MILITARY-CONNECTED ADOLESCENT AGGRESSIVE TENDENCY SCALE: DEVELOPMENT, VALIDITY AND RELIABILITY

AIGBOJE, H.M.
Email: *hmimogie@nda.edu.ng*
Department of Psychology,
Faculty of Arts and Social Sciences,
Nigerian Defence Academy, Kaduna, Nigeria

and

OLLEY, B.O.
Email: *olley28@yahoo.com*
Department of Psychology,
Faculty of the Social Sciences,
University of Ibadan, Ibadan, Oyo State, Nigeria

ABSTRACT
This study documents the development and validation of a tool to measure aggressive behaviour tendencies among adolescent children of military personnel in Nigeria. Existing scales measuring aggressive behaviour were reviewed and a qualitative study to determine prominent issues relating to aggressive behaviour and its manifestation among this population was conducted. From themes generated, those related to aggressive behaviour were utilised to construct a 28-item aggressive behaviour scale. Among 147 adolescent children of military personnel, a cross-sectional survey was carried out to test the reliability and validity of the scale. Exploratory factor analysis factored the scale into three sub-dimensions (Physical, Verbal and Relational aggression) with items loading from 0.63 to 0.80. Convergent validity was established between the Military-Connected Adolescent Aggressive Tendency scale (MAATS) and the Buss and Perry Aggression questionnaire (r= 0.583, p< .001). While divergent validity was established between the MAATS and Multi-dimensional perceived social support scale (r=0.003, p<.001). The scale yielded an adequate internal consistency of α= 0.862, a Guttmann Split half coefficient of 0.769, Test-retest reliability of 0.78 and Split-half reliability of 0.734 (form a) and 0.757 (form b) with 0.783 as correlation between the forms. The result of the statistical analyses suggests that the MAATS has adequate psychometric properties and is a reliable and valid measure of assessing aggressive behaviour tendencies among adolescents of military personnel.

Keywords*: Aggressive behaviour, Adolescents of military personnel, Scale development, Assessment.*

INTRODUCTION

Interpersonal interaction is an important component of child and adolescent development. In the context of such social relations, aggressive behaviour among young people has become a global public health issue. Such behaviours are targeted at causing harm to others, resulting in psychological problems for victims as well as aggressor. According to Bushman and Huesmann (2010), aggression is an inherently social behaviour between at least two people and is purposely engaged in for the express goal of causing hurt or harm. Aggressive behaviour often leads to problems including social isolation, low self-esteem, poor well-being, depression, anxiety, distress, poor or dysfunctional relationships, disciplinary problems among others. Aggressive characteristics not only affect the individual leading to poorer outcomes and impairments later in life, but also the individual's family, close relations and the wider community. Violent or aggressive behaviour is a concern for the World Health Organisation judging from this statement: ''Children of today are the adults of tomorrow. These children are deserving of a safer, fairer and healthier environment. Important to achieving this, is the task of safeguarding such environments from violent acts'' (WHO, 2002).

In terms of origin, aggressive behaviours have been identified as either being reactive (in response to some form of provocation) or proactive/instrumental (acted out to achieve some form of objective or goal). Thus, a child carries out proactive aggressive behaviour generally with the expectation of positive outcomes, while children with reactive aggressive behaviour

perceive a higher degree of hostility in the actions from their peers or others, even in situations where the prior provocative behaviour is not clear. Such behaviours often result in interpersonal problems with peers in different situations.

Among children from military homes, studies have identified that some behavioural issues may be particularly problematic for this unique population. Ternus (2010) reported that one out of three of these children are at risk of developing interpersonal relationship problems. In line with such findings, Orthner and Rose (2005) suggest that there are high rates of angry acting out behaviours prominent among this population. Related studies also report increased levels of temper tantrums, poor discipline, high levels of conduct and externalising behaviour problems among this population (Creech, Hadley, & Borsari, 2014, Crow & Seybold, 2013). In the Nigerian context, though studies among this population of children are limited, Aigboje and Legbeti (2018) in their qualitative study identified that among children of serving military personnel, many were at high risk for developing behavioural and emotional problems. This study reported that behavioural problems identified include acting out behaviours, frequent fights, bullying of peers, difficulty in conforming to rules and standards among others. These behaviours as suggested in the literature are in one way or the other related to aggression. The need therefore, to assess and manage acts of aggression has never been greater, with the high risk of such behavioural problems among the population.

