

## Comparison of the Emotional Indicators of the Pfister Test between Boys and Girls from Ceará-Brazil

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### Abstract

The increasing need for psychological instruments characterized by scientific rigor, with their psychometric qualities confirmed, drives the development of studies that seek evidence of validity for psychological tests. The aim of this study was to seek evidence of validity for the Pfister Test by comparing the sexes. The study was carried out with 197 children from the city of Ceará, 46% male and 54% female, using the Pfister Colored Pyramids Test as the main instrument and the Raven Colored Progressive Matrices Test as an instrument to screen the intellectual performance of the participants. After statistical analysis and interpretation of the data, predominance in the choice of blue, green and black colors was observed in the boys, especially regarding darker tones, which may indicate emotion-related control. The girls made more frequent use of the colors violet and red, both in the lightest tones, which culturally refers to femininity and may suggest impulsivity. It was concluded that there are statistically significant differences in color choices between boys and girls, which can be comprehended as a contribution to the evidence of validity studies of the Pfister Test.

**Keywords:** Test validity, Color Pyramid Test, gender.

### Comparação dos Indicadores Emocionais do Teste de Pfister entre Meninos e Meninas Cearenses

#### Resumo

A necessidade, cada vez mais emergente, de instrumentos psicológicos que se caracterizem pelo rigor científico, atestado por meio de suas qualidades psicométricas, impulsiona o desenvolvimento de estudos que busquem evidências de validade de testes psicológicos. Neste estudo objetivou-se buscar

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por evidências de validade para o Teste de Pfister por meio da comparação entre sexos. O presente estudo foi realizado com 197 crianças da capital cearense, sendo 46% do sexo masculino e 54% do sexo feminino, utilizando o Teste das Pirâmides Coloridas de Pfister, como instrumento principal, e o Teste das Matrizes Progressivas Coloridas de Raven, como instrumento de rastreamento do desempenho intelectual dos participantes. Após análises estatísticas e interpretação dos dados, verificou-se uma predominância na escolha das cores azul, verde e preto por parte dos meninos, especialmente em tons mais escurecidos, o que pode indicar controle relacionado às emoções, enquanto as meninas fizeram uso mais frequente das cores violeta e vermelho, ambas no tom mais claro, o que se remete culturalmente à feminilidade e pode sugerir impulsividade. Conclui-se que há diferenças estatisticamente significativas nas escolhas das cores entre meninos e meninas, o que pode ser compreendido como uma contribuição aos estudos de evidências de validade do Teste de Pfister.

**Palavras-chave:** Validade do teste, Teste das Pirâmides Coloridas, sexo.

## La Comparación de los Indicadores Emocionales del Test de Pfister entre Niños y Niñas Cearenses

### Resumen

La necesidad de instrumentos psicológicos que se caractericen por el rigor científico, atestado a través de sus calidades psicométricas, impulsa el desarrollo de estudios que busquen evidencias de validez de pruebas psicológicas. En este estudio se objetivó buscar evidencias de validez para el Test de Pfister por medio de la comparación entre sexos. Este estudio fue realizado con 197 niños de la capital cearense, siendo 46% del sexo masculino y 54% del sexo femenino, utilizando el Test de Pfister. El Test de las Matrizes Progresivas Coloridas de Raven se utilizó como rastreo del desempeño intelectual de los participantes. Se verificó una predominancia en la elección de los colores azul, verde y negro por parte de los niños en tonos más oscurecidos, o que puede indicar control relacionado a las emociones, mientras las niñas optaron más significativamente por los colores violeta y rojo, ambas en el tono más claro, lo que se remite culturalmente a la femineidad y puede sugerir impulsividad. A partir de los resultados, se concluye que hay diferencias significativas en las elecciones de los colores entre niños y niñas, lo que puede ser comprendido como una contribución para estudios de evidencias de validez en el Test de Pfister.

**Palabras clave:** Validación del Test, Test de las Piramides Coloridas, sexo.

The scientific rigor of the psychometric qualities of psychological instruments ensures their responsible and reliable use, while guaranteeing to the professionals, tools that actually fulfill the desired goals in a Psychological Evaluation process (Cardoso & Villemor-Amaral, 2017). Federal Psychology Council Resolution No. 009/2018 (*Conselho Federal de Psicologia* [CFP], 2018) established that all psychological tests must comply with minimum conditions with respect to their evidence of validity, standardization, normalization and reliability. According to Ambiel and Carvalho (2017), it is fundamental that the interpretations

suggested from the empirical results of the tests are understood, in order to comprehend the scope and limits of the interpretations, as well as how error-free the results are. Interpretations of a test are considered to have evidence of validity when based on a theory concomitant to a solid scientific basis. The choice of the most appropriate sources of validity evidence for each situation will depend on the objectives and format of the instrument, on the study method and on the intention to use the instrument for different samples and contexts. Cardoso and Villemor-Amaral (2017) describe, for example, that validity evidence based on the relations with

other variables is commonly used with projective methods.

Regarding the reliability of a test, this concept is closely related to its stability, that is, to the degree to which the scores obtained are free of measurement errors. Every evaluation of a psychological construct has some measurement error, with it being important to estimate this margin of error (Ambiel & Carvalho, 2017). Whenever there is, for example, some degree of subjectivity in the judgment of the response, it is important that the reliability among judges be performed, which seeks to verify to what degree the particularities of each evaluator could be a possible source of error in the results of the test. For this, the aim is to control the variable related to the evaluator in the coding of the protocols (Zanon & Hauck-Filho, 2015).

It is important to emphasize the frequent discussions about the realization of, or even the deficiencies present in, psychometric studies using projective techniques, as well as about the methods considered more appropriate for use in these studies, and, for that reason, to consider the specificities inherent in aspects of Personality. In this sense, the complexity of the phenomena that these techniques aim to evaluate is emphasized, leading some authors, such as Cardoso and Villemor-Amaral (2017), to defend the relevance associated both with more idiographic studies and those identified as nomothetic.

One of the projective techniques studied in Brazil is the Pfister Colored Pyramids Test (CPT), which provides information on the emotional dynamics and cognitive functioning of the examinee. Indicators that have good evidence of validity to generate data that allow the understanding of emotional dynamics involve the use of colors. In this way, the percentage and the combination of the use of the colors and their hues allow different information to be obtained about the way people handle and organize their emotional experiences (Villemor-Amaral, 2012, 2014).

This relationship between color and emotion has been explained from the physiological point of view by the process that is triggered by color stimulation, with it being perceived that

aspects related to the emotional dynamics of the individual stand out for being affected by color.

Like the emotions, colors are stimuli that initially reach us and trigger physiological processes, without, in their origin, being part of the cognitive sphere, which does not occur with the recognition of shapes, which depend on intellectual processes for their distinction. (Weiner, 2000 apud Villemor-Amaral, 2012, p. 75)

Given this, the emotional indicators in the Pfister Test can be understood as relevant, as they constitute expressive information for a more complete comprehension of the personality of the subject. In addition, the test allows, in a specific way, for emotional aspects to be extracted with the minimum participation of the cognitive functioning of the individual.

For LoBue and DeLoache (2011) and Oliveira (2016), the choice of colors, in addition to the physiological aspects, involves a process of individual preferences that undergo cultural influences. Villemor-Amaral, Biasi, Cardoso, Pavan, and Tavella (2015) mentioned that there are also affective and behavioral characteristics that are culturally attributed to men and women, exemplifying that characteristics more related to rationality and an oppressive character are historically conferred to men, while women are considered to be significantly stronger emotionally and understood as being more tender.

It is noted that this social construction is constituted from childhood, as recalled by Villemor-Amaral et al. (2015) when citing rigid masculinity, based on sport, competition, and permitted violence taught to boys, while girls were taught how to be docile, discreet, gentle, and obedient. The sexist division of toys (LoBue & DeLoache, 2011) and the stereotyped way in which colors are treated can be cited as examples, with the realization that pink objects and decorations are usually used for girls and blue for boys (Oliveira, 2016).

