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Psychological Evaluation

Battery of Intellectual and Creative Assessment for Children: Validity Evidence

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Abstract: The literature emphasizes the need for psychological instruments that assess intelligence and creativity simultaneously. This study examined two sources of validity evidence of the Children's Intellectual and Creative Assessment Battery (BAICI), which consists of five intelligence and three creativity tests. A total of 132 children between the ages of 9 and 12 were included in the study. The Children's Figural Creativity Test (TCFI) was used as an external criterion for evaluation. A positive and significant correlation was found between the TCFI and the BAICI creativity measures (r = 0.419; $p \leq 001$), supporting evidence of convergent validity. Correlations between the TCFI and intelligence measures (r = 0.198; $p \leq 0.023$) were low or not significant thus indicating these are independent constructs.

Keywords: intelligence, creativity, cognitive test, psychometrics, child

Bateria de Avaliação Intelectual e Criativa Infantil: Evidências de Validade

Resumo: A necessidade de instrumentos psicológicos que avaliem a inteligência e a criatividade de forma integrada é apontada na literatura. O objetivo deste estudo foi investigar duas fontes de evidências de validade da Bateria de Avaliação Intelectual e Criativa Infantil (BAICI), composta por cinco subtestes de inteligência e três de criatividade. A amostra foi composta por 132 crianças, com idades entre 9-12 anos. O Teste de Criatividade Figural Infantil (TCFI), já validado no país, foi utilizado como critério externo. Correlações significativas entre o TCFI e as medidas de criatividade da BAICI se mostraram positivas e significativas (r = 0,419; $p \leq$, 001), confirmando evidências de validade convergente. Correlações baixas ou não significativas entre o TCFI e as medidas de inteligência (r = 0,198; $p \leq$ 0,023) confirmaram evidências de validade por divergência, ou seja, demonstrando que estes construtos são independentes.

Palavras-chave: inteligência, criatividade, teste cognitivo, psicometria, criança

Batería de Evaluación Intelectual y Creativa Infantil: Evidencia de Validez

Resumen: La necesidad de instrumentos psicológicos que avalen la inteligencia y la creatividad de forma integrada está apoyada en la literatura. El objetivo de este estudio es investigar dos fuentes de evidencias de validación de la Batería de Avaliação Intelectual e Criativa Infantil (BAICI), compuesta por cinco subtestes de inteligencia y tres de criatividad. Amostra foi composta por 132 crianças, con idades entre 9-12 años. El Teste de Criatividade Figural Infantil (TCFI) se utiliza como criterio externo. Correlações significativas entre o TCFI y as medidas de criatividade da BAICI se mostrarán positivas e significativas (r = 0,419; $p \leq$, 001), confirmando evidencias de validación convergente. Las correlaciones bajas y no significativas entre el TCFI y las medidas de inteligencia (r = 0,198; $p \leq$ 0,023) confirman la evidencia de validez debido a discrepancias, lo que indica constructos independientes.

Palabras clave: inteligencia, creatividad, puebra cognitiva, psicometría, niño

Intelligence and creativity, skills considered essential for the 21st century (Vincent-Lancrin, 2019), can be conceptualized from a multidimensional viewpoint, being seen as important constructs for the acquisition and production of knowledge and for human behavior (Corazza & Lubart, 2021). Intelligence, which is often related to socially valued behaviors, can be characterized by both cognitive aspects and sociocultural and personality aspects (Cavas & Cavas, 2020). On the other hand, creativity has been defined as a skill that favors the development of human potential and is related to the promotion of well-being, mental health, and positive aspects of individuals (Creech et al., 2023). Considering the importance of intelligence and creativity, Jauk et al. (2013) reinforce the importance of evaluating these two constructs together to obtain a more complete view of human potential.

Historically, various theoretical models have been developed to explain intelligence (Flanagan & McDonough, 2022) and the most widely used today is the Cattell-Horn-Carroll (CHC) model, which takes a multidimensional view

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of this construct. In this model, intelligence is presented in a hierarchical way, made up of three strata (McGrew et al., 2023). The first stratum represents general intelligence (G factor), while the second is made up of 10 broad abilities: fluid intelligence (Gf), crystallized intelligence (Gc), short-term memory (Gsm), visual processing (Gv), auditory processing (Ga), long-term storage and retrieval (Glr), processing speed (Gs), decision speed and reaction time (Gt), reading and writing (Grw) and quantitative knowledge (GQ). Finally, the third stratum is made up of more than 70 specific skills, which are the result of the different ways of assessing broad skills. This model served as the basis for the construction of the instrument under investigation in the studies presented here.

