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ORIGINAL

DEVELOPMENT AND VALIDATION OF THE PRESCHOOLERS BODY SCALE

DESARROLLO Y VALIDACIÓN DE LA ESCALA CORPORAL PARA PREESCOLARES

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ABSTRACT

The aim was to develop and validate an instrument to measure the body size perception and body dissatisfaction among preschoolers. The Preschoolers Body Scale (PBS) is composed of two sets of four figures (male and female versions) in front and profile views, representing four weight categories. The scale was administered to a total of 244 preschoolers aged 4 to 6.4 years, 42 participated in the pilot study and 202 took part in the instrument's reliability study. Also, 10 expert pediatricians aged 50 to 65 years participated in the

validation and reliability process. Results revealed good validity and moderate-to-high reliability, which improved as children became older. We conclude that the PBS is a reliable and appropriate instrument to measure body perception in preschoolers, particularly among participants older than 5 years.

KEYWORDS: preschoolers, body image, body size percepction, body dissatisfaction, validity, reliability, instrument

RESUMEN

El objetivo del estudio fue desarrollar y validar un instrumento para medir la percepción del tamaño corporal y la insatisfacción corporal en preescolares. La Escala Corporal para Preescolares (PBS) estuvo compuesta por cuatro figuras corporales (versiones masculina y femenina) en posición frontal y lateral, representando cuatro categorías de peso. La escala fue administrada a 244 preescolares de 4 a 6,4 años, de los cuales 42 participaron en el estudio piloto y 202 en la fiabilidad del instrumento, la cual se reforzó con un proceso de validación y fiabilidad con 10 pediatras expertos de entre 50 y 65 años. Los resultados revelaron una buena validez y una fiabilidad de moderada a alta, que fue mejorando conforme los niños fueron mayores, especialmente con las figuras de perfil. Se comprobó que PBS es un instrumento adecuado para evaluar la percepción corporal y la insatisfacción corporal, particularmente entre participantes mayores de 5 años.

PALABRAS CLAVE: preescolares, imagen corporal, percepción corporal, insatisfacción corporal, validez, fiabilidad, instrumento

1. INTRODUCTION

Within the framework of body image, the perceptual component (i.e., estimation of body size) and cognitive-affective (i.e., feelings, attitudes, emotions, and assessments of the body) (Thompson, 1990) has been widely studied, especially among preadolescents and adolescentss, as they are considered to be at-risk populations for the development of body dissatisfaction and eating disorders (Gómez-Mármol, Sánchez-Alcaraz, Molina-Saorín, & Bazaco, 2017; Rodgers, Paxton, & McLean, 2014). However, theoretical and empirical literature show that the development of body image and the onset of body concerns appear at early ages (Smolak, 2012), where there is a paucity of research (Lombardo, Battagliese, Pezzuti, & Lucidi, 2014).

To date, previous studies reveal that the majority of preschoolers aer inaccurate in the perception of their body size (Ambrosi-Randic & Tokuda, 2004; Cramer & Steinwert, 1998; Meers, Koball, Wagner, Laurene, & Musher-Eizenman, 2011; Ra, Yun, & Cho, 2016), especially females (Ambrosi-Randic, 2000; Holub, 2008) and children with an excess of weight (Cramer & Steinwert, 1998; Burgess & Broome, 2012; Tremblay, Lovsin, Zecevic, & Larivière, 2011). Taking these results into account, it has been suggested that the accuracy of body size perception might be developed at older ages (Ambrosi-Randic & Tokuda, 2004).

This perception of oneself is complemented by a valuing and affective dimensión of the self, that is, to what extent children value their characteristics and competencies, how satisfied or dissatisfied, happy or unhappy they feel about how they are (Palacios, Marchesi, & Colll, 1990). Regarding this dimension, some previous studies have demonstrated that a high percentage of children have body dissatisfaction (Ambrosi-Randic & Tokuda, 2004; Dohnt & Tiggemann, 2006a, 2006b; Li, Hu, Ma, Wu, & Ma, 2005; Musher-Eizenman, Holub, Edwards-Leeper, Persson, & Goldstein, 2003; Pallan, Hiam, Duda, & Adab, 2011; Ra et al., 2016; Tremblay et al., 2011, Wong et al., 2013), whereas others have found that the majority of children were happy and satisfied with their bodies (Burgess & Broome, 2012; Damiano et al., 2015; Davison, Markey, & Birch, 2000; Xu & Nerren, 2008), demonstrating more concern with their hair or clothes rather than with their body size or shape (Hayes & Tantleff-Dunn, 2010; McCabe et al., 2007). Therefore, results are varied and inconclusive.

During the preschool stage, body size perception and body dissatisfaction are usually measured with visual instruments that are easy and quick to apply (Gardner, Jappe, & Gardner, 2009; Truby & Paxton, 2002), as recommended by some researchers (Collins, 1991; Tremblay et al., 2011), since such young children may have limitations in their ability to verbalise their ideas and describe their perceptions. The visual instruments more commonly used are body figure or silhouette scales (Gardner et al., 2009; Hill, 2012), composed of bodies of different sizes arranged from the thinnest to the heaviest (Collins, 1991; Lerner & Gellert, 1969; Stunkard, Sorensen, & Schulsinger, 1983; Tiggemann & Pennington, 1990; Truby & Paxton, 2002). These scales typically contain seven or nine figures or silhouettes with identical faces and heights, so that the only dimension that varies is the body size. To measure body size perception, children are asked what figure looks most like them, obtaining a discrepancy score that compares the child's body mass index (BMI) with the BMI of the figure selected as current, whereas for body dissatisfaction another discrepancy score is obtained, by subtracting the desidred figure from the perceived one (Collins, 1991; Truby & Paxton, 2002).

Several studies have pointed out that one of the reasons of the inaccurate body size perception could be due to the inaccuracy or adequacy of the instruments (Collins, 1991; Holub, 2008; Pallan et al., 2011) since scales designed for older populations have been used as there are no validated instruments for young children. In some cases, adaptations have been made to facilitate the task to preschoolers; for example by cutting the number of figures (Meers et al., 2011). The inaccuracy of body figure scales has also been criticised because some of them are composed of subjective drawings that do not correspond to real bodies, which makes it difficult to obtain an accurate or exact measurement of the perceptual component of body image lo cual dificulta una medición adecuada o exacta del componente perceptivo de la imagen corporal (Gardner, 2012; Lombardo et al., 2014).

With the aim of overcoming the exposed limitations, the purpose of this study was to develop and validate an instrument based on real body figures created from children's photographs to measure the body size and body dissatisfaction

in preschoolers. According to this aim, we hypothesised that the instrument would demonstrate adequate validity and reliability, being more reliable with older children.

2. MATERIALS AND METHOD

2.1 Participants

A total of 244 preschoolers took part in this study. Of them, a subgroup composed of 42 Caucasian children from 4.4 to 6.3 years old (22 girls, 20 boys, M_{age} = 5.25 ± 0.54) participated in the pilot study, and the remaining 202 children between 4 to 6.4 years (97 girls, 105 boys, M_{age} = 5.24 ± 0.63) took part in the reliability process of the instrument. All participants were recruited from 13 schools located in Albacete, Spain. The children's ethnicity was reported by the parents, being 98% Caucasian and 2.5% American. Children were divided into five groups according to their age, as follows: 4 to 4.4 years ($n_{♀}$ = 10; $n_{♂}$ = 19); ($n_{♀}$ = 13; $n_{♂}$ = 24); 5 to 5.4 years ($n_{♀}$ = 22; $n_{♂}$ = 22); 5.5 to 5.9 years ($n_{♀}$ = 36; $n_{♂}$ = 29); and 6 to 6.4 years ($n_{♀}$= 16; $n_{♂}$ = 11). This classification was made due to the cognitive diferences that exist between children born in different months of the same natural year, which is know as relative age effect (Barnsley, Thompson, & Barnsley, 1985). Apart from the reliability obtained with children, a process of validation and reliability was conducted with 10 paediatricians, seven men and seven women, who ranged in age from 50 to 65 years (M_{age} = 58.7 ± 5.83); all of them had more than 10 years of experience as physicians.

