ANNALS OF PSYCHOLOGY/ROCZNIKI PSYCHOLOGICZNE
2024, XXVII, 2, 119–139
DOI: https://doi.org/10.18290/rpsych2024.0007

POLISH ADAPTATION AND VALIDATION OF THE PENN STATE WORRY QUESTIONNAIRE FOR CHILDREN (PSWQ-C): FACTOR STRUCTURE, RELIABILITY AND VALIDITY

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This study presents the Polish version of the Penn State Worry Questionnaire for Children (PSWQ-C). The validation of the PSWQ-C in Poland was conducted through two studies. Study 1 examined the initial factor structure, internal consistency, and construct validity of the PSWQ-C in two samples of school students ($N = 819$) aged 8–19 years ($M = 14.63$, $SD = 3.09$). Study 2 involved 620 participants aged 8–19 years ($M = 14.35$, $SD = 3.42$). We conducted Confirmatory Factor Analysis to compare the initial factor structure with different models mentioned in the literature. The results suggest that the scale has good psychometric properties, including good reliability and acceptable validity. The factor structure that showed the best fit to the data consisted of one general worry factor and two method factors representing wording effects. This study is part of a broader discussion on the factor structure of the PSWQ-C. The results suggest that the questionnaire is homogeneous and measures one latent variable, worry, despite a bifactorial model being the best fit for the data. The two sub-factors do not have any psychological meaning ("non-worrying"), but are only an effect related to the positive or negative wording of the scale's statements.

Keywords: worry; Penn State Worry Questionnaire for Children; Polish adaptation of PSWQ-C; children and adolescents.

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This work was supported by the Faculty of Social Sciences, John Paul II Catholic University of Lublin, grant no. 05-0611-2 (Discipline of Psychology). The raw data supporting the findings of this study are available from the author upon request.

Handling editor: KAMIL IMBIR, University of Warsaw. Received 25 March 2024. Received in revised form 30 April 2024. Accepted 3 May 2024. Published online 8 July 2024.

Worry is defined as a series of uncontrolled thoughts and images that lead to the emergence of negative emotions and contribute to the development and maintenance of anxiety (Kelly & Miller, 1999). The process of worrying involves continually recurring unproductive thoughts, marked by the anticipation of events that the individual regards as adverse and undesirable (Borkovec et al., 1998; Donovan et al., 2017). Worry is characterized by a focus on future events, in contrast to rumination, which is concerned with past experiences (Muris et al., 2004).

Worry is characterized by chronicity, unproductiveness, recurrence, intrusiveness, and fixation on the anticipation of adverse events (Davey et al., 1992). Pathological worry is excessive in intensity, frequency, and uncontrollability (Borkovec et al., 1998).

Worry is one of the key characteristics in anxiety disorders—especially in general anxiety disorder (GAD; Esbjørn et al., 2015; Hallion & Ruscio, 2013), but also in separation anxiety disorder, social phobia (Rabner et al., 2017; Weems et al., 2000), obsessive-compulsive disorder, panic attacks, and PTSD (Dar & Iqbal, 2015; Wells et al., 2008).

In addition to the negative aspects, some positive effects of worry have been identified. According to Solarz and Janowski (2013), worrying can give a person a sense of control over a situation, which can reduce their anxiety levels. Additionally, some studies suggest that worry can be an effective strategy for preventing danger and avoiding negative future events (Affrunti & Woodruff-Borden, 2017; Pallesen et al., 2006). The literature even speaks of a “happy worrier”, meaning a person who experiences both worry and cheerfulness simultaneously (Wells et al., 2008). Worrying can trigger positive experiences for such individuals.

Research indicates that children also experience worry, not just adults (Fowler & Szabó, 2013; Parkinson & Creswell, 2011; Wilson & Hughes, 2011). The most common causes of worry among children are school failures, peer conflicts, and health issues (Kramer et al., 2021; Muris et al., 2004; Quiles et al., 1999). The tendency to worry has been observed in children as young as five years old (Vasey et al., 1994). The expression and manifestation of worry undergo changes during development. Older children tend to worry more, but they also possess better coping skills and cognitive abilities to process the content of their worries (Carr & Szabó, 2015; Fialko et al., 2012; Muris et al., 2002; Wilson & Hughes, 2011).

Assessing worry is crucial in predicting anxiety disorders. The Penn State Worry Questionnaire (PSWQ), developed by Meyer et al. (1990), is a widely

used tool for measuring worry in adults. Its effectiveness has been demonstrated in various empirical studies (e.g. Delgado-Pastor et al., 2015; Gould et al., 2015; Jiménez-Ros et al., 2019; Liu et al., 2022; Nikčević et al., 2014), as well as in Poland (Janowski, 2011; Solarz & Janowski, 2013). Chorpita et al. (1997) developed the Penn State Worry Questionnaire for Children (PSWQ-C) based on the PSWQ. The PSWQ-C is a questionnaire designed to assess worry in children and adolescents. This article presents the Polish adaptation of the PSWQ-C.

METHOD

A description of the original PSWQ method is presented first, followed by the process of adapting the Polish version of the questionnaire.

Description of the Original Measure

The Penn State Worry Questionnaire for Children (PSWQ-C) is a 14-item questionnaire designed to measure the tendency to worry in children and adolescents aged 7 to 17 years. It is an adaptation of the Penn State Worry Questionnaire (PSWQ), a 16-item measure for adults developed by Meyer et al. (1990). The PSWQ-C was adapted by a research team from the University of California under the guidance of Chorpita et al. (1997).

The task of the respondent is to select one of the following answers to indicate the extent to which a given statement is true about them: *never true*, *sometimes true*, *most times true*, and *always true*. The answers are scored on a 4-point Likert scale, ranging from 0 (*never true*) to 3 (*always true*). Items 2, 7, and 9 are scored on a reverse scale from 0 (*always true*) to 3 (*never true*), where a higher score indicates a lower tendency to worry. The total score is calculated by adding up the item scores, resulting in a range of 0 to 42 points. A higher score indicates a stronger tendency to worry.

The measure was evaluated in two groups: the control group ($N = 199$) consisted of children aged 6–18 years ($M = 12.98$, $SD = 2.86$), and the clinical group ($N = 34$) was composed of children diagnosed with anxiety disorders aged 7.8 to 17.7 years ($M = 12.5$, $SD = 3.4$).

The factor analysis performed supported the one-factor solution, which explained 36.3% of the variance. Factor loadings ranged from .24 to .75. Two items with the weakest loadings on the factor were removed (item 1 with a

loading of .24 and item 11 with a loading of .34). The one-factor structure was also supported by confirmatory factor analysis (GFI = .87, RMSEA = .058, CFI = .88, $\chi^2 = 256.61$, $df = 154$, $p < .05$).

The questionnaire demonstrated acceptable psychometric properties. Its reliability was assessed using Cronbach's α internal consistency coefficient, which was .89. The reliability was higher in the group of older children (aged 12–19, α = .90) than in younger ones (aged 6–11, α = .81).

The discriminatory power of items ranged from .30 (item 10) to .68 (item 7). The validity of the measure was confirmed through correlation analysis. The questionnaire showed a high correlation ($r = .71$, $p < .05$) with a subscale of a measure of anxiety (RCMAS—Revised Children's Manifest Anxiety Scale) and a moderate correlation ($r = .52$, $p < .05$) with a scale measuring depression (CDI—Children's Depression Inventory).

The clinical group ($N = 24$) demonstrated very high test–retest reliability of the PSWQ-C ($r = .92$, $p < .001$). Table 1 presents the descriptive statistics for both groups.

Table 1

Descriptive Statistics for Original Version of PSWQ-C: Control Group (n = 193) and Clinical Group (n = 34)

	PSWQ-C	*N*	*M*	*SD*	Min.	Max.
Control group	Children aged 6–11 years	60	16.12	6.43	5	37
	Children aged 12–18 years	133	19.24	8.33	0	39
	Total	193	18.27	7.90	0	39
	Boys	86	16.18	7.19	0	38
	Girls	106	20.05	8.06	2	39
Clinical group	GAD	14	27.07	5.43	20	38
	Other anxiety disorders	10	20.80	8.97	7	37
	Normal children	10	9.50	4.30	2	16

Note. Source: Pestle et al. (2008).

Children aged over 12 scored significantly higher than younger children ($F[1, 188] = 7.13$, $p < .008$). Girls exhibited a significantly higher tendency to worry than boys ($F[1, 188] = 10.31$, $p < .002$). Children diagnosed with anxiety disorders scored significantly higher than non-diagnosed children

($F[2, 31] = 22.02$, $p < .001$), a pattern confirmed by other empirical studies (cf. Pestle et al., 2008).

Polish Version of the PSWQ-C

An adaptation of the PSWQ-C was performed with the consent of Professor Chorpita.[1] The Polish version of the test was developed following the standards for cultural adaptation of tests (Hornowska & Paluchowski, 2004). The study began with a theoretical analysis of the construct *worry*, followed by linguistic and psychometric adaptations. The latter included pilot studies, preliminary adaptation studies using Exploratory Factor Analysis for psychometric data analysis (Study 1), and proper studies using Confirmatory Factor Analysis (Study 2) to confirm the final factor structure of the PSWQ-C method. The adaptation process took place solely in the Department of Clinical Psychology at the Catholic University of Lublin, Poland.