Appropriate and accurate assessment of any given psychological construct is crucial to its proper management. Several measures of aggression exist in the literature (Achenbach, 1999; Buss & Perry, 1992; Gremigni, Damásio, & Borsa, 2013; Goodman, 2001; Orpinas & Frankowski, 2001; etc.). However most of them are designed for general populations and foreign contexts. Also a number of these instruments are age specific, and some of such tools are based on peer nominations, parent, teacher or clinician ratings and reports. A new scale was thus developed, because the content of other aggression scales did not seem to adequately capture the uniqueness of aggressive behaviour tendency among adolescents of army personnel in Nigeria. Also a context-specific self-report assessment tool for the behaviour problem of aggression among adolescents in this population is a step towards identifying, understanding and curtailing such problematic behaviours. Such a tool may give the adolescent's perspective of the problem as other forms of assessment may provide limited or incomplete information about the behaviour of the child, especially as they rely on comparisons (with other children) to make their judgments.

Additionally, research techniques that do not directly involve reports from the perspectives of the child/adolescent have been faulted for being studies on the child population but not with children (Ben-Arieh, 2005). The use of a designed self-report instrument may be particularly advantageous with this population as the aggressive behaviour and the intrinsic motivation towards its use may be clearer to the adolescent than to external observers. However, despite the advantage of self-report questionnaires, they may also have their limitations, which could include: response biases from respondents, especially if a question is targeted at undesirable social behaviours (Furnham, 1986); also, the age and literacy of the child could be an important limitation of self-report scales (Smith & Shu, 2000).

Taking into consideration the limited studies and scarcity of context-related tools designed for aggressive behaviour among children of military personnel in the Nigerian context, this study aimed at developing and assessing the psychometric properties of a self-report tool created to meet specific context-related aggressive behaviour tendencies among adolescent children of military personnel in Nigeria. The systematic procedure involved is described.

METHODS

Item Generation:

The literature was reviewed to examine the concept and scales that assessed aggressive behaviour. Researchers conducted a qualitative study analysis to ensure items of the new scale captured the concept of aggression appropriately within the context. Focus group discussions (FGD's) and in-depth interviews were utilised. These were conducted with two groups of adolescent children of military personnel (nine participants each; N=18) and in-depth interviews conducted with teachers who teach children of military personnel (N=8), mothers of children of military personnel (N=6) and adolescents from military homes (N=6). This sample was drawn from the 1 Division barrack and the Command day secondary school in the 1 Division, Nigeria. The snowball and purposive sampling techniques were the sampling techniques employed. A focus group protocol and semi-structured interview guide developed by the researcher and assessed by two other clinical experts were used to collect data at this stage.

These interviews provided information on recurrent themes and dimensions of aggression among this population and enhanced the content validity as these individuals were considered experts in their own rights. These discussions were focused on the cognitive, behavioural and contextual manifestations of aggressive behaviour of children of military personnel. Recorded discussions were transcribed and themes emerged from which resulted 49 items.

Scale Validation:

Face validity: The forty-nine items initially derived, were further reduced to 37 as some of the items were flagged as duplicated. Face validity was assessed to ensure the scale contained relevant items to tap aggressive behaviour tendencies among adolescents in the context. These items were presented to thirteen experts (8 psychologists, 3 teachers and 2 mothers). The use of experts agrees with Sunmola (2001), who suggests the use of experts rating for face and content validity. The eight psychologists had experience in clinical/mental health practice, social child and adolescent behaviour. The three teachers and two mothers of adolescent children were familiar and had experience with behavioural tendencies of adolescents within this context. These experts were asked to evaluate and rate the relevance/suitability, clarity and preciseness of the items to be included in the scale. Their ratings were analysed to assess their agreement on the suitability of each item in measuring adolescent aggressive behaviour tendency. Any item that did not meet a 70% criterion was dropped (Kerlinger, 1993). Based on their independent contributions, five items were dropped and as a result, only 32 items met criterion and were left for pre-test. Some items were suggested for rewording and were modified accordingly to improve their clarity and to express appropriate meaning.

