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A Short Form of the Worry Domains Questionnaire:

Construction and Factorial Validation

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Abstract

The Worry Domains Questionnaire (WDQ) (Tallis, Eysenck, & Mathews, 1992) is an instrument widely used to assess the amount of worry across five domains of everyday concern: relationships, lack of confidence, aimless future, work, and financial issues. With 25 items, however, the WDQ is somewhat lengthy. The aim of the present study was therefore to construct a 10-item short form (WDQ-SF). A sample of 1,080 university students completed the 25 items of the WDQ. One half of the sample was used to construct the WDQ-SF by selecting two appropriate items from each of the five WDQ domain subscales. The other half of the sample was used to cross-validate the factorial structure of the WDQ-SF by means of confirmatory factor analysis. Like the WDQ, the WDQ-SF displayed high internal consistency (Cronbach's $\alpha = .88$) and a clear five-factor structure. Moreover, the WDQ-SF showed a near-perfect correlation with the WDQ long form ($r = .97$). Thus, the WDQ-SF represents a reliable and economical alternative to the full 25-item scale.

Keywords: Anxiety, worry, generalized anxiety disorder, scale construction, structural equation modeling

Introduction

For over three decades, worry has represented a theoretically and empirically fruitful concept in anxