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Validation of the Amharic Version of the Father-Adolescent Conflict Scale with School Adolescent Sample in Addis Ababa

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Abstract

Child-parent conflict is a pervasive developmental concern that occurs during adolescent transition to adulthood. However, assessment tools that help diagnosing the nature of this conflict are unavailable in the Ethiopian setting. The purpose of this study was, therefore, to establish the psychometric qualities of the adolescent version of Conflict Behavior Questionnaire- Father Adolescent Conflict Scale-(CBQ-FAC 20) using 'Aggression Questionnaire' (BPAQ-12) as an anchor variable. 225 participants (123 girls and 102 boys), aged 14 to 16 years, were sampled using stratified random sampling from Grades 8 through 10 in one school (Nejashi Academy) in Addis Ababa. The Amharic translation of these tools was used for validation. Analysis of data revealed that CBQ-FAC 20 had a Cronbach's alpha value of .804. Furthermore, a principal component analysis with oblique rotation yielded two factor structures for FAC scale. The construct validity of FAC scale with the Aggression Questionnaire (BPAQ-12) was also strong. Finally, FAC scale showed measurement invariance (equivalence) by gender. Hence, CBQ-FAC 20 has sound psychometric properties and, therefore, can be used to assess parent-adolescent conflict and negative communication behaviors in Amharic language speaker urban adolescent family settings.

Keywords: Adolescence, Conflicts, Gender Invariance, Conflict Behavior Questionnaire, Aggression Questionnaire

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Introduction

Following the fundamental changes at puberty, a desire among adolescents for independence appears to increase. Family relationships begin to alter from parental to peer reliance, as adolescents begin to ascertain themselves as a part of a hierarchy that is headed by their parents (Fuligni& Eccles, 1993). Parent-adolescent relationship experiences increased conflict and decreased closeness (Steinberg & Morris, 2001) and some of these conflicts of course have apparent functions in adolescent development of autonomy and individuation (Steinberg, 2001) particularly if it is a moderate level of conflict (Schlomer, Del Giudice, & Ellis, 2011). However, high level of conflict is marked by disapproval of and complaints about the behavior of the other member/s (Prinz, Foster, Kent &O'Leary, 1979) that may lead to a feeling of resentment and internalization (Yeh, 2011; Bradford, Vaughn, & Barber, 2008) that may translate into a variety of externalizing and internalizing problems (Buehler & Gerard, 2002; Pelton & Forehand, 2001; Robin & Foster, 1989) eventually compromising developmental and health outcomes of adolescents (cited in Shek & Ma, 2001). Presumably, early diagnosis and intervention would help reorienting the pathological pathways before it becomes debilitating. Parent-adolescent conflict assessment would undoubtedly plays a significant role in this journey for recovery. Such assessments mandate the use of solid tools that promise sound decision making. One promising tool that has been widely employed is the Father-Adolescent Conflict (FAC) Scale; which is one version of the Conflict Behavior Questionnaire (CBQ). This paper is a modest attempt to validate this FAC scale.

Rationale of the study

Parent-adolescent conflicts are usually considered as common occurrences during adolescence. Research evidences suggest that these problems can be prevalent in the Ethiopian setting as well (Belay & Yekoyealem, 2015). Hence, these problems need to be properly measured in order to conduct interventions and therapy. However, although parent-adolescent conflict measures are proliferating particularly in the West, there are no instruments with adequate psychometric properties to measure conflicts in the Ethiopian setting. Against this background, there is a need to establish the factor structure and psychometric qualities of the short form of CBQ-FAC 20 scale in a representative sample of urban elementary and secondary school adolescent population. Additionally, potential gender invariance needs to be tested to ensure item sensitivities of the scale for different stakeholders. For example, it provides a

handy support for clinicians and counselors to diagnose the level of parent-adolescent conflicts. It also serves as an important tool of data collection in the field. Last, it helps to design proactive intervention measures on young people in Ethiopia. Therefore, this validation research attempted to seek data along the psychometric properties of the Amharic version of this tool and it attemptedto examine internal consistency, factorial structure and measurement invariance.

Objectives of the study

The main objective of this validation research was to establish the psychometric properties of the Amharic version of Adolescent reported CBQ-FAC 20 Scale. In order to achieve this objective, the research sought to answer the following specific questions.

- What is the reliability (internal consistency) of the Amharic version of CBQ-FAC 20 Scale?
- What is the construct validity of this Scale in urban areas of Ethiopia as Addis Ababa?
- What are the underlying factor structures of the Scale?
- What is the measurement invariance of the Scale with respect to gender?

Review of Related Literature

Adolescent-parent conflicts are usually considered as common occurrences during adolescence period (Noller, 1994). Yet, family relationships remain important throughout adolescence (Noller, 1994). Conflicts in families can in many instances serve a way of renegotiating boundaries and rules between parents and adolescent (Hawk, Keijsers, Hale, & Meeus, 2009), resulting in to redefining the family system (Parkin & Kuczynski, 2012). Psychologists even use to view significant conflict in adolescence as an important component to healthy development (referred to because the “storm and stress” of adolescence) (Peterson & Leigh, as cited in Nebel & Marie 2006). In fact, adolescents who did not exhibit high levels of conflict with their parents were feared to suffer from stunted development.