2.2 Instruments

2.2.1 Preschool Body Scale (PBS). The instrument used was designed from photographs and comprises two scales composed of four body figures belonging to four boys and four girls ranging in age from 4 to 6 years. One scale shows the figures from a profile view and the other one from a front view. The first figure corresponds to a very low-weight child (3rd percentile: BMI_{boy} = 13.13 and BMI_{girl} = 13.03); the second figure represents a normal weight (50th percentile: BMI_{boy} = 16 and BMI_{girl} = 15.06); the third figure belongs to an overweight child (85th percentile: BMI_{boy} = 17.1 and BMI_{girl} = 17.06); and finally, the fourth figure shows an obese child (> 99th percentile: BMI_{boy} = 21.03 and BMI_{girl} = 21.25). All figures have the same height and are arranged from the thinnest to the heaviest.

To avoid the tendency to select the central option (Matas, 2018), the scale was composed of an even number of figures. Also, due to the early age of the participants, a small number of figures were selected since, as suggested Lombardo et al. (2014) and Paxton and Damiano (2017), preschool children may have difficulties discriminating the small differences between the adjacent figures on a large scale. Although, the ideal number of figures is unknown, Gardner and Brown (2010) claim that, while many figures are used on some scales, only three or four are actually used in the majority of cases.

With the aim to develop the instrument, the weight and height of 61 children were obtained. After that, their BMI (weight kg/height m2) and BMI percentiles were calculated following the World Health Organization children growth standards (WHO, 2006). The children were grouped into four categories: low or very low weight (percentile ≤ 10), normal weight (percentiles 15-75), overweight (percentiles 85-95), and obese (percentile ≥ 97). Then, one child of each gender and category was selected to be photographed from the front and in profile.

The photographs were taken individually by a researcher in the presence of the parents and in a separate and quiet room. Children, clothed in underwear, stood 20 cm from the wall and 150 cm from the camera. The heads of the children were not photographed to ensure their anonymity and to ensure that the children using the tool focus their attention on the figure's body and not on the facial features during the assessment of body size perception. Further, as it is pointed out by Gardner et al. (2009), the omission of these traits is fundamental for the instrument to be appropriate for its administration with other ethnic groups because the extant scales show the Caucasian ethnicity. An example of this limitation can be seen in the study by Li et al. (2005), who adapted the fácil features of the Collins' scale (1991) to their culture.

Finally, the obtained photographs were edited with Adobe Photoshop CC 2015. The first version of the instrument, showing an example of the female scale, is presented in Figure 1.

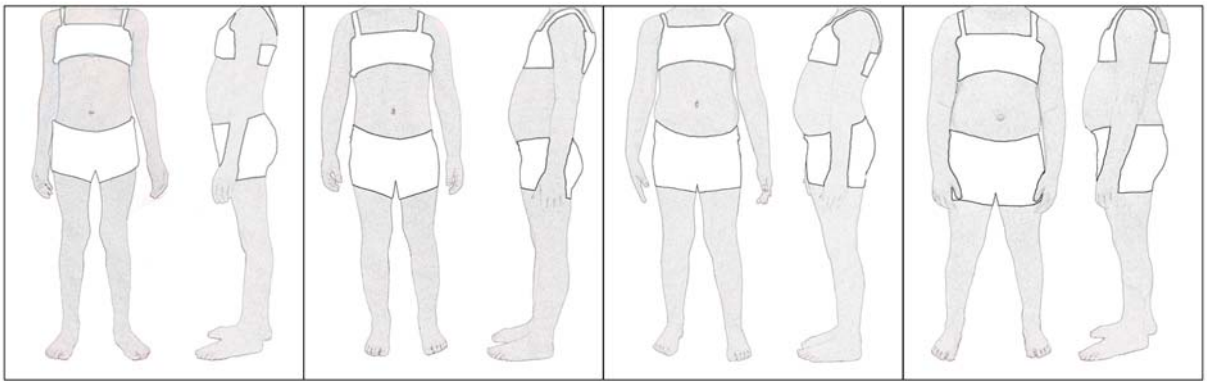

Figure 1. First female version of PBS.

Using the male and female versions of the instrument, a pilot study was conducted to assess its adequacy. Initially, the scale was composed of four squares that contained the front and profile figures of each photographed child. After the pilot testing, the instrument was modified, dividing the scale into two - one of them with profile figures and the other one with front figures. This modification was made after observing that many children, especially the younger ones, had difficulty understanding that the two figures of the same square belonged to the same child. The final version of the instrument is shown in Figures 2 and 3.

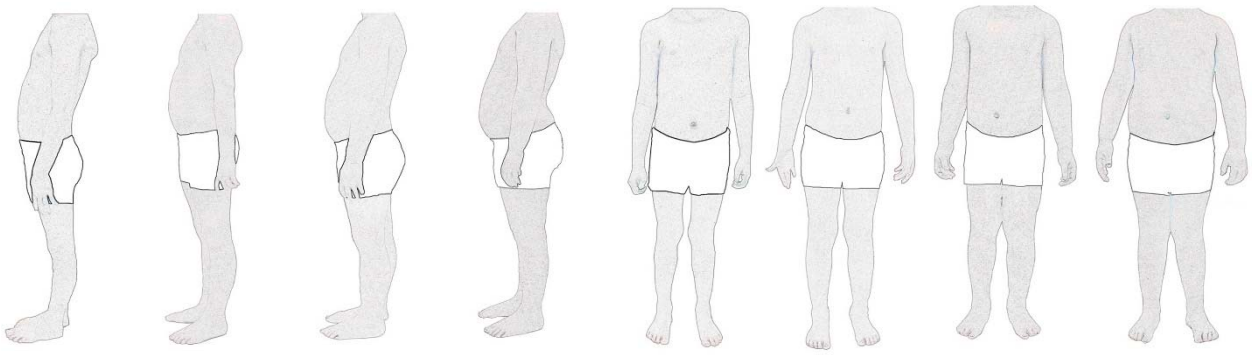

Figure 2. Final male version of PBS.

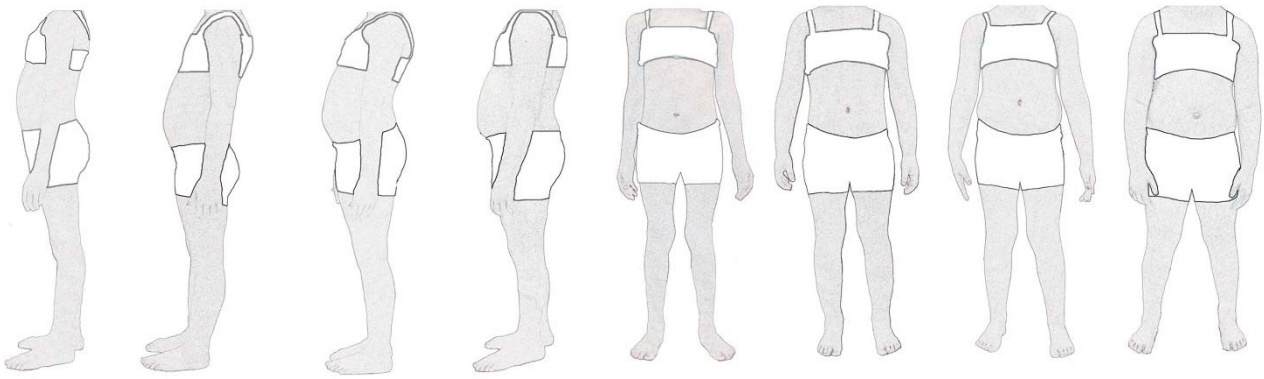

Figure 3. Final female version of PBS.

