Chapter ....

THE ROMANIAN PENN STATE WORRY QUESTIONNAIRE: ADAPTATION OF THE INSTRUMENT FOR CLINICAL AND NON CLINICAL RESEARCH AND ASSESSMENT OF WORRY SYMPTOMS

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Abstract: *The Penn State Worry Questionnaire(PSWQ) is an important instrument for the assessment of worry symptoms, which was translated and adapted in many countries around the world. We sought to translate and adapt the PSWQ in Romania for clinical and nonclinical purposes. For that purpose, we conducted two studies. In the first study, we translated and back-translated the PSWQ and tested the translation on 35 bilingual participants. Additionally, we assessed the temporal stability of the instrument along with its internal consistency. Results indicated a good translation and adequate initial psychometric properties of the instrument. In the second study, in a more heterogeneous sample of 116 participants, we assessed the factorial validity of the Romanian PSWQ by fitting three competing Confirmatory Analysis Models, according to prior research on PSWQ, using new developed corrections to traditional CFA in low samples and that allow taking into account the correlated errors due to method effects. We then analyzed again the internal consistency of the instrument and assessed its convergent validity with validated anxiety, depression, and well-being measures. Results indicated that the instrument has excellent reliability, is unidimensional and has adequate convergent validity, being significantly related to anxiety and depression measures as well as to satisfaction with life. The potential clinical and nonclinical uses of the Romanian PSWQ are highlighted and the results are situated in the main research trend concerning the instrument, recent development of "positive clinical psychology" and cross-culturally, with respect to the particular Romanian socio-cultural context.*

Key-words*: The Penn State Worry Questionnaire, Worry, bilingual test-retest method, corrected CFA, validity, reliability*

INTRODUCTION

PSWQ has been developed by Meyer et al. (1990) as measure of worry, which typically occurs as a symptom of Generalized Anxiety Disorder (GAD), and yielded initial good psychometric properties, having been established as a screening instrument for GAD and associated worry (Behar et al., 2003; Fresco et al., 2003) and used in such way for many clinicians (Hunsley, 2006). However, recent research suggests that in some particular samples (i.e. psychotherapy) the usefulness of PSWQ is restricted to particular symptoms and not the GAD (Salzer at al., 2009). However, many studies have shown that PSWQ is useful for assessment in many clinical conditions as well (e.g. Barlow, 1988; Dugas et al., 1998; Molina et al., 1998). Overall, studies have shown that PSWQ is generally clinically useful as well as cross-culturally appropriate. Thus, PSWQ has been adapted successfully worldwide including Argentina (Rodríguez-Biglieri & Vetere, 2011), Germany (Stöber, 1995), Holland (Heiden et al., 2009), China (Zhong et al., 2009) to name only a few.

OBJECTIVES

The main purpose of the present studies is the validation of the Penn State Worry Questionnaire in Romania using scientifically sound methodology as well as to establish its psychometric properties and situate the findings cross-culturally, with respect to PSWQ research.

METHOD
Study 1
Aims

To translate PSWQ into Romanian and test the translation in a bilingual sample as well as asses two types of reliability, namely temporal stability and internal consistency by following International Test Commission Guidelines for Translating and Adapting Tests (International Test Commission, 2010).

Participants

The participants of our study were 35 bilingual persons (English and Romanian) from different regions of Romania, who indicated a high level proficiency in English language, chosen on voluntary basis, who received no feed-back or compensatory rewards for participation, with the following demographic characteristics: economists 26%(9), bank employees 51% (18),

students 6% (2), other professions of higher education 12% (4), 1 simple worker and 1 retired, aged 23-84 (*M*=43.4, *SD*=13.12), 37% (13) males, 63% (22) females, (15) 43% of participants had no children, 40% (14) had 1 child, 14% (5) had 2 children, 1 participant (3%) had 7 children, most of the participants (31, 89%) were orthodox, 2 participants were protestants (2, 6%), and 1 was catholic (3%), 1 participant did not declare his religious confession, most of the participants were Romanian (34, 97%), and 1 participant had Hungarian ethnicity (3%), the participants had the following monthly income: <500 lei (3, 9%), 501-1000 lei (3, 9%), 1001-1500 lei (13, 37%), 1501-2000 lei (2, 6%), 2001-2500 lei ((3, 9%), 2501-3000 lei (2, 6%), and 1 participant (3%) had the income >3000 lei, 8 participants (23%) did not declare their monthly income.

