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# Aggression among adolescents: psychometric evaluation of a tool

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**ABSTRACT**

Adolescence, a crucial period preceded by childhood and followed by adulthood, involves significant growth and developmental changes leading to various psychological challenges and aggressive tendencies. Several scales have been developed to measure aggression, but 12-item short form aggression questionnaire has been widely used for assessing aggression and it is manifestations for varied age groups. However, there has been a dearth of studies related to the tool on assessing aggression in adolescents, further the cultural variations among various research populations compelled researcher to re-evaluate the tool on school-going adolescents. The current study aimed to examine the psychometric properties of 12-item short form aggression questionnaire on 400 school adolescents (14-18 years). The hypothetical model was evaluated by structural equation modelling. The identified 4-factor model structure, viz. physical aggression (PA), verbal aggression (VA), hostility (H), and anger (A); depicted excellent goodness of-fit; and established the questionnaire with 12-items as a reliable and valid measure for assessing aggression among adolescents. The scale can serve as a valuable resource for researchers, teachers, and psychologists to evaluate overall aggression and its specific forms in adolescents. While predictive validity of questionnaire with 12-items should be explored, and norms development as per given cultural context is recommended.



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## 1. INTRODUCTION

In contemporary times, adolescent aggression is an escalating concern and constitutes a significant factor contributing to worldwide adolescent illness and fatalities [1]. Everyone from parents to educators to psychologists to social activists, are quite concerned about it. Aggressive behavior occasionally has the potential to be lethal for both the victim and the offender. Sometimes a teenager's future might be ruined through a momentary rage. In a gang-versus-gang brawl, 14.1% adolescents had taken part, and 5.7% had attacked someone with the aim to gravely damage them [2]. Teenage aggression cases are frequently reported in the media [3]. There are 1.2 billion adolescents worldwide-the largest cohort ever. Across the globe, different agencies include several age groups under "childhood" [4]. The United Nations Convention on the rights of the child defined child as "a human being below the age of 18 years unless under the law applicable to the child, majority is attained earlier" and while United Nations defined that those between the ages of 10 to 19 years are specifically defined as adolescents [5]. The categorization is stated for the purpose of validating the aggression questionnaire. Adolescence, popularly known as the "period of storm and stress" [6] a very critical and crucial stage in the development of any individual. During this phase the individual undergoes several

drastic growths and developmental changes resulting into inevitable turmoil's and contributing towards risk-taking behavior, heightened sensitivity, aggression, and psychological indispositions.

According to Reyna *et al.* [7], "aggression is a personality trait associated with antisocial behavior". Research has shown that the construct of aggression is quite heterogeneous [8]. According to Malti and Rubin [9] the term "aggression" encompasses a wide range of categories and is not confined to acts that are appraised based on symptoms [10]. Aggression has been described from multiple viewpoints and assessed through several types of manifestations. Aggression has been classified as physical against VA (e.g., [11]), direct against indirect aggression (e.g., [12]), proactive against reactive aggression (e.g., [13]), or instrumental against impulsive aggression (e.g., [14]). An inclusive classification encompassing all forms of aggression is still to be universally acknowledged [15]. While Allen and Anderson [16] include antisocial behavior, juvenile delinquency, coercion, assertiveness, aggressive cognition and aggressive affect within the realm of aggression; aggression can be categorized as hostile, instrumental, physical, verbal, relational, reactive, proactive, impulsive, active, passive, overt, covert, legitimate, illegitimate, displaced, triggered displaced, or not displaced, as well as person-based, situation-based, or both person and situation-based [10].

The most accepted definition of aggression by Buss [17], defines "aggression as a response that brings a harmful effect in another organism." Aggressive behavior can range from physical aggressiveness, such as being willing to physically injure others, to VA, such as using hurtful language to emotionally harm others [18]. Anyone can engage in aggressive behavior-which is defined as a deliberate act designed to cause harm to another person-in the forms of hostility (H), violence, relational aggression, verbal abuse, and physical aggression (PA) [19]. Bryant and Smith [20] defined the multiple constructs related to aggression as "the cognitive aspect of behavior is represented by H, consisting of resentment and sentiments of injustice; aggression that involves causing harm to others physically or verbally is referred to as the instrumental or motor component of behavior; the emotional or affective aspect of behavior is represented by anger (A), which entails physiological arousal and aggression preparation," Young people's predisposition to engage in violent behavior rises over time [21], which contributes to a high rate of crime, which if ignored at the early stages, could become permanent [10].

