO* = .88 and Bartlett's Test of Sphericity was significant $p < .001$. An initial analysis was run to obtain eigenvalues for each factor. A three factor solution explained 44.9% of the variance (see Table 1 and Figure 1). The eigenvalues for these three factors were 6.851, 2.292 and 2.092. After rotation, items loading on the three factors are shown in Table 2. The Care items all loaded on factor 1 (range of loadings 0.49 - 0.72). The Overprotection items were loaded on two factors (range of loadings 0.31 - .057). Factors 2 and 3 represented two sub-dimensions of the Overprotection scale. Items, 3, 7, 15, 21, 22, 25 indicated Encouragement of Behavioural Freedom and items 8, 9, 10, 13, 19, 20, 23 indicated Denial of Psychological Autonomy (Qadir et al., 2005; Murphy & Silka, 1997).

Figure 1

Factor analysis scree plot for the father version of the PBI

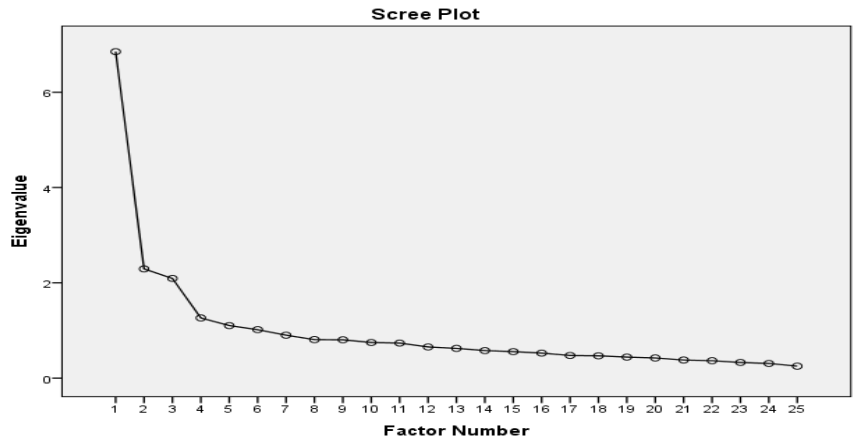

Table (1)
Total Variance Explained (Father version)

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.851	27.405	27.405	6.351	25.402	25.402	5.244	20.976	20.976
2	2.292	9.168	36.573	1.624	6.496	31.898	2.158	8.630	29.607
3	2.092	8.369	44.943	1.457	5.828	37.726	1.738	3.743	36.559
4	1.264	5.054	49.997						
5	1.103	4.410	54.407						
6	1.017	4.070	58.477						
7	.901	3.606	62.083						
8	.809	3.234	65.318						
9	.805	3.220	68.537						
10	.747	2.989	71.526						
11	.735	2.942	74.468						
12	.654	2.617	77.085						
13	.625	2.499	79.584						
14	.579	2.314	81.898						
15	.556	2.225	84.123						
16	.525	2.101	86.224						
17	.475	1.900	88.124						
18	.468	1.873	89.997						
19	.442	1.767	91.764						
20	.423	1.694	93.458						
21	.381	1.523	94.981						
22	.366	1.465	96.445						
23	.329	1.316	97.762						
24	.308	1.233	98.994						
25	.251	1.006	100.000						

Extraction Method: Principal Axis Factoring.

Table 2
Principal axis analysis for Parental Bonding Instrument Father and Mother versions
(see Parker for the English language items)

Items	Father version			Mother version		
	Factor 1 Care	Factor 2 Encouragement of behavioral freedom	Factor 3 Denial of autonomy	Factor 1 Care	Factor 2 Encouragement of behavioral freedom	Factor 3 Denial of autonomy
1	.495			.388	-.342	
2	.727			.531		
3		.492				
4	.687			.570		
5	.671			.461	-.404	
6	.595			.551	-.413	
7		.572			.451	
8			.328	-.466		.353
9			.469	-.622		.535
10			.505	-.570		.522
11	.679			.420	-.445	
12	.669			.546	-.358	
13			.345	-.546		.446
14	.654			.622		
15		.561			.568	.307
16	.651			.642		
17	.646			.549	-.352	
18	.592			.466		
19			.525	-.531		.376
20			.501	-.551		.511
21		.640			.671	
22		.558			.489	
23			.442	-.549		.492
24	.645			.637		
25		.315				

For the mother version, the Kaiser-Meyar-Olkin measure verified the sampling adequacy for the analysis, *KMO* = .85 and the Bartlett's Test of Sphericity was significant ($p < .001$).