Instruments

PSWQ (Penn State Worry Questionnaire)
We administered the PSWQ (Penn State Worry Questionnaire) (Meyer, Miller, Metzger & Borkovec, 1990) which has 16 items and measure worry as a component of anxiety, often found in Generalized Anxiety Disorder (Generalized Anxiety Disorder GAD). PSWQ could be thus used mainly as diagnostic tool for GAD and other anxiety conditions or as a monitoring tool of clinical interventions as well as for other research purposes. The instrument has not yet been adapted in Romania. The answer format of the 16 items is on 5 level Likert scale, ranging from of 1 ("not at all typical of me") to 5 ("very typical of me"). The PSWQ items 1, 3, 8, 10, 11 must be reverse-scored for obtaining a total score of worry. An example of symptom-positively worded item is: *I notice that I have been worrying about things*. And symptom-negatively worded item: *When there is nothing more I can do about a concern, I do not worry about it anymore.* The original PSWQ has adequate psychometric properties (Meyer et al., 1990). PSWQ has been also shown to be psychometrically sound in research over time regarding reliability (based on internal consistency and test-retest procedures) (see for ex. Molina & Borkovec, 1994 and Phillips, 2016 for a review) and acceptable convergent validity with peer ratings and with other clinical scales, discriminant validity as well as factorial validity (e.g. Stöber, 1997; Meyer et al., 1990; Brown, 2003). These adequate psychometric properties have also been shown cross-culturally (e.g. Zhong et al, 2009).

The sociodemographic questionnaire was administered only once at the end of the last PSWQ assessment and included open questions about: occupation, age, gender, income, ethnicity, religion, marital status and number of children.

Procedure

We used a translation back-translation method (Brislin, 1970). The first author of this paper translated the PSWQ into Romanian and the third author translated the instrument back into English and the team compared the two English versions of PSWQ as well as the Romanian translated version. We found 3 items which could have a misleading meaning in Romanian, therefore those items were adjusted and a final Romanian translation of PSWQ was created. Then, we recruited a bilingual sample from a multinational company from Romania. The participants agreed to participate anonymously on a voluntary basis without any rewards. We administered thereafter PSWQ to the bilingual sample on two occasions, first the English version and two weeks later the Romanian one, together with the demographic questionnaire as well as the filter question about significant stressors that had occurred during the time interval between the two administering sessions of PSWQ (2 weeks) which was negatively answered by all participants (Did anything stressful happen in this 2 weeks period that could impact on your responses to the questionnaire?). The administration was standardized, took place in the same room and the questionnaires were paper and pencil administered. The only variable manipulated was the language in which PSWQ was presented. In this study, there were no conflict of interests and ethical guidelines of the Romanian College Board (Colegiul Psihologilor din Romania) were followed.

RESULTS

For the analysis the PSPP v. 0.8.5 software was used. Before we conducted the analysis we first looked (by inspecting the total score histograms) for specific outliers and found none in the dependent variable, PSWQ, in both English and Romanian versions. Then we assessed the normality of the total score of PSWQ. Two Shapiro-Wilk tests calculated on the original and Romanian PSWQ did not reach significance at .05 level and the visual inspection of the histograms shown no significant deviation from normality with skewness of .07 (SE= .40) and kurtosis of -.17 (SE= .79) for the original version and with skewness of .09 (SE= .40) and kurtosis of -.36 (SE= .78) for the Romanian version.

Further, we used test retest bilingual method (Butcher & Gur, 1974) and assessed the equivalence of the two versions of the instrument. A paired-samples t-test was conducted to compare the PSWQ scores in the English language condition versus Romanian language condition. There was a not significant difference in the scores for PSWQ English (M=51.44, SD=12.23) and PSWQ Romanian (M=50.91, SD=13.77) conditions; $t(33)$=.36, p = .72 therefore we regard the two versions as equivalent. Since we had the equivalence of the two versions of PSWQ we assessed the test retest reliability of the instrument. The two versions of PSWQ were strongly correlated, $r(32)$ = .79, p < .01 which attest that Romanian PSWQ has acceptable test temporal stability. Internal consistency of the 16 items of the Romanian PSWQ was high (α= .93) Corrected Item-Total Correlation ranged from .30 (item11) to .84 (item4) and deleting any of the item did not result in an improved internal consistency.

CONCLUSIONS

The first study outcomes show Romanian PSWQ linguistically equivalent to the original instrument and possessing acceptable to good reliability. We conclude that the instrument had initial adequate psychometric properties which were similar to original PSWQ as well as to other adaptations throughout the world (e.g. Glöckner-Rist & Rist, 2014).

Study 2

METHOD

Aims

To analyze the factorial structure of Romanian PSWQ as well as to analyze and assess its internal consistency and convergent validity.

Participants

The participants of our study were initially 128 persons and after outliers removal (see preliminary analyses) 116 persons with a very heterogeneous professions range who received feed-back upon request but no compensatory rewards for participation, with the following demographic characteristics: age 15-57 (M=31.37, SD=9.60), 18% (21) were male, 82% (95) were female, most of the participants were orthodox (100, 86%), 3 participants were protestants (3%), (2) were atheists and 9 were

catholic (9%), 2 participants (2%) did not declare their religious confession, most of the participants were Romanian (34, 97%), and 1 participant had Hungarian ethnicity (3%), the participants had the following monthly income: <500 lei (27, 23%), 1001-1500 lei (19, 16%), 1501-2000 lei (19, 16%), 2001-2500 lei (7, 6%), 2501-3000 lei (7, 6%), and 10 participants (8%) had the income >3000 lei.

Instruments

PSWQ (Penn State Worry Questionnaire)

We administered the Romanian PSWQ results from Study 1. The original PSWQ has been found to be unidimensional using traditional Principal Component Analysis A (e.g. Brown et al., 1992) thus measuring the worry construct unitarily. However, later authors found using Principal Component Analysis, Exploratory Factor Analysis and Confirmatory Factor Analysis, that PSWQ have actually 2 factors (see Glöckner-Rist & Rist, 2014 for a review) namely, Worry Engagement and Absence of Worry, making PSWQ internal factor structure a matter of debate. Using a more developed method of PCA that accounts for method effects that arise when questionnaires have reverse-worded items, Brown (2003) reaffirmed the unidimensionality of the PSWQ. The two factor solutions reported by many studies (Beck, Stanley, & Zebb, 1995; Stöber, 1995; van Rijsoort, Emmelkamp, & Vervaeke, 1999) actually comprised one factor with 11 items (which reflects worry) and a contra factor with 5 reverse-worded items (which reflects the absence of worry). Brown (2003) explained, based on previous work with other questionnaires that the two-factor solution is spurious and arises from artefactual reasons (e.g. carelessness or difficulty in reading reverse-worded items). Same issues made Wood & Tarrier (2010) assert that many clinical concepts (e.g. depression) which proved to be multifactorial are actually unidimensional and lie on a continuum from well-being to ill-being making the aforementioned researchers sketch a "positive clinical psychology", that is a clinical psychology that takes into consideration both positive and negative human experience. In terms of convergent validity PSWQ has been found to be positively related to Peer ratings, Depression, Anxiety, Tension as well as other constructs both in clinical and non-clinical samples (e.g. Meyer at al., 1990, Brown et al., 1992, Stöber, 1997, as well as in on-line studies (Zlomke, 2009). Test-retest reliability and internal consistency have been found to be acceptable to good in the aforementioned studies).

CES-D (Center for Epidemiological Study of Depression Scale)

The Center for Epidemiological Study of Depression Scale (CES-D) (Radloff, 1977) is a self-assessment scale designed to measure the depression symptomatology in the general population. CES-D scores establish the difference between patients with psychiatric problems and those without psychiatric problems. A score greater than 16 indicates depressive symptoms. The 20 items measure the affective and somatic dimensions of depression, reflected in the depressed state, feelings of guilt or futility, helplessness, psychomotor delays, lack of appetite, and sleep disturbance. (Radloff, 1977). CES-D has been since its creation the focus of many researches and has been found valid and reliable worldwide being also translated and adapted in Romania by the first and last authors of this paper wherein it yielded adequate psychometric properties (see Stevens et al., 2013 for a review and for adapted Romanian version).

HADS (Hospital Anxiety and Depression Scale)

The Hospital Anxiety and Depression Scale is a valuable scale for assessing the incidence and severity of anxiety in both somatic and psychiatric patients as well as in the general population (Snaith, 2003). HADS was validated in different languages both in general practice and community settings (Stern, 2014) and good psychometric properties of reliability and validity have been reported (Snaith, 2003). The scale includes 14 items, seven items measuring anxiety and seven items measuring depression. For the current study we used only the anxiety subscale, namely HAS. Each item is rated on a 0-3 frequency scale: 0- not at all, 1- From time to time, occasionally, 2 - A lot of the time, 3- Most of the time and one item must be reversed scored. The translation into Romanian as well as validation was done by Professor Maria Ladea (2007) who reported adequate convergent validity with anxiety and depression measures. The HAS has obtained in our study an Alpha-Cronbach of .78 and standardized Alpha-Cronbach of .79.

SWLS (Satisfaction With Life Scale)

Satisfaction With Life Scale contains 5 items of life satisfaction, being a measure of the cognitive process of evaluating the satisfaction of people's lives at a phenomenological level, respondents evaluating their agreement on items on a 7 levels Likert scale. The questionnaire was tested for reliability demonstrating its stability in the many

studies it was used (Diener, Suh, Oishi, 1997). The questionnaire was tested for construct validity by correlating with multiple other well-being tests and obtained significant correlations. Literature on Well-Being, include a wealth of information on the psychometric properties of the scale as well as the theoretical constructs involved (see Diener, Suh, Oishi, 1997; Diener, Scollon, Lucas, 2003). The adaptation, translation and validation of this questionnaire on the Romanian population was conducted by the first, second and later author of this paper in collaboration with other researchers (Stevens, Constantinescu and Lambru, 2006) and Stevens et al. (2011) wherein SWLS yielded acceptable convergent and factorial validity as well acceptable test retest reliability and internal consistency. We chose to measure Life Satisfaction in our study because it should theoretically and empirically be negatively related to Worry. Too much worry could be even a consequence of the lack of well-being, as shown by previous studies(see Platsidou, 2012 for the theoretical validated model)

Procedure

The administering of the questionnaires was done anonymously on-line and the recruiting of the participants was done with advertisements on different on-line socialization websites Participation to the study was on voluntary basis. The filling out of the questionnaires took approx. 20 min. Three participants requested feed-back with a secret code they introduced when filling out the questionnaires. Answering to all questionnaire items was compulsory before submitting the questionnaires form, but the demographic questionnaire had not such a format. In this study, there were no conflict of interests and ethical guidelines of the Romanian College Board (Colegiul Psihologilor din Romania) were followed.

RESULTS

The analysis was conducted using the Statistical Software R v 3.1.0. Preliminary analyses were conducted on the initial 123 participants in order to test the assumptions required for Confirmatory Factor Analysis. Using R with the package "rgl" we obtained the bivariate scatter plots Matrix of the items with smooth lines, and the visual inspection indicated that some items had minor deviations from linearity. Further with the package "MVN" (Korkmaz, Goksuluk and Zararsiz, 2014) we run the Mardia test (Mardia, 1970, 1974) and Shapiro-Wilk test and we tested the assumptions of multivariate and of univariate distribution respectively. The results indicated that both assumptions were violated. Afterwards, using the package "faoutlier" (Chalmers & Flora, 2015; Flora, LaBrish & Chalmers, 2012) we identified using likelihood distances (Cook and Weisberg, 1982) 12 influential cases. Upon an inspection of the responses it appeared that these participants might not have understood some items correctly and therefore the answers were biased so we removed those outlying cases.

Rechecking the linearity and normality assumptions nothing was changed. However, as has been shown in simulation studies, even 1 influential case can be very powerful and can distort significantly the results (Flora, LaBrish and Chalmers, 2012) so we chose to eliminate the chosen outliers and run the analysis on 116 participants. Next, using the package "lavaan" (Rosseel, 2012) we fitted 3 CFA models under the robustness condition (given that there was neither multivariate normality nor univariate normality) and the fit index' were adjusted with Sattora-Bentler correction (Satorra and Bentler, 1994). For evaluating the model fit we used Hu & Bentler (1999) index' that best take account of acceptable Type I and II errors in low samples. SRMR (Standardized Root Mean Square Residual) was not corrected. The first model had one factor comprising all PSWQ items the second model had two factors, namely Absence of Worry comprising reverse worded items and Worry Engagement comprising the remaining items, and the third model had again one factor with correlated errors due to method effect (Schmitt and Stuits, 1985; Marsh, 1986, 1996; Woods, 2006). The results were similar to previous studies. The first model had the worst fit, and there was a significant improvement when the model with two factors was fitted, However, one factor with correlated errors model best fitted the observed data according to Hu & Bentler (1999) cut-offs recommendations for CFA in low samples, Comparative Fit Index (CFI) and (Tucker-Lewis Index) TLI > .90 and Standardized Root Mean Square Residual(SRMR) < .06. However, the model with two factors also fitted the data but PSWQ was found to be one dimensional because both Corrected $\chi2$ and SRMR were smallest.

Table 1. *CFA Indexes of PSWQ*

Model	Corr. $\chi2$***	df	Corr. CFI	Corr. TLI	SRMR
1 factor	238.293	104	0.888	0.871	0.067
2 factor	196.503	103	0.921	0.908	0.053
1 factor	190.422	94	0.919	0.897	0.047

corr. err

***p<.001

We could note also that item loadings as well as residual variances for reverse worded items 1, 3, 8, 10, 11 are lowest and highest respectively.

Table. 2 *CFA Results - Factor Loading and residual variances of PSWQ items*

Item	Loading	Residual variance
pswq1r	0.199	1.315
pswq2	1.156	0.520
pswq3r	0.409	1.544
pswq4	1.131	0.420
pswq5	1.219	0.703
pswq6	1.006	0.783
pswq7	1.164	0.509
pswq8r	0.369	1.716
pswq9	0.907	0.941
pswq10r	0.542	1.048
pswq11r	0.250	1.826
pswq12	1.124	0.527
pswq13	1.026	0.592
pswq14	1.185	0.559
pswq15	1.226	0.220
pswq16	1.000	0.719

Using package "Rmisc" we then calculated again alpha Cronbach which was high, Alpha= 0.92, Standardized alpha = 0.92 and deleting any of the items did not resulted in a an important improved in internal consistency. However item-total correlations for items 1, 3, 8, 10, 11 where rather low.

Table. 3 Internal consistency analyses of PSWQ Items

Item	Alpha	Std.Alpha	r(item,total)
pswq1r	0.9264	0.9271	0.2227
pswq2	0.9122	0.9120	0.7600
pswq3r	0.9228	0.9223	0.3932
pswq4	0.9109	0.9104	0.8144
pswq5	0.9111	0.9111	0.7880
pswq6	0.9138	0.9135	0.7069
pswq7	0.9116	0.9115	0.7795
pswq8r	0.9256	0.9249	0.3042
pswq9	0.9161	0.9158	0.6288
pswq10r	0.9192	0.9191	0.5118
pswq11r	0.9289	0.9279	0.1928
pswq12	0.9113	0.9110	0.7933
pswq13	0.9129	0.9124	0.7443
pswq14	0.9117	0.9116	0.7746
pswq15	0.9094	0.9090	0.8640
pswq16	0.9131	0.9126	0.7355

Further, we screened for bivariate outliers concerning the relationships of the PSWQ with HAS, CESD and SWLS respectively, by calculating DifFitS and DifBetaS in three simple regressions context where PSWQ was always criterion and the predictors were HAS, CESD and SWLS respectively, as well as visually inspecting bivariate scatter plots. Although, the analyses shown possible outliers, the three relationships of interest, namely PSWQ-HAS, PSWQ-CESD and PSWQ-SWLS, had no obvious common outliers (cutt offs were DifFitS > +/-1 DifBetaS >+/-2) and bivariate scatter plots shown similar results, with possible outliers lying not very far from the smooth lines which indicate the linear trend of the relationship and we decided not to delete these possible outliers. The plots shown minor deviations from the specified linear relationships and we concluded that the linearity assumption was not violated. We checked also the normality of the variables visually and using Shapiro Wilk (R package "nortest"). None of the variables was normal distributed so for validity analyses we chose to calculate Spearman rho using R package "Hmisc". The significance levels p were adjusted with Holm Method, Holm (1979) given the multiple comparisons that were present.

Table. 4 Rank order correlations,of PSWQ with HAS CESD and SWLS

	CESD	HAS	PSWQ	SWLS
CESD		0.69***	0.57***	-0.45***
HAS	0.69***		0.66***	-0.30
PSWQ	0.57***	0.66***		-0.22**
SWLS	-0.45***	-0.30***	-0.22**	

***p<.001 **p<.01

CONCLUSIONS STUDY 2

The second study shows, that PSWQ has adequate factorial validity and is unidimensional and bipolar, worry lying on a continuum ranging from Absence of Worry to Worry Engagement

and reliability and convergent validity were adequate. It is worth noting that the rank order correlations, particularly for the Romanian PSWQ and SWLS are medium. The debate about factorial structure of PSWQ (e.g. Fresco et. al. 2003; Brown et al., 1992) which has been partially explained theoretically and empirically by introducing the correlated errors resulting from artefactual measurement into CFA models (Brown, 2003) also received empirical support in our study. Though, the factor loadings and item total correlations for the 5 reverse worded items show these with less value for the construct measurement, these items are still important in the assessment of worry.

GENERAL CONCLUSIONS

The Romanian PSWQ performed similarly to the original as well as to other adaptations around the world, in terms of psychometric properties. It can be used now confidently for research and clinical purposes (e.g. monitoring clinical interventions), though, in order to be fully functional in clinical and non clinical contexts adequate norms must be developed.

Further research with PSWQ should take into consideration comparisons between Romanian PSWQ scores with PSWQ scores from other countries, as well as between different age groups in Romania, taking into account the Romanian culture specificity, especially that worry is a special symptom that deserves attention in this country. About 20 five years ago Romania left a well structured and highly controlled communist society that despite many disadvantages, provided a sense of stability and social and psychological security (Dragomir, 2010; Mitruț, Șerban, Vasilache, 2013) which is basically to human surviving (Masslow, 1954). The transition to a new way of life imposed by liberalism and free market has been rather difficult for some people (e.g. Tismaneanu, 1998). Epidemiological studies (see Ciuca, 2016 for a short review) showed what clinical practitioners (Ladea, 2010, personal communication) also observed, an increase of anxiety type disorders which could be explained as a result of the social stress experienced for Romanians during the 25 years. However, newer cohorts, which did not experience communism directly proved to be more adapted and their worry and anxiety are lower than that of older generations (Florescu et al., 2009). Though, current conditions (e.g., geopolitical uncertainty in the region, internal corruption) are of concern to younger Romanians (Sandu, Stoica & Umbres

(2014). Also, well established democratic societies should probably have lower levels of worry in comparison with general Romanian population. Any use of PSWQ thus should take into account these socio-cultural specificities when screening for worry.

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