The linguistic adaptation was carried out during the graduate seminar in Clinical Psychology. The collaborative and iterative translation method was used in the translation procedure. Twelve students attending the seminar independently translated the measure into Polish. Then, under the supervisor's guidance, the best version of the questionnaire was determined and agreed upon. The back-translation procedure was abandoned due to its shortcomings, primarily the ambiguity of translated words and expressions and the difficulty of achieving a verbatim translation (cf. Douglas & Craig, 2007). The instructions for giving answers and computing scores remained the same as in the original measure.

A pilot study was conducted among eight children aged 8–16 years ($M = 10.87$, $SD = 3.31$) that students attending a clinical psychology seminar were familiar with. After obtaining consent from their parents, the children filled in the first, experimental version of the questionnaire. The mean score for the tendency to worry was $M = 16$ ($SD = 5.53$). The reliability of the experimental version was assessed using Cronbach's α internal consistency coefficient and was found to be .74. Some children aged 8–10 had trouble understanding items with double negations in Polish, such as item 9 ("I never worry about anything"), as well as the response scale ranging from *never true* to *always true*. To address this, we simplified the response scale to range from *never* to *always* and reworded a few items. No difficulties were reported by older children.

[1] Consent was obtained by email on April 8, 2013.

Study 1

The questionnaire's initial Polish version was administered as part of research for the MA thesis of students attending the seminar and the proseminar. The research was conducted in randomly selected schools in Lubelskie Voivodeship, Poland. Prior to the study, written parental consent was obtained for their children's participation. The study was conducted using the paper-and-pencil method during one school lesson. The children completed a set of four questionnaires as described in the Convergent and Discriminant Validity section. They were informed about the research purpose and their right to refuse or resign from participation at any stage.

The participants were 819 individuals aged 8–19 years (M = 14.63, SD = 3.09), with the younger group (children) aged 8–14 (N = 350, 42.8%), and the older group (adolescents) aged 15–19 (N = 464, 57.2%). The sample consisted of 437 girls (53.2%) and 382 boys (46.8%). 39.1% of the subjects were from rural areas, and 28% lived in big cities. 86.1% of the subjects were raised in nuclear families.

In accordance with the procedure used by the authors of the PSWQ-C, we replicated the consecutive stages of psychometric adaptation of the measure. All calculations were made in SPSS version 28. Descriptive statistics and measures of variability of the PSWQ-C by age and gender are presented in Table 2.

Table 2

Descriptive Statistics and Measures of Variability of PSWQ-C by Age and Gender (N = 819)

	N	Min.	Max.	*M*	*SD*	Skew.	*SE*	Kurt.	*SE*
Group 1 (children)	350	0	40	14.31	6.72	1.17	.13	1.83	.26
Group 2 (adolescents)	464	0	42	20.95	8.60	.13	.11	–.33	.23
Total	819	0	42	18.10	8.51	.53	.09	–.22	.17
Girls	437	0	42	19.83	8.96	0.3	.12	−.63	.23
Boys	382	0	42	16.11	7.49	0.77	.12	.73	.25
Total	819	0	42	18.10	8.50	0.53	.08	−.22	.17

The K-S test for normal distribution was significant (K-S [819] = .082, p < .001), but skewness and kurtosis ranged within an acceptable range of

values, from < –1 to > 1. The scores were right-skewed, indicating a higher frequency of low scores than high ones.

In the following step, we evaluated the reliability of the complete questionnaire. The internal consistency coefficient of Cronbach's α was .90, indicating excellent internal consistency of the scale. Additionally, we evaluated the discriminatory power of each item, as shown in Table 3 through item-total correlations.

Table 3

Reliability and Discriminatory Power for PSWQ-C Items

	Item-total correlation	Cronbach's alpha if item deleted
PSWQ-C_1	.55	.90
PSWQ-C_2 reversed	.42	.90
PSWQ-C_3	.71	.89
PSWQ-C_4	.63	.89
PSWQ-C_5	.64	.89
PSWQ-C_6	.71	.89
PSWQ-C_7 reversed	.45	.90
PSWQ-C_8	.63	.89
PSWQ-C_9 reversed	.46	.90
PSWQ-C_10	.71	.89
PSWQ-C_11	.59	.90
PSWQ-C_12	.63	.89
PSWQ-C_13	.70	.89
PSWQ-C_14	.63	.90

All correlations were statistically significant ($p < .001$), ranging from moderate ($r = .42$) to high (.71), indicating good discriminatory power of the scale items. The reverse scored items (2, 7, 9) had the lowest correlations ($r = .42$, .45, .46, respectively), but their exclusion would not improve the reliability of the measure.