An initial analysis was run to obtain eigenvalues for each factor in data. A three factor solution explained 39.1% of the variance and the eigenvalues for these three factors were 5.477, 2.326 and 1.996 (see Table 3 and Figure 2). After rotation, items were loading on three factors (see Table 4), except items 3 and 25. Similar to the father version, the Care items all loaded on factor 1 (range of loadings 0.46- 0.64). Care items 1, 5, 11, 12, 15, 17 were loaded negatively on factor 2 (the overprotection Encouragement of Behavioural Freedom factor). The Overprotection items were loaded on two factors (range of loadings 0.30 - .067). Factors 2 and 3 represent two sub-dimensions of the Overprotection scale. Similar to the father version, items 7, 15, 21, 22, loaded on factor 2 (indicating Encouragement of Behavioural Freedom), and items 8, 9, 10, 13, 19, 20, 23 loaded on factor 3 (indicating Denial of Psychological Autonomy) (Qadir et al., 2005; Murphy & Silka, 1997). Items 3 and 25 were not loaded on any of the factors of the Overprotection scale.

Figure 2

Factor analysis scree plot for the mother version of the PBI

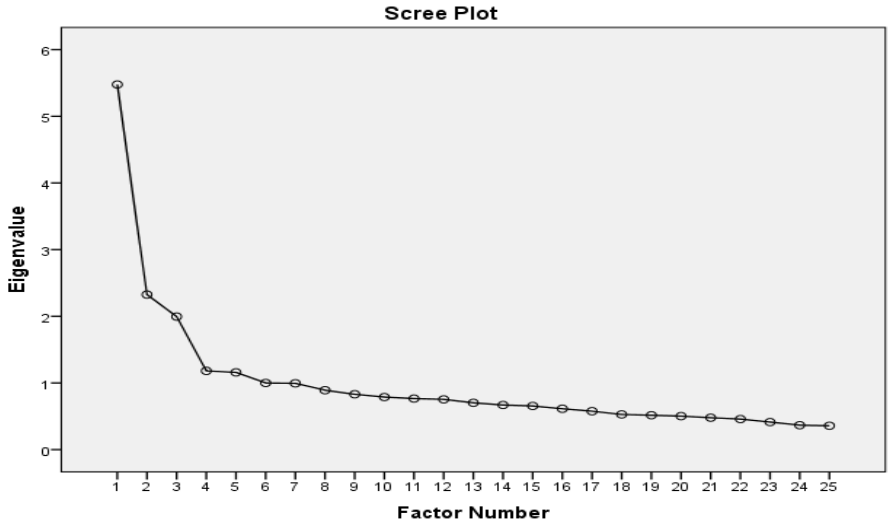

Table (3) Total Variance Explained Mother version

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.477	21.907	21.907	4.880	19.519	19.519	3.283	13.131	13.131
2	2.326	9.303	31.209	1.625	6.500	26.019	2.252	9.009	22.140
3	1.996	7.983	39.192	1.455	5.819	31.838	1.865	29.598	1.865
4	1.182	4.726	43.918						
5	1.159	4.636	48.554						
6	1.000	4.002	52.556						
7	.995	3.979	56.535						
8	.891	3.566	60.101						
9	.831	3.323	63.423						
10	.788	3.153	66.576						
11	.766	3.062	69.638						
12	.754	3.015	72.654						
13	.702	2.810	75.463						
14	.669	2.676	78.140						
15	.655	2.619	80.759						
16	.613	2.453	83.212						
17	.576	2.304	85.516						
18	.527	2.110	87.626						
19	.516	2.065	89.691						
20	.502	2.009	91.700						
21	.479	1.916	93.616						
22	.458	1.834	95.450						
23	.413	1.651	97.101						
24	.367	1.467	98.568						
25	.358	1.432	100.000						

Correlations with other measures

A statistically significant negative correlation was found between mother care scores and depression scores; r (301) = -.532, $p < .001$. Higher scores for depression were associated with less mother care. Also, there was a positive correlation between mother overprotection scores and depression scores; r (301) = .275, $p < .001$. Higher scores from depression were

associated with higher mother overprotection. A statistically significant correlation was found between mother care and self-esteem scores; r (301) = .528, p < .001. Higher scores for self-esteem were association with higher mother care. Also, there was significant negative correlation between mother care scores and bullying scores; r (301) = -.394, p <0.001. Victimization of bullying was negatively correlated with mother care scores; r (301) = -.469, p <0.001. Higher scores for bullying and victimization were associated with lower mother care scores. Correlations between mother overprotection scores, bullying and victimization were nonsignificant after applying Bonferroni corrections.

For father care, statistically significant negative correlations were found between father care scores and depression scores; r (301) = -.587, p < 0.001. Higher scores for depression were associated with less father care. Self-esteem scores were found to be significantly correlated with higher father care scores, r (301) =.600, p < .001. Higher scores for self-esteem were associated with higher scores father care. Furthermore, higher bullying scores were found to be negatively correlated with low father care scores, r (301) = -.431, p < 0.001. Also, higher victimization scores were negatively correlated with low father care scores, r (301) = -.435, p < 0.001.

Father overprotection was negatively correlated with self-esteem; r (301) = -.256, p <0.001. Higher scores for father overprotection were associated with lower scores for self-esteem. Also, there was a significant correlation between father overprotection scores and depression scores, r (301) = .238, p < 0.001. Higher scores for father overprotection were associated with higher scores for depression. Overprotection was significantly correlated with bullying; r (301) = .166 p = 0.004 and victimization; r (301) = .208, p < 0.001. Higher scores for bullying and victimization were associated with higher scores for father overprotection.

Discussion

To the best of our knowledge this is the first study to report a psychometric analysis of the PBI in the Arabic language. The validation of the PBI for use in Saudi Arabia is an important addition to Arabic psychometrics. This validation followed similar techniques used in previous research undertaking validation to other languages (Kitamura & Suzuki, 1993; Qadir et al., 2005; Huack, Schestatsky, Terra, Knijinik, Sanchez, Ceitlin, 2006). These steps were translation, back translation, reliability / internal consistency, factor analysis and concurrent validity assessment. In this validation, the verb tenses for all items were changed to the present simple tense so that it would be suitable for adolescents aged 13-18 years in Saudi society.

The results showed the feasibility of the PBI only for the care dimension. The validity of the protection dimension is poor for the Saudi version of the PBI, especially for the mother version. The internal consistency of the protection dimension was poor in the preliminary study due to item 23 (‘was overprotective of me’) and item 3 (‘let me do things I liked doing’). Although this improved in the replication study, the correlations for these items were low. The factor analysis showed poor construct validity for the mother version of the protection dimension.

The causes for the poor validity of the protection subscale can be related to cultural values. The items for the overprotection dimension in the original PBI assessed two factors; encouraging freedom and denying human autonomy. Items 3 and 25 which are about encouragement of behavioural freedom did not fit the rotated factor matrix. In western societies, where the PBI was developed, adolescents (boys and girls) have more freedom and independence to administer their life issues. Also, there are no strict social rules which force

them to be obedient to their parents as there are in Saudi society. In the validation of the Pakistani version Qadir et al., 2005), the internal consistency for items 13, 21, 22, 23 and 25 which belong to the overprotection dimension revealed no significant correlations. The items had been affected by social norms. In the Pakistani culture and Urdu language item 23 tends to be perceived as a positive feature of parenting. In contrast, in the original version, this item tends to be perceived negatively as denying freedom. The cultural similarity between Pakistani and Saudi society supports the validation problems found for the protection dimension.

For the concurrent validity, the results of the correlation between PBI scores and depression scores support Parker et al (1979). They showed that PBI was associated with neurotic depression in adult life, when the scores were lower for care and higher for overprotection. Also, lack of affection (less care) correlated with psychological problems in adult life such as mental illness and personality disorders (Hauck et al., 2006). The results also support Kitamura and Suzuki (1993) who found that depression was correlated with mother overprotection. For bullying, the results support Mitsopoulou and Giovazolias (2013), also Williams and Kennedy (2012) and Koiv's (2012) studies which found an association between affectionless parenting and bullying/victimization among adolescents.

The proprieties of PBI found in this validation study have found that it will be a suitable instrument for investigating the quality of relationship between parents and adolescents in Saudi society. The internal consistency for the care dimension was good and it had the strongest factor loadings. Although the internal consistency for the overprotection dimension was improved after correcting the translation and the conceptual equivalence, the factor loadings of the items were inconclusive. PBI validation is an important step to enrich the Arabic psychological library with diversified instruments.

Also this validation will be useful to use from the counsellors in the schools to assess the quality of parent-student relationship and its impact on students' mental health and behaviours problems. Moreover, it can be used in clinical practice to determine the role of parent-adolescent bonding in depression. However, cultural patterns have a clear impact on the overprotection dimension which raises concerns about implementing this sub-scale in Saudi society. Therefore, the researcher do recommend to conduct further researches to develop the items of overprotection subscale to be more suitable to assess the parent and adolescents relationship in Saudi society.

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