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CLINICAL STUDY

Validation of the Slovak version of the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ), version A

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ABSTRACT

AIM: This study aimed to assess the psychometric characteristics of the Slovak translation of the version A of Wijma Delivery Expectancy/Experience Questionnaire (SW-DEQ) among healthy Slovak pregnant women.

METHOD: Exploratory factor analysis (EFA) of the SW-DEQ was performed. Several coefficients of internal consistency were employed for the whole scale as well as for separate factors. Concurrent/convergent validity was assessed by correlation analysis of the overall SW-DEQ score with State-Trait Anxiety Inventory, Eysenck Personality Inventory – subscales Neuroticism and Extraversion, as well as with adjusted versions of Beck Depression Inventory and Internal-External Locus of Control Scale. EFA yielded seven factors: 'lack of composure', 'negative appraisal', 'lack of self-efficacy', 'lack of positive anticipation', 'fear and hopelessness', 'loneliness', and 'concern for the child'.

RESULTS: The Cronbach's α of the whole scale was .93, while for the separate factors, it ranged between .68 and .87. The sum score of SW-DEQ correlated weakest with extraversion (in nulliparous women) and locus of control (in multiparous women), and strongest with trait anxiety (in both groups).

CONCLUSIONS: The Slovak version could be considered a valid and reliable measure of fear of childbirth among pregnant Slovak women. However, the dimensional structure of the measure warrants further confirmation (*Tab. 7, Ref. 33)*. Text in PDF *www.elis.sk.*

KEY WORDS: fear of childbirth, translation, validity, reliability, pregnancy, anxiety.

Introduction

Even though pregnancy and childbirth are considered to be a positive event in woman's life, the fear of childbirth is one of the most common mental health concerns during pregnancy (1). Childbirth-related fear is conceptualised along a continuum, with women who are almost free of fear at one end, and women with disabling fear (known as tokophobia) at the other. Up to 80 % of pregnant women suffer from some level of fear of childbirth (2). Across the fear of childbirth literature, there is a lack of consistency over the way tokophobia is defined, and this adds to the lack of clarity about prevalence rates. Tokophobia is generally defined as an unreasonable dread of childbirth and can be divided as primary (in nulliparas) and secondary (in multiparas with negative experience from previous childbirth) (3). Secondary tokophobia can occur after any traumatic obstetric event in previous pregnancy (4), and includes events associated with birth and pregnancy loss at any gestation. While in Western countries, the tokophobia rate has been identified at over 20 % (5), an Australian study has quoted a rate of 48 % for moderate tokophobia and 26 % for strong tokophobia (6). Other studies referring to a 'pathological and disabling fear of birth' have used a range of 6–10 % to highlight the prevalence (7, 8). Rates of childbirth-related fear vary across countries, in part because of how it is defined and measured. In some populations, severe fear affects as much as 14 % of pregnant women (9) and this fear can affect mental health of mother and child in the long term (10). Chronic anxiety can lead to eating disorders, insomnia or chronic fatigue syndrome in pregnant women (11). Elevated levels of anxiety during childbirth may lead to increased risk of elective caesarean section, and, in some cases, prolonged labour (12, 13).

To identify the level of fear of childbirth in pregnancy, several tools have been developed and validated. One of the most widely used is the version A of Wijma Delivery Expectancy Questionnaire (W-DEQ-A) (14). The questionnaire was translated and validated in several languages (15–19). The aims of this study were to translate the W-DEQ-A into Slovak language and examine its validity and reliability among Slovak pregnant women.

Methods

Sample and procedure

The data were obtained between April 2018 and April 2019 at the 2nd Department of Gynaecology and Obstetrics of the Univer-

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sity Hospital Bratislava in Bratislava, Slovakia. A convenience sample was recruited from healthy nulliparous and multiparous pregnant women with no existing complications in the third trimester of pregnancy, who were attending outpatient prenatal screenings in the hospital. The inclusion criterion was healthy pregnancy, with no identified complications after 26 weeks of gestation. The exclusion criteria were age under 18 years, high-risk pregnancy (twins, severe preeclampsia, foetal death), and native language other than Slovak. The questionnaires were administered in paper form by clinic nurses. The participants were informed about the voluntary nature of participation, and aim of the study. They were also informed that by completing the questionnaires, they gave consent to be included in the study, and that they could withdraw at any time. The study was approved by the Ethics Committee of University Hospital Bratislava, Ruzinov Hospital on 8th April 2018 under the approval number EK/069/2018.

Tab. 1. Frequencies of participants by parity and data completeness.

	n Total	n Parous	n Nulliparous	n Missing data on parity
Returned the questionnaire	321	202	117	2
Additionally, passed trap questions	313	196	115	2
Additionally, filled all SW-DEQ items	279	178	100	1
Additionally, filled all items of any other scale†	270-277	172-178	95-99	1
Completed all scales with no missing items	257	165	91	1

SW-DEQ = Slovak translation of the Wijma Delivery/Expectancy Questionnaire. † n depending on particular scale.

In accordance with the original Swedish W-DEQ validation study (14), we aimed for at least 100 participants who would pass trap questions and complete all W-DEQ-A items in the group of nulliparous, as well as in the group of multiparous women. We proceeded with collecting the data in both groups simultaneously, until reaching the minimum sample size in both groups.

Measures

Demographic and medical measures included age, highest educational degree achieved, number of previous births, gestation, and information on whether the woman currently lived with the father of the unborn child. Additionally, information on previous caesarean sections was obtained from the medical records of multiparous women.

The Slovak translation of W-DEQ-A (SW-DEQ) included 33 items on a six-point Likert scale ranging from 0 to 5 according to the degree of agreement, while the total possible score ranged between 0 and 165. The higher score indicates the higher level of childbirth-related fear. The questionnaire was translated from English to Slovak by a bilingual physician with English skills close or equivalent to those of a native speaker. It was then reviewed and discussed by researchers, more bilingual speakers, and consulted with an English native speaker. The edited version was back-translated into English by a bilingual expert. The original and back-translated versions were compared by the researchers in order to determine the semantic and content equivalence of different language versions of the questionnaire. Based on the results of factor and reliability analyses (see below), a more suitable alternative is suggested for one of the items (see the Discussion section for more details).

The State-Trait Anxiety Inventory (STAI) (20) measures trait and state anxiety. In this study, the part measuring trait anxiety was employed (20 items; possible score range of 0–165).

Personality dimensions of neuroticism (EPQR-S N) and extraversion (EPQR-S EEPQR-S E) were administered from the short form of the *Eysenck Personality Questionnaire – Revised (EPQR-S)* (21). Each dimension consists of 12 dichotomous items (possible score range of 0–12).

The Beck Depression Inventory (BDI) (22) measures the severity of depressive states. Eight questions about physiological reactions were removed because in pregnant populations, these reactions may be caused by the pregnancy rather than being symptoms of depression. The resulting 13-item version had a possible score range of 0–39.

The external locus of control (ELoC) was measured by an adjusted, simplified version of the Internal-External Locus of Control Scale (I–E) (23). The 23 forced-choice pairs of I-E scale items were converted into 46 dichotomous items, similarly to Collins (1974). Subsequently, the scores from items indicating the internal locus of control were subtracted from the scores of items indicating the external locus of control (possible score range of –23 to 23).

Unlike in the study of Wijma et al (1998) (14), neither the instructions of STAI, nor the items of I-E LoC were contextualized specifically for the current situation of pregnancy. Finally, a few trap questions were included throughout the questionnaire in order to identify and subsequently filter out respondents who were not paying close attention to survey questions (e.g., "Please, mark the option 'I rather disagree' now").

Analysis of construct validity

The analysis of construct validity of SW-DEQ was performed for both nulliparous and multiparous women separately by means of Pearson's correlation coefficients of SW-DEQ with other instruments measuring other psychological constructs with varying degrees of relatedness to fear of childbirth. In line with the original Swedish validation study, we expected that SW-DEQ would have more overlap with the questionnaires measuring anxiety and neuroticism (STAI, EPQR-S N) than with those measuring depression (BDI) and internal-external locus of control (I-E), whereas extraversion (EPQR-S E) could be expected to not relate at all to the content of W-DEQ: (W-DEQ x STAI; W-DEQ x EPQR-S N) > (W-DEQ x BDI; W-DEQ x I-E) > (W-DEQ x EPQR-S E).