However, since then, evidence has shown that levels of conflict vary considerably and high levels are not necessarily seen as optimal (Montemayor, as cited in Nebel & Marie 2006). Although conflict remains to be a common part of adolescent relationships, this higher level of intensity are related to hostility and, therefore, limit the potential for future positive interactions (Montemayor, Laursen, as cited in Nebel & Marie 2006),

predispose adolescents to adjustment problems (Fuligni & Eccles, 1993), resentment and internalization of problems (Yeh, 2011; Bradford, Vaughn, & Barber, 2008), and a host of internalizing and externalizing problems (Buehler & Gerard, 2002; Pelton& Forehand, 2001; Robin & Foster, 1989) including low self-esteem, depression (Pasch et al.,2006) and more risky behavior (Tucker, McHale, & Crouter, 2003), and antisocial behaviors (Shek & Ma, 2001). According to Shek and Ma (2001), parent-adolescent conflicts are also associated with adolescent maladjustment including depression, injuries, unacceptable behavior, problem-behavior at school and academic performance, and anxiety and self-esteem problems.

Clinicians measure parent-adolescent conflicts via standardized scales developed by researchers. Among these documented scales, the Conflict Behavior Questionnaire (CBQ) developed by Prinzand and colleagues (1979) and its short forms, CBQ-44 and CBQ-20 (Robin & Foster, 1989) appear to have a wider presence in the literature and evidences suggest that it could be of tremendous help if validated in the Ethiopian setting. The authors believe that validating and assessing the psychometric properties of CBO (particularly the adolescent version of Father-Adolescent-FAC Scale) against the Ethiopian context will help in the future applicability of the instrument for parent–child conflict intervention program as well as research purposes. CBQ aims to assess parent and adolescent behaviors directly from parents (mother and father) and adolescents as a way of estimating the degree of conflict and negative communication experienced within the family system, primarily for use with families of adolescents (Sheila, 2009). It is a comprehensive scale (Prinz et al., 1979) comprised of two versions, parents and adolescents' versions (Prinz et al., 1979; Robin & Foster, 1989), that are widely used to assess different interaction behavior between parents and adolescents (Sullivan et al., 2012; Keenan-Miller, Peris, Axelson, Kowatch, & Miklowitz, 2012).

In the original Conflict Behavior Questionnaire (CBQ), the parents' version consists of 75 items and adolescent's version has 73 items (Robin & Foster, 2002). Both parents and adolescents independently complete parallel versions of the CBQ (i.e., Father-Adolescent Conflict or FAC and Mother–Adolescent conflict or MAC) by rating their interactions in the last few weeks (Sheila, 2009). CBQ-20 is one of the two shorter versions of CBQ whose adolescent version is composed of "adolescent appraisal of parents" and "adolescent appraisal of parent-teen dyad" (Sheila, 2009). The two parallel scales of adolescent version of CBQ are Father-Adolescent Conflict (FAC) Scale and

Mother-Adolescent Conflict (MAC) Scale. CBQ is thought to be quick and easy to self-administer and score, especially the condensed 20-question version (Park, Garber, Ciesla, & Ellis, 2008). It is useful in clinical, research and family assessment contexts. Sheila (2009) described that CBQ-20 is efficient and economical to administer, allows for repeated use of instrument at various treatment intervals (i.e. CBQ-20) and is easily adaptable to different family settings. However, CBQ is not designed or validated for adolescents with developmental or psychotic disorders, and there is lack of recent validation data (Sheila, 2009).

Regarding its psychometric properties, internal consistency is estimated on the basis of the Prinz et al (1979). Original research samples were .90 or above for mother and teenager reports on each subscale. Approximate mean test-retest coefficients were 0.70 for adolescents (Sheila, 2009). In their study Park and colleagues (2008) also found a Cronbach's alphas of .86 for the adolescent version. Concerning validity issues, CBQ was well validated and differentiated between distressed and non-distressed parent-child dyads (Robin & Foster, 1989). Sheeber and Sorensen (cited in Sheila, 2009) also validated this tool and it yielded adequate psychometric properties and had the ability to distinguish between distressed and non-distressed families. CBQ scores significantly decrease after behavioral and non-behavioral treatment, indicating treatment sensitivity (Robin & Foster, 1989; Barkley, Guevremont, Anastopoulos, & Fletcher, 1992). However, lack of up-to-date validation data is its limitation; mainly shorter versions were not yet validated (Sheila, 2009).

Most studies conducted using CBQ and/or other instruments reported differences in prevalence of conflict between parents and adolescents across gender and the discrepancies were not unidirectional (Rudolph, &. Hammen; van de Looij-Jansen et al, as cited in Khan et al., 2015). Though there might be various explanations for the presence of such discrepancies, psychometric qualities of the instrument could be of prime importance. Given the significance of parent-adolescent conflict as a component of family system's augmentation (Hawk et al, 2009; Parkin, & Kuczynski, 2009), it is important to address the construct validity issues of parent-adolescent conflict (CBQ). The indicators on several of the instruments may depict gender specific behaviors. These types of interaction behaviors may be more frequent in one gender and less frequent in other (Khan et al., 2015). The more an instrument comprised of gender specific behaviors, the less reliable are the differences reported by the instrument.

