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Assessment tool for managing the aggression cycle as early as possible, A cross-sectional study validating the Arabic version of impulsive premeditated aggression scale (IPAS) for children and adolescents

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Abstract:

Background Aggression is a relatively stable behavior that starts in childhood and continues to adulthood if not managed early , we can't deny the Bidirectional relation between childhood aggression and child abuse. There is no available Arabic method to differentiate impulsive from premeditated aggression which is crucial point in management**. Methods** The IPAS was translated into Arabic using forward backward translation ,the Arabic BDEFS- CA and Arabic BPAQ -SF were used to assess the concurrent validity of the scale. **Results** Five items were excluded due to deficits in reliability resulting in a 25 items scale with Excellent internal consistency (0.95) using Cronbach's Alpha , excellent test retest reliability (ICC =0.9), good Concurrent validity of Arabic IPAS subscales with the Arabic BDEFS-CA subscales and Arabic BPAS-SF subscales, correlation (ϱ) from 0.6 to 0.86, $p < 0.01$ for all the comparisons, Though impulsive aggression might be more responsive to treatment, still it's not of any less severity than premeditated aggression according to MOAS scores. **Conclusions** This Arabic IPAS is a valid reliable tool for assessment of aggression subtype in children and adolescents, , The first step to approach an aggressive child should be the assessment of the aggression subtype for more effective management. Impulsive aggression differs significantly from premeditated aggression in the affected executive functions and accordingly in their treatment.

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Keywords: executive functions, impulsive aggression, premeditated aggression, Arabic IPAS, child abuse, BDEFS-CA Arabic, Arabic BPAQ, MOAS

Introduction

The future of mankind can be determined mostly by our mastery of human aggression. Currently, multiple constructs might describe aggression, as a specific symptom like hostility or a diagnosis as conduct disorder and antisocial personality or a certain behavior as impulsivity, and lacking a clear nosology creates diagnostic discrepancies.(1)

The root of human aggression is always traced to childhood so to be able to manage human aggression, we must tackle it in children.

One of the most consistent findings in research is that aggression is a relatively behavior or trait stable that starts in childhood and continues to adulthood with nearly the same severity if not managed early. Besides we can't deny the evident Bidirectional relation proved in literature between childhood aggression and child abuse where aggressive children grow up to be the abusive parents and also abusive parents cause increased levels of aggression in their abused children, even the more severe the emotional and physical abuse the higher the frequency of aggression in abused children.(2)

Types of Aggression

In 1987, the distinction between impulsive and premeditated aggression in children was introduced.(3)

The intent behind aggression is the main factor differentiating impulsive from premeditated subtype.

I) impulsive subtype

Aggressive behavior is mainly driven by impulsivity and extreme negative emotions at the moment of attempting the act of aggression and despite being the most common subtype still there is no specific criteria to diagnose it in DSM -5 or ICD 11 nor a specific therapeutic agent targeting impulsive aggression.

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On a level of diagnosis many of those children with impulsive aggression doesn't fit perfectly to any of the available diagnoses as conduct disorder, IED or DMDD leaving these patients in a diagnostic dilemma hard to be defined and treated.(4)

II) Instrumental or cognitive or premeditated aggression

This is a planned aggressive behavior not a momentary decision it is more cognitive than emotional to gain revenge, reward or power, for instance. If the aggressor believes that there is an easier way to obtain the goal, the aggression will probably not occur. In other words, it's the child own maladaptive way of problem solving.(1)

Aggression and executive functions:

A significant inverse relation between aggression and executive functions is already established in literature but without evident highlight on specific executive dysfunctions present in each aggression subtype.

Children with conduct disorder Conduct-disorder performed poorly on executive functioning tests. Tests of executive function were also impaired in those with antisocial personality disorder.(5)

Also, research demonstrate that preschool children with aggression performed poorly in tests of response inhibition, irrespective of their attention deficits.(6)

Management

Psychopharmacology

As mentioned before there is no specific therapeutic agent targeting aggression subtypes and unfortunately Misattributing aggressive behaviors in children as a symptom of a specific diagnosis as ADHD, IED, CD, DMDD, or ODD can cloud the clinical decision and mislead the management of those children.

The current practice of dealing with all aggressive behaviors in children as one construct or symptom under the umbrella of any of the previously mentioned diagnoses is not as effective as needed and many of the children remains symptomatic till adulthood to continue the cycle of violence as an abusive parent in a family context or attempting criminal behaviors in his own society.(4)

Despite a growing pediatric psychopharmacological research base on aggression-related diagnoses constructs, however, few studies have specifically investigated aggression subtypes such as impulsive aggression.

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A review on used drugs targeting aggression from 1980 to 2005 found 45 randomized, controlled trials that targeted general aggression without specific categorization showed that larger effects were noted for stimulants and atypical antipsychotics (ES = 0.9) followed by the typical antipsychotics (ES = 0.7). Least effects were found with antidepressants and mood stabilizers.(7)

Psychotherapy

Different schools of therapy mainly behavioral were studied for treating aggression.

Dialectical behavior therapy is one of those schools which was effective on Expulsive Anger and Impulsive Behaviors.(8)

Despite the research over the past century still the lack of clear nosology , assessment and treatment protocol targeting each aggression subtype makes the current task of parents and mental health professionals really difficult.

Clinical research suggests that tailoring treatment to distinct subtypes of aggressive behaviors whether its impulsive or premeditated subtype may yield more effective violence intervention and prevention as each of them responds differently to treatments.

Since That the first step for management in any medical protocol will be the Comprehensive Assessment and as to our knowledge the absence of a valid tool in Arabic till this moment to differentiate between the two types of aggression stands as an obstacle in managing those children, we decided to present the solution for this by translating and validating the IPAS.

Materials and methods

Study design A cross-sectional study.

participants This Egyptian study population for the Arabic version IPAS validation consisted of all children presenting with aggression over a period of 6 month to the Child and adolescent psychiatry clinic at Alexandria university hospital (after exclusion of children with psychosis or intellectual disability (n =**146**), children were of Age 6 – 18 years And of Both genders. Arabic was the first language of all participants, and all parents gave informed consent.

The Ethics committee at Alexandria university faculty of medicine approved this study.

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Instrument

Impulsive premeditated aggression scale IPAS.

The IPAS is a 30-item self-report questionnaire used to rate aggressive acts occurring over the past six months. Items are scored on a five-point scale, It helps with the classification of aggressive behaviors that can be implicated in clinical interventions, it has a robust psychometric property of validity and reliability across different cultures and variable samples.(9)

The Arabic version of buss - perry aggression questionnaire -Short Form (BPAQ-SF]

It is a 12 items scale rated on a 5-point Likert scale. It includes four subscales , physical aggression (, verbal aggression , anger and hostility with 3 items assessing each subscale.(10) The Arabic version can be found in Fekih-Romdhane et al. (2023).(11)

Arabic version of Barkley Deficits in Executive Functioning Scale—Children and Adolescents (BDEFS-CA).

It assesses the executive functions of daily life activities in children and adolescents . We used the long form of the BDEFS-CA consisting of 70 question parents rated consisting of five subscales: Self-Management to Time, Self-Organization and Problem-Solving, Self-Restraint, Self-Motivation, and Self-Regulation of Emotion.(12)

The Modified Overt Aggression Scale (MOAS):

It assesses four types of aggression: verbal aggression, aggression against property, auto aggression, and physical aggression over the past week.(13)

Procedure:

The approval of the Ethical Committee of Alexandria University was obtained and all children presenting with aggression over a period of 6 month to the Child and

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adolescent psychiatry clinic at Alexandria university hospital who fulfilled the inclusion criteria were recruited for a semi structured psychiatric interview.

Informed consent and ascents were taken, followed by assessment of IQ using the Stanford binnet Scale to ensure that the IQ was average.

The IPAS was translated into Arabic using the forward backward translation process with cross-cultural considerations was carried out to yield an Arabic version of the IPAS then the scale was applied to the children at two different times 2 to 3 weeks apart to assess the test-retest reliability, also we applied the BDEFS -CA scale and the **BPAQ-SF** scales to assess the concurrent validity of the Arabic IPAS scale and its subscales And the MOAS to assess the aggression severity.

Statistical analysis of the data

The internal consistency was assessed by the Cronbach's alpha coefficient and the test–retest reliability was assessed by the intra-class correlation coefficient (SPSS version 17, SPSS Inc.).

Results

Statistical analysis of the data

Data was fed to the computer and analyzed using IBM SPSS software package version 20.0**. (**Armonk, NY: IBM Corp**)** Significance of the obtained results was judged at the 5% level.

The used tests were

1- Pearson coefficient

To correlate between two normally distributed quantitative variables

2– Cronbach's Alpha

Reliability Statistics was assessed using Cronbach's Alpha test.

3- F-test (ANOVA)

For normally distributed quantitative variables, to compare between more than two groups.

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According to the diagnosis, 37% of the children had ADHD,10% had ADHD comorbid with conduct disorder,10%had ADHD with other comorbidities,35.6% had conduct disorder and 6.8% had other diagnoses.

5 items were excluded because of their very low internal consistency to yield a 25 item Arabic version of the IPAS, Their deletion increased Cronbach's Alpha for the impulsive aggression subscale from 0.8 to 0.96 and for the premeditated aggression subscale from 0.93 to 0.97.

