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ORIGINAL ARTICLE

Development and psychometric properties of the short Polish version of the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSA)

Agata Trzcińska [A,C,D,E,F,G], *Wojciech Podsiadłowski* [B,D,E,F], *Jowita Wieleszczyk*[B,E,F]

Faculty of Psychology, University of Warsaw, Warsaw, Poland

BACKGROUND
The Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSA) is an instrument widely used among researchers to assess young children's self-perceptions. In two studies, we aimed to develop and validate a shortened version of the PSPCSA in Polish.

PARTICIPANTS AND PROCEDURE
In Study 1, 133 preschoolers aged 4 to 6 years participated. The goal was to shorten the scale by selecting the best-performing items and to verify the factor structure of both the full-length and shortened Polish versions of the PSPCSA. Study 2 involved 344 children aged 4 to 7 years, aiming to validate the factor structure, reliability, and validity of the shortened version within the Polish cultural context.

RESULTS
The shortened PSPCSA demonstrated good internal consistency and test-retest reliability. Confirmatory factor analysis supported a two-factor model (Competence and Acceptance) for the shortened scale, with satisfactory fit indices. Additional, theoretically and psychometrically reasonable modifications further improved the model fit. Our results confirmed the validity of the scale and supported both configural and metric measurement invariance across age groups.

CONCLUSIONS
The Polish short version of the PSPCSA offers a reliable tool for assessing preschoolers' self-perceptions of competence and acceptance. Its validation ensures robust psychometric properties, supporting its utility in research studies to understand early self-esteem development. The shortened version reduces the fatigue associated with the longer scale, making it more suitable for young children.

KEY WORDS
PSPCSA; self-perceptions; preschool children; validation

CORRESPONDING AUTHOR – Agata Trzcińska, Ph.D., Faculty of Psychology, University of Warsaw, 5/7 Stawki Str., 00-183 Warsaw, Poland, e-mail: atrzcinska@psych.uw.edu.pl

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BACKGROUND

In children, initial self-evaluations can be observed between the ages of two and four, coinciding with the onset of language development and increasing social interactions (Harter, 2005; Kozielecki, 1986). Nevertheless, in early childhood, self-esteem tends to be concrete and domain-specific rather than global. Preschool children generally form self-evaluations based on specific areas such as physical appearance, social acceptance, and cognitive competence rather than an overarching sense of self-worth (Harter, 2005). This is due to their limited cognitive development, which restricts their ability to integrate these specific evaluations into a global self-concept (Harter, 1999). However, even at this early stage, implicit self-esteem – a subconscious and global self-assessment – can be measured using specialized tools (Cvencek et al., 2016; Greenwald & Banaji, 1995). As children age, their self-esteem becomes more abstract and integrated. During adolescence, cognitive development allows for more sophisticated self-evaluations, leading to a more global and nuanced self-concept (Cvencek et al., 2024).

Understanding the formation of self-esteem in children is crucial due to its significant implications for their overall development and well-being. Positive self-esteem is associated with numerous beneficial outcomes, including psychological resilience, better academic performance, and healthier social relationships (McConnell et al., 2009; Wolff et al., 2018). Conversely, low self-esteem in children can lead to a range of adverse outcomes, including increased vulnerability to mental health issues such as depression and anxiety, social withdrawal, and poor academic achievement (Muris et al., 2003; Renouf et al., 1997). Early identification and intervention are essential to address these issues and support the development of a positive self-concept.

Measuring self-esteem in children involves both explicit and implicit approaches. Explicit measures assess self-esteem through direct questioning and self-report instruments, capturing the reflective and rational aspects of self-evaluation (Greenwald & Banaji, 1995). However, few tools measure the explicit self-esteem of preschool children. Among these are Harter and Pike's (1984) Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSA) and a short seven-item scale based on this tool developed by Chaplin and Norton (2015). Additionally, Marsh and colleagues proposed a measure of self-esteem appropriate for children aged five to eight years (Marsh & Holmes, 1990; Marsh et al., 1991). Implicit measures of self-esteem, on the other hand, assess subconscious self-evaluations that may not be accessible through direct questioning. It can be assessed using a child-friendly adaptation of the Implicit Association Test (IAT), i.e. the Preschool Implicit Association Test (PSIAT; Cvencek et al., 2016, 2024).