Moreover, CBQ is adaptable to different family settings mostly in Western cultures as a measure of perceived communication-conflict behavior at home (Sheila, 2009). It is extensively used around the world, and constructed using both a bottom-up approach (Prinzetal, 1979) and top- down processes (e.g., Khan et al., 2015). However, it has not been validated in the African and Ethiopian context and yet extrapolating psychometric indices to these contexts would be fundamentally inappropriate. Particularly, CBQ suffers from lack of up-to-date validation data and more importantly its shorter versions were not validated (Sheila, 2009) as much as it is desired. Given that this tool provides a general estimate of how much conflict and negative communication a family experiences, it appears to be very useful and needs to be validated against the Ethiopian context.

Methods

Participants

Participants of the present study were adolescents (N= 225) from Nejashi Academy in Addis Ababa. Sample size determination was based on the suggestion of the ratio of participants to items. Nunnally (cited in Pallant, 2010) recommends a 10 to 1 ratio; that is, ten cases for each item to be factor analyzed. Others suggest that five cases for each item are adequate in most cases (Pallant, 2010). Furthermore, Comrey (1988) stated that a sample size of 200 is adequate in most cases of ordinary factor analysis that involve no more than 40 items.

The population of the study was stratified by grade and gender: Grade 8 (=118, 66 boys & 52 girls), Grade 9 (= 113, 59 boys & 54 girls), and Grade 10 (=106, 55 boys & 51 girls) students. A total sample of 225 participants (123 girls and 102 boys), aged 14 to 16 years (mean= 15.25, SD = 2.18 years), were selected randomly from the strata. The gender distribution indicated a slightly higher ratio of females in the sample. Students who live with their biological parents (intact family), those who are aged 12 years and above and fluent in Amharic language were included in the study. Preliminary information obtained from respective classroom teachers aided in identifying adolescent students meeting these criteria.

Instruments

Along with a demographic sheet, participants completed the following instruments.

Father-Adolescent Conflict (FAC) Scale of Conflict Behavior Questionnaire (CBQ-FAC 20 Scale)

The FAC scale of CBQ-20 and items were translated from English to Amharic following the standard backward and forward translation methods. This measure (CBQ-FAC 20 scale) was completed by the adolescents. The CBQ-20 previously translated into Chinese by Shek (1997) found that the CBQ-FAC Scale had high internal consistency and temporal stability (measuring test-retest reliability). Robin and Foster (1989) also validated CBQ-FAC 20 Scale and was able to distinguish between distressed and non-distressed families and, found adequate psychometric properties. The CBQ 20-item version has been shown to correlate highly (r = .96) with scores from the longer version (Robin & Foster, 1989). Furthermore, Lancaster (2006) found the internal consistency of CBQ-20 to be a coefficient alpha of .85 for parents (Adolescent version) and .88 for children (Parent version). The tool consists of 20 items with dichotomous options (True-false) that focus on adolescents' appraisal of their fathers as well as the dyadic relationship between the two. Items on the CBQ-FAC 20 scale are counterbalanced so that in some instances a true response corresponds to a positive perception and in some instances a true response corresponds to a negative perception. It is important to note that the CBQ does not distinguish between frequency and intensity of conflict. A higher score indicates a higher level of parent-adolescent conflict during this study.

Buss–Perry Aggression Questionnaire (BPAQ)

This instrument is used as an anchor tool to establish the construct validity of CBQ-FAC 20 Scale.

The short version of Buss-Perry Aggression Questionnaire (Buss & Perry, 2001) is a "refined" version of the BPAQ consisting of 12 Likert type items rated on a 6-point ordinal scale. The BPAQ-12 is also organized into four subscales: Physical Aggression (PA, 3 items), Verbal Aggression (VA, 3 items), Anger (A, 3 items), and Hostility (H, 3 items). Bryant and Smith decided to change the original 6-point scale to a 5-point scale to eliminate the scale's midpoint and force respondents to decide whether each statement was characteristic of them. This BPAQ short version with 12 Likert-type items to be rated on a 5-point scale (Never = 1 to Always = 5) are to be used in this validation work. The authors translated this tool, too, from English into Amharic for the present use.

Consent and Procedures

After approval was obtained prior to data collection to conduct the research at the school, the researchers approached the participants in the school and they explained the purpose of the study. Then all of the students expressed their consent to participate in the. Participation was strictly voluntary and students' responses were kept anonymous

and confidential. The students were also informed that they could discontinue their participation at any time. The Amharic versions was administered in an hour by putting all participants in one classroom. The administration was carried out by classroom teachers and school counselor. The completion rate was 100%.

Appropriate procedures were followed during the translation and retroversion of the instrument. The initial translation from English into Amharic was completed by the researchers, who made sure that young people would be able to adequately understand the meaning of the items. Further two bilingual individuals independently translated the Amharic version back to English. No major differences were found between the back-translation and the original version, demonstrating that the translated items had the same or very similar meanings as the original English version.

Statistical analyses

In order to establish the psychometric properties of the CBQ-FAC 20 scale, the current validation study conducted three steps analysis: reliability estimation, factor structure, and construct and external validity. The Cronbach alpha coefficient was used to determine the internal consistency for CBQ-FAC 20 Scale which reflects the inter relatedness among the items. Thus, Cronbach's alpha with a value > 0.70 is considered acceptable (Pallant, 2010).

Construct validity reflects the extent to which an instrument's score relates to the score of the theoretical construct of another instrument as expected and was investigated by means of hypothesis testing (Terwee et al., 2007). The construct validity of the scale was analyzed by calculating the correlations between the total score of CBQ-FAC 20 Scale and its two factors and the BPAQ-12 total score. In the current study, construct validity was evidenced by convergent and divergent validity of the CBQ-FAC 20 scale. It was hypothesized a priori that the CBQ-FAC 20 would be statistically significant and positively related to a measure of the Aggression Questionnaire (AQ). Specifically, association between the CBQ-FAC 20 scale and the individual subscales of the Buss–Perry AQ- 12 item scale was investigated using bivariate correlations. External (criterion-related) validity of the scale was investigated via relationships with demographic variables (gender and parental educational level) that were shown to be related in previous studies to the CBQ-FAC 20 Scale.

Finally, the factor structure of the Amharic adolescent version CBQ-FAC 20 Scale was assessed. One of the most commonly used approach to identify (extract) the number of underlying factors or dimensions is principal components analysis (Pallant, 2010). In principal components analysis, the original variables are transformed into a smaller set of linear combinations, with all of the variance with in the variables being used (Pallant, 2010). Stevens (cited in Pallat, 2010) admits a preference for principal components analysis, and provides variety of reasons that it is psychometrically more sound and mathematically simpler. It also avoids some of the potential problems of 'factor indeterminacy' associated with factor analysis. During this PCA analysis, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) of all items and Bartlett's test of Sphericity were used as a criteria to evaluate the items' appropriateness for factor analysis. Factor extraction involves determining the smallest numbers of factors that can be used to best represent the interrelationships among the set of variables (items) and, therefore, the Oblimin rotation was applied for deriving a simple structure to help the interpretation. Loehlin (cited in Gerevich, Bácskai, and Zobor (2007) describes that the Oblimin rotation is an oblique rotation technique which assumes that the two factors are not independent in a given scale. Since there are conceptual as well as clinical reasons to presume a correlation between the variables of the CBQ-FAC 20 scale, this technique provides a more realistic representation of the data than the orthogonal solution (varimax rotation) which assumes independence. Moreover, it is up to the researcher to determine the number of factors that he/she considers best describes the underlying relationship among the variables (Pallant, 2010). During the analysis, Kaiser's criterion, Scree test, and parallel analysis techniques were used further to assist in the decision concerning the number of factors or components to retain in the scale. The statistical package SPSS, version 23.0, was used.

Results

Demographic Characteristics of the Sample: table 1 below shows the distribution of basic demographic characteristics (gender and parental educational level) of the sample. The gender distribution indicated a slightly higher ratio of females in the sample (123, 54.67%) than males (102, 45.33%). In relation to educational level distribution, a relatively higher number of the parents (84, 37.3%) reported that they were e in the category of secondary education.

Table 1*: Gender and Parental educational level distribution of the samples (N=225)*

Variables	Level of variables	Frequency	Percent
Gender	Male	102	45.33
	Female	123	54.67
	Total	225	100
Parental level of education	No formal education	7	3.1
	Primary education (grade1-8)	22	9.8
	Secondary education(grade 9-12)	84	37.3
	Diploma	17	7.6
	First degree	47	20.9
	MA and above	48	21.3
	Total	225	100

Descriptive Statistics for the CBQ-FAC 20 Scale

Table 2: *Descriptive Statistics for the CBQ-FAC 20 Scale*

CBQ-FAC 20 scale	Number of Items	Total items mean score	Standard Dev.	Items Mean score ranges (M&S.D)
FAC scores	20	8.86	8.35	.15(0.35) - 0.83(0.38)

As can be seen in table 2 above, the CBQ-FAC 20 Scale item mean score across the entire range of items was8.86 (SD =8.35). The mean score for the individual items ranged between 0.15 (SD = 0.35) for item 18 and 0.83 (SD = 0.38) for item 19.

Reliability estimates of the CBQ-FAC 20 Scale

Scale reliability was examined through the internal consistency measure, which reflects the inter-relatedness among the item (Table 3).

Table 3: *CBQ-FAC 20 scale Item-Total Statistics*

Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
1. My father doesn't understand me.	.495	.787	.804
2. My father and I sometimes end our arguments calmly.	.038	.806	
3. My father understands me.	.048	.806	
4. We almost never seem to agree.	.536	.786	
5. I enjoy the talks we have.	.048	.806	
6. When I state my own opinion, he gets upset.	.549	.784	
7. At least three times a week, we get angry at each other.	.476	.790	
8. My father listens when I need someone to talk to.	.020	.806	
9. My father is a good friend to me.	.020	.806	
10. He says I have no consideration for him.	.543	.784	
11. At least once a day, we get angry at each other.	.345	.799	
12. My father is bossy when we talk.	.529	.785	
13. The talks we have are frustrating.	.594	.780	
14. My father understands my point of view, even when he doesn't agree with me.	-.156	.812	
15. My father always seems to be complaining about me.	.484	.788	
16. In general, I don't think we get along very well.	.570	.781	
17. My father screams a lot.	.612	.778	
18. My father puts me down.	.533	.786	
19. If I run into problems, my father helps me out	-.191	.812	
20. I enjoy spending time with my father.	-.329	.814	

Regarding CBQ-FAC 20 the result is presented in Table 3. As shown in this table, high reliability index (0.804) was observed for the total CBQ-FAC 20 Scale and moderate to high for the corrected item-total correlation coefficient (0.329 – 0.612). Eight problematic items were identified among which items 2,3,5,8, and 9 were with low item-total correlations (lower than 0.20) and items 14, 19 and 20 registered negative item-total correlations.

Reliability estimates of refined CBQ-FAC 20 Scale items

Based on the extraction method of principal component analysis and direct Oblimina rotation method, two factor solutions of CBQ-FAC 20 Scale were produced. Through identification of items loading for FAC scale, items which had crossed load were removed. Consequently, the refined CBQ-FAC 20 Scale and its factors were subjected to scale reliability test. The reliabilities of the refined CBQ-FAC 20 Scale and its factors were recomputed using internal consistency and were considered good (Table 4).

Table 4: *Internal consistency of the refined two factors CBQ-FAC 20 Scale*

Refined CBQ-FAC scale	Number of Items	Cronbach's Alpha	Ranges of the Corrected Item-Total coefficient (CITC)
Refined FAC	18	.752	
FACTOR 1	9	.710	0.134 - 0.597
FACTOR 2	9	.803	0.325 - 0.588

Cronbach's alpha coefficient for the refined 18 items version presented in Table 4 shows that the FAC total scale has a reliability of 0.752 whereas Factor 1 and Factor 2 have a reliability of 0.710 and 0.803 respectively. Because Cronbach's alpha is sensitive to the number of items included in a given scale, the alpha value of the refined CBQ-FAC 20 total scale was reduced from .804 to .752.

Construct validity

Psychometric properties of the CBQ-FAC 20 Scale were further analyzed to determine its construct validity by computing its correlations with Aggression Questionnaire (BPAQ-12). Construct validity involves convergent validity and discriminant validity. To establish the construct validity of an instrument the researcher should demonstrate both convergent and discriminant validity (David & Robert, 2007). Convergent validity

refers to the relationship between measures of constructs that should be strongly and positively related (David & Robert, 2007**)**, such as conflict behaviors and aggression (see table 5).

Table 5: *Correlation coefficients of CBQ-FAC 20 scale and its factors with BPAQ-12 and its subscales*

CBQ-FAC scale	Aggression total scale	Physical aggression	Verbal aggression	Anger	Hostility
FAC total scale (18 items)	.241**	.177**	.136*	.197**	.145*
FAC scale Factor 1 (9 item)	-.165*	-.009	-.071	-.145*	-.210**
FAC scale Factor 2 (9 items)	.283**	.132*	.200**	.227**	.213**

**P<0.05; **P<0.01*(2-tailed).

As Table 5 illustrates, CBQ-FAC 20 Scale showed a significant and positive correlation with Aggression Questionnaire (AQ-12) total (r = .241, p<0.000) and all subscales of AQ-12: Physical Aggression (r =.177, p < 0.008), Verbal Aggression (r = .136, p <0.041), Anger (r= .197, *p* <0.003) and Hostility (r = .145, p < 0.029). In order to provide an indication of the extent to which the refined CBQ-FAC 20 Scale's two factors are correlated with Aggression Questionnaire (AQ-12) total and its subscales, convergence were taken for each individual's scores on CBQ-FAC 20 scale. Table 5 shows that CBQ-FAC 20 Factor 2 (appraisal of dyads) is significantly and positively related to Aggression questionnaire total (r= .283, P<. 01) as well as its subscales: Physical aggression (r= .132, P<. 05), verbal aggression (r= .200, P<. 01), anger (r= .227, P <. 01) and hostility (r= .213, P<. 01). Thus, the findings (positive relationship) revealed eminence for convergent validity. However, CBQ-FAC 20 scale Factor 1 (appraisal of fathers) significantly and negatively related to Aggression Questionnaire total (r= -.165, P<. 05) and two subscales: anger (r= -.145, P<. 05) and hostility (r= -.210, P <. 01). This negative relationship result evidences for discriminant validity of the CBQ-FAC 20 Scale Factor 1 (appraisal of father) with the AQ-12 total and its dimensions (anger and hostility). The findings from the above table provided moderate support for the convergent validity of the refined CBQ-FAC 20 scale and Factor 2, while the CBQ-FAC 20 Scale Factor 1 showed low discriminant validity.

External validity: Measurement Invariance (equivalence)

In order to assess gender sensitivity of the items in CBQ-FAC 20 scale, measurement invariance (equivalence) was examined by external validity of CBQ-FAC 20 scale. It was analyzed by calculating the correlation between the CBQ-FAC 20 scale and participants' demographic variables: gender and parental educational level (Table 6).

Table 6: *Correlation between CBQ-FAC 20 Scale and its factors and demographic variables of the Participants*

Demographic variables	CBQ-FAC 20 scale and its factors		
	FAC total	FAC scale Factor 1	FAC scale Factor 2
Sex	-.032	.104	-.033
Parental educational level	.057	.105	-.043

In order to establish external validity, correlation was computed to check the extent to which the CBQ-FAC 20 scale and its factors differ across gender and parental educational level of the samples. As Table 6 illustrates, there is no significant relationship between CBQ-FAC 20 scale and its factors in both sex groups and parental educational level (P>. 05).The findings revealed that the instrument (CBQ-FAC 20 scale) had measurement invariance by gender and parental level of education. Measurement invariance of the scale by gender implies that the items in CBQ-FAC 20 scale are gender insensitive.

Factor Analysis: Factor Structure

Before proceeding to factor analysis, two criteria were used to verify whether the study data setwas suitable for factor analysis. These were the Kaiser-Meyer--Olkin measure of sampling adequacy (KMO) over all items and Bartlett's test of Sphericity value. To be considered suitable for factor analysis, the correlation matrix should show at least some correlations of r= .3 or greater. Bartlett's test of Sphericity should be statistically significant at $p < .05$ and the Kaiser-Meyer-Olkin value should be .6 or above (Pallant, 2010).

Accordingly, the FAC data inspection of the correlation matrix of the 20 CBQ-FAC 20 scale items revealed the presence of many coefficients of .3 and above and the assessment of the sampling adequacy diagnostics led to Bartlett's test of Sphericity (chi-square = 1680.622, df=190, P<.000), while the KMO measure was high (0.907). The Kaiser-Meyer-Olkin value was .894, exceeding the recommended value of .6 (Kaiser 1970, 1974) and Bartlett's test of Sphericity (Bartlett 1954) reached statistical significance. Therefore, CBQ-FAC 20 data factor analysis is appropriate and these findings support the existence of possible factorability of the correlation matrix (Pallant, 2010).

In the 20 items of the CBQ-FAC 20 scale, data were subjected to factor extraction. Factor extraction involves determining the smallest number of factors that can be used to best represent the interrelationships among the set of variables (Pallant, 2010). There are a variety of approaches that can be used to identify (extract) the number of underlying factors or dimensions. In this study, principal component analysis (PCA) approach was used. This was because it is one of the simplest approaches to identify (extract) the number of underlying factors in such scale.

Because the unrotated factor loadings were difficult to construe, oblimin factor rotation was run. This rotation was used assuming that the two factors are not independent and that many people in the field of psychometrics recommend it over varimax rotation (Kline, 2000; Wegener & Fabrigar, 2000). Oblique (direct oblimin) rotations methods were performed using the principal component analysis (PCA) procedure for component extraction on CBQ-FAC 20 scale. Therefore, using principal component analysis of oblimin rotation, more interpretable two factor solutions were obtained. The CBQ-FAC 20 scale factors which had Eigen values greater than 1.0 were extracted. Using the default options in SPSS, four components were obtained. In terms of explained variance of the extracted components of the 20 item CBQ-FAC 20 Scale, Principal components analysis revealed the presence of four components with Eigen values exceeding one, explaining 36.62%, 8.05%, 5.98% and 5.42% of the variance respectively. The first two factors/components with Eigen values above one (7.324 and 1.61) were found. These two factors existed explaining the 44.67 % of the total variance, while the next two (Factors 3 & 4) Eigen values represented 11.39 % of the total variance. The total variance explained by Factors 3 and 4 was too low.

Further investigation of the questionnaire's latent structure was implemented by factor structure methodology. Before making a final decision concerning the number of factors, we need to have a look at the rotated four-factor solution that is shown in the Pattern Matrix table. In CBQ-FAC 20 scale this shows the items loadings on the four factors with four items loading above .4 on Component 1, five items loading on Component 2, four items on Component 3 and five items loading on Component 4. Ideally, it would

be like all items loading on one of the components, but three items do not load on any of the components. In the CBQ-FAC 20 scale this solution is not optimal, further supporting the decision to retain only two factors. Finally, it was necessary to go back and 'force' a two-factor solution. An inspection of the scree plot revealed a clear break after the second component. Using Catell's (1966) scree test, it was decided to retain two components for further investigation. This was further supported by the results of Parallel Analysis, which showed only two components with Eigen values exceeding the corresponding criterion values for a randomly generated data matrix of the same size (20 variables × 225 respondents). Table 7 shows factor loadings after oblique rotation with fixed number of factors for CBQ-FAC 20 scale.

Table 7: *Principal Component analysis estimates of the oblique (direct Oblimin) factor loadings for the CBQ-FAC 20 scale*

Items	Component	
	1	2
8. My father listens when I need someone to talk to.	-.797	
19. If I run into problems, my father helps me out	-.732	
20. I enjoy spending time with my father.	-.681	
3. My father understands me.	-.633	
9. My father is a good friend to me.	-.630	
5. I enjoy the talks we have.	-.558	
1. My father doesn't understand me.3. My father understands me	.520	
14. My father understands my point of view, even when he doesn't agree with me.	-.492	
2. My father and I sometimes end our arguments calmly.	-.447	
13. The talks we have are frustrating. *	.430	425
7. At least three times a week, we get angry at each other.		.703
15. My father always seems to be complaining about me.		.698
17. My father screams a lot.		.606
11. At least once a day, we get angry at each other.		.588
10. He says I have no consideration for her.		.577
4. We almost never seem to agree.		.536
12. My father is bossy when we talk.		.505
18. My father puts me down.		.488
6. When I state my own opinion, he gets upset.		.461
16. In general, I don't think we get along very well.*	.402	.449

Oblique rotations (direct Oblimin) were performed using the Principal component analysis. As Table 7 shows, factor loadings after oblique rotation obtained two factors. Factor I is labeled «Appraisal of father» and Factor II is labeled «Appraisal of Dyads».

It can also be noted that item 13 (The talks we have are frustrating) and item 16 (In general, I don't think we get along very well) present cross loading positively on both Factor 1 and Factor 2. The loading difference is less than 0.2. The authors obtained that all the items loaded greater than .40 and removed two items (items 13 & 16) with cross loadings (i.e., in two components).

Table 8: *Eigen values, percentage of explained variance, inter-factor correlations and factor-total correlations for the CBQ-FAC 20 Scale*

Parallel scale of CBQ-20	Factors	Eigen value	Percentage of explained variance	Inter-factors correlations	
				Factor I	Factor II
FAC Scale	Factor I	7.32	36.62	1.00	-.570
	Factor II	1.16	8.05	-.570	1.00

Table 8 shows the Eigen values and percentage of explained variance associated with each factor and inter- factors correlations of CBQ-FAC 20 Scale. First, both factors in CBQ-FAC 20 Scale have Eigen values that exceed the unit, a criterion frequently used to guide the number of meaningful factors. Second, the first factor in CBQ-FAC 20 Scale is a major factor and accounts for more than one-third of the variance of the CBQ-FAC 20 Scale, whereas Factor II is a minor factor. Together, the two factors account for 44.67 % of the variance in the CBQ-FAC 20 Scale score. Both the factors are inter-correlated.

Discussions

Scale Reliability

One of the objectives of the current study was to establish reliability (internal consistency) of the CBQ-FAC 20 scale. The reliability of the CBQ-FAC Scale for the school adolescent sample was α =.804 with slightly lower index (α =.752) for the refined version. These reliability findings are consistent with Shek (1997) and Robin and Foster (1989). Shek found that the FAC and MAC (Mother – Adolescent Conflict) parallel scales of CBQ-20 had high internal consistency while the finding from Robin and Foster revealed that the adolescent version of the CBQ-20 was a valid and reliable measure of parent-adolescent conflict. Furthermore, in another attempt to check for internal consistency, Lancaster (2006) who used the shorter version of CBQ-20 found a coefficient alpha of .85 for parents (Adolescent version) and .88 for children (Parent version). It was also been shown by Prinz et al., (1979) that CBQ had adequate internal consistency (α =.88).

Although slightly lower results than the index were found in other populations (Robin & Foster, 1989), the short form of CBQ yielded a single summary score that correlates .96 with scores from the long form, and test-retest reliability ranges from 0.37 to 0.84 for adolescent report and 0.57 to 0.82 for parent-report. Although these instruments were designed for another population and in another language, the CBQ was subsequently adopted since the findings were found to be within the expected and acceptable range.

Positive findings on psychometric properties were also found when analyzing our Amharic version of the CBQ-FAC 20 Scale. Concerning internal consistency of CBQ-FAC 20 Scale's two factors, an alpha value of 0.710 and 0.803 were found for Factor 1 (appraisal of father) and Factor 2 (appraisal of dyads) respectively. These internal consistency values were slightly lower than the reliability estimates for CBQ-75 obtained by Prinz et al.(1979), which reported high internal consistency of 0.94 and 0.95 for adolescent report of parents (appraisal of parents) and parent-child relationship (dyads of interaction) respectively. The value differences in reliability index can be explained, among others, by the fact that Cronbach's alpha technique is sensitive to the number of items included in a given scale. Regarding the corrected item–total correlation range, the CBQ-FAC 20 scale total score and its most items reached the minimum recommended value of .20 (Kaplan & Saccuzzo, 2009).

Construct Validity

The second objective of the present study was to determine construct validity of adolescent's version of CBQ-FAC 20 Scale. Thus, construct validation was conducted. This validity is directly concerned with the theoretical relationship of a variable (e.g., a score on some scale) to other variables (Cronbach & Meehl, as cited in Robert, 2003). It is important to recognize that two measures may share more than construct similarity. The validation data on construct validation also confirmed validity evidences (Prinz et al., 1979) in terms of convergent and discriminant validity. The construct validity of the CBQ-FAC 20 Scale with the other theoretical construct that is BPAQ-12 and its four factors revealed a statistically significant correlation. As expected, the CBQ-FAC 20 Scale total and its Factor II (Appraisal of dyads) scores were significantly and positively correlated (low to moderate) with aggression scale total and its four subscales. Thus, these bivariate correlation findings evidenced for convergent validity of the CBQ-FAC 20 Scale whereas a significant negative relationship between CBQ-FAC 20 Scale factor 1(appraisal of father) and aggression questionnaire scale and its subscale (i.e. anger

and hostility) evidenced discriminant validity of the instrument. From these findings we can understand that the CBQ-FAC 20 Scale has construct-related validity. The current findings are consistent with previous studies that have utilized the short form of CBQ, for example, Shek and Ma (2001). In their study Shek and Ma (2001) reported father-adolescent conflict and mother-adolescent conflict (measured by FAC and MAC parallel scales of CBQ-20) were concurrently related to adolescent antisocial behavior (such as aggression) in Chinese adolescents and parent-adolescent conflict predicted antisocial behavior. Further studies (Buehler & Gerard, 2002; Pelton &Forehand, 2001; Robin & Foster, 1989) found greater parent–adolescent conflict has been associated with increased adolescent externalizing and internalizing problems. In conclusion, there is evidence suggesting that conflict and negative communication experienced between parents and adolescent may predict aggressive behavior among adolescents.