The scale reliability

The internal consistency for the 12 items subscale of **premeditated aggression** of Arabic IPAS using Cronbach's Alpha was excellent (0.967), **the internal consistency** was excellent for the 13-item **impulsive aggression** subscale (0.956), **the test-retest reliability** in interval of 2 to 3 weeks was excellent (ICC =0.9), $p < 0.01$

Concurrent validity

The correlation (ϱ) between Problem solving executive dysfunction subscale of Arabic BDEFS -CA and premeditated aggression subscale of Arabic IPAS scores was good (0.572), $p < 0.01$.

Table (1): Reliability Statistics

	Cronbach's Alpha	No. of Items
PM	0.967	12
IA	0.956	13
5 items	0.172	5
PM+ 5 items	0.934	17
IA+ 5 items	0.881	18

The correlation (ϱ) between Response inhibition executive dysfunction subscale of Arabic BDEFS -CA and IPAS premeditated aggression subscale was Significant good Inverse relation (-0.535) and Significant good direct relation with the impulsive aggression subscale (0.647). $p < 0.01$.

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Table (2): Pearson correlations coefficients (n = 146)

			PM	IA
Barkly	Total score	r	-0.430*	0.608*
		P	<0.001*	<0.001*
	Problem solving	r	0.572*	-0.508*
		p	<0.001*	<0.001*
	Response inhibition	r	-0.535*	0.647*
		p	<0.001*	<0.001*
	Emotion regulation	r	-0.656*	0.792*
		p	<0.001*	<0.001*
PPAS	Total score	r	-0.002	0.073
		p	0.979	0.379
	BPAQ hostility	r	0.868*	-0.818*
		p	<0.001*	<0.001*
	BPAQ anger	r	-0.854*	0.857*
		p	<0.001*	<0.001*

r: Pearson coefficient; *: Statistically significant at $p \leq 0.05$

The correlation (ϱ) between Emotion regulation executive dysfunction subscale of Arabic BDEFS -CA and the IPAS premeditated aggression subscale was Significant good Inverse relation (-0.656) but Significant excellent direct relation with the impulsive aggression subscale (0.792), $p < 0.01$ for all the comparisons.

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Table (3): Reliability using Test retest.

		r	p
PM	**Q1**	0.984*	<0.001*
PM	**Q2**	0.998*	<0.001*
IA	**Q3**	0.993*	<0.001*
IA	**Q4**	0.998*	<0.001*
5items	**Q5**	0.989*	<0.001*
PM	**Q6**	0.981*	<0.001*
IA	**Q7**	0.998*	<0.001*
IA	**Q8**	1.000*	<0.001*
IA	**Q9**	1.000*	<0.001*
PM	**Q10**	0.996*	<0.001*
5items	**Q11**	1.000*	<0.001*
PM	**Q12**	0.998*	<0.001*
IA	**Q13**	0.998*	<0.001*
PM	**Q14**	1.000*	<0.001*
IA	**Q15**	0.996*	<0.001*
5items	**Q16**	0.987*	<0.001*
IA	**Q17**	0.992*	<0.001*
PM	**Q18**	0.998*	<0.001*

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PM	**Q19**	0.984*	<0.001*
PM	**Q20**	0.998*	<0.001*
5items	**Q21**	0.998*	<0.001*
IA	**Q22**	0.991*	<0.001*
PM	**Q23**	0.992*	<0.001*
IA	**Q24**	0.996*	<0.001*
5items	**Q25**	0.993*	<0.001*
IA	**Q26**	1.000*	<0.001*
IA	**Q27**	0.998*	<0.001*
PM	**Q28**	0.996*	<0.001*
PM	**Q29**	0.998*	<0.001*
IA	**Q30**	0.998*	<0.001*

r: Pearson coefficient *: Statistically significant at $p \leq 0.05$

Concurrent validity of the Arabic IPAS subscales With the Arabic BPAQ-SF subscales was as follows , the premeditated aggression subscale showed Significant excellent direct relation with hostility subscale of BPAQ-SF (0.868),$p < 0.01$,while the impulsive aggression subscale showed Significant excellent direct relation with anger subscale of BPAQ-SF (0.857), $p < 0.01$

There was no significant correlation between the severity of aggression according to MOAS scores and the type of aggression using the PM and IA subscales of IPAS, i.e. Though impulsive aggression might be more responsive to treatment, still it's not of any less severity than premeditated aggression.

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Table (4): Correlation between Total MOAS Score with PM and IA (n = 146)

	Total MOAS score	
	r	**p**
IPAS Premeditated Score (PM)	0.058	0.488
IPAS Impulsive Score (IA)	-0.032	0.704

r: Pearson coefficient; *: Statistically significant at $p \leq 0.05$

In children diagnosed with ADHD While impulsive aggression was higher (average score: 36.3) the average score for premeditated aggression was only 14.8.

Discussion

According to our results the Arabic IPAS has been +proved to be an effective valid reliable tool for assessment of type of aggression with excellent internal consistency and test-retest reliability and concurrent validity.

Impulsive aggression does not significantly differ from premeditated aggression regarding the severity, but they differ significantly in the affected executive functions and accordingly in their response to different treatments and this agrees with literature that found that impulsive aggression is biologically distinct from premeditated aggression.(14)

Another valuable finding here is that aggression is a heterogeneous construct and The type of aggression is not mainly dependent on the diagnosis or the severity of the aggression but on the executive functions affected as some of children diagnosed with ADHD might have associated premeditated aggression not just impulsive aggression and the same regarding children diagnosed with conduct disorder while most of them

have associated premeditated aggression some of them might also have impulsive aggression,

Those findings can be of great value in choosing the most effective management and can explain the variable outcomes for aggression in children with ADHD or Conduct disorders.

To conclude the first step to approach an aggressive child should be the assessment of the aggression subtype for more effective management and no matter what the diagnosis is, the children with premeditated aggression would benefit from problem solving skills due to their deficits in problem solving executive functions while other children with impulsive aggression can benefit more from interventions targeting the emotion regulation or medications targeting the response inhibition.

Limitations

Although our study is the first in the region validating a tool (IPAS) that differentiate impulsive from premeditated aggression which is a crucial point in management, but a specific sample including only clinical sample of children and adolescents is the main Limitation here, so caution is needed in generalizing these findings to broader nonclinical sample or to different age categories as adults and geriatric population.

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Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

References

1. Connor DF, Newcorn JH, Saylor KE, Amann BH, Scahill L, Robb AS, et al. Maladaptive Aggression: With a Focus on Impulsive Aggression in Children and Adolescents. J Child Adolesc Psychopharmacol. 2019;29(8):576-91.
2. Huesmann LR, Dubow EF, Boxer P. Continuity of aggression from childhood to early adulthood as a predictor of life outcomes: implications for the adolescent-limited and life-course-persistent models. Aggress Behav. 2009;35(2):136-49.

3. Kempes M, Matthys W, de Vries H, van Engeland H. Reactive and proactive aggression in children--a review of theory, findings and the relevance for child and adolescent psychiatry. Eur Child Adolesc Psychiatry. 2005;14(1):11-9.

4. Robb AS, Schwabe S, Ceresoli-Borroni G, Nasser A, Yu C, Marcus R, et al. A proposed anti-maladaptive aggression agent classification: improving our approach to treating impulsive aggression. Postgrad Med. 2019;131(2):129-37.

5. Hoaken PNS, Shaughnessy VK, Pihl RO. Executive cognitive functioning and aggression: Is it an issue of impulsivity? Aggress Behav. 2003;29(1):15-30.

6. Raaijmakers MA, Smidts DP, Sergeant JA, Maassen GH, Posthumus JA, van Engeland H, et al. Executive functions in preschool children with aggressive behavior: impairments in inhibitory control. J Abnorm Child Psychol. 2008;36(7):1097-107.

7. Pappadopulos E, Woolston S, Chait A, Perkins M, Connor DF, Jensen PS. Pharmacotherapy of aggression in children and adolescents: efficacy and effect size. J Can Acad Child Adolesc Psychiatry. 2006;15(1):27-39.

8. Jamilian HR, Malekirad AA, Farhadi M, Habibi M, Zamani N. Effectiveness of group dialectical behavior therapy (based on core distress tolerance and emotion regulation components) one expulsive anger and impulsive behaviors. Glob J Health Sci. 2014;6(7 Spec No):116-23.

9. Stanford MS, Houston RJ, Mathias CW, Villemarette-Pittman NR, Helfritz LE, Conklin SM. Characterizing aggressive behavior. Assessment. 2003;10(2):183-90.

10. Bryant FB, Smith BD. Refining the architecture of aggression: A measurement model for the Buss–Perry Aggression Questionnaire. J Res Personal. 2001;35(2):138-67.

11. Fekih-Romdhane F, Malaeb D, Sarray El Dine A, Yakın E, Hallit S, Obeid S. Association between Bullying Victimization and Aggression in Lebanese Adolescents: The Indirect Effect of Repetitive Negative Thinking-A Path Analysis Approach and Scales Validation. Children. 2023;10(3):598.

12. Hamza AM, Ghobashy SA, Abou El Wafa HE. An Arabic version of Barkley Deficits in Executive Functioning Scale - Children and Adolescents (BDEFS-CA): translation and validation study. Mid East Curr Psychiatry. 2023;30(1):9.

13. Elsheikh M. Study of attention measured by event-related potential as a predictive factor of violence among patients with schizophrenia and substance use disorder. Mid East Curr Psychiatry. 2020;27(1):17.

14. Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of impulsivity. Am J Psychiatry. 2001;158(11):1783-93.