The roots of aggression can stem from biological factors, including genetics, brain structures, medical conditions, neurotransmitters, hormones, substance abuse, and medication, psychological factors (diagnostic and statistical manual of mental disorders, fifth edition (DSM-5) diagnoses linked to aggression) and socio-cultural factors that contribute to aggression. Genetic or environmental factors relate to aggression [22]. Timely intervention to prevent aggression at the early stages of development may help in reducing it is persistence as well as long-term adverse impact on the later stages of development of an individual and thus the society.

Globally, adolescents constitute 1.2 billion of population between the ages of 10 and 19 (both genders), and 16% of the world's population live in India, making up 20.9% (0.251 billion) of them, or 18.02% of all Indians [23]. In India, 46.04% of adolescents encountered PA [24]. Additionally, Kumari [25] found that 73% of male adolescents displayed moderate levels of aggressive behavior, while 32% exhibited high levels. Furthermore, it was revealed that 57% of female adolescents demonstrated moderate levels of aggressive behavior, with 18.5% displaying high levels. 32,235 charges against juveniles were filed in 2019, a 2.0% increase over 2018, demonstrating India's escalating crime rate and youth violence. In the urban population of India, it was shown that the prevalence of violence was significantly connected with factors such as age distribution, type of habitation, and others, with males exhibiting greater "PA" and females exhibiting "H" [26]. 66.5% of youngsters in rural areas were physically aggressive and 56.8% were vocally hostile [27]. In general, aggressiveness was prevalent in adolescents, particularly in males, late teenage youth, and children of less educated mothers [26]. Additionally, students at private schools showed more H than those in public schools [28]. According to Kishore *et al.* [2] an alarming percentage of school children have engaged in aggressive behavior, including punching, kicking, biting, scratching, damaging, and verbally assaulting both children and adults. Moreover, incidents of school bullying, cyberbullying, and challenges in coexistence are commonplace, and these interpersonal issues typically manifest through acts of aggression, whether verbal, relational, or physical in nature [29]. Individuals exhibiting aggressive behavior may harm others physically or emotionally [30]. Children and adolescents often exhibit aggressive behavior. High aggression in adolescents is often associated with delinquent activity, physical harm, poor academic achievement, and suicide [31].

Several studies [7], [32]–[34] have validated this 12-item short form aggression questionnaire (BPAQ-SF) (Bryant and Smith [20]) in various countries, including Switzerland, France, Argentina, and Yogyakarta, demonstrating its reliability and applicability across diverse cultural contexts. However, the existing research does not address the unique cultural and socio-economic factors affecting Indian adolescents hence creates a significant gap. Thus, the objective of this research was to evaluate the factor structure as well as the psychometric properties of BPAQ-SF on Indian adolescents.

## 2. METHOD

The current investigation has been categorized into three stages, namely stage I, which involves data collection, cleaning, reliability calculation, and addressing common method bias (CMB) or common method variance (CMV); stage II, which includes exploratory factor analysis (EFA), determination of factor loadings for all items, calculation of anti-image correlation, and commonality assessment; and stage III, which focuses on confirming the factor structure through confirmatory factor analysis (CFA). The current study was cross-sectional validation study involving psychometric analysis of BPAQ-SF as assessment tool. The inclusion criteria in the current study were secondary school students with age range of 14-18 years using convenience sampling in four schools of middle of West Bengal.

The 12 items on the BPAQ-SF are divided into four categories: "PA" (3 items, for example, "I have threatened people I know"); "VA" (3 items, for example, "My friends say that I'm somewhat argumentative"); "A" (3 items, for example, "I have trouble controlling my temper"); and "H" (3 items, for example, "I wonder why sometimes I feel so bitter about things"). Participants were asked to rate how much they agreed or disagreed with 12 statements on a scale of 1 to 5 ("strongly agree" to "strongly disagree"). BPAQ-SF comprising of 12-items was administered on 210 adolescents keeping in view the recommendation by Bentler and Chou [35] for a minimum subjects-to-item ratio as 10:1 [36]. Out of 210, only 200 questionnaires (50% boys (M=37.27; SD=7.943). and 50% girls (M=37.27; SD=7.943) were selected for conducting EFA and 10 were discarded due to unengaged responses and missing data. The ethical committee of Lovely Professional University approved our study (Number LPU/IEC-LPU/2024/1/14).

## 3. RESULTS AND DISCUSSION

### 3.1. Results

#### 3.1.1. Demographic information

The participants consisted of 400 adolescents from secondary schools, with 50% boys (M=43.04; SD=7.986) and 50% girls (M=42.56; SD=8.875). Table 1 presents demographic data detailing the distribution of participants based on gender and age categories within a sample population. Gender distribution shows an equal representation, with 200 boys (50%) and 200 girls (50%), ensuring a balanced sample across genders. This parity is crucial for studies examining gender-related factors or differences, as findings can be generalized equally to both male and female groups. Regarding age distribution, the sample primarily consists of adolescents aged 14 to 18 years. The largest group of participants aged 17, comprising 30% (n=120) of the total sample. Close behind were 16-year-olds, making up 25% (n=100), followed by 15-year-olds at 17.25%(n=69), 14-year-olds at 16%, (n=64) and 18-year-olds at 11.75% (n=47).

#### 3.1.2. Stage I

The IBM SPSS Statistics version 23 and AMOS 23version were used to analyze the data. The Table 2 shows reliability information and Cronbach's alpha index values of BPAQ-SF both dimension wise and in total. Kyriazos [37] and Kline [38] stated that Cronbach alpha estimate of internal consistency reliability for psychological constructs might be as low as 0.60 [39]. According to George [40] Cronbach's alpha "greater than 0.80 is acceptable" [41]. If ($\alpha$>0.09) internal consistency is considered as outstanding, if ($\alpha$ between 0.7-0.9) it is considered as good [42]. All the items were retained as the corrected item-total correlation value for all items was (>0.03) [43]. Further, it is crucial to analyze CMV/CMB [44] for EFA. A researcher encounters various sorts of biases during study, including those from the responder side, researcher side, and instrument used for data collection. A study without the measurement of CMV [45] frequently reports method-biased results. To evaluate the probable existence of (CMV/CMB) bias, Harman's single factor test [46] was used. In the present study, the one factor analysis showed percentage of variance as 33.759 % in the first factor. Since the value of one factor analysis was found to be (<50%), this implies that there is a no CMB/CMV [47] and hence further analysis i.e., EFA can be conducted.

Table 1. Demographic data

| Variable | Categories | n | % |
|---|---|---|---|
| Gender | Boys | 200 | 50 |
| | Girls | 200 | 50 |
| Age | 14 | 64 | 16 |
| | 15 | 69 | 17.25 |
| | 16 | 100 | 25 |
| | 17 | 120 | 30 |
| | 18 | 47 | 11.75 |

Table 2. Reliability information of BPAQ-SF-12

| Dimension | Items | Item-total statistics: Corrected item-total correlation | Cronbach's alpha index (dimension wise) | Corrected item-total correlation | Cronbach's alpha index (12 items) |
|---|---|---|---|---|---|
| PA | PA1 | 0.688 | 0.858 | 0.452 | 0.806 |
| | PA2 | 0.770 | | 0.578 | |
| | PA3 | 0.738 | | 0.586 | |
| VA | VA1 | 0.520 | 0.731 | 0.345 | |
| | VA2 | 0.589 | | 0.322 | |
| | VA3 | 0.552 | | 0.345 | |
| A | A1 | 0.574 | 0.75 | 0.371 | |
| | A2 | 0.580 | | 0.346 | |
| | A3 | 0.576 | | 0.379 | |
| H | H1 | 0.747 | 0.867 | 0.564 | |
| | H2 | 0.798 | | 0.597 | |
| | H3 | 0.686 | | 0.523 | |