As W-DEQ is intended to measure childbirth-related fear in both the nulliparous and multiparous groups, we performed correlation analyses between SW-DEQ and the other questionnaires in each group separately. Subsequently, the magnitudes of these relationships were compared by parity group.

Tab. 2. Frequencies of demographic data, parity, and gestational week. Mean ± standard deviation or n (%).

Variables	Total n=279* Mean (SD) or n (%)	Nulliparous n=178 Mean (SD) or n (%)	Multiparous n=100 Mean (SD) or n (%)	p
Average age (SD)	30.9 (4.0)	30.0 (3.9)	32.6 (3.7)	>.001
Highest educational degree achieved				.815
-Apprenticeship or high school without final examination	4 (1.4)	2 (1.1)	2 (2.0)	
-Grammar school or high school with final examination	52 (18.6)	36 (20.2)	16 (16.0)	
-University - bachelor	14 (5.0)	10 (5.6)	4 (4.0)	
-University – masters or equivalent	196 (70.3)	122 (68.5)	73 (73.0)	
-University – PhD. degree or higher	13 (4.7)	8 (4.5)	5 (5.0)	
Living with the father of the child				.715
-Yes	271 (97.1)	172 (96.6)	98 (98.0)	
-No	8 (2.9)	6 (3.4)	2 (2.0)	
Previous births				
-0	178 (63.8)	178 (100)	-	
-1	84 (30.1)	-	84 (84.0)	
-2	14 (5.0)	-	14 (14.0)	
-3	2 (0.7)	-	2 (2.0)	
-Missing data	1 (0.4)	-	-	
Caesarean section in previous births				
-Yes	n/a	-	59 (59.0)	
-No	n/a	-	36 (36.0)	
-Missing data	n/a	-	5 (5.0)	
Gestational week				
-34th or less	8 (2.9)	4 (2.2)	4 (4.0)	
-35th	17 (6.1)	11 (6.2)	6 (6.0)	
-36th	72 (26.0)	46 (25.8)	25 (25.0)	
-37th	70 (25.3)	41 (23.0)	29 (29.0)	
-38th	55 (19.9)	35 (19.7)	20 (20.0)	
-39th	32 (11.6)	24 (13.5)	8 (8.0)	
-40th	13 (4.7)	8 (4.5)	5 (5.0)	
-41st	7 (2.5)	4 (2.2)	3 (3.0)	
-42nd	3 (1.1)	3 (1.7)	-	
-Missing data	2 (0.7)	2 (1.1)	-	
Gestational week: average†	37.2 (1.8)	37.3 (1.9)	37.1 (1.7)	.424
Measures†				
-SW-DEQ	49.9 (20.6)	51.6 (20.8)	46.8 (20.0)	.060
-STAI	39.1 (8.4)	38.4 (8.0)	40.4 (9.1)	.065
-EPQR-S N	3.9 (3.0)	3.7 (3.0)	4.2 (3.1)	.174
-BDI	2.2 (2.8)	2.1 (2.6)	2.4 (3.2)	.373
-ELoC‡	-1.3 (6.2)	-1.0 (6.0)	-1.8 (6.5)	.242
-EPQR-S E	8.1 (3.5)	8.3 (3.5)	7.9 (3.7)	.552
Severe fear of childbirth (SW-DEQ ≥ 85)				.222
-Yes	12 (4.3)	10 (5.6)	2 (2.0)	
-No	267 (95.7)	168 (94.4)	98 (2.0)	

SW-DEQ = Slovak translation of the Wijma Delivery/Expectancy Questionnaire; STAI = *State-Trait Anxiety Inventory;* EPQR-S N = Eysenck Personality Questionnaire – Revised, dimension Neuroticism; BDI = Beck Depression Inventory - modified; ELoC = External locus of control, as measured by a modified Internal-External Locus of Control Scale; EPQR-S E = Eysenck Personality Questionnaire – Revised, dimension Extraversion. † In the 'Total' column, one case was included with no self-reported data on parity. Average gestational week was calculated from the 277 cases available. Number of cases available for each scale can be found in Table 4. ‡Details on instructions and scoring of the scale in this study can be found in the text of the Methods section.

Statistical analyses

After calculating the statistics of descriptive variables, the differences were tested between the nulliparous and multiparous groups in study variables using the Fisher's Exact Test for 2x2 contingencies, Monte Carlo Bootstrap method with 10 000 samples for contingencies more than 2x2 with any cell count less than five (24), Student's t-test for SW-DEQ sum scores as the only continuous variable with normal distribution, and Mann–Whitney U test for the remaining continuous variables with non-normal distribution. Normality was tested by the Kolmogorov–Smirnov Test (data not presented). Also, the differences in all continuous variables between the women with at least one previous caesarean section and those who gave birth(s) naturally were measured by the Mann–Whitney U test.

Exploratory factor analysis (EFA) was conducted on SW-DEQ to analyse the factor validity. Maximum likelihood estimation procedures were employed. The number of factors was determined through the use of scree plots after confirming that the eigenvalues of all retained factors were > 1. Promax rotation was performed because all W-DEQ subscale factors were considered somewhat interdependent. This assumption was subsequently also explored – and verified – by a correlation matrix.

Concurrent/convergent validity was assessed by Pearson correlation analysis of SW-DEQ with measures of trait anxiety (STAI), neuroticism (EPQR-S N), depression (BDI), external locus of control (I-E), and extraversion (EPQR-S E). The magnitudes of differences between correlations in the two groups by parity were calculated by an online calculator at psychometrica.de/correlation.html, based on). All other analyses were performed using SPSS.

The reliability of the complete SW-DEQ scale was measured by Cronbach's α, McDonald's ω, and split-half reliability estimates (i.e., Spearman–Brown Prophecy Coefficient). Additionally, Cronbach's α for each factor was calculated. Also, item-total correlations of all SW-DEQ items are provided.

Results

According to the nurses who distributed the questionnaires, no patients declined completion. Therefore, the response rate can be considered to be at 100 %. Of the 321 women who returned the questionnaires, 279 had no missing SW-DEQ items and passed the trap questions. The final analysis was performed on the data returned from 279 women (178 nulliparous, 100 multiparous, one with no parity specified; average age 30.9 years, SD 4.0 years).

Tab. 3. Factor loadings.

	F1	F2	F3	F4	F5	F6	F7
16. Not composed	**.84**	.04	-.04	.04	-.01	.02	-.02
17. Not relaxed	**.80**	.15	.00	.00	-.13	.05	.01
12. Tense	**.73**	-.25	.05	.03	.09	-.10	.06
26. Not allow body to take control	**.49**	.05	-.23	.15	-.02	-.04	.00
10. Not independent	**.43**	.12	.26	.03	-.28	-.03	.00
24. Pain	**.41**	.03	.18	-.13	.07	-.05	-.05
25. Behave badly	**.35**	-.15	.19	.05	.12	.08	.05
13. Not glad	-.01	**.87**	.01	-.09	.11	-.05	-.05
18. Not happy	.04	**.85**	-.02	.00	-.04	.03	-.04
14. Not proud	-.05	**.80**	-.03	-.05	-.01	.03	.02
21. No longing for the child	-.21	**.55**	.06	.22	.03	-.06	.09
23. No trust	.12	**.49**	.01	.04	.14	.00	.04
9. Not safe	.19	**.43**	.03	.04	.14	.06	-.03
5. Not confident	.03	.04	**.81**	-.04	-.02	.01	.01
4. Not strong	.00	.07	**.77**	.03	-.10	.02	.00
22. No self-confidence	.10	.20	**.59**	.09	-.09	.01	.10
27. Lose control	-.06	-.09	**.59**	-.02	.18	.00	-.03
2. Frightful	-.10	-.06	**.52**	.00	(.48)	-.05	-.04
1. Not fantastic	.22	.16	**.36**	-.02	.10	-.04	-.03
8. Weak	.25	-.03	**.31**	.03	.22	.04	-.05
30. Not as it should be	.02	-.09	.03	**.91**	.06	.03	.01
29. Not natural	.18	-.06	.02	**.70**	.01	.03	-.06
28. Not enjoyable	-.01	.18	-.02	**.57**	-.01	-.07	-.01
20. Hopelessness	.00	.08	.06	.00	**.65**	.05	.01
19. Panic	(.50)	-.13	-.01	-.02	**.56**	-.02	-.01
31. Dangerous	-.14	.10	-.07	(.31)	**.47**	.03	.02
11. Desolate	.16	.11	-.05	.00	**.47**	.04	.07
6. Afraid	.41	.07	.06	-.09	**.43**	.02	.00
3. Lonely	.01	-.01	-.05	-.05	-.04	**1.05**	.00
7. Deserted	-.10	-.06	.15	.04	.10	**.67**	-.01
15. Abandoned	-.04	.11	-.14	.03	.24	**.28**	.01
32. Child will die	.02	-.03	-.03	-.03	.01	-.02	**1.01**
33. Child will be injured	.01	.05	.02	-.02	.04	.02	**.76**
Eigenvalues	10.92	2.38	2.15	1.80	1.48	1.23	1.01
% of variance	33.09	7.22	6.51	5.46	4.47	3.74	3.07
Cronbach's α	.80	.86	.87	.78	.81	.68	.87

Exploratory factor analysis: maximum likelihood method, Promax rotation. Factor 1, Lack of composure; Factor 2, Negative appraisal; Factor 3, Lack of self-efficacy; Factor 4, Lack of positive anticipation; Factor 5, Fear and hopelessness; Factor 6, Loneliness; Factor 7, Concern for the child.

For more details on data completeness see Table 1. Of the 100 multiparous women, 36 had a previous caesarean section, and 59 did not have any previous caesarean section, while in six cases, the information on type of delivery was not available.

Socio-demographic, obstetric and psychometric variables in the whole sample and by parity group are presented in Table 2. In our sample, 5.6 % (10/178) of the nulliparous and 2 % (2/100) of the multiparous women, i.e., 4.3 % of the overall sample yielded overall SW-DEQ score of 85 or more, which is considered to present severe fear of childbirth (Ryding, Wijma, Wijma, & Rydhström, 1998). The median for the overall SW-DEQ score was 50 in the whole sample, 51.5 among the nulliparous, and 44 among the multiparous women. Except for age, no statistically significant differences were found between nulliparous and multiparous women (Tab. 2). Among the multiparous women, the difference in SW-DEQ scores as measured by independent-samples t-test between those with the history of caesarean section (M = 48.8, SD = 18.41) and without it (45.8, SD = 21.12) was not statistically significant ($t(93) = -.70$, $p = .487$). No significant differences between these two groups were found in the other continuous study variables either (data not presented).

Table 3 shows the results of EFA. Seven factors had eigenvalues of > 1. After visual assessment of the scree plot, the seven factors were extracted, as the only clear level-off point of the curve was between the numbers of seven (eigenvalue 1.01) and eight (.99). These seven factors, accounting for a cumulative variance of 63.56 %, were defined as 'lack of composure', 'negative appraisal', 'lack of self-efficacy', 'lack of positive anticipation', 'fear and hopelessness', 'loneliness', and 'concern for the child'. The item 'abandoned' (nr. 15) had a relatively weak loading on the 'loneliness' factor (.28). Even though the rule-of-thumb threshold of .30 is routinely recommended for factor loadings, we chose to retain the item, because the difference from the threshold was only very slight, and the item was compatible with the factor both in terms of contents and findings from several previous studies (19, 26, 27). Cronbach's α for the factors ranged between .68 ('loneliness') and .87 ('lack of self-efficacy' and 'concern for the child'). The Table 4 shows the correlations between item sum scores of the seven factors, as well as other psychometric scales. The Factor 7 ('concern for the child') had the relatively weakest relationships to the remaining factors but it was still significantly positively correlated with all of them, except for that of 'lack of positive anticipation'.

The relationships between SW-DEQ sum score and the other scales are presented for the whole sample (Tab. 4) as well as by parity (Tab. 5). Both in nulliparous and multiparous women, the sum score of SW-DEQ correlated strongest with STAI (positively), and somewhat weaker with EPQR-S N and BDI (also positively). SW-DEQ correlated positively with ELoC among multiparous women, but was unrelated to ELoC among the nulliparous women. The relationship between SW-DEQ and EPQR-S N (extraversion) was negative among nulliparous women, and was not statistically significant among multiparous women. For exploratory purposes, we further explored the unexpected relationship between SW-DEQ and extraversion by controlling it for trait anxiety (STAI) as a possible confounder, based on its relationships with both extraversion and SW-DEQ (Tab. 4). After this adjustment, the associations between SW-DEQ and extraversion were substantially weaker (-.09 in the whole sample; -.10 in nulliparous women; -.06 in multiparous women; $p > .05$ in all cases; data not presented). The correlations between SW-DEQ overall scores and the other psychological constructs did not differ significantly by parity group (Tab. 5).

All scales used showed a good or at least satisfactory level of internal consistency with Cronbach's α ranging from .72 to .93 in the whole sample (Tab. 6).

In the total sample, the 33-item SW-DEQ yielded Cronbach's α of .93, Spearman–Brown Prophecy coefficient of .94, and McDonald's ω of .93. Separate analysis of each parity group yielded very similar results (Tab. 6).

Corrected item-total correlation coefficients (CITC) for the 33 SW-DEQ items ranged from .27 to .70 in the total sample. Only two items had CITC slightly under .30, namely 'abandoned' and 'not allow body to take control' (both .27). For the complete list of CITC in the whole sample and parity groups see Table 7.

Tab. 4. Correlation matrix with seven factors (whole sample; n = 279).

	SW-DEQ	F1	F2	F3	F4	F5	F6	F7	STAI	EOD-N	BDI	ELoC
F1	.83	1										
F2	.76	.50	1									
F3	.89	.72	.61	1								
F4	.52	.34	.40	.37	1							
F5	.83	.65	.48	.68	.39	1						
F6	.52	.26	.35	.37	.32	.45	1					
F7	.36	.18	.21	.27	.06	.29	.12	1				
STAI	.45	.36	.31	.38	.24	.39	.29	.21	1			
EPQR-S N	.30	.28	.15	.25	.18	.25	.23	.16	.75	1		
BDI	.33	.31	.23	.28	.11	.27	.25	.14	.73	.61	1	
ELoC	.20	.17	.10	.13	.09	.25	.22	.07	.30	.30	.20	1
EPQR-S E	-.22	-.10	-.27	-.22	-.17	-.12	-.14	-.07	-.33	-.24	-.21	-.07

SW-DEQ = Slovak translation of the Wijma Delivery/Expectancy Questionnaire; Factor 1, Lack of composure; Factor 2, Negative appraisal; Factor 3, Lack of self-efficacy; Factor 4, Lack of positive anticipation; Factor 5, Hopelessness and fear; Factor 6, Loneliness; Factor 7, Concern for the child: STAI = State-Trait Anxiety Inventory; EPQR-S N = Eysenck Personality Questionnaire – Revised, dimension Neuroticism; BDI = Beck Depression Inventory - modified; ELoC = External locus of control, as measured by a modified Internal-External Locus of Control Scale; EPQR-S E = Eysenck Personality Questionnaire – Revised, dimension Extraversion. All correlations above .11 are statistically significant ($p < .05$).

Discussion

The main aim of our study was to provide an initial validation of the Slovak translation of WDEQ-A, including exploratory analysis of its factor structure on Slovak pregnant women. Most of the dimensions which were identified by our EFA (7-D structure) considerably correspond with the dimensions found previously in a sample from several Nordic European countries (6-D structure) (26). The Slovak version has concurrent/convergent validity and internal consistency comparable to the original version (14) as well as other established translated versions (19, 26). However, when considering the high value of Cronbach's α, namely over .90, in any language version of W-DEQ, it should be taken into account that this coefficient tends to increase along with increasing number of items in the scale, which is relatively high in this psychometric measure.

Regardless of the high overall internal consistency, the items 'child will die', 'not allow body to take control', and 'abandoned' yielded rather low – albeit still acceptable – item-total correlations. Compared with previous studies, the first item mentioned, along with fear of having child injured, routinely seems to stand more apart from the rest of items, apparently due to its contents. The second one was repeatedly either removed from further analyses due to its psychometric properties (17, 27) or showed rather weak factor loadings (19, 26), which is perhaps because it might be generally difficult to comprehend. The item nr. 15 ('abandoned') generally tends to correlate well with the rest of the scale in other versions of WDEQ-A. We suspect that the weak item-total correlations and factor loading of this item found in our study occurred due to translation, which, despite our best efforts, seems not to have captured the intended meaning fully and unequivocally. Compared with the conceptually related items 3 ('lonely') and 7 ('deserted'), the item 15 showed substantially weaker associations with several items or factors, notably with that of 'lack of confidence' (data not presented). This suggests that in some of the participants, the original Slovak translation might also have been interpreted as 'self-sufficient' or as being 'left alone to make my own decisions' rather than 'abandoned'. Based on these findings, we slightly modified the term in the updated Slovak translation, so that the original meaning of the item is expressed more clearly (while also mentioning the term as used in the study for information's sake).

The correlations of SW-DEQ with the other explored psychometric measures were roughly similar to those in the validation study of the original Swedish version (14). As expected, SW-EDQ had the strongest association with STAI, the trait anxiety measure. However, our expected order of the strength of associations was confirmed only partly. The association with a similar construct of neuroticism was somewhat weaker than expected. Moreover, contrary to our hypotheses, a weak but statistically significant association of SW-DEQ with extraversion was found, especially in nulliparous women. Nonetheless, after the relationship had been controlled for anxiety, it substantially weakened and ceased to be statistically significant. This suggests that besides its overlap with the construct of anxiety, the extraversion as such accounts for little to none of variance in fear of childbirth.

Based on eigenvalues and scree plot levelling-off criteria, our EFA resulted in a factor solution that is largely compatible with those found in most European countries where such data are available (26). Compared to them, our study revealed a notable difference, namely in form of the presence of an additional factor, which included many items from the factor elsewhere named 'lack of self-efficacy'. Several of these items were related to composure and tension, hence the factor was tentatively named 'lack of

Tab. 5. Pearson's correlations (r) between Slovak translation of W-DEQ-A and other questionnaires in a group of nulliparous and parous pregnant women, and differences between the correlations in the groups of nulliparous and parous women in the Slovak sample.

	Nulliparous	Parous	Zr_1-r_2	p
STAI	.46**	.48**	-.20	.842
n	174	95		
EPQR-S N	.32**	.30**	.17	.862
n	176	99		
BDI	.31**	.40**	-.81	.419
n	178	98		
ELoC	.13	.32**	-1.56	.059
n	172	97		
EPQR-S E	-.28**	-.15	-1.07	.142
n	173	99		

STAI = State-Trait Anxiety Inventory; EPQR-S N = Eysenck Personality Questionnaire – Revised, dimension Neuroticism; BDI = Beck Depression Inventory - modified; ELoC = External locus of control, as measured by a modified Internal-External Locus of Control Scale; EPQR-S E = Eysenck Personality Questionnaire – Revised, dimension Extraversion. * $p < .05$; ** $p < .001$

Tab. 6. Reliability estimates of the questionnaires used in nulliparous and multiparous women.

Variables	Whole sample†	Nulliparous	Multiparous
SW-DEQ			
Cronbach's α	.93	.94	.92
Split-half	.91	.92	.89
McDonald's ω total	.93	.94	.93
n	279	178	100
STAI‡			
Cronbach's α	.90	.89	.91
Split-half	.83	.81	.86
McDonald's ω total	.91	.90	.92
n	270	174	95
EPQR-S N‡			
Kuder-Richardson	.84	.84	.84
n	276	176	99
BDI‡			
Cronbach's α	.77	.75	.82§
Split-half	.70	.70	.73
McDonald's ω total	.80	.78	.84§
n	277	178	98
ELoC ‡			
Kuder-Richardson	.72	.75	.68
n	270	172	97
EPQR-S E‡			
Kuder-Richardson	.88	.87	.89
n	273	173	99

SW-DEQ = Slovak translation of the Wijma Delivery/Expectancy Questionnaire; Factor 1, Lack of composure; Factor 2, Negative appraisal; Factor 3, Lack of self-efficacy; Factor 4, Lack of positive anticipation; Factor 5, Hopelessness and fear; Factor 6, Loneliness; Factor 7, Concern for the child STAI = *State-Trait Anxiety Inventory;* EPQR-S N = Eysenck Personality Questionnaire – Revised, dimension Neuroticism; BDI = Beck Depression Inventory - modified; ELoC = External locus of control, as measured by a modified Internal-External Locus of Control Scale; EPQR-S E = Eysenck Personality Questionnaire – Revised, dimension Extraversion. † Numbers in the "Whole sample" column do not entirely correspond with the sum of the columns "Nulliparous" and "Parous", due to one individual who did not report the number of her births. ‡ Only includes cases with no missing items in the WDEQ. § Calculated without BDI item nr. 9, as the item had no variance in this group. Split-half reliability was calculated according to Spearman-Brown formula.

composure'. These findings based on EFA warrant further confirmation with a more complex methodology (27), preferably on a bigger sample with sufficient representation of both nulliparous and multiparous participants.

Due to its widespread popularity, the full 33-item W-DEQ- A enables international comparison. It is also a highly comprehensive instrument that enables to explore various aspects of childbirth-related anxiety in its complexity. However, its current length might make it less suitable in certain clinical settings. Moreover, there has been a lack of consensus on the dimensionality of the measure. While the instrument was originally constructed and intended as unidimensional, its unidimensionality has been increasingly questioned due to both conceptual issues regarding its contents, as well as due to empirical findings on its psychometric properties (17, 27). Previous factor-analytic studies on W-DEQ resulted in several different four-dimensional (6, 19, 28, 29) or six-dimensional models (26, 30). These studies exploited various distinct analytical approaches. Often it might be rather difficult to distinguish the degree to which these differences are a result of different methodologies, cultural aspects, nuances in translation, or simple randomness. In any case, if future research provides sufficient evidence that a briefer multi-dimensional instrument derived from W-DEQ (such as WDEQ-A-Revised proposed by Pallant et al) (27) can be applied universally, both clinical practice and research might greatly benefit from it.

The strengths of our study are the excellent response rate and availability of data on several other psychometric measures, either identical or similar to those used in the original Swedish validation study. These have been rarely assessed ever since in relation to the W-DEQ. A limitation of this study is its lack of national representativeness: the data were collected in a single hospital in the capital city. Thus, women with higher education were over-represented compared to overall Slovak population of reproductive age (31). Another limitation is the unequal size of parity groups, with the nulliparous group being almost doubled in size compared to the multiparous group. This, however, reflects the actual makeup of the pregnant women who were visiting the clinic, and, to an extent, also the relatively low overall parity progression ratio from first to second birth in the country (32). Moreover, the potentially traumatic or negative experiences from previous pregnancies or childbirths other than caesarean sections (e.g., miscarriages) were not taken into account.

Tab. 7. Corrected item-total correlations of the Slovak translation of the W-DEQ version A in the whole sample, and in nulliparous and parous women.

Items	Whole sample[1] (n = 279)	Nulliparous (n = 178)	Multiparous (n = 100)
1. Not fantastic	.63	.66	.59
2. Frightful	.62	.65	.54
3. Lonely	.42	.44	.39
4. Not strong	.65	.66	.63
5. Not confident	.69	.71	.65
6. Afraid	.70	.69	.72
7. Deserted	.44	.50	.33
8. Weak	.64	.70	.54
9. Not safe	.64	.64	.66
10. Not independent	.45	.41	.53
11. Desolate	.55	.51	.62
12. Tense	.54	.59	.45
13. Not glad	.59	.61	.61
14. Not proud	.50	.50	.56
15. Abandoned	**.27**	**.26**	**.29**
16. Not composed	.70	.73	.64
17. Not relaxed	.70	.69	.70
18. Not happy	.59	.59	.62
19. Panic	.67	.69	.65
20. Hopelessness	.59	.62	.51
21. No longing for the child	.39	.42	.34
22. No self-confidence	.73	.74	.72
23. No trust	.61	.63	.58
24. Pain	.46	.50	.38
25. Behave badly	.51	.52	.47
26. Not allow body to take control	**.27**	.32	**.20**
27. Lose control	.48	.50	.43
28. Not enjoyable	.32	.36	**.23**
29. Not natural	.44	.47	.34
30. Not as it should be	.44	.46	.37
31. Dangerous	.40	.46	.26
32. Child will die	**.26**	**.19**	.39
33. Child will be injured	.32	**.27**	.44

Conclusions

Fear of childbirth and its associated negative experience significantly influence the future quality of life (33). Up to now, in Slovakia, a Central European country with 5.5 million inhabitants, there has been a lack of a comprehensive psychometric measure for fear of childbirth. With this validation study of Slovak version of WDEQ-A, we aim to fill this gap. The results provide support for the Slovak version to be considered a valid and reliable measure of fear of childbirth among pregnant Slovak women. Nevertheless, more studies with higher sample size and applying Rasch analysis are needed to confirm the capability of the instrument, particularly its dimensionality.

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