LoBue and DeLoache (2011) sought to verify the preference of colors between boys and girls. The study included 192 children, who were

divided into age groups, ranging from seven months to five years, totaling six groups with 32 children each. The children were offered eight pairs of objects, which were always composed of one pink object and another that varied between yellow, green, blue and orange. They were asked to choose one of the objects and, as a result, it was found that there were no significant differences in the frequency with which children less than two years of age preferred pink objects, whereas, from two years of age, the choices changed, with the choice of pink objects in the girls being significantly more frequent, when compared to the boys. In addition to this, a behavior of cancellation of interest for the pink color was observed for boys aged between three and four years, which can be considered data to corroborate the influence of sexual differences in the preference of the color pink.

Dal'Igna (2007) analyzed the discourse of teachers of the initial grades of the municipal school network of São Leopoldo-RS, with regard to gender relations. The teachers argued that agitation and lack of attention damaged the academic performance of children and typically attributed these characteristics to boys. From the perceptions of the teachers, girls should be more obedient, passive and conformed to the rules. Also in the discourses of the teachers, it was evident that they tended to reinforce the importance of being well-mannered and obedient in the girls, while there was a greater tolerance of the agitated behaviors in the boys, as if they were characteristic of the gender. A differentiation was noted between the way of being of boys and girls, which was accepted and mobilized by the teachers.

The influence of the relationships of gender and age on the choice of colors in the CPT has already been investigated by Villemor-Amaral et al. (2015). The study included 206 protocols of adults, ranging from 19 to 78 years of age, 57% male and 43% female, and 528 protocols of children aged 6 to 12 years, 41% of whom were male and 59% female, totaling 734 protocols. In order to compare the frequency of use of the colors and hues of blue and red according to

sex and age, Cohen's Student *t*-test was used. Regarding the comparison between boys and girls, the results of the study demonstrated a significant increase of Blue 1 (lightest hue of Blue) and Red 1 in girls, while boys presented an increase in Blue 4 (darker blue hue) and Red 2 (most intense red).

Similarly, Villemor-Amaral (2014) described information relevant to differences in the use of colors between boys and girls, citing, for example, the increase of Violet 1 (similar to lilac) and Red 1 (corresponding to pink) colors in girls, associating this with the cultural representativeness of the colors as indicative of femininity. No other studies were found that considered the cultural influence in the pattern of behaviors and customs established in the use of the CPT.

Although the CPT has been authorized for use by psychologists since 2005 (CFP, 2016), validity evidence of psychological tests should be frequently evaluated for the most varied contexts (Ambiel & Carvalho, 2017; Cardoso & Villemor-Amaral, 2017). In this sense, it should be noted that four studies of validity evidence for use of the Pfister Colored Pyramids Test with Brazilian children were found in the research databases (Cardoso & Capitão, 2007; Villemor-Amaral et al., 2015; Villemor-Amaral, Pardini, Tavella, Biasi, & Migoranci, 2012; Villemor-Amaral, Tavella, Cardoso, Biasi, & Pardini, 2014) and only that of Villemor-Amaral et al. (2015) was carried out with the comparison of performance according to gender. Considering that information regarding the possible influences of the use of colors according to gender were also described in the instrument manual (Villemor-Amaral, 2014), the present study aimed to search for evidence of validity for the Pfister Color Pyramids Test based on the relationship with other variables, which in this case was the gender of the participants. The study was carried out by means of the comparison of the formal aspect indicators, process of execution, frequency of use of colors and color syndromes according to the gender of children of Fortaleza-CE.

## Method

### *Participants*

The instruments were administered to 208 children. It was sought to match the sex, age and type of school in which they studied and to be attending the school grade corresponding to what is expected for that age, as well as having a median or superior intellectual performance in the Raven's Colored Progressive Matrix test, having the consent form signed by one of those responsible and having no history of seeking psychological or psychiatric treatment were adopted as inclusion criteria in the sample.

The protocols of 11 children who did not meet the requirements of the inclusion criteria were disregarded. Thus, the present study was carried out from a sample of 197 children, living in Fortaleza - Ceará, of whom 91 (46%) were male and 106 (54%) female. Of these, 97 (49%) were students of public schools and 100 (51%) of private schools, with their ages ranging from 6 years to 11 years and 6 months (mean = 8.56,  $SD = 1.47$ ).

### *Instruments*

**The Pfister Colored Pyramids Tests (CPT) - Version for children and adolescents** (Villemor-Amaral, 2014). The main instrument used for the study was the CPT, being a projective method that aims to evaluate aspects of the personality, highlighting indicators related to the affective dynamic and the cognitive functioning of the examinee. The CPT consists of three cards, which contain a pyramid design, with a variety of colored squares. These squares are presented in ten different colors, divided into 24 hues. The task of the examinee is to fill in each design, one at a time, until they are to their taste. After the construction of the pyramids, the applicator conducts an inquiry, asking about the preferences of the examinee in relation to the pyramids, the colors of their day to day and the colors contained in the test.

Regarding the evaluation of the information obtained through the test, all the answers go

through a codification process, that is, the way the examinee filled in the pyramid designs and chose the colors are classified into codes that can be interpreted as indicators. For the present study, the CPT indicators regarding the formal aspect, execution process, frequency of use of the colors and of the color syndromes were analyzed.

With a favorable evaluation of its use in the Psychological Testing Assessment System (*Sistema de Avaliação de Testes Psicológicos* [SATEPSI]) since 2005 (CFP, 2016), the CPT has studies evaluating its psychometric qualities that indicate good results regarding the accuracy and validity of the test (Villemor-Amaral, 2014). The consistency of the projective methods is usually determined by inter-rater agreement and temporal stability studies (Cardoso & Villemor-Amaral, 2017). Villemor-Amaral (2014) mentions studies performed by his team, demonstrating good indicators of reliability related to the analysis of the formal aspect and the color formula (86% agreement for the first and 92.4% agreement for the second) and justifies that studies of temporal accuracy are not indicated for instruments aimed at child evaluation, given the developmental and cognitive changes common to the period of childhood. Thus, in order to obtain data on temporal stability, studies were conducted with adults, who presented high rates of correlation between the first and second tests (Villemor-Amaral, 2014).

Regarding the evidence of validity studies, the author compared aspects related to age, gender and schooling and obtained statistically significant differences between some indicators. Differences in the data obtained reflected discrepancies that were theoretically justified, thus contributing to evidence of validity of the CPT. The author highlighted that disparities in the use of colors and color syndromes, considering sex and age, are explained by the process of cognitive development, learning and the cultural influences to which children are subjected. In addition, Villemor-Amaral (2014) mentioned several other studies regarding the use of CPT with children, considering the specificities of some groups.

**Raven's Colored Progressive Matrices Tests** (Angelini, Alves, Custódio, Duarte, & Duarte, 1999). The Colored Progressive Matrices Test (CPM) is derived from the original Standard Progressive Matrices (SPM) developed by John C. Raven in 1938 and known in Brazil as the General Scale. Raven's tests are intended to estimate the intelligence of the examinee, starting from the two-factor theoretical framework of Charles Spearman. Thus, the aim was to evaluate the general intellectual capacity - "g" factor, more specifically the educative capacity, which consists of extracting new comprehensions and information from what is already perceived or known.

Raven's tests, in their different versions, are composed of an array of figures in which there is a larger incomplete figure and six smaller figures so that the examinee chooses, among them, the one that best fills the incomplete space. Following this same pattern, there is a version of the CPM intended primarily for children, aged between five and 11 years, as well as a version for the elderly and one for the mentally disabled. Regarding the accuracy of the CPM, some studies have been performed considering the Brazilian reality, demonstrating that the instrument has good indications for this population, with the test having a favorable evaluation on the SATEPSI list (CFP, 2016). Angelini et al. (1999) verified the accuracy of the CPM through the split-halves method, calculating the correlation coefficients between the even and odd items for each sex, in each age group and for their total sample. After the coefficients were corrected using the Spearman-Brown formula, a coefficient of 0.92 was found for males and 0.90 for females.

Two criteria adopted to assess the validity of the CPM were age differentiation and internal consistency. Regarding the first criterion, the authors highlighted that, for an intelligence test to be considered valid, it is important to observe a progressive increase in the results according to the increase in age. Therefore, the test in question can be considered valid, since Angelini et al. (1999) presented results in which the test scores increased with age. In terms of the age

of the participants, it is important to develop normative tables considering developmental differences in six-month intervals. Regarding internal consistency, the studies of these authors showed that the majority of the items satisfy the range of 0.3 to 0.8 of item-total correlations, these being considered significant and, therefore, with satisfactory internal consistency.

### *Procedures*

**Data Collection Procedures.** Data collection was performed by psychology undergraduates from a university located in the northeast of Brazil, who received training of approximately 100 hours for the application of the test, and its coding was carried out according to the standardization of the manuals. Initially, the students had the opportunity to study the manuals of each test, appropriating their instruments and administering them with each other. They then performed the application of these instruments on child volunteers. It is important to emphasize the accompaniment of the supervising professor during each of these stages, ensuring that possible doubts were resolved and inappropriate conducts corrected. Only then did the applicators go into the field to collect the data related to this article.

Data collection was performed in some public and private schools of Fortaleza, which, in addition to making contact with the families requesting permission for the child to participate, also provided the physical space for administering the tests. The tests were administered individually, in a single meeting of approximately 60 minutes, at appropriate times and in spaces made available by the schools. It should also be noted that the coding of each indicator of the Pfister protocols was reviewed and corrected by the research supervision professor prior to being fed into the database and subsequently subjected to data analysis.

**Data Analysis Procedures.** The first statistical analysis of the data was related to the verification of the adequacy of the coded data through the inter-rater reliability. The Kappa index of all the analyzed variables indicated good reliability of the instrument [formal aspect

of pyramid I (Kappa of 0.93,  $p < .001$ ), of pyramid II (Kappa of 0.86,  $p < .001$ ) and of pyramid III (Kappa of 0.88,  $p < .001$ ) and color formula (Kappa of 0.92,  $p < .001$ ]. After a conference among the evaluators related to the consistency, the data were transferred to a statistical package, using Student's t-test to compare the performance in the CPT between boys and girls. In addition, *Cohen's d* was calculated to analyze the magnitude of the effect, considering  $d = 0.20$  as an effect of small magnitude,  $d = 0.50$  an intermediate magnitude, and  $d = 0.80$  a large magnitude (Cohen, 1992).

**Ethical Procedures.** This article is derived from a study approved by the Research Ethics Committee (REC) on 04/17/2014, with authorization No. CAAE 26205614.1.0000.5534. Once approved by the REC, it was possible to contact the schools that had signed the Institutional Consent Terms of the study, requesting

that they send the consent form to the parents of the students, so they could authorize or not the participation of their children in the research. Those children whose parents authorized participation were invited to take part in the study, with its aims and how it would be performed being explained, in accessible language. After agreeing to contribute to the study, they were asked to sign the consent form.

## Results

For the present study, the CPT indicators related to the formal aspect, execution process, frequency of use of the colors and of the color syndromes were compared. After the data analysis, there were some divergences regarding the responses of boys and girls. Table 1 shows the variables that presented statistically significant differences with  $p < .05$ .

**Table 1**  
Comparison of CPT Indicators according to the Sex of the Children

Variable	Sex	N	Mean	Standard Deviation	t	p	d																																																																																												
Blue 3	Female	106	1.56	1.316	-2	.046	0.29																																																																																												
	Male	91	2.02	1.861				Red 1	Female	106	3.73	2.905	6.507	<.001	0.968	Male	91	1.69	1.313	Red 2	Female	106	2.24	1.809	-2.76	.005	0.407	Male	91	3.14	2.61	Green 3	Female	106	1.5	1.173	-2.3	.022	0.325	Male	91	1.95	1.598	Violet 1	Female	106	2.93	2.121	5.378	<.001	0.808	Male	91	1.57	1.248	Violet	Female	106	6.11	4.09	3.753	<.001	0.56	Male	91	4.25	2.55	Black	Female	106	2.05	2.022	-2.11	.036	0.34	Male	91	2.67	2.055	Wide and flexible color formula	Female	106	0.09	0.288	-2.17	.032	0.32	Male	97	0.2	0.399	Disordered execution process	Female	106	0.05	0.227	-7.12	.012	0.37
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It can be seen in Table 1 that the use of the colors and hues Blue 3, Red 2, Green 3 and Black was more frequent in the pyramids produced by the boys, while the girls made more constant use of the colors Red 1, Violet 1 and Violet. It should be noted that Red 1 and Violet 1, similar to pink and lilac respectively, were more commonly used by girls, having the most intense magnitude of effects of the differences. In addition, when compared to the girls, the boys presented a more flexible and wider color formula and a disordered execution process.

## Discussion

An initial result that stands out is the fact that the majority of the indicators that significantly differentiated the groups were related to the frequency of use of the colors (Table 1). As mentioned by Villemor-Amaral (2012, 2014) colors are indicators of emotional aspects. Thus, the data suggest that the differences between girls and boys in the CPT involve emotional factors more than cognitive functioning factors.

The group of boys in this sample used the colors Blue 3, Green 3 and Black more frequently than the girls (Table 1), with the colors and their hues needing to be considered for a more complex understanding of these differences. The blue color, for example, is presented in four hues and, in general, is associated with emotional control and adaptation, however, there may be variations of meanings from the differences of hue. In this way, darker hues are more related to introverted and controlling attitudes. In addition, the increase of this color may be related to ambivalent attitudes and feelings of inferiority (Villemor-Amaral, 2012).

Due to the achromatic character of the black color, the increase in the frequency of its use is related to the negation of the colored stimuli, associated with an attitude of greater negation of the emotions or constriction when faced with the environment. Thus, it indicates a stabilizing and regulating function, related to the defenses against stimuli and fear of the emergence of the impulses. The combination of increased blue and black colors suggests resistance and difficulty in

elaboration, hindering the emotional development (Villemor-Amaral, 2012). According to Villemor-Amaral (2012), when green increases, this indicates an overload of stimulation, which, in the absence of regulatory and maturity factors, may result in anxiety and rupture of the internal balance, thus indicating a possible elevation of emotional overload of the boys, when compared to the girls of the sample.

The use of these colors in boys suggests a possible distancing from very stimulating situations, relating to emotional control, with a certain level of negation of emotions, and possible overload of stimulation (Villemor-Amaral, 2012, 2014). Such data can also be understood from a cultural bias, with boys having the need for consideration and restraint in the expression of their transmitted feelings, due to socially consolidated taboos associated with the cult of insensitivity or hardness related to masculinity.

The girls in the sample tended to show more frequent use of red and violet colors (Table 1), which, according to Villemor-Amaral (2014), may be associated, respectively, with attitudes of more a impulsive or aggressive character and with a level of anxiety. Additionally, the meanings related to the hues of these colors stand out. In the case of Violet 1, this anxiety is associated with fear of helplessness and feeling defenseless and it is important to note that the whiter hues have their use related to structural fragility. Furthermore, the combined increase in red and violet indicates the possibility of explosive and unpredictable discharges, due to the characteristics of excitement and impulsivity shown by the colors (Villemor-Amaral, 2012).

In a similar study, Villemor-Amaral et al. (2015) obtained similar results, with the increasing use of blue and green colors, especially in the hues 3, which are darker, and of Red 2 and Black being described in boys. These data demonstrate that, when compared to girls, boys are more likely to use darker hues. As discussed by these researchers, this more repressive and rational character is historically attributed to men due to their need to be providers. In the same study, the girls



showed an increase in the use of Red 1, which was theoretically attributed to the expression of cultural tendencies associated with femininity. The increased use of the Violet 1 color by the girls in the present study corroborates the data of the authors, considering the feminine symbolism of this color in contemporary Western society. It should be noted that Villemor-Amaral (2014) also found predominance of the violet color in girls when compared to boys.

Another difference between girls and boys, observed in Table 1, is the wide and flexible color formula, observed more frequently among the boys. This formula indicates a great openness to the stimuli, indicating capacity for action and achievement in a more energetic way and perhaps more directed towards defined objectives, suggesting adjustment capacity (Villemor-Amaral, 2012, 2014).

The last indicator that differentiated the two groups was related to the disordered execution process, which, according to Villemor-Amaral (2012, 2014), reflects, in general, a careless and anxious attitude. These data are similar to those described by Dal'Igna (2007), in that they are characteristics socially more accepted in boys than in girls, and in this sense there is a process of cultural consent attributed to these behaviors in the male population. This fact may favor the maintenance of these characteristics among boys.

Based on the differences found between boys and girls, it is necessary to discuss some aspects related to gender issues and how culture pervades these issues, understanding that it is, above all, a changeable process and that, therefore, it should not be analyzed as something spatially and temporally static (Oliveira, 2016). According to Dal'Igna (2007), the issues inherent to the constitution of gender are included in a very broad context, escaping the personal sphere and transcending historical and cultural implications. Thus, the results obtained show the social influences on the way of being, from cultural patterns that are present from an early age (LoBue & DeLoache, 2011), establishing certain relationships between affective aspects in the female and male genders.

This set of data makes it possible to perceive that, in different Brazilian regions, there is a tendency to attribute to boys a social role focused more on impulse control and repression, while girls are identified by the characteristics of fragility and greater sensitivity conferred upon them. Additionally, the results indicate that the CPT differentiated significant elements between girls and boys, suggesting good evidence of validity based on the relation with other variables and corroborating the interpretations of previous studies, such as the one of Villemor-Amaral (2012) and other studies that sought evidence of validity for the use of the CPT with children (Cardoso & Capitão, 2007; Villemor-Amaral et al., 2012; Villemor-Amaral et al., 2014).

This study is relevant in the Brazilian context considering that there is a growing demand for psychological instruments to be constantly evaluated with regard to their psychometric qualities (Ambiel & Carvalho, 2017; Cardoso & Villemor-Amaral, 2017; CFP, 2018; Zanon & Hauck-Filho, 2015).

Finally, the fact that children from Ceará show similar performance to those in the normative studies conducted by Villemor-Amaral (2014) indicates good perspectives for the use of the CPT with children from Ceará. With this, it is possible for the test to gain greater support among the scientific community and professionals in the field, since the results and interpretations of the CPT are consonant in diverse Brazilian regions and realities.

### **Final Considerations**

The present study aimed to find evidence of validity for the use of the CPT by comparing the color choice in the Pfister Test according to sex. From the results found, significant differences were observed when comparing the performance in the CPT of boys and girls from the state of Ceará, corroborating data found in similar studies conducted in other regions of the country. The findings contribute to the validity evidence of the Pfister Test, with the fact that it was performed with children from Ceará being relevant, as there are no studies in the literature

that have been performed with this specific population.

It is important to highlight that the information obtained should not be taken as crystallized data of choices due to the gender, but provides a framework for understanding aspects that involve this factor, being permeated by cultural and social issues. In addition, the limited nature of the study is highlighted, with regard to the representativeness of the sample from the capital of Ceará, and the need to perform further studies that seek evidence of validity for other regions of the country, for example, studies in capital cities and rural areas of Brazil.

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