We then assessed the validity of the Polish version of the PSWQ-C using Pearson's *r* correlations with the following measures:

1. The State-Trait Personality Inventory (STPI), developed by Spielberger and Reheiser (2009). It is a self-administered questionnaire used to measure state and trait anger, anxiety, curiosity, and depression. Each scale consists of

10 items rated on a four-point scale. The STPI has a reliability of $r = .85$, and in actual research only the TPI-part was used with reliability of Cronbach's alpha $r = .78$.

2. SPP-18 by Ogińska-Bulik and Juczyński (2011) is a scale designed to measure resiliency in children and adolescents. The scale comprises 18 items, rated on a 5-point scale (ranging from 0 = *totally disagree* to 4 = *totally agree*). The scale demonstrates satisfactory internal consistency, with Cronbach's alpha of .82 (ranging from .76 to .87 for specific factors). The 6-week test-retest stability was high ($r = .78$). In the actual research Cronbach's alpha $r = .87$.

3. SOC-13 by Zwoliński et al. (2011) is a scale designed to measure a sense of coherence. It consists of 13 statements rated on a five-point scale. The survey instrument has good psychometric properties, which are reflected in a high internal consistency ($\alpha = .82$). In current research, Cronbach's alpha $r = .90$.

Based on previous results, we expected a positive correlation of the PSWQ-C with TPI (convergent validity) and negative ones with SPP-18 and SOC-13 (divergent validity). The results are presented in Table 4.

Table 4

Correlations of PSWQ-C with Other Measures

	Worry (PSWQ-C)	
	N	*r*
Anxiety (TPI)	162	.68***
Depression (TPI)	162	.53***
Resilience (SPP-18)	364	–.38***
Sense of coherence (SOC-13)	162	–.22***

Note. *** $p < .001$.

The correlations were significant, as expected—higher for convergent validity than for divergent validity. As in other studies, the PSWQ-C correlated more strongly with measures of anxiety than depression (cf. Chorpita et al., 1997; Pestle et al., 2008).

Next, we conducted an exploratory factor analysis using principal component analysis with Varimax orthogonal rotation in the next step.

The requirements for exploratory factor analysis were met, including the selection of variables for analysis and participants for the sample (Zakrzewska, 1994). The preliminary correlation matrix analysis confirmed the existence of numerous statistically significant ($p < .001$) correlations between items,

ranging from .20 to .75. Regarding participant selection, the sample size condition was met as 819 individuals were examined, which is significantly higher than the number of items in the PSWQ-C (cf. Zakrzewska, 1994). The sample homogeneity condition was also met as the adaptation study was conducted among children and adolescents, who are the target population of the Polish adaptation. The choice of the factor analysis model was formally supported by the Kaiser–Meyer–Olkin (KMO) index (.93) and Bartlett's sphericity test ($\chi^2 = 5058.55$, $p < .001$).

Exploratory factor analysis was conducted on the 14 PSWQ-C items using Varimax orthogonal rotation. The analysis revealed two factors, which accounted for 56.10% of the variance (Factor I accounted for 45.87% and Factor II accounted for 10.29%). An item was included in a factor if its factor loading was above .40. The rotated component matrix analysis indicated that all 14 items were accepted (see Table 5).

Table 5

Item–Factor Loadings for Two-Factor Solution Rotated Using Principal Component Analysis

Item	Factor I	Factor II
1. My worries really bother me	**.59**	.21
2. I don't really worry about things	.14	**.80**
3. Many things make me worry	**.73**	.27
4. I know I shouldn't worry about things, but I just can't help it	**.62**	.31
5. When I am under pressure, I worry a lot	**.66**	.24
6. I am always worrying about something	**.79**	.15
7. I find it easy to stop worrying when I want	.21	**.72**
8. When I finish one thing, I start to worry about everything else	**.71**	.15
9. I never worry about anything	.19	**.81**
10. I've been a worrier all my life	**.79**	.14
11. I notice that I have been worrying about things	**.70**	.09
12. Once I start worrying, I can't stop	**.70**	.17
13. I worry all the time	**.81**	.09
14. I worry about things until they are all done	**.66**	.23

Note. Significant results are in the bold.

The first factor consisted of items that were directly associated with worry (1, 3, 4, 5, 6, 8, 10, 11, 12, 13, 14), while the second factor comprised items

that were reverse scored (2, 7, 9), where approval indicates a lower level or absence of worry. The Danish adaptation of the PSWQ-C (Esbjørn et al., 2013), as well as the studies by Hopko et al. (2003) and Pestle et al. (2008), obtained identical results. The first factor was labelled "worry/trait factor", while the second was labelled "method factor". This suggests that the latter was a result of the applied method of item construction, namely reverse wording, and should therefore be treated as an artifact. Some researchers suggest removing the reversed items from the questionnaire (e.g. Pallesen et al., 2006), while others accept having a factor composed of reverse-scored items indicating "non-worry" (as opposed to the first factor, "worry"; Hopko et al., 2003). This factor may be related to the social desirability variable (Gana et al., 2002). In order to address the issue of factor structure of the PSWQ-C, study 2 was carried out.

Study 2

Additional analyses were conducted in a new study group using Confirmatory Factor Analysis as a statistical analysis method to definitively determine the structure of the PSWQ-C. The research was conducted in randomly selected schools in Lublin, Kraków, and Wrocław, Poland. Consent was obtained from both parents and children for the research. The study was conducted using the paper-and-pencil method during one school lesson. The children completed a set of five questionnaires as described in the Convergent and Discriminant Validity section. As with the first study, the children were informed about the study's purpose and their right to refuse or resign from participation at any stage.

A second study was conducted in June 2023 with 913 participants aged between 8 and 20 years (M = 15.35, SD = 3.27). The study group comprised five students aged 20 years. In order to maintain consistency with Study 1 and ensure the adaptation was relevant to the developmental period of adolescence, it was decided to remove the results of these individuals.

The participants were divided into two age groups: group 1 — children (n = 311), aged 8–14 and group 2 — adolescents (n = 597), aged 15–19.

We homogenized the groups by randomly selecting individuals from second group to ensure equal group sizes (n = 311). We then checked the sample for atypical observations (we used IQR [*interquartile range* method] and as a result one observation was removed from each group).

The study finally involved 620 participants, with 310 in each of group 1 and group 2. The age range of the participants was 8–19 years, with $M = 14.35$, $SD = 3.42$. Both groups had an equal number of girls ($n = 157$, 50%) and boys ($n = 153$, 50%). 61.8% of the participants were from rural areas and urban centers, while the remaining participants were from villages. The vast majority of subjects were brought up in nuclear families (77.6%). 11.4% of participants experienced family breakdown due to divorce or death of parents.

At this stage of the study, we conducted CFA to confirm the structural factors of the PSWQ-C. The calculations were made in IBM SPSS AMOS, version 29. Missing data have been replaced by averaged results. The requirements for confirmatory factor analysis were met, including the linearity of the relationship between variables (confirmed by scatter plots), and randomization of the sample. As a multivariate normal distribution was not confirmed (multivariate kurtosis c.r. = 15.058), ML bootstrapping was used in further analyses.

RESULTS

Analyzing study 2, we first compared the four models described in the literature, according to the adult version of this questionnaire (PSWQ) (as cited in Pajkossy et al., 2014): (a) a single-factor model with all 14 items loading on one factor (M1, e.g., Meyer et al., 1990); (b) a two-factor model with two latent factors representing the positively and the negatively worded items, respectively (M2, e.g., Stoeber & Bittencourt, 1998); (c) a bifactor model with one general trait factor and two method factors representing the positively and the negatively worded items, respectively (M3, e.g., Gana et al., 2002; Pallesen et al., 2006); (d) a bifactor model consisting of a general trait factor representing all 14 items and one method factor representing the negatively worded items (M4, e.g., Lim et al., 2008; Reise et al., 2010).

To determine model fit, we have applied commonly used statistics whose critical values are presented in Table 6.

Table 6

Selected Indicators of Model Fit in CFA

χ^2	p	χ^2/df	RMSEA	Lo	Hi	PCLOSE	CFI	GFI	AGF	Hoelter's CN
	> .05	[2–5]	≤ .05	≤ .05	≤ .08	≥ 0.05 ≤ 1	≥ .95	≥ .90	≥ .95	≥ 200

Note. From Yu 2002.

Table 7 displays the fit indices of the four latent models mentioned previously.