### 3.1.3. Stage II: exploratory factor analysis (EFA)

Before performing exploratory factor analysis for validation of the concerned tool, Kaiser-Meyer-Olkin (KMO) was calculated to ensure sample adequacy [48] and Bartlett's test of sphericity was conducted to find whether the whether the correlations in the data are strong enough to use factor analysis. KMO is considered very adequate if falls between 0.7-0.8; excellent if between (0.8-0.9), and outstanding if (over 0.9) as recommended by Karaca and Bektas [49] factor analysis is considered as appropriate if chi-square value is significant ($p<0.05$) [50]. In the current study, KMO=0.780 indicates the sample size was more than adequate, while Bartlett's Test of Sphericity (about $\chi^2$=979.839, df=66, $p<0.05$) was substantial. The tests revealed the appropriateness of data collected for component analysis.

Table 3 shows the descriptive data of the BPAQ-SF-12, factor loadings, and factor structure. In Table 3, each item's factor loading for each of the four BPAQ-SF dimensions "PA", "VA", "A", and "H" was determined to be larger than 0.50 with no cross loading. The minimum loading of an item with no cross loadings should be 0.50 or greater [50]. No items were eliminated as all BPAQ-SF factor loading values were above the cut-off value of 0.5. The Kaiser [51] criterion technique states that factors with eigenvalues (>1) should be extracted for interpretation. According to Table 4, the four dimensions accounted for 72.996% of the total variance. Further, 33.759% of the variance was explained by the first dimension, 17.053% by the second, and the third factor explained 13.105%, and the fourth factor accounted for 9.079% of variance. The values of anti-image correlation for all items should be (>0.05). Commonalities of all items should be greater than 0.3 [50]. Further, every item exhibited an anti-image correlation greater than 0.5 and a commonality greater than 0.3 as evident in Table 5.

Table 3. Descriptive information, factor loadings of different dimensions of BPAQ-SF-12

| Dimensions | Items | Mean | SD | Factor loadings: H | PA | A | VA |
|---|---|---|---|---|---|---|---|
| H | H1 | 4.00 | 0.985 | 0.860 | | | |
| | H2 | 4.04 | 0.942 | 0.847 | | | |
| | H3 | 3.28 | 1.090 | 0.809 | | | |
| PA | PA2 | 3.97 | 1.114 | | 0.860 | | |
| | PA3 | 3.84 | 1.175 | | 0.830 | | |
| | PA1 | 3.67 | 1.127 | | 0.817 | | |
| A | A2 | 3.20 | 1.235 | | | 0.820 | |
| | A1 | 3.18 | 1.188 | | | 0.800 | |
| | A3 | 3.19 | 1.252 | | | 0.797 | |
| VA | VA2 | 1.97 | 1.075 | | | | 0.830 |
| | VA3 | 2.23 | 1.210 | | | | 0.802 |
| | VA1 | 1.91 | 0.970 | | | | 0.753 |

Notes: Factor loadings less than |0.50| not included

Table 4. Eigenvalues and variance explained

| Component | Initial eigenvalues: Total | Variance % | Cumulative % | Extraction sums of squared loadings: Total | Variance % | Cumulative % | Rotation sums of squared loadings: Total | Variance % | Cumulative % |
|---|---|---|---|---|---|---|---|---|---|
| 1H | 4.051 | 33.759 | 33.759 | 4.051 | 33.759 | 33.759 | 2.375 | 19.791 | 19.791 |
| 2PA | 2.046 | 17.053 | 50.812 | 2.046 | 17.053 | 50.812 | 2.374 | 19.781 | 39.572 |
| 3A | 1.573 | 13.105 | 63.917 | 1.573 | 13.105 | 63.917 | 2.027 | 16.895 | 56.467 |
| 4VA | 1.089 | 9.079 | 72.996 | 1.089 | 9.079 | 72.996 | 1.984 | 16.530 | 72.996 |

Notes: Principal component analysis as extraction technique. Rotation method as Varimax with Kaiser normalization

Table 5. Value of anti-image correlation and commonality

| Items | Anti-image correlation | | | | | | | | | | | | Communalities |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PA1 | .854[a] | -.366 | -.243 | .120 | -.039 | .089 | .057 | -.017 | -.004 | -.119 | -.011 | -.031 | .742 |
| PA2 | -.366 | .795[a] | -.466 | .022 | .067 | -.166 | -.097 | -.016 | .071 | .087 | -.169 | -.038 | .818 |
| PA3 | -.243 | -.466 | .837[a] | -.042 | -.028 | -.038 | .016 | -.130 | .036 | -.031 | .019 | -.150 | .781 |
| VA1 | .120 | .022 | -.042 | .737[a] | -.315 | -.220 | -.151 | .004 | -.029 | -.139 | .108 | -.102 | .637 |
| VA2 | -.039 | .067 | -.028 | -.315 | .685[a] | -.400 | -.016 | -.056 | .108 | .045 | -.016 | -.101 | .698 |
| VA3 | .089 | -.166 | -.038 | -.220 | -.400 | .672[a] | .016 | .113 | -.174 | -.014 | -.077 | .173 | .671 |
| A1 | .057 | -.097 | .016 | -.151 | -.016 | .016 | .735[a] | -.316 | -.307 | .047 | -.104 | .099 | .667 |
| A2 | -.017 | -.016 | -.130 | .004 | -.056 | .113 | -.316 | .707[a] | -.355 | -.053 | .040 | .099 | .702 |
| A3 | -.004 | .071 | .036 | -.029 | .108 | -.174 | -.307 | -.355 | .706[a] | -.054 | .033 | -.163 | .681 |
| H1 | -.119 | .087 | -.031 | -.139 | .045 | -.014 | .047 | -.053 | -.054 | .797[a] | -.577 | -.165 | .803 |
| H2 | -.011 | -.169 | .019 | .108 | -.016 | -.077 | -.104 | .040 | .033 | -.577 | .779[a] | -.355 | .824 |
| H3 | -.031 | -.038 | -.150 | -.102 | -.101 | .173 | .099 | .099 | -.163 | -.165 | -.355 | .846[a] | .736 |
| | | | | | | | | | | | | | Extraction method: principal component analysis. |

### 3.1.4. Stage III: CFA

It is recommended to do an EFA first and subsequently CFA in adaptation studies as well as scale development studies to demonstrate the validity of the structure. If there is a change in the factor structure, then one will not be able to detect the same by just running CFA only [52]. The validity of the structure acquired through EFA should be tested in scale development studies using CFA [53]. In the social and behavioral sciences, CFA is regarded as an essential method for validation [35]. After the conduct of EFA, using the Kaiser Normalization approach and Varimax Rotation four components i.e., "PA", "VA", "A" and "H" were identified. CFA was conducted on another sample of 200 secondary school students (obtained after cleaning of data comprising of 220 respondents), boys made up 50% (M=46.46; SD=7.563) of the sample, while girls made up 50% (M=47.85; SD=6.220). CFA is used to evaluate the model's goodness of fit and factorial validity of the factors [54]. The SEM approach was then used to test the model [55]. CFA was presented as a unique instance of structural equation modelling known as the "linear structural relationship model" [56]. In order to assess the questionnaire's reliability and validity in the Indian context, CFA and Cronbach's Alpha were used [57]. Figure 1 depicts the factor loadings from CFA of BPAQ-SF 4-factor structure. The main consideration in structural model analysis is how well the proposed model 'fits' or accurately reflects the sample data [53]. Table 6 depicts the fit index values and measurement model of the given data as good fit.