Responses to the 32 items were arranged in a 5-point Likert type format that ranged from very unlike me to very like me. An initial testing of items was conducted with 5 adolescent students selected conveniently to check ambiguity and clarity of items. Statements that were reported 'not clear' were modified for ease of understanding. These items were then subjected to pilot testing with one hundred and fifty-nine (159) adolescents from military homes in the Command Day Secondary School, Odogbo barrack, Ibadan, (2 Division) Nigeria (not setting involved in item generation). Participants of this stage of the study were selected by a purposive sampling technique based on the following inclusion/exclusion criteria.

i) Participants had to be adolescent children of military personnel not less than 10 years of age and not above 19 years of age as at time of study

ii) Participant's parent must have returned written and signed informed consent forms for participation of the adolescent in the study

iii) Participating adolescents had to give assent/willingness to be included in the study

The questionnaire was administered to the adolescents who were from military homes and received parental consent to participate in the study. Any adolescent who did not receive parental consent or was unwilling to participate was excluded. All appropriately filled questionnaires (147 in all i.e. 92.5%) were subjected to internal consistency, to test how fitted the items were together. Also concurrent validity to establish the degree to which the measure correlated with another measure of same or similar construct was conducted. Pearson's correlations measured these. After a three-week period, a re-test on the same sample of participants was carried out. Fifty-five adolescents who had participated in the earlier testing and whose previous questionnaire response was identified, were used in a test-retest reliability comparison.

RESULTS

Themes emerging from the qualitative process:

From the focus groups and interview transcripts, the following overarching themes emerged and guided the generation of items in the scale.

i) Aggression a problematic behaviour among population

ii) Aggression forceful and harmful behaviour

iii) Thought and emotional processes involved in aggressive behaviour

iv) Behavioural components to aggressive behaviour

v) Goals of aggressive behaviour

Descriptives: The participants of this study who filled valid questionnaires were one hundred and forty-seven (147) in number. Of these, fifty (34%) were males, while ninety-seven (66%) were females. Participants had a mean age of 14.2 years. Of these participants, 46% were in the junior secondary school, while 54% were in the senior secondary school. Participants with a male serving military parent were 96%, while those with a female serving parent were 2% and those with both parents as serving personnel were also 2% of the sample. Results also showed that, only 14% of the sample had their serving parent in the Officer cadre, while the remaining 84% of the sample had parents in the Soldier (non-commissioned) cadre.

Construct Validity: An exploratory factor analysis was conducted to examine the structure of underlying dimensions that influenced responses (Decoster, 1998), on the military adolescent aggressive tendency scale (MAATS). The Kaiser-Meyer-Olkin sampling adequacy (KMO) and Bartlett test of Sphericity were conducted. The KMO observed was .815 which is satisfactory for sampling adequacy and Bartlett's Test of Sphericity was $\chi 2 = 1606.717$, $p < .01$ indicating the scale had more than one factor (see table 1). The analysis further revealed a three-dimension structure (see table 2). Factors had eigenvalues >1.0 for the MAATS. On assessing the items contained within each factor they were labelled thus: Physical aggressive tendency ($\alpha=0.80$), Verbal aggressive tendency ($\alpha=0.63$), and Relational aggressive tendency ($\alpha=0.69$).

Table 1: Initial factor analysis (MAATS)
Kaiser-Myer-Olkin and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.815
Bartlett's Test of Sphericity.	Approx. Chi-Square	1606.717
	Df	406
	Sig.	.000

Table 2: Initial factors and factor loadings of the MAATS

Factor 1 **Physical Aggressive Tendency**	**Factor 2** **Verbal Aggressive Tendency**	**Factor 3** **Relational Aggressive Tendency**
Item 16	Item 10	Item 27
Item 22	Item 11	Item 26
Item 17	Item 5	Item 28
Item 15	Item 9	Item 8
Item 18	Item 19	Item 1
Item 3	Item 24	Item 13
Item 14		Item 20
Item 7		
Item 23		
Item 4		
Item 21		
Item 2		
Item 6		
Item 25		
Item 12		
Eigen values **6.44**	**2.831**	**3.552**
Cronbach alpha(α) **0.80**	**0.63**	**0.69**

Internal Consistency:

The contribution of each item to the scale was measured by evaluating the Cronbach alpha value if an item is deleted. The removal of any item was considered if its removal contributed significantly to the improvement of the scale alpha (see table 3). The corrected item to total correlation also assessed the correlation between the item score and the overall assessment score. This was acceptable if not less than 0.3 (McCreary and Thompson, 2006). Coefficients obtained are shown in table 3. Four items were thus dropped as a result of these reliability analysis, leaving the scale with only 28 items in all.

Table 3: Initial MAATS item-total statistics

	Cronbach Alpha Number of items	0.852 32	
	Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
C1	I get into fights often	.418	.850
C2*	If anyone offends me, I give them a piece of my mind	.041	.859
C3	When I am angry, I break or tear things	.453	.849
C4	When provoked, I do not find it difficult hitting the offender	.462	.848
C5	Anything around me becomes a weapon when I am upset	.519	.847
C6	I threaten people sometimes	.375	.851
C7	I bully others sometimes	.317	.852
C8	I sometimes join in fights with groups I belong to	.347	.851
C9	When someone offends me, I say nasty things about him/her to other people	.385	.850
C10	I use abusive words when people annoy me	.381	.851
C11	I do not feel regrets when I cause trouble	.314	.852
C12	I do not care for how others feel	.297	.853
C13*	There is no good reason to hit someone	.168	.857
C14	If I have to fight to protect my rights, I will	.363	.851
C15	I get angry easily	.400	.850
C16*	People say I argue a lot	.217	.855
C17	I am important and everyone must respect that	.481	.848
C18	I can slap anyone who deserves to be slapped	.454	.848
C19	Anyone who disrespects me will pay for it	.443	.849
C20	I shout down anyone who tries to be troublesome	.435	.849
C21	I deal with anyone who takes me for granted	.439	.849
C22	People don't want to make friends with me because they think I am aggressive	.332	.852
C23	I intentionally exclude people from my group as a punishment	.302	.853
C24	I do not care for the rights of others	.292	.853
C25	I will fight anyone that oppresses me or my own	.467	.848
C26	If I am hit, I will hit back	.313	.852
C27	In a discussion, I must get the last word in	.512	.847
C28	Once in a while I feel like I could break something	.370	.851
C29*	I do not have problems controlling my temper	.200	.856
C30	People get on my nerves easily	.450	.849
C31	I have had disagreements with many of my peers	.360	.851
C32	I am easily put off by the behaviour of some people	.391	.850

The reliability of the scale was ascertained by conducting item analyses on the entire scale's 28 items. The MAATS yielded a Cronbach alpha of α= 0.862. According to Hair, Black, Babin, Anderson, and Tatham (2006), Cronbach alphas as low as 0.70 are adequate and are acceptable for internal consistency. Also, a Guttmann Split half coefficient of 0.769, Spearman-Brown coefficient of 0.771, Split-half reliability of 0.734 (form a) and 0.757 (form b) with 0.783 as correlation between the forms were obtained.

Test-retest reliability: A test-retest reliability was conducted carrying out a comparison of responses of 55 participants on the MAATS. They completed the questionnaires and had a follow-up after a 3-week interval. Coefficient obtained for test-retest reliability was 0.78 ($p<0.01$), which is adequate and acceptable.

Concurrent Validity: Concurrent validity in this study was achieved through convergent and discriminant validities conducted. The overall MAATS was administered alongside the Aggression questionnaire (Buss & Perry, 1992) and the Multidimensional perceived social support scale (MPSS) (Zimet, Dahlem, Zimet & Farley, 1988). Pearson correlations yielded in the convergent analysis revealed that there was a strong positive relationship ($r= 0.583$, $p< .001$) between the overall MAAT scale and the Buss and Perry aggression questionnaire. Also, the discriminant validity analysis revealed that between the MAATS and the MPSS, there was an insignificant relationship ($r=0.003$, $p>.001$). The norm was set by using the average score on the MAATS (Norm (147) = 65.01). A score above the mean suggests that the respondent has high aggressive behaviour tendency, while scores at this norm score or below suggests that the respondent is low in aggressive behaviour tendency.

DISCUSSION

This study was aimed at developing and evaluating a context appropriate tool to measure aggressive behaviour tendencies among adolescents of military personnel in Nigeria. Using a systematic approach to tool development, a 28-item scale was developed to measure military-connected adolescent aggressive behaviour tendency and proved to have strong psychometric properties.

The Cronbach alpha was employed to evaluate the relatedness and level of acceptability of items. A very good alpha coefficient of 0.86 was observed on the overall scale and according to Hair et al., 2006; Cortina, 1993; and Nunally, 1970, correlations of 0.70 and above were adequate and acceptable levels of internal consistency. Test-retest reliability scores observed in the study were found to be good and this further confirms the use and reliability of the MAATs among adolescent children of military personnel. In addition, the selection of context and culturally related items through qualitative based techniques guarantees the appropriateness of items in the scale to the context. Also, the MAATS demonstrated strong significant positive correlations with the Buss and Perry aggression scale which measure a series of behavioural problems commonly associated with aggressive behaviour.

Evidence from the factor analysis conducted indicate that, the scale is multi-dimensional and revealed three sub-dimensions of aggressive behaviour tendency. These dimensions were namely: i) Physical, ii) Verbal, and iii) Relational aggressive tendency. These suggest that aggressive behaviour among adolescent children of military personnel occurs in varied forms. Such behaviours take on overt and covert forms that could be physical, verbal and relational in nature unlike the physical aggression as concentrated on by a number of other scales and studies. On correlating some demographic variables of these adolescents with aggressive behaviour tendency scores, it was observed that there was an inverse relationship between class of adolescent and aggressive behaviour tendencies. This means that as child increased or went higher in class, aggressive behaviour reduced. This could be as a result of the expectations of society and authority as the child increases in age and moved higher in class. There was however no correlation observed between gender and aggressive behaviour tendencies. This suggests that between the adolescent child in this context there wasn't a significant relationship between being female or male and aggressive tendencies reported.

This study's discussion must be viewed in the light of the following limitations. Firstly, participants were recruited from only military barracks and Command Secondary Schools in two

military cantonments in Nigeria. This leaves out those adolescents from military homes that do not live within the barrack setting and also do not attend the Command schools. This may have its effect on the generalisability of the scale and its norms. Further studies are required to further validate the items of this scale and even cross culturally. Also the limitations of the self-report type of assessment should be considered and the tool could be administered and compared with other sources of assessment. Regardless of these limitations, a reliable tool with context appropriate items to assess aggressive behaviour tendencies is valuable and should be tested further to improve its properties.

Conclusions

This study explains the steps and processes involved in the development of a 28-item scale for measuring aggressive behaviour tendency among adolescents from military homes. The scale demonstrates its reliability and it will be a useful tool in the clinical setting especially as it relates to adolescent children from military homes with aggressive behaviour problems. It will be particularly helpful to mental providers working in this setting to aid quick assessment of children with such behaviour tendencies to enable early intervention and improvement outcomes.

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Ethical approval and consent to participate:

The Ethics Committee Nigerian Defence Academy, Kaduna, Nigeria approved the study, and permissions were obtained from Commandants of Schools involved in the study. After explaining the nature and objectives of the study, written informed consent was obtained from all parents as well as assent from all the adolescents. Also informed consent of the teachers and parents involved in the study were obtained.