The theoretical basis of the CHC influenced the revision of various available batteries that could assess intelligence more completely, such as the Woodcock-Johnson III battery (Woodcock et al., 2001). In the process of adapting it for use in Brazil, it was observed that a large number of items in the WJ-III would have to be modified or adapted (Wechsler et al., 2010), and the Battery of Intellectual and Creative Assessment for Children (BAICI) was built as an alternative. The battery was developed with the proposal that it be administered collectively and that it could bring together various areas of intelligence with creativity, the latter of which was lacking in the WJ-III. Some studies showed that the battery assessed intelligence and creativity as separate concepts but in an integrated way (Wechsler et al., 2022a). Subsequently, the children's version (BAICI) was built with the easiest items from this battery (Wechsler, 2022b).

In recent decades, there has also been a growing interest in creativity and its impact on personal, educational, and professional areas (Walia, 2019), which has resulted in different theoretical models. Creativity can be defined as a complex phenomenon related to the integral development of the individual and can be understood as the possibility of creating new and relevant ideas and responses to current and future challenges, thus involving cognitive aspects, personality characteristics, environmental, cultural and social aspects (Lassig, 2019; Runco & Pritzker, 2020). It is a potential present in all people and will manifest itself to a greater or lesser degree, depending on the environmental conditions encountered (Morais et al., 2021). Considering that creativity is understood as belonging to a general domain of thought and that its potential can manifest itself in different areas (Kim, 2008, 2011), we need to be able to assess it in many different ways.

Given the relevance of both constructs for individual development, there has been much discussion about the relationship between intelligence and creativity, although there is no consensus on the intensity and magnitude of this relationship (Breit et al., 2023; Plucker et al., 2015). There are basically three explanatory strands. While some authors affirm the existence of a high relationship between creativity and intelligence (Silvia, 2015), others defend the idea that they are two independent constructs (Kim, 2008), and some believe that creativity can only be manifested from a certain level of intelligence in the threshold theory (Preckel et al., 2006). Such conclusions were also observed in the meta-analysis study by Gerwig et al. (2021), which indicated that several facets of intelligence (G, Gf, Gc) had positive but low correlations with measures of divergent thinking, thus indicating that creativity and intelligence were distinct constructs. Therefore, these results confirm the conclusions of other authors who have pointed out the independence of these two constructs (Ilagan & Patungan, 2018; Karwowski et al., 2016; López-Martínez & Lorca Garrido, 2021; Runco & Pritzker, 2020) and suggest the need for an integrated assessment of intelligence with creativity.

The assessment of intelligence is well-known in the field of psychological testing, as can be seen in the number of instruments developed to measure this concept (Benson et al., 2019; Flanagan & McDonough, 2022; Satler, 2018). However, creativity is rarely assessed in cognitive assessment, thus limiting knowledge about an individual, as creative people tend to produce answers that differ from what is scored as correct in intelligence tests that only value convergent thinking (Kaufman, 2015; Pfeiffer, 2018). In a recent review of the tests approved by the Psychological Test Evaluation System (SATEPSI), it was observed that tests of general intelligence or visuospatial thinking predominate, and there is no battery of tests that evaluates intelligence and creativity in an integrated way.

It is important to note that several studies aimed at investigating psychometric properties are necessary during the test construction process. In this scenario, this study sought to investigate two sources of validity evidence for the Battery for the Intellectual and Creative Evaluation of Children (BAICI). The search for evidence of validity based on the relationship with external variables of the convergent type aimed to compare the results of the BAICI creativity test, which assesses figural and verbal creativity, with another instrument already approved by SATEPSI, which assesses creativity in a figural way (TCFI), with moderate or high correlations expected between these two measures. Another source of validity, through divergence, was analyzed, investigating whether there were low or non-significant relationships between the BAICI intelligence tests and the TCFI creativity test to check whether they were assessing different concepts. This study aimed to investigate two sources of validity evidence for the Battery for the Assessment of Children's Intellect and Creativity (BAICI), made up of five intelligence subtests and three creativity subtests.

Method

Participants

The sample consisted of 132 participants aged between 9 and 12 years (M = 9.8 years; SD = 1.2 years), 51.5% of whom were male, students in the 4th grade (n = 78), 5th grade (n = 24) and 7th grade (n = 30) of elementary school. Of these,

64.4% studied in private schools and the rest in public schools, all located in the inland region of the state of São Paulo.

Some criteria were adopted for the inclusion of the children in the sample, in particular, that they had to be between 9 and 12 years old, enrolled in regular schools, present the Free and Informed Consent Terms signed by their guardians, and sign the Assent Form. On the other hand, those who did not respond to all the instruments applied would be excluded from the sample, which was the case with seven children.

Instruments

Battery of Intellectual and Creative Assessment for Children - BAICI (Wechsler et al., 2022 b)

The BAICI is an integrated battery for assessing intelligence and creativity in children between the ages of 7 and 14, with five intelligence subtests and three creativity subtests. The intelligence subtests were based on the children's version of the Woodcook-Johnson battery (WJ III) and the creativity subtests were based on the Torrance Creative Thinking Tests, figural and verbal versions. It should be noted that initial evidence of the validity of the BAICI with external variables was published by Wechsler et al. (2022b) when differentiating contrasting groups.

The five subtests that assess intelligence are: (1) Verbal Abilities (assesses crystallized intelligence, through an activity that involves vocabulary through pictures, and another that involves verbal analogies); (2) Visuospatial Thinking (assesses visuospatial intelligence, through an activity with incomplete pictures that must be assembled like a puzzle); (3) Logical Thinking (assesses fluid intelligence, through geometric pictures that must be selected according to the criteria of quantity, color, shape, and position); (4) Speed of Thinking (Assesses processing speed, through 60 lines made up of letters and numbers, requiring the child to circle the repeating ones as quickly as possible); (5) Memory (assesses working memory, through symbols that represent words, which must be memorized to form sentences). In terms of correction and interpretation criteria, it is clear that the 5 intelligence subtests must be corrected using their respective correction sieves, resulting in the total raw points obtained by the child.

The creativity subtest assesses figural and verbal creative thinking through three activities that evaluate the cognitive dimensions of creativity, namely fluency (number of relevant ideas), flexibility (diversity of ideas), originality (ability to produce unusual ideas) and elaboration (ability to embellish an idea by adding details and increasing information). The activities are: (1) Figural Creativity: This activity is made up of seven different stimuli, which the children must use to draw pictures; (2) Verbal Creativity: The children are shown a picture that represents the cover of a book, and so they have to give titles for this book; (3) Verbal Creativity: A hypothetical situation is presented, and the children have to write down what the consequences of this situation would be if it really happened. It should be noted that the cognitive functions of creativity (fluency, flexibility, originality, and elaboration) are scored in all 3 activities, except for flexibility, which is only scored in activities 1 and 2. The sieves of each instrument should be used for correction, resulting in the final total of raw points in each category. It should also be noted that if the child does not already score in the fluency category, the other categories (Flexibility, Originality, and Elaboration) will also be reviewed.

Children's Figural Creativity Test - TCFI (Nakano et al., 2011)

The instrument, designed to assess the figural creativity of students in the 2nd to 9th grades of elementary school, consists of three activities in which the respondent is asked to draw pictures using incomplete stimuli. The first activity consists of just one stimulus, the second of 10 different stimuli, and the third of 30 identical stimuli. In this last activity, the examinee must formulate the greatest number of responses from the same stimulus. The instrument was developed based on the Torrance Creative Thinking Test, a figurative version (Torrance, 1966).

Twelve characteristics are assessed: Fluency (number of appropriate answers), Flexibility (diversity of types or categories of ideas), Elaboration (adding details to the basic drawing), Originality (unusual ideas), Expression of Emotion (expression of feelings, both in the drawings and in the titles), Fantasy (presence of imaginary beings, fairy tales or science fiction), Movement (clear expression of movement in the drawings or titles), Unusual Perspective (people or objects drawn from unusual angles), Internal Perspective (internal view of objects or part of people's bodies, in the form of transparency), Use of Context (creating an environment for the drawing), Extension of Limits (extending the stimuli before completing the drawings), Expressive Titles (going beyond the obvious description of the drawing, abstracting it).

In the correction, the characteristics are added up and grouped into four factors, plus a total score. The factors are: (1) Factor 1: Enrichment of Ideas (ability to see the situation in more detail); (2) Factor 2: Emotivity (made up of characteristics involving the use of creative resources linked to emotional issues); (3) Factor 3: Creative Preparation (made up of characteristics assessed in the first activity of the test, acting as a preparation for carrying out the other activities); (4) Factor 4: Cognitive Aspects (made up of creative characteristics that make use of cognitive resources, such as the search for differentiated, original solutions that go beyond the established limits).

Research aimed at investigating evidence of the test's validity and accuracy was conducted and confirmed its psychometric qualities for use in Brazilian samples. Among the studies, investigations into evidence of validity indicated correlation values between 0.81 and 0.94 for concurrent validity with the Torrance Figural Test, with significance levels of $p \leq 0.001$ being found for all the skills assessed, and accuracy was also confirmed employing the test and retest, which indicated values between 0.84 and 0.95. Analysis of Variance (ANOVA) was also carried out, which indicated that the variables grade ($F = 6.93$, $p \leq 0.001$), region ($F = 7.09$, $p \leq 0.001$), and type of school ($F = 11.26$, $p \leq 0.001$) exerted a highly significant influence on all 12 characteristics

assessed by the TCFI (Nakano et al., 2011). The instrument is approved for use by SATEPSI (System for the Evaluation of Psychological Tests), and presents normative studies for elementary school students.

Procedures

Data collection. Two schools in Campinas (SP), one public and one private, were contacted to invite all students aged 9-12 to participate in the research. The schools were asked to send the Free and Informed Consent Term (FICT) to the guardians so that they could allow the children to participate in the research. Before the instruments were administered, the children also had to sign the consent form to confirm their willingness to participate.

The BAICI was applied to the children collectively, in three one-hour meetings in each class. In the fourth meeting, the TCFI was applied collectively, separately in each grade, in a one-hour meeting. It should be noted that students who did not have their guardians' permission were directed to other activities at the time of application, under the responsibility of the schools.

Finally, feedback was also given to both schools and parents, with the aim of illustrating the children's performance on the BAICI and TCFI, by means of general graphs of the results, which highlighted the children's areas of strength and weakness. Talks on possible ways of stimulating children's cognitive and creative potential were also given to the teaching staff of the two participating schools.

Data analysis. The statistical analyses of the data obtained from the children in the BAICI and TCFI were carried out using the JASP software, version 0.16.3. First, descriptive statistics were estimated for each instrument and its factors. The first analyses concerned the normality and homogeneity of the sample, using the Shapiro-Wilk test, which indicated a non-normal distribution of the results ($p <$ 0.05), so non-parametric tests were used for the following analyses. Spearman's correlation was then used to estimate the relationship between the measures. The effect size was also calculated using Fisher's z.

Ethical Considerations

The research project was approved by the Human Research Ethics Committee of the Pontifícia Universidade Católica de Campinas (Certificate of Submission for Ethical Review - CAAE No. 13190119.3.0000.5481).

Results

Initially, the descriptive statistics for each instrument were estimated for the factors and total score. To compose the total score for the TCFI, the scores for its four factors are added together. For the BAICI figural creativity measure, only the figurative activity of the battery is considered, and for verbal creativity, the sum of the two verbal creativity activities. Lastly, the BAICI intelligence assessment took into account the five subtests and their sum, giving rise to the total intelligence score. The results are shown in Table 1.

Table 1

Descriptive statistics for each factor and total score in the instruments

Measure	Average	*SD*	Minimum	Maximum
Factor 1	13.93	13.21	0	77
Factor 2	4.18	4.34	0	19
Factor 3	2.81	3.12	0	19
Factor 4	44.12	20.52	0	134
Total TCFI	65.13	32.23	0	228
Figural Creativity	7.29	6.76	0	32
Verbal Creativity	22.93	16.33	0	32
BAICI total creativity	30.22	19.97	0	114
Logical	9.67	3.95	0	15
Speed	28.06	15.00	0	48
Visuospatial	15.84	6.47	0	40
Memory	24.79	14.83	0	57
Verbal	11.28	6.18	0	22
BAICI total intelligence	89.66	31.59	11	152

Note. Factor 1 (Enrichment of ideas); Factor 2 (Emotivity); Factor 3 (Creative preparation); Factor 4 (Cognitive aspects).

Next, to verify the evidence of validity based on the relationship with external variables of the convergent type, the correlation between the TCFI measures and the BAICI creativity subtests was estimated. The results are presented in Table 2, along with the effect size.

As can be seen, the results indicated a positive and significant correlation between the TCFI total score and the BAICI total score ($r = 0.419$; $p \leq$, 001), and with the BAICI figural ($r = 0.499$; $p \leq$, 001) and verbal ($r = 0.390$; $p \leq 001$) creativity measures. In addition to these, other correlations proved significant, of the BAICI's total creativity with two TCFI factors (F1 and F4, respectively), and of figural creativity with all TCFI factors. The effect sizes were moderate and large.

Table 2

Correlation and Effect Size between the TCFI and the BAICI Creativity Subtests

Variable	Measure	Factor 1	Factor 2	Factor 3	Factor 4	total TCFI
Figural Creativity	*r*	0.405***	0.188*	0.252**	0.446***	0.499***
	p	< 0.001	0.031	0.004	< 0.001	< 0.001
	z	0.429	0.190	0.257	0.479	0.548
Verbal Creativity	*r*	0.136	0.118	0.003	0.367***	0.305***
	p	0.120	0.177	0.968	< 0.001	< 0.001
	z	0.137	0.119	0.003	0.384	0.315
BAICI Total creativity	*r*	0.248**	0.160	0.088	0.451***	0.419***
	p	0.004	0.066	0.315	< 0.001	< 0.001
	z	0.254	0.162	0.088	0.486	0.446

Note. Factor 1 (Enrichment of ideas); Factor 2 (Emotivity); Factor 3 (Creative preparation); Factor 4 (Cognitive aspects); *z* = effect size (Fisher); *$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.

Next, to identify evidence of validity based on divergent constructs, the results of the BAICI intelligence subtests, namely logical, speed, visuospatial, memory, and verbal, as well as the total score, were compared with the TCFI. The results of the correlation and effect size are shown in Table 3.

The results indicated a positive, significant, and low magnitude correlation, as expected, between total intelligence on the BAICI and total creativity on the TCFI ($r = 0.198$; $p \leq 0.023$). The memory subtest was also significantly related to total creativity. Other significant correlations were found (speed, visuospatial, and total intelligence) with creativity factor 2 (emotional factor), as well as memory with factor 1 (enrichment of ideas) and factor 4 (cognitive aspects). The effect sizes ranged from small to moderate.

Table 3

Correlation and Effect Size between the TCFI and BAICI Intelligence Measures

Measure		Factor 1	Factor 2	Factor 3	Factor 4	total TCFI
Logical	*r*	0.017	0.150	0.035	0.002	0.038
	p	0.847	0.087	0.693	0.979	0.664
	z	0.017	0.151	0.035	0.002	0.038
Speed	*r*	0.007	0.317***	0.079	-0.052	0.023
	p	0.933	< 0.001	0.365	0.553	0.794
	z	0.007	0.329	0.080	-0.052	0.023
Visuospatial	*r*	0.050	0.307***	0.161	0.046	0.107
	p	0.570	< 0.001	0.065	0.598	0.221
	z	0.050	0.317	0.163	0.463	0.353
Memory	*r*	0.240**	0.159	0.003	0.231	0.268**
	p	0.005	0.069	0.968	0.008	0.002
	z	0.245	0.160	0.003	0.235	0.275
Verbal	*r*	0.164	0.139	0.168	0.121	0.179*
	p	0.060	0.112	0.055	0.167	0.040
	z	0.166	0.140	0.169	0.122	0.181
BAICI iTotal intelligence	*r*	0.161	0.334***	0.110	0.117	0.198*
	p	0.065	< 0.001	0.211	0.181	0.023
	z	0.162	0.347	0.110	0.118	0.201

Note. Factor 1 (Enrichment of ideas); Factor 2 (Emotivity); Factor 3 (Creative preparation); Factor 4 (Cognitive aspects); *z* = effect size (Fisher); *$p \leq 0.05$; **p; ≤; 0.01; ***$p \leq 0.001$.

Discussion

Intelligence and creativity are essential constructs for the development of human potential. However, the assessment of intelligence is still more emphasized in psychology (Benson et al., 2019). This can be seen, for example, in the large number of instruments for assessing this construct available in Brazil, coupled with the scarcity of tests for assessing creativity. However, despite the fact that both cognitive abilities are valued and complement each other in the broad understanding of the individual, no Brazilian instrument available to date encompasses both constructs. Consequently, research ends up using specific intelligence or creativity tests separately.

Understanding intelligence is important, but it is not enough to explain the different ways in which human potential is expressed (Kaufman, 2015). If we adopt the view that the constructs are related but involve different mental operations (Cho et al., 2010), this perception indicates the need for instruments that can assess intellectual and creative abilities in an integrated way (Jauk et al., 2013). In view of this demand, the process of constructing the Battery for Intellectual and Creative Assessment - Children's Version (BAICI) was started, and this study presents part of its psychometric studies, namely the investigation of validity evidence based on convergent and divergent external criteria.

As can be seen, the investigation into evidence of convergent validity confirmed high correlation values between the two creativity measures ($r = 0.419$). This result confirms the requirements of the Federal Council of Psychology (CFP, 2022) to study the relationship between tests that assess the same construct. In this case, creativity. In this type of investigation, evidence of magnitude from $r = 0.50$ confirms that both tests measure the same construct. The value found of $r = 0.41$ indicates that there are points in common between the activities, but also differences, which are mainly based on the fact that in BAICI, verbal and figural creativity are assessed, whereas in the test taken as a comparative criterion (TCFI), only figural creativity is assessed. This may have influenced the results, especially if we consider that the literature has pointed to creativity as an area that can manifest itself in a wide variety of specific domains (Kim, 2011), which can capture different facets of this construct.

Given that creativity is a multidimensional and complex construct, we can see that in the subtests included here, different creative abilities were compared: verbal and figural. Possibly this condition affected the magnitude of the correlation. This can be seen by analyzing the association between similar tasks involving figural creativity (TCFI) and the BAICI figural creativity measure, whose correlation was higher ($r = 0.499$), reaching the value recommended by the CFP (CFP, 2022), to confirm the BAICI's evidence of convergent validity.

In the next objective, validity evidence based on tests that assess different constructs was investigated, based on the use of a test that appears to be different from the one taken as a basis. In this specific case, this source of validity was investigated by comparing the different subtests of intelligence from the BAICI and creativity from the TCFI. The results showed a value of $r = 0.19$ between the total of the two measures, indicating that creativity and intelligence have significant but low relationships, thus indicating that they are different or divergent concepts. This result confirms the studies conducted by different researchers (Ilagan & Patungan, 2018; Karwowski et al., 2016; López-Martínez & Lorca Garrido, 2021; Runco & Pritzker, 2020) stating that intelligence and creativity are independent constructs (Wechsler, Peixoto, et al., 2022) and that there should therefore be instruments that can indicate the complementation or integration of these two ways of thinking.

The identification of gifted children usually considers dimensions of intelligence and creativity (Pfeiffer, 2018). However, considering that creativity is not present in IQ tests, this identification is quite limited by the understanding of children's cognitive potential. The BAICI's contribution as a valid tool to help identify these children will be of great value in recognizing the human capital that exists in our country.

Finally, it is interesting to note that, among the other correlations found, the memory subtest in particular proved to be positively and significantly related to both the total TCFI score and factor 1 (enrichment of ideas) and factor 4 (cognitive aspects). Although at first glance memory and creativity may appear to be distinct abilities, Gerver et al. (2023) state that creative thinking can be conceptualized as a high-level cognitive ability that is supported by lower-level cognitive processes such as memory, attention, and cognitive control. Empirical work suggests that creative ideas do not come out of nowhere but usually result from memory processes at different stages of the creative process (Benedek et al., 2023). Memory (semantic and episodic) would act at the initial stage of idea generation (free association and goal-directed association) (Beaty & Kenett, 2023).

Memory stores facts, concepts, and general knowledge that can be retrieved and combined in new ways to facilitate creative thinking since distant concepts in memory can be connected to each other in a new, appropriate, and creative way (Beaty et al., 2023). According to the authors, creative individuals have a richer associative memory than less creative individuals. However, Gerver et al. (2023) point out that some care should be taken when seeking to understand the relationship between memory and creativity given the need to involve defining the type of memory and creativity under investigation, as well as the types of task and individual differences that can influence the strength and direction of the relationship.

Based on the results presented in this study, it can be concluded that the BAICI, in addition to filling a gap in relation to instruments that enable an integrated assessment of intelligence and creativity, and contributing to a broader assessment of cognitive development, presents evidence of validity that confirms its suitability for the intellectual and creative assessment of children.

However, the study's limitations need to be taken into account, especially the small sample size limited to one

region of Brazil, with a predominance of students from private schools, a situation that does not reflect the Brazilian reality. Therefore, future studies are still needed to include samples from different regions of the country, as well as investigations into other psychometric qualities, such as accuracy, item analysis, and standardization, until the battery can be made available for professional use.

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