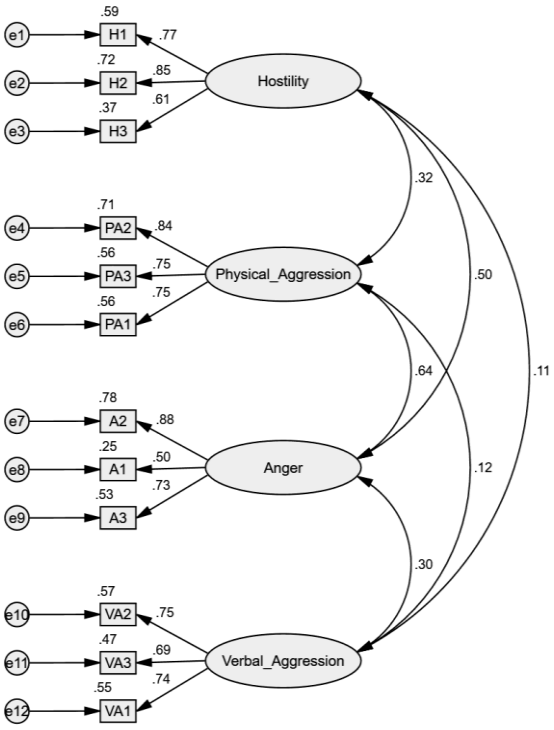


Figure 1. BPAQ-SF 4-factor structure with standardized item loadings

Table 6. For the measurement model, fit indices

| Fit index | Current study | Recommended value | Source |
|---|---|---|---|
| df | 48 | | |
| $\chi^2$ | 48.440 | | |
| PClose | 0.957 | > 0.05 | Hu and Bentler [58] |
| $\chi^2$/df | 48.440/48 | ≤3.00 | Byrne [55] |
| GFI | 0.962 | ≥ 0.90 | Pan *et al.* [50] |
| AGFI | 0.939 | ≥0.80 | Chau and Hu [59] |
| CFI | 0.999 | ≥0.95 | Hu and Bentler [58] |
| RMSEA | 0.007 | ≤0.06 | Hu and Bentler [58] |
| NNFI (TLI) | 0.999 | ≥0.95 | Hu and Bentler [58] |
| SRMR | 0.047 | <0.08 | Pan *et al.* [50] |

Note: goodness fit index (GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), root mean square error of approximation (RMSEA), non-normed fit index (NNFT), Tucker-Lewis index (TLI), standardized root means square residual (SRMR)

### 3.1.5. Validity

Validity of the all the constructs has been analyzed by adopting the Campbell and Fiske [60] criteria of validity [61]. Average variance extracted (AVE) was calculated to ensure convergent validity. For each construct, CR>0.7, AVE>0.5, and CR>AVE indicating convergent validity. As evident from Table 7, prerequisites were found to be satisfactory for all four dimensions thus depicting convergent validity. For each construct, AVE> maximum shared variance (MSV) and AVE> average shared variance (ASV) this prerequisite must be met to prove discriminant validity [56], [62]–[73]. According to Table 7, AVE was found to be greater for each construct than it is MSV and ASV statistics provided evidence of the scale's discriminant validity. For each four dimensions viz. "H, PA, A and VA" of aggression questionnaire, the composite reliability (CR) value ranged from 0.756 to 0.825 (>0.7), and the average variance extracted (AVE) was greater than 0.5 and ranged from 0.520 to 0.612. Maximum reliability (MaxR(H)) was found >0.7, while the ASV ranged from 0.031 to 0.230. MaxR(H) and ASV ranged from 0.088 to 0.414 and 0.031 to 0.230 respectively. According to Espino-Rodrguez and Taha [74] all correlations among all constructs must underperform the square root of AVE readings. Additionally, for discriminant validity, the two constructs' correlation should not be higher than each of their own composite reliabilities. In all instances, H, Pa, A, and VA were found to have strong correlations among them, and the correlation values of any two construct were found to have inferior values than each of their own composite reliabilities, thus indicated discriminant validity.

Table 7. Model validity measures of BPAQ-SF

| Dimensions | CR | AVE | MSV | MaxR (H) | ASV | H | PA | A | VA |
|---|---|---|---|---|---|---|---|---|---|
| H | 0.790 | 0.560 | 0.253 | 0.822 | 0.096 | (0.753) | | | |
| PA | 0.825 | 0.612 | 0.414 | 0.834 | 0.176 | 0.323*** | (0.782) | | |
| A | 0.756 | 0.520 | 0.414 | 0.835 | 0.230 | 0.508*** | 0.646*** | (0.718) | |
| VA | 0.772 | 0.531 | 0.088 | 0.775 | 0.031 | 0.099 | 0.113 | 0.289** | (0.729) |

Note. p<0.100, *p<0.050, **p<0.010, ***p<0.001, are correlations that are significant. Values in bold and in brackets along diagonal refer to square root of AVE, while values outside the diagonal depict correlations between constructs.

### 3.2. Discussion

The objective of the study was to assess the psychometric characteristics of the Buss-Perry aggression questionnaire short form (BPAQ-SF) among Indian adolescents, aligning with similar validations discussed in prior research. Reyna *et al.* [7], Flowers *et al.* [32], and Genaud *et al.* [75] conducted validation studies of psychological measures, each retaining all items without deletions, as seen in their respective exploratory and confirmatory factor analyses. Flowers *et al.* [32] explored a measure of other-esteem with adolescents in Switzerland, while Flowers *et al.* [32] validated the French version of the aggression questionnaire across various age groups and socioeconomic statuses in France. Reyna *et al.* [7] ensured the buss-perry aggression questionnaire's construct validity and gender invariance among Argentinean adolescents.

In the context of validating the BPAQ-SF-12 among Indian adolescents, the study employed both EFA and CFA methodologies, consistent with Reyna *et al.* [7], Flowers *et al.* [32] and Genaud *et al.* [75]. No items were deleted during validation, confirming the questionnaire's original 4-factor structure conceptualized by Buss and Perry [11]. The study meticulously followed a methodological approach to validate the BPAQ-SF among school students, ensuring it met all criteria for reliability, validity, and factor structure in both EFA and CFA. Cronbach's alpha coefficients indicated strong internal consistency, affirming the retention of all items without need for modification. Additionally, corrected item-total correlation analyses among Indian samples aligned with established psychometric norms [76].

These findings extend the understanding of BPAQ-SF's conceptual and psychometric properties beyond its initial validations in Argentina (adolescents aged from12 to 19 years) [7], Switzerland (adolescents aged 14-18 years) [32], Yogyakarta (participants of age from 15 to 83 years) [33] and France (middle school students) [34]. This comprehensive validation underscores the questionnaire's robustness as a tool for assessing aggression among adolescents in the mentioned cultural context, contributing significantly to both theoretical advancements and practical applications in psychological research and practice across diverse cultural contexts.

It is necessary to do more research to explore the predictive validity of BPAQ-SF-12 and to determine whether the current results can be verified in other scenarios. Nevertheless, development of norms based on the given cultural context adolescent population is recommended in order to categorize the respondents as low, moderate or high level of aggression based on scoring. The current research has certain limitations, that indicate significant directions for future study. The use of single sample (i.e., secondary school students) to verify the BPAQ-SF-12 in the given cultural milieu may be a serious restriction. The short form aggression questionnaire can be used on college and university students. It is recommended to employ diverse samples, to improve the external validity of the findings.

The current study has another flaw of methodological nature as it did not check test-retest reliability. Data collection over a period may be used to evaluate test-retest reliability and gauge the stability of the BPAQ-SF-12. This gap might be filled by upcoming studies employing various or more representative populations. Future replications of this study with the age group and demographic coverage may be undertaken.

## 4. CONCLUSION

The findings provide conclusive evidence that the psychometric properties of BPAQ-SF, both the reliability and validity were acceptable. Using exploratory and confirmatory factor analyses on two samples, this study offered a preliminary stage in the verification of the 12-item aggressiveness questionnaire. The structure of four factors was confirmed. The scale and its subscales have shown to be highly reliable. The scale can serve as a valuable resource for researchers, teachers, and psychologists to evaluate overall aggression and its specific forms in adolescents. Comprehending the prevalence and root causes of psychosocial factors that contribute to aggression in school-aged adolescents can be identified with this scale and pattern of relationships with other variables can also be explored.

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