Through the shown scales and with the aim of measuring body size perception and body dissatisfaction, children were asked to identify their perceived figure (i.e., Which child looks most like you?) and their ideal figure (i.e., Which child would you most want to look like?). To know if children's body size perception is accurate, a discrepancy score (real figure – perceived figure percibida) is calculated, whereas to know the body dissatisfaction, another discrepancy score is obtained by subtracting the desired figure from the perceived figure. Both puntuations would vary between 3 and -3.

2.3 Measures

2.3.1 Anthropometry. Children were measured to calculate their BMI, percentiles, and BMI z-scores. The height, measured with light clothing and without shoes, was obtained with a portable stadiometer accurate to 0.1 cm (Tanita HR-001), and the weight was measured with a digital scale (Tanita HD-366) accurate to 0.1 kg. These measurements were taken by one specialised researcher with the first-level anthropometry certification from the International Society for the Advancement of Kinanthropometry (ISAK).

2.3.2 Validity and reliability. Children only took part in the reliability of the instrument, as previous studies showed the difficulties of preschoolers to perceive accurately their body size, which could bias the validity of the

instrument. Following previous studies (Collins, 1991; Lerner & Gellert, 1969; Pallan et al., 2011), the reliability was obtained through a 72-hour test-retest design, by asking children verbally about their perceived and desired figure.

The reliability of the instrument obtained with children was reinforced with a process of validity and reliability conducted with 10 expert paediatricians, as was algo done by Wells, Goldstein and Bentley (2018). The number of experts was determined following Landeta's recommendations (2002), who suggests a minimum of seven experts to obtain a judgement or assessment of one topic.

The construct validity with experts was measured by observing the degree of correspondence between the BMI of children in the photographs and the BMI of the figures from the scale selected by the paediatricians (Swami, Salem, Furnham, & Tovée, 2008), whereas the reliability was calculated through the interobserver agreement with the aim of obtaining the concordance among the answers of the participants (Fleiss, 1981).

2.4 Procedure

The present study was approved by the Hospital Research Ethics Committee of Albacete, as well as the Education Local Government of Castilla-La Mancha. Also, approval was provided by school principals. As the sample size was composed of children, their parents gave their consent to take part in the study, whereas children gave their verbal assent prior to data collection, which was carried out during school time.

The children's anthropometrics were obtained in a separate room by the measurement of their height and weight, following the ISAK protocol (2001). For the height, the subject was placed standing with the feet together and the buttocks and upper part of the back resting on the stadiometer, with the head in the Frankfort plane. Whereas, for the measurement of the weight, the subject was placed in the centre of the scale with the weight equally distributed on both supports.

Once anthropometrics were obtained, some photographs were taken and the scale, previously explained, was developed. Subsequently, each child was briefly interviewed by a trained researcher to know his or her perceived and ideal figures. During this task, the participant was seated in a small chair in front of a 17-inch screen placed on a table at eye level and at a distance of approximately 30 cm. A protocol was developed to ensure a standardised protocol that did not influence children on their responses.

The figures, 18 × 7 cm in size, were displayed on the screen in ascending order, from lowest to highest BMI percentile, and with a white background, showing first the profile figure scale and the front figure scale afterward. This procedure was repeated 3 days later to obtain the test-retest reliability.

The same researcher conducted the data collection with paediatricians, who gave their informed consent to take part. They were randomly presented with 14 photographs of seven boys and seven girls of different weight status. Each of

these photographs, both in front and profile views, were displayed individually for 30 seconds on a 24-inch screen, while they were given the printed figure scales on standard-sized paper. On a record sheet, the paediatricians noted what figure of the scale was related to each photograph according to the body weight. However, in no way were they to record a weight status, percentile, or BMI that represented each figure or photograph, in order not to constrain or bias their answers.

2.5 Statistical analysis

The analysis was made using SPSS Statistics 24.0, obtaining first the descriptive statistics. To calculate the test-retest reliability with children, Spearman correlations and Wilcoxon signed-rank tests were conducted, making a stratified analysis by gender and age. The construct validity with paediatricians was calculated through Spearman correlations, whereas Fleiss' Kappa was used to find the interrater agreement among the paediatricians, given the nature of the variables and the existence of more than two raters. Further, children's anthropometrics were calculated using the AnthroPlus 1.0.4 software (WHO, 2007).

3. RESULTS

3.1 Anthropometry

Children's BMI, excluding those who took part in the pilot study, ranged from 12.19 and 21.25 (M = 15.45 ± 1.66). The results showed that 13,1% of children had low weight, 72,1% had normal weight, 8.2% were overweight, and y 6.6% were obese.

3.2 Validity and reliability

Regarding the construct validity, the results echoed a strong and significant correlation between the BMI of children in the photographs and the BMI of the figures selected by the paediatricians (ρ = .85, p < .005). Also, the interrater reliability demonstrated a substantial agreement taking into account all the figures of the scale with a Fleiss' Kappa = .61 (Fleiss, 1981). This coefficient is considered as moderate between .41 and .60, whereas the concordance is substantial from .61. Analysing the reliability by each figure, scores ranged from .49 to .81, with higher agreement between experts with photographs of obese children and less agreement with normal-weight children. With the low-weight figure, the degree of agreement was .55, whereas with overweight figure it was .58.

The test-retest reliability with children was calculated through Spearman correlations, to determine the temporary consistency between test (T1) and retest (T2). Also, means and standar desviations for perceived figures in T1 and T2, as well as the Wilcoxon signed-rank test were calculated to compare the puntuations between both times. The results by age and gender are shown in Table 1.

Table 1. Test-retest reliability for the perceived figure with front and profile scale, according to age and gender

	T1 perceived figure *M* (SD)		T2 perceived figure *M (SD)*		Correlation T1-T2 perceived figure	
Groups	Profile	Front	Profile	Front	Profile	Front
All (*N* = 202)	1.68 (1)	2.05 (1.01)	1.68 (0.97)	1.91 (0.98)	.557**	.408**
Boys (*n* = 105)	1.68 (1.07)	2.14 (1.04)	1.66 (1.01)	2.02 (1.09)	.689**	.404**
Girls (*n* = 97)	1.68 (0.91)	1.95 (0.97)	1.71 (0.92)	1.79 (0.85)	.402**	.396**
4 - 4.4 years (*n* = 29)	1.93 (1.19)	2.41 (1.26)	1.83 (1.10)	2.03 (1.14)	.387*	.216
4.5 - 4.9 years (*n* = 37)	2.08 (1.22)	1.89 (0.96)	2 (1.13)	2.05 (1.07)	.600**	.029
5 - 5.4 years (*n* = 44)	1.45 (0.79)	2.16 (0.93)	1.52 (0.97)	1.82 (0.92)	.458**	.439**
5.5 - 6.4 years (*n* = 65)	1.51 (0.80)	1.98 (0.91)	1.59 (0.79)	1.88 (0.85)	.617**	.592**
6 - 6.4 years (*n* = 27)	1.63 (1)	1.85 (1.06)	1.56 (0.93)	1.81 (1.11)	.641**	.718**