Table 7

Fit Indices of Four Latent Models of PSWQ-C (N= 620)

	χ^2	$p <$	χ^2/df	RMSEA	Lo	Hi	PCLOSE	CFI	GFI	AGF	Hoelter's CN .05
M1	277.276	.001	3.797	.067	.059	.076	.000	.963	.934	.904	210
M2	257.591	.001	3.488	.063	.055	.072	.005	.967	.939	.912	229
M3	**118.817**	**.001**	**1.916**	**.038**	**.028**	**.049**	**.967**	**.990**	**.974**	**.955**	**424**
M4	251.467	.001	3.493	.063	.055	.072	.005	.967	.939	.911	229

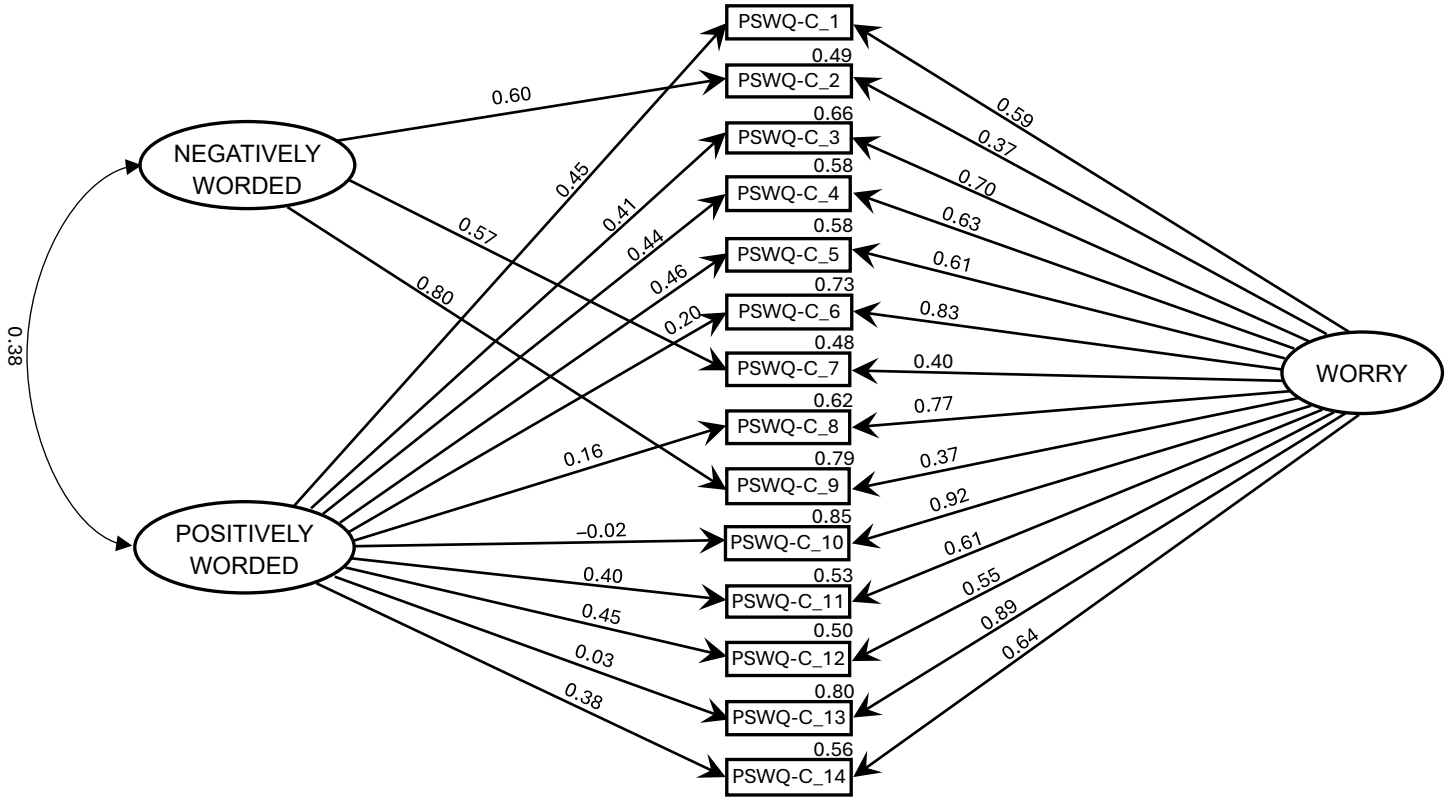
Note. Fit indices that best fit the data are in the bold.

All models had significant χ^2 values, but given the large sample sizes and complex models, this test is too conservative (Pajkossy et al., 2014). Therefore, we also examined other fit indicators. The results showed that M3 had the best fit, with the lowest RMSEA and the highest PCLOSE values and CFI. Additionally, GFI and AGF were both above .95. Due to its superior fit, M3 was retained for further analysis.

The factor loadings and percentage of explained variance of model 3 are presented in Figure 1.

Figure 1

Bifactor Model With One General Trait Factor ("Worry") and Two Method Factors Representing the "Positively" and the "Negatively Worded" Items



Similar to the Hungarian study (Pajkossy et al. 2014), the factor loadings for the positively worded items are weaker and less consistent, with negative and statistically insignificant results. Gana et al. (2002) and Pallesen et al. (2006) also obtained similar results. Despite these inconsistent factor loadings, the presence of a factor with positively worded items significantly improves the model fit. Therefore, it is recommended to maintain the bifactorial model with one trait and two method factors.

Additionally, the percentage of explained variance (multiple correlation coefficient R^2) mostly exceeds 0.5, except for items 2 and 7.

In this step, we assessed the reliability of the PSWQ-C using the Omega McDonald reliability coefficient, which is more precise for a bifactorial model (Ciżkowicz, 2018). Omega total (ω_{tot} = .965) indicates that 96% of the variance in the results obtained is explained by all common sources of variance. The Omega hierarchical (ω_h = .883) statistic indicates that 88% of the total variance in test results can be attributed to the general factor. 91% of the variance in the test is related to the general factor ($\omega_{h/t}$). The multivariate nature of the test, caused by subfactors, accounts for a 8% variance ($\omega_t - \omega_h$).

In conclusion, the test has been found to be highly reliable with ω_t at 0.96. Additionally, the value of ω_h indicates a high saturation of the test results with the general factor, allowing inferences to be made about the level of the measured trait based on the test results.

We then assessed the validity of the Polish version of the PSWQ-C using Pearson's *r* correlations with the following measures:

1. The STAIC and the STAI, both developed by Spielberger, are self-administered questionnaire used to measure state and trait of anxiety in children (STAIC) and adolescents/adults (STAI). Each consists of 40 items rated on a four-point scale to assess anxiety as a state (20 items) and a trait (20 items). Both the STAIC and the STAI are highly reliable. In actual research the internal reliability of Cronbach's alpha was r = .94 and r = .78, respectively.

2. CDI 2, in Polish adaptation of Kovacs, Wrocławska-Warchala and Wujcik (2017), is a brief self-report test that helps assess cognitive, affective and behavioral signs of depression in children and adolescents. The short version consists of 12 items. There is high internal consistency of the total score. In actual research the internal reliability of Cronbach's alpha was r = .83.

3. The GSES by Schwarzer and Jerusalem (1995) is a self-report measure of self-efficacy. It consists of 10 items, each assessed on a 4-point scale ranging from 1 (*not at all true*) to 4 (*exactly true*). The total score is calculated by summing all items, resulting in a score between 10 and 40. A higher score

indicates greater self-efficacy. The internal reliability of GSE was assessed using Cronbach's alpha, which ranged from .76 to .90. In the present study, the internal reliability was found to be $r = .74$.

Based on previous results, we expected a positive correlation of the PSWQ-C with the STAI/STAIC and CDI (convergent validity) and negative ones with GSES (divergent validity). The results are presented in Table 8.

Table 8

Correlations of PSWQ-C with Other Measures

		Worry (PSWQ-C)
STAI / STAIC	STAIC_C1	.61***
	STAIC_C2	.76***
	STAI_X1	.65***
	STAI_X2	.78***
CDI	Depression	.64***
GSES	Self-efficacy	–.33***

Note. *** $p < .001$.

There are significant correlations between PSWQ-C and the other measures. The correlations were higher for convergent validity (the highest STAI_X2, anxiety as a trait $r = .78$; $p < .001$) than for divergent validity (self-efficacy $r = –.34$; $p < .001$), indicating that the validity of the Polish version of the PSWQ-C is satisfactory.

After four weeks, the test-retest reliability of method constancy was estimated to be $r = .71$ ($p < .001$) for $N = 43$. In group 1 ($n = 30$), method constancy was slightly lower at $r = .76$ ($p < .001$) than in the older group ($n = 13$), where it was $r = .72$ ($p < 0.01$) (Spearman's rho coefficient). The original assumption was to retest 30 students in each of the two age groups. However, this was only achieved in the younger group due to high absenteeism among older students on the day of the retest. The high correlation coefficient indicates that the test is reliable and that the results obtained with the PSWQ-C are stable.

Table 9 presents a comparison of selected aspects between the original method, PSWQ-C, and the Polish version, PSWQ-C(PL).

Table 9

Comparison of Selected Aspects of Original and Polish Version of PSWQ-C

	PSWQ-C (original)					PSWQ-C (Polish)				
	N	*M*	*SD*	Min.	Max.	*N*	*M*	*SD*	Min.	Max.
Children (1)	60	16.12	6.43	5	37	310	18.34	9.33	0	42
Adoles-cents (2)	133	19.24	8.33	0	39	310	22.94	10.41	0	42
Total	193	18.27	7.90	0	39	620	20.64	11.13	0	42
Boys	86	16.18	7.19	0	38	306	17.51	9.82	0	42
Girls	106	20.05	8.06	2	39	314	23.69	9.49	0	42
GAD	14	27.07	5.43	20	38	–	–	–	–	–
Other anxiety disorders	10	20.80	8.97	7	37	–	–	–	–	–
Factor structure	One-factor structure is best fitted with data in CFA: (GFI = .87, RMSEA = .058: CFI = .88, χ^2 = 256.61, *df* = 154, *p* < .05).					Bifactorial model with one trait-factor and two method factors is best fitted with data in CFA: (GFI = .974, RMSEA = .038: CFI = .990, χ^2 = 118.817, *df* = 62, *p* < .001).				
Reliability	Cronbach's α internal consistency coefficient *r* = .89					Omega Mc Donald ω_{tot} = .96				
Test-retest	In the clinical group (*n* = 24) *r* = .92, *p* < .001).					In group 1 (*n* = 30), *r* = .76, *p* < .001 in group 2 (*n* = 13), *r* = .72, *p* < .01 Total Spearman's rho coefficient *r* = .71, *p* < .001 for *n* = 43				

Note. 1 = USA: 6–11; PL: 8–14 years; 2 = USA: 12–18; PL: 15–19 years.
"–" = no Polish studies in clinical groups

DISCUSSION

The main goal of this study was to examine the psychometric properties of the Polish PSWQ-C scale following the cultural adaptation process. Study 1 confirmed that the Polish PSWQ-C has the same excellent internal consistency as the original questionnaire. Our secondary goal was to examine the factor structure of the Polish PSWQ-C. Using CFA, we replicated previous research (e.g., Lim et al., 2008; Pallesen et al., 2006) by demonstrating that bifactor

models with trait and method factors fit the data best. The one-factor model—as in the original—also met the fit criteria, but the bifactor model had better fit rates. Although the factor structure is more complex, the Omega reliability indices confirm the homogeneity of the method. The method factors only explain 7% of the variance, while the main factor saturates the method by 93%. The results suggest that the two subfactors do not hold any content, psychological value—they are not indicative of "not worrying". Our findings indicate that the Polish PSWQ-C has a latent structure consisting of one general trait factor measuring pathological worrying and two method factors related to the wording of the items. It is also worth noting that other studies have also confirmed the bifactorial structure of the PSWQ-C (Pestle et al., 2008). However, there is a debate in the literature regarding the interpretation of inverted items, which form the second factor. Some researchers have proposed that these items should be discarded in studies of younger children, as they are more difficult to understand due to the negative wording of the items (Muris et al., 2001). Others have proposed the complete removal of these items from the scales (Liu et al., 2022; Păsărelu et al., 2017). Some researchers have proposed that the three reverse-scored items should be retained, as they made a small but significant contribution to the instrument's validity (Pestle et al., 2008).

The PSWQ-C Polish version demonstrates good reliability and acceptable validity. The measure effectively distinguishes the level of worry among different age groups and confirms previous findings on gender differences. It is suitable for research purposes.

However, the present study has an important limitation as we did not assess the reliability and validity in a clinical group. Therefore, future research should evaluate the effectiveness of the measure in assessing pathologically strong symptoms of worry and identifying children at risk of developing anxiety disorders, particularly in clinical groups with anxiety disorders (Esbjørn et al., 2013). Another limitation of the research presented is its self-descriptive nature, which can be a source of potential error, for example, response bias. The subsequent issue pertains to the retention of items exhibiting factor loadings below 0.50 and percentage of variance explained below 0.70. These are inverted items (negatively worded). It is pertinent to note that there is an ongoing debate regarding the retention of the full version of the method (Pestle et al., 2008) or an abbreviated version without the inverted items (Păsărelu et al., 2017). In future, the Polish abridged version will also be verified in empirical studies.

Despite this limitations the PSWQ-C is the first instrument to measure worry in Polish children and adolescents, and it demonstrated favorable reliability and validity. The Polish version of the scale was approved by the author of the scale, Bruce C. Chorpita, and is included in the diagnostic methods resource on the clinical science research laboratory website "Child FIRST".[2]

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