Measurement Invariance (equivalence)

The other objective of the current validation study was to investigate measurement invariance (equivalence) of the scale as a characteristic of instrument gender sensitivity. In order for gender difference findings to be considered valid and reliable, gender invariance must be assured. The validation data on the relationship of gender and CBQ-FAC 20 scale confirmed no validity evidence that there is no significant difference on the FAC scale scores for both gender groups. This finding implies that the items on the CBQ-FAC 20 scale are equally sensitive for male and female adolescent respondents. Contrary to earlier studies (Rudolph & Hammen ; Smetana; van de Looij-Jansen , et al., as cited in Khan et al.,2015), the results of the present study revealed gender invariance for the prevalence of parent-adolescent conflicts. Measurement invariance of the scale by gender implies that the items in the CBQ-FAC 20 scale are gender insensitive to both gender groups (male and female) or the items do not have gender specific behaviors. As Meredith reviewed by Khan et al (2015) described, among several of the explanations, the least focused but of the prime importance in tool validation is the gender sensitivity of the instrument used to measure conflict. According to the current study researchers' opinion, the indicators to measure the conflicts in the scale may not have different connotation for girls and boys across the study population. However, in previous study, Prinz et al. (1979) confirmed that there was validity evidences for both gender groups in terms of Convergent and Criterion related validity. In addition, Khan et al. (2015) suggested that the items on the CBQ-44 are not equally sensitive (lack of measurement invariance) for male and female adolescent.

Factor Structure

The last objective of the current study was to determine the factor structure of the Amharic version of CBQ-FAC 20 scale. Accordingly, through principal component analysis and the use of Catell's (1966) scree test, which was further supported by the results of Parallel Analysis method the two factor structure of the scale was extracted. The first factor (appraisal of father) in CBQ-FAC 20 scale assessed students' dissatisfaction with their fathers' behavior, whereas the second factor in CBQ-FAC 20 scale (appraisal of dyads) assessed evaluations of the interactions between the adolescents and the fathers. The interpretation of the two components was consistent with previous research on the CBQ, with "appraisal of parent" items loading on Component 1 and "appraisal of dyads" items loading on Component 2.The finding of the current study involving factor analysis (Principal component analysis) revealed a two factor solution of the short form of CBQ-FAC 20 scale in the study sample population. This factor structure finding coincided with previous works (Khan et al., 2015), which confirmed a two factors model in CBQ-44 with the adolescent study population: "appraisal of parents" and "appraisal of dyads". There are numerous studies that analyze the factor structure of the CBQ-20 and CBQ-44 with non-Ethiopian population, so it would be very protracted to compare in detail the data obtained by all of them. In contrast with the present finding, Robin and Foster (1989) proposed a one-dimensional scale of short form of CBQ-20. The inconsistence of factor structure of this Amharic version of CBQ-FAC 20 scale with English version (Robin & Foster, 1989) can be attributed to various methodological and cultural issues which characterized the study.

Analysis of construct validity revealed that the correlations of the CBQ-FAC 20scale total with the Aggression questionnaire (BPAQ-12) were higher when the CBQ-FAC 20 scale factor I was analyzed independently than when the correlations with the total CBQ-FAC 20 scale score obtained are used. The correlation of the CBQ-FAC 20 scale factor 2 (appraisal of dyads) with the BPAQ-12 total scale is especially important. And also there was a moderate negative correlation between two factors of the CBQ-FAC 20 scale (r = -.570**,** p<.01). The results of this analysis support the use of the "appraisal of father" items and "appraisal of dyads" items as separate factors. This finding corroborates the above-mentioned two dimensional/factor properties of the conflict behavior questionnaire (CBQ). Despite the inconsistency of results with authors like Nebel and Marie (2006), who suggest and use one dimension of parent adolescent

conflict measures (CBQ) and Robin and Foster (1989), who develop the short form of CBQ-20 that has unidimensional properties, the results of the current study explore the two dimensional (bi-factorial) properties of the short form of Amharic version CBQ-FAC 20 Scale.

In terms of loading of CBQ-FAC 20 scale onto its emerged factors, problems were evident with the CBQ-FAC 20 scale items 13 and 16. The functioning of item 13 and 16 (where these items had crossed load on to two components and have a loading value difference below 0.2) should be confirmed in subsequent works with Amharic language speaker urban adolescent school population to propose possible solutions, if necessary. The authors removed all the items that had crossed loadings (i.e., more than .40 in two or more components) as well the loading values difference is less than 0.2. This produced a refined CBQ-FAC 20 scale consisting of 18 items.

Conclusions and Recommendations

The Amharic version of the short form of CBQ-FAC 20 demonstrated that there were appropriate and satisfactory psychometric properties. The findings of this study generally suggested that the short form CBQ-FAC 20 scale had the potential for generalizability across different languages speakers. The CBQ-FAC 20 scale was also found to be a valuable instrument to assess parent-adolescent conflict and negative communication behaviors among Amharic speaking urban youth in Ethiopia. The results underline the importance of on-going and rigorous assessment of scale properties, in particular when assessing variables sensitive to cultural influence like parent -adolescent conflict and negative communication behaviors. To the researchers' knowledge, this study can be considered as an initial work in establishing psychometric properties of the Amharic version of the short form of CBQ-FAC 20 scale among urban school adolescents in Ethiopia.

This validation research had some limitations that should be addressed in the future research. First, no test-retest analysis was performed to evaluate the stability of the CBQ-20. Second, there is a need to further assess the convergence and discriminant validity. Third, the present results may not be generalizable both to the general Ethiopian school adolescent population (as the sample was small) and to non-student samples such as juvenile or adult offender populations. Hence, there is a need to gather empirical evidences about the factor structure of the short form of the CBQ-FAC 20 scale using diverse and large samples. Further validation studies are also recommended to be done in the future to determine, for example, test–retest reliability, cross-validation using a larger sample.

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