**$p < .001$
*$p < .005$

Regarding the perceived figure, the global correlation coefficient for test-retest reliability was .55 with the profile scale and .40 with the front scale. This realiability was notably different by gender with profile figures, since boys showed greater reliability than girls ($\rho = .68$, $p < .001$ vs. $\rho = .40$, $p < .001$). After making an age-stratified analysis, an increase in reliability was observed. Following the Landis and Koch criteria (2012), before 4.4 years, a low or no reliability of the instrument was noted, whereas reliability was moderate with children between 4.5 and 4.9 years with the profile scale ($\rho = .60$, $p < .001$) and with children ranging in age between 5 and 5.4 years with both scales. However, it is from 5.5 years of age that children showed a higher reliability with both scales (profile: $\rho = .61$, $p < .001$ and front: $\rho = .59$, $p < .001$), which increased at the age of 6 (profile: $\rho = .64$, $p < .001$ and front: $\rho = .71$, $p < .001$).

The Wilcoxon signed-rank test just showed mean differences between T1 and T2 in the age group of 5 to 5.4 años ($Z = -2.060$, $p = .039$), as the average score in the test was 1.52 (0.97) and 1.82 (0.92) in the retest. Taking into account all the participants, there were no mean differences with profile ($Z = -.071$, $p = .943$) and front figures ($Z = -1.680$, $p = .093$). Also, according to gender, there were no mean differences with the profile figures (boys: $Z = -.460$, $p = .646$; girls: $Z = -.366$, $p = .714$) or with the front ones (boys: $Z = -1.099$, $p = ,272$; girls: $Z = -1.323$, $p = .186$).

Regarding the ideal figure, Table 2 shows lower reliability than with the perceived figure, as a correlation of .46 and .36 was obtained respectively with the profile and front scale. The test-retest reliability improved from the age of 5 with both scales, reaching the higher scores at the age of 6 (profile: $\rho = .73$, $p < .001$ and front: $\rho = .50$, $p < .001$). Regarding the gender, boys demonstrated higher reliability than girls with both scales [boys (profile: $\rho = .52$, $p < .001$ and front: $\rho = .39$, $p < .001$) vs. girls (profile: $\rho = .37$, $p < .001$ and front: $\rho = .28$, $p < .001$)].

With the ideal figure, Wilcoxon signed-rank test did not show any significant difference between the means of T1 and T2 (profile figures: $Z = -1.467$, p=.142; front figures: $Z = -0.136$, $p = .892$).

Table 2. Test-restest reliability for the ideal figure with profile and front scale, according to age and gender

	T1 Ideal figure *M (SD)*		T2 Ideal figure *M (SD)*		Correlation T1-T2 figura ideal	
Groups	Profile	Front	Profile	Front	Profile	Front
All (*N* = 202)	1.82 (1.01)	2 (0.97)	1.72 (0.96)	2 (1.01)	.461**	.365**
Boys (*n* = 105)	1.85 (1.09)	2.15 (1)	1.71 (1.05)	2.14 (1.12)	.527**	.395**
Girls (*n* = 97)	1.79 (0.92)	1.84 (0.90)	1.72 (0.85)	1.85 (0.87)	.377**	.287**
4 - 4.4 years (*n* = 29)	2.10 (1.20)	2.34 (1.17)	1.97 (1.11)	2.48 (1.05)	.240	.352
4.5 - 4.9 years (*n* = 37)	2.39 (1.20)	2,05 (0.97)	2.14 (1.20)	2.14 (1.13)	.495**	-.032
5 - 5.4 years (*n* = 44)	1.75 (0.86)	2.18 (1.04)	1.73 (0.89)	2.05 (1.09)	.347*	.375*
5.5 - 6.4 years (*n* = 65)	1.54 (0.84)	1.89 (0.83)	1.42 (0.73)	1.85 (0.83)	.341**	.456**
6 - 6.4 years (*n* = 27)	1.52 (0.75)	1.52 (0.75)	1.56 (0.75)	1.59 (0.88)	.735**	.505**

**$p < .001$
*$p < .005$

4. DISCUSSION

This study was conducted to develop and validate a body figure scale to measure the body size perception and body dissatisfaction among preschoolers. Results obtained with the expert paediatricians demonstrated a high correlation for construct validity and a good reliability. The level of agreement among experts with overweight and obese figures, so the excess of weight may be clearly observable in the phographs and figures of the instrument.

Spearman correlations with children showed a moderate-to-high test-retest reliability from 5 years of age with both figure scales, as expected, which demonstrates that the responses of older children are more consistent over time, especially with the perceived figures, whereas the reliability was weaker with the ideal figures. This fact might mean that at these ages children have not yet formed a body ideal, which leads them to select different figures on different days. In this sense, it has been argued that in these ages, children have not yet developed the abstract think that allows them to distinguish and compare between their real self and ideal self (Dunphy-Lelii, Hooley, McGivern, Guha, & Skouteris, 2014; Papalia, Wendkos, & Duskin, 2010). Such abstract thinking begins to emerge from the age of 11 and, thanks to this, children are able to go beyond concrete experiences and develop images of ideal circumstances. A case in point is that children can imagine how an ideal parent would look like and compare it to their real parent. Therefore, they are able to think about the future and what they could be (Santrock, 2007).

The body scale designed by Collins (1991) for older children demonstrated reliability with similar scores as those obtained in the present study. Another example is the scale for children aged 7 to 11 years developed by Truby and Paxton (2008), composed of seven body figures (Children's Body Image Scale –CBIS–). This scale obtained a higher test-retest reliability in comparison with our scale, both with perceived and ideal figure.

This result could be due to the cognitive maturity of the participants, whose ideas and responses are more stable over time. Truby and Paxton (2008), like Lerner and Gellert (1969) demonstrated that females were more consistent in their responses, which could reflect their superiority and precocity in cognitive development. However, in the present study, males demonstrated higher reliability than females, both in the selection of the perceived and ideal figure. This suggests that boys at early ages show clearer choices in relation to body image. Such clarity in males' responses might explain a higher accuracy in the perception of their body size (Ambrosi-Randic, 2000; Holub, 2008). On the contrary, the lower consistency in females' responses might suggest that they are more vulnerable and more impressionable by external factors that lead them to modify their responses and have a less stable body image. In this sense, Smolak (2004) claims that girls are more socially pressured than boys to achieve a particular bodily ideal.

This study contributes to the field of body image by providing a new instrument that, to our knowledge, is the first valid and reliable one for preschoolers. One strength of PBS is that it is composed of real bodies and anthropometric dimensions and not of subjective drawings, which allows us to measure the perceptual and cognitive-affective components of body image with precision. In addition, the absence of facial features allows the tool to be employed with different ethnicities. However, since they are real bodies, the images do not have exactly the same position: the different parts of the body are not placed at the same distance and the changes in body size are not consistent. Another strength of our study was the participation of expert paediatricians with the aim of overcoming the limitation of validating the instrument with children. Finally, another strength of the instrument is the limited range of age that PBS includes, since as Gardner and Brown (2010) point out, children's bodies are continuously changing and it is important that an appropriate scale for their age be used.

As a limitation of the study, it is worth noting the small number of participants in some age groups, as they are divided into semesters (e.g., from 4 to 4.4 years) insted of entire years (e.g., there are 66 children aged 4 years).

It would be valuable that future studies administer the instrument to analyse body size perception and body dissatisafction in preschoolers, who has received little attention in the body image research. For an adequate understanding of the body image development from early ages, the use of mixed methods that provide both quantitative and qualitative data in relation to body perception and body dissatisfaction is required.

5. CONCLUSIONS

Our results show that PBS is a valid and reliable instrument for preschoolers, siendo recomendable utilizarlo a partir de 5 años. The easy application of the instrument allows its use by researchers and teachers of preschool children, to know the body image in young populations and avoid future health problems related to body image, such as anorexia, bulimia or Muscle dysmorphia.

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