THE PICTORIAL SCALE OF PERCEIVED COMPETENCE AND SOCIAL ACCEPTANCE FOR YOUNG CHILDREN

Harter and Pike's (1984) Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSA) is widely used to assess preschool children's self-perceptions. The PSPCSA has been employed in research on psychological disorders, learning disabilities, and the effects of low self-esteem (e.g., Coplan et al., 2007; Garrison et al., 1983; Holguin & Sherrill, 1990). Mantzicopoulos (2010) also used it to explore age, gender, and ethnic differences in self-perception. The PSPCSA, adapted from the Perceived Competence Scale for Children (Harter, 1982), was designed for children aged four to seven, using pictorial stimuli and concrete behaviors to ensure reliable judgments. It includes four subscales: cognitive competence, physical competence, social acceptance, and maternal acceptance. Nevertheless, Harter and Pike's (1984) exploratory factor analysis conducted on a sample of 145 preschool and kindergarten children suggested a two-factor model (competence and acceptance). However, some subsequent studies found that four-factor models fit better, though none achieved acceptable fit indices universally (Fantuzzo et al., 1996; Strain & Simonson, 1999).

The PSPCSA has been translated into multiple languages. Nevertheless, psychometric analyses and results for these adaptations can be considered patchy and inconsistent. For instance, the Israeli (Priel et al., 1990) and Portuguese (Ducharne, 2004) versions supported a four-factor structure, whereas the French (Fiasse & Nader-Grosbois, 2012) and Lebanese (el Hassan, 1999) versions supported a two-factor structure. The Italian version reported acceptable consistencies without detailed factor analysis (Psouni et al., 2015), and the Chinese version lacked comprehensive psychometric evaluation (Santos Teixeira & Correia, 2017). The most comprehensive study on the dimensionality of the PSPCSA was conducted by Mantzicopoulos et al. (2004). Its results confirmed a two-factor model consistent with Harter and Pike's original findings. As this study was well powered and applied proper statistical analyses, we also expected a two-factor solution in Poland, as has been found most often by other researchers.

OVERVIEW

In Poland, there are no instruments to measure preschool children's self-perceptions, while in other

countries, researchers often use the widely recognized PSPCSA for this purpose. However, concerns about the scale's length and the fatigue it may cause among child participants raise doubts about its current relevance. Additionally, given its development many years ago, the content of some questions on the scale may no longer be considered pertinent in contemporary social contexts. Moreover, challenges with its original factor structure were identified (Strein & Simonson, 1999), necessitating a revision to better fit contemporary psychometric standards. This paper presents two studies aimed at addressing these issues. The first study focuses on shortening the scale by selecting items that perform best and verifying the factor structure of both the full-length and shortened Polish versions of the PSPCSA. The second study aims to validate the factor structure, reliability, and validity of the shortened version within the Polish cultural context. Both studies were carried out following the Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans and approved by the Institutional Research Ethics Board.

STUDY 1

PARTICIPANTS AND PROCEDURE

Participants

Data were collected from 133 children (64 girls), aged four to six years (M = 4.78, SD = 0.76), across six preschools in Warsaw, Poland. Parents provided written informed consent, and all children gave oral assent. To assess test-retest reliability, the scale was administered twice within two weeks to 30 children (13 girls and 17 boys, M_{age} = 4.53 years, SD = 0.73) from two preschools.

Measures

A Polish version of the PSPCSA was used. Scale translation was performed by three independent translators. A final version was produced by the translators' mutual agreement, then retranslated back into English and compared with the original English version (see Supplementary materials for the final translation). The scale consists of two subscales, each composed of 12 items. The subscales are: (1) cognitive and physical competence and (2) peer and maternal acceptance. The answers are scored on a scale of one to four: 1 representing low perceived competence or acceptance and 4 representing high perceived competence or acceptance. The Pictorial Scale was administered individually to children by trained interviewers in a quiet room at the preschool they attended. Interviews followed the instructions in the instrument's manual (Harter & Pike, 1983). The protocol involves the presentation of two pictures with an oral description. Questions are presented in a structured alternative format, where a child is shown descriptions and pictures of two different "kinds of children": typically, one who is very good at the task(s) depicted and one who is not very good at the task(s). There are different picture plates for each gender. The child is read two brief statements, one positive and one negative for each of the pictures, and is then asked to choose which of the children described by the two statements is most like him or her. After the respondent identifies with one of the children, the interviewer asks whether they are a lot like that child or a little like that child.

RESULTS

Descriptive statistics and internal consistency

The most common methodology for item selection in scale reduction is to choose items that maximize internal consistency, specifically selecting items with high inter-item correlations and item-total correlations (Clark & Watson, 1995; Stanton et al., 2002). However, Stanton et al. (2002) recommend that item selection should be based not only on internal item qualities but also on subjective assessment of face validity to avoid redundancy among the selected questions. Following these criteria, we selected six items for each of the two PSPCSA subscales (Competence and Acceptance). Table 1 provides descriptive statistics for all 24 items alongside corrected item-total correlations. The final 12 items chosen for the shortened scale version are bolded in Table 1. The corrected item-total correlations for these abbreviated subscales are also presented in Table 1, all meeting Cristobal et al.'s (2007) criterion of being above .30, contrary to the long version. The shortened (12-item) version of the scale yielded reliability coefficients similar to those of the entire (24-item) scale (see Table 1). Given that Cronbach's α is sensitive to scale length, making it difficult to compare reliabilities of scales with different lengths, we also assessed average inter-item correlations as recommended by Clark and Watson (1995). These authors suggested that the average inter-item correlations should fall within the range of 0.15-0.50. For the complete PSPCSA scale, the average inter-item correlations were .16 for the competence scale and .22 for the acceptance scale. After shortening the scale to six items per subscale, the average inter-item correlations increased to .28 for the competence scale and .34 for the acceptance scale. Both Cronbach's α and the average inter-item correlations indicate that the internal consistency of the shortened scale is satisfactory.

Table 1

Descriptive statistics, reliabilities and item-total correlations for complete and shortened PSPCSA

Scale/Item	*M*	*SD*	Skewness	Kurtosis	Item total (12 items)	Item total (6 items)
PSPCSA Competence 12 items (α = .69)	3.18	0.40	−0.36	−0.01		
PSPCSA Competence 6 items (α = .69)	3.24	0.52	−0.67	0.14		
1. Good at puzzles	**3.27**	**0.79**	**−0.80**	**−0.07**	**.35*****	**.40*****
3. Good at swinging	3.04	0.96	−0.69	−0.52	.25**	
5. Gets stars on papers	3.11	0.89	−0.68	−0.44	.21*	
7. Good at climbing	**3.17**	**0.86**	**−0.62**	**−0.67**	**.41*****	**.46*****
9. Knows names of colors	3,56	0.64	−1.54	2.64	.32***	
11. Can tie shoes	2.10	1.11	0.44	−1.25	.24**	
13. Good at counting	**3.32**	**0.83**	**−1.06**	**0.41**	**.34*****	**.37*****
15. Good at skipping	**3,50**	**0.68**	**−1.62**	**3.39**	**.48*****	**.43*****
17. Knows alphabet	**2.92**	**0.93**	**−0.43**	**−0.73**	**.54*****	**.45*****
19. Good at running	3.44	0.77	−1.46	1.87	.26**	
21. Knows first letter of name	3.41	0.78	−1.34	1.52	.22*	
23. Good at hopping	**3.28**	**0.82**	**−0.98**	**0.35**	**.39*****	**.44*****
PSPCSA Acceptance 12 items (α = .77)	2.93	0.51	−0.20	−0.42		
PSPCSA Acceptance 6 items (α = .75)	2.74	0.69	−0.26	−0.52		
2. Has lots of friends	3.10	0.96	−0.72	−0.57	.36***	
4. Mom smiles	3.22	0.64	−0.41	0.14	.33***	
6. Stays overnight at friends	**2.19**	**1.10**	**0.45**	**−1.13**	**.36*****	**.41*****
8. Mom takes you places you like	3.16	0.84	−0.93	0.46	.37***	
10. Has friend to play games with	**3.00**	**0.96**	**−0.57**	**−0.71**	**.52*****	**.52*****
12. Mom cooks favorite foods	3.05	0.84	−0.32	−0.97	.29***	
14. Has friends on the playground	**3.00**	**0.97**	**−0.61**	**−0.66**	**.57*****	**.52*****
16. Mom reads to you	**2.86**	**0.98**	**−0.40**	**−0.87**	**.52*****	**.53*****
18. Gets asked to play with others	3.11	0.92	−0.70	−0.48	.35***	
20. Mom plays with you	**2.77**	**1.09**	**−0.21**	**−1.33**	**.55*****	**.53*****
22. Eats dinner at friends' house	**2.60**	**1.10**	**−0.19**	**−1.28**	**.42*****	**.46*****
24. Mom talks to you	3.14	0.93	−0.69	−0.66	.28**	
PSPCSA total 24 items (α = .83)	3.05	0.41	−0.17	−0.33		
PSPCSA total 12 items (α = .78)	2.99	0.51	−0.22	−0.46		

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. PSPCSA – Pictorial Scale of Perceived Competence and Social Acceptance for Young Children. The final 12 items chosen for the shortened scale version are bolded.

Confirmatory factor analysis

The next step was to conduct confirmatory factor analysis (CFA) for both the full (24-item) and shortened (12-item) scales. Given that the original research by Harter and Pike (1984) supported a two-factor model and that this structure was most frequently observed in previous studies using CFA (Fiasse & Nader-Grosbois, 2012; Mantzicopoulos et al., 2004), this was the model we tested in our analyses. We employed the maximum likelihood estimation method with robust standard errors and the Satorra-Bentler scaled

test statistic (MLM), as this method is robust to non-normality (Kline, 2012). The analysis was performed using MPlus software version 7.2 (Muthén & Muthén, 1998). We considered the following indicators as criteria for an acceptable model fit: $\chi^2/df < 2$, RMSEA < .08, CFI ≥ .90, TLI ≥ .90, and SRMR < 1 (Byrne, 2010; Hooper et al., 2008). A model fit was deemed good if RMSEA < .05, CFI ≥ .95, TLI ≥ .95, and SRMR < .08 (Byrne, 2010; Hair et al., 2010; Hu & Bentler, 1999). To establish the correlation among errors, we used a conservative approach by examining modification indices (MI) that exceeded a threshold of 11, while also considering model saturation and goodness-of-fit measures. Factor loadings were interpreted according to the recommendations of Tabachnick and Fidell (2007), with loadings equal to or greater than .32 deemed acceptable.

Two models with a two-factor structure were tested: model A included all 24 items of the scale (12 each for Competence and Acceptance subscales), while model B comprised a subset of 12 selected items (six each for Competence and Acceptance). The analysis indicated that model A did not fit the data well ($\chi^2(251) = 371.99$, $p < .001$, RMSEA = .060 [.047-.073], CFI = .757, TLI = .732, SRMR = .084). However, model B for the shortened version of the scale exhibited an acceptable fit ($\chi^2(53) = 66.42$, $p = .102$, RMSEA = .044 [.000-.074], CFI = .947, TLI = .935, SRMR = .061). Item-factor loadings ranged from .43 (item 6) to .69 (item 10) and were deemed satisfactory. An examination of modification indices suggested a correlation between the error covariances of items 10 ("has friends to play games with") and 14 ("has friends on the playground"; MI = 14.35), resulting in an improved and good model fit in model C ($\chi^2(52) = 53.33$, $p = .423$, RMSEA = .014 [.000-.057], CFI = .995, TLI = .993, SRMR = .060, $\Delta\chi^2(1) = 13.09$, $p < .001$). The correlation between these two error covariances is theoretically justified as both items refer to a relatively narrow domain of having lots of friends. Item-factor loadings in this model ranged from .46 (item 6) to .67 (item 16) and were deemed satisfactory (see Supplementary materials: Figure S1).

Test-retest stability

A group of 30 children completed the PSPCSA twice with an interval of two weeks. For both the full and the shortened version of the scale, the intraclass correlation coefficients (ICC) exceeded .80, proving that the reliability of the Polish version of the PSPCSA can be considered as "good" to "excellent" (Koo & Li, 2016). Specifically, the ICC for the Competence subscale with 12 items was .93 (95% CI [.85-.97], $F(29,29) = 14.36$, $p < .001$), and for the 6-item version was .95 (95% CI [.90-.98], $F(29,29) = 20.74$, $p < .001$). Similarly, the Acceptance subscale demonstrated an ICC of .83 (95% CI [.66-.92], $F(29,29) = 6.11$, $p < .001$) for 12 items and .81 (95% CI [.60-.91], $F(29,29) = 5.18$, $p < .001$) for 6 items.

STUDY 2

PARTICIPANTS AND PROCEDURE

Participants

Data were collected from 344 children (170 girls), aged four to seven years ($M = 5.09$, $SD = 0.95$), in six preschools in Warsaw, Poland. Parents provided written consent, and all children gave oral assent to participate. Each child was individually tested in a quiet room at their preschool using the short version of the PSPCSA. To assess construct validity, Self-esteem and Theory of Mind were measured in a subset of 230 children (108 girls) across four preschools.

Measures

PSPCSA – short. We used 12 questions from the Polish version of the PSPCSA (Harter & Pike, 1984) selected in Study 1.

Self-esteem. We used the seven-item self-esteem scale by Chaplin and Norton (2005), where children rate themselves in areas such as cognitive competence, social acceptance, physical competence, appearance, and conduct. Responses were collected using a 5-option "smiley face" scale. An example item is, "When I think about how good I am at things, I feel…". The original study reported a Cronbach's α of .95, but in our study, it was .56.

Theory of mind. We assessed theory of mind (ToM) using three measures (administered in rotated order): the Sally and Anne false belief task (Baron-Cohen et al., 1985), the Cookie Box misleading container test (Gopnik & Astington, 1988), and the Duck and Lion social test (Nguyen & Frye, 1999). Each task required participants to answer a ToM test question and two control questions (reality and memory) to earn 1 point. Scores from all tasks were combined into a composite measure, ranging from 0 to 3 (KR-20 = .67).

RESULTS

Descriptive statistics and internal consistency

In the second study, Cronbach's alphas for both subscales (Table 2) were slightly below the recommended minimum of .70. It should be noted, however, that Cronbach's alphas may be underestimated when the data do not meet the assumptions of normality or when a limited number of items are included in the test (Voss et al., 2000). Therefore, as suggested by Clark and Watson (1995), we calculated average inter-

Table 2

Descriptive statistics, reliabilities and item-total correlations for shortened PSPCSA

Scale/Item	*M*	*SD*	Skewness	Kurtosis	Item total
PSPCSA Competence 6 items (α = .65)	3.21	0.53	−0.66	0.37	
1. Good at puzzles	3.20	0.85	−0.79	−0.15	.27
7. Good at climbing	3.06	0.99	−0.71	−0.77	.37
13. Good at counting	3.35	0.84	−1.18	0.58	.37
15. Good at skipping	3.44	0.71	−1.36	1.77	.39
17. Knows alphabet	2.93	0.95	−0.39	−1.02	.42
23. Good at hopping	3.26	0.87	−0.95	0.01	.47
PSPCSA Acceptance 6 items (α = .61)	2.66	0.56	−0.01	−0.51	
6. Stays overnight at friends	1.88	0.98	0.83	−0.43	.26
10. Has friend to play games with	3.01	0.91	−0.52	−0.66	.38
14. Has friends on the playground	3.01	0.90	−0.44	−0.83	.36
16. Mom reads to you	2.91	0.93	−0.28	−1.00	.32
20. Mom plays with you	2.63	1.01	0.04	−1.17	.38
22. Eats dinner at friends' house	2.50	1.07	−0.06	−1.25	.34
PSPCSA total 12 items (α = .70)	2.93	0.45	−0.24	0.15	

Note. All item total correlations are significant at $p < .001$. PSPCSA – Pictorial Scale of Perceived Competence and Social Acceptance for Young Children.

item correlations, which were .24 for the Competence scale and .21 for the Acceptance scale, falling within the recommended range of .15-.50. Consequently, the internal consistency of the short PSPCSA measure can be considered satisfactory. Table 2 also presents descriptive statistics and corrected item-total correlations for these abbreviated subscales.

Confirmatory factor analysis

We conducted a CFA to confirm the two-factor structure of the shortened version of the PSPCSA established in Study 1. We used the same estimation method as in the previous study and included a correlation between the error covariances of items 10 and 14, as suggested by the modification indices in Study 1 (model C). The analysis indicated that the fit statistics for model C were slightly below the recommended thresholds ($\chi^2(52) = 104.98$, $p < .001$, RMSEA = .054 [.039-.069], CFI = .888, TLI = .858, SRMR = .056). However, an examination of the modification indices suggested adding another correlation between the error covariances: for items 6 ("stays overnight at friends") and 22 ("eats dinner at friends' house"; MI = 21.81). Adding this correlation was theoretically justified as both items refer to visiting friends at their homes. This adjustment resulted in an improved fit of the model D ($\chi^2(51) = 84.10$, $p = .002$, RMSEA = .043 [.026-.060], CFI = .930, TLI = .910, SRMR = .050, $\Delta\chi^2(1) = 20.88$, $p < .001$). Item-factor loadings in this model ranged from .224 (item 6) to .582 (item 23); see Supplementary materials, Figure S2.

Measurement invariance across age groups

To assess measurement invariance across age in the short version of the PSPCSA factor structure, initially, single-group CFAs were conducted to examine the factorial structure of the PSPCSA in each age group. The sample was divided into two categories: 4-5 years old (younger group, $n = 208$) and 6-7 years old (older group, $n = 136$). We tested a modified model, incorporating the covariations between items 10 and 14 and items 6 and 22 (model D). The findings substantiated the model's validity across both age subsamples extracted from the overall sample. For younger group fit statistics were: $\chi^2(51) = 60.88$, $p = .162$, RMSEA = .031 [.000-.056], CFI = .963, TLI = .952, SRMR = .049, and for older group were: ($\chi^2(51) = 58.17$, $p = .228$, RMSEA = .032 [.000-.066], CFI = .962, TLI = .951, SRMR = .056).

Subsequently, we performed a multi-group CFA using MPlus software to assess the consistency of the factor structure across age groups (Meredith, 1993). The measurement invariance tests for age groups showed that the configural model showed an adequate fit to the data, indicating an equivalent factor structure of the short version of the PSPCSA across

the two age groups (see Table 3). The χ^2 change for the metric invariance model was non-significant, and the reductions in CFI and RMSEA changes were well below the predetermined thresholds (i.e., .030 for CFI and .020 for RMSEA; Rutkowski & Svetina, 2017), suggesting that the contribution of each item to the latent factor is comparable across both age groups. However, the χ^2 change for scalar invariance was significant. Although the RMSEA change was below the predetermined threshold, the CFI change was not. Therefore, scalar invariance across age groups was not confirmed, although configural and metric invariance were.

Construct validity

To measure convergent validity, we correlated both subscales and the total score of the PSPCSA with the self-esteem measure proposed by Chaplin and Norton (2015). All correlations were significant ($p < .01$) but relatively low (.26 with total score of PSPCSA, .22 with Competence subscale and .26 with Acceptance subscale). Additionally, we anticipated age-related changes in self-perceptions. According to Mantzicopoulos (2006), as children age, their self-perceptions of competence improve, while their assessments of social acceptance decline. Our findings supported this: the perceived competence score correlated positively with age ($r(218) = .29$, $p < .001$), whereas perceived acceptance correlated negatively ($r(218) = -.19$, $p = .005$). We also hypothesized that self-perceptions might be related to the level of development of theory of mind (ToM). As children develop ToM – the ability to understand the mental states of others – they begin to recognize that others may evaluate them and that the extent to which they are liked by others may not always be as positive as they would prefer. Therefore, we hypothesized that the level of ToM development would negatively correlate with perceived acceptance, which pertains to the social dimension of self-perceptions and relates to how children understand their relationships with others. Our hypothesis was confirmed: as ToM developed, perceived social acceptance decreased ($r(228) = -.25$, $p < .001$).

DISCUSSION

In two studies, we aimed to develop and validate a shortened version of the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children (PSPCSA; Harter & Pike, 1984) in Polish. The first study focused on shortening the scale by selecting the most effective items and confirming the factor structure of both the full-length and shortened versions. The second study aimed to validate the shortened version's factor structure, reliability, and its validity within the Polish cultural context.

Table 3

Model fit indices for age group measurement invariance tests

Model	Model fit indices					Model difference					
	χ^2 (*df*)	*p*	RMSEA	CFI	SRMR	ΔM	$\Delta\chi^2$ (Δ*df*)	*p*	ΔRMSEA	ΔCFI	ΔSRMR
M1: Configural	119.17 (102)	.118	.031	.963	.052	–	–	–	–	–	–
M2: Metric	132.86 (112)	.087	.033	.955	.061	M2 vs. M1	13.92 (10)	.176	.002	−.008	.009
M3: Scalar	174.12 (122)	.001	.050	.887	.074	M3 vs. M2	44.04 (10)	< .001	.017	−.068	.013

The results of the first study demonstrated that the shortened version of the PSPCSA retained satisfactory internal consistency and reliability, with Cronbach's α values and average inter-item correlations meeting acceptable standards. The confirmatory factor analysis (CFA) supported a two-factor model (Competence and Acceptance) for both the full and shortened versions, with the shortened version exhibiting a better fit. The test-retest stability was also confirmed, indicating good reliability over time. In the second study, the internal consistency of the shortened version was found to be satisfactory, with Cronbach's α values slightly below the recommended minimum but average inter-item correlations falling within the acceptable range. The CFA confirmed the two-factor structure of the shortened version, and additional, theoretically and psychometrically reasonable modifications improved the model fit. The results of the CFA align with the original research by Harter and Pike (1984), which supported a two-factor model. This finding is also consistent with observations from most subsequent studies (Fiasse & Nader-Grosbois, 2012; Mantzicopoulos et al., 2004). The current studies further validate the two-factor model and enhance the scale's applicability in the Polish cultural context.

Our study is the first to assess the measurement invariance of the PSPCSA across age groups. We confirmed measurement invariance only partially, achieving configural and metric but not scalar invariance. This means that while the factor structure of the PSPCSA is consistent across ages and measures the same underlying constructs, the means of perceived competence and acceptance are not comparable across age groups. This underscores the importance of considering developmental factors influencing responses to PSPCSA questions. Future studies should explore which developmental changes contribute to variations in PSPCSA across age groups. We also confirmed construct validity by examining correlations between the PSPCSA and Chaplin and Norton's (2015) self-esteem measure. Our findings aligned with developmental theories (Mantzicopoulos, 2006): perceived competence improved with age while perceived social acceptance declined, and children with higher theory of mind development exhibited lower perceived social acceptance, indicating greater awareness of social evaluations.

The study's psychometric analyses, while comprehensive, have certain limitations. The CFA indicated that the model fit for the full-length and shortened scale versions was not entirely satisfactory without adding modification indices, with some fit statistics falling below recommended thresholds. This suggests that the factor structure might not be entirely robust, and further refinement and validation of the scale might be necessary. Additionally, the study did not explore predictive validity regarding long-term outcomes. Future research should consider longitudinal designs to examine how self-perceptions measured by the PSPCSA relate to children's subsequent developmental trajectories and psychosocial outcomes.

In conclusion, the studies successfully addressed the limitations of the original PSPCSA by developing and validating a shortened Polish version. The findings support the reliability and validity of the shortened scale, with implications for its use in assessing self-perceptions among Polish preschoolers. The shortened version reduces the fatigue associated with the longer scale, making it more suitable for young children. Future research should aim to replicate these findings in larger and more diverse samples and explore the applicability of the scale in different cultural contexts.

Supplementary materials are available on the journal's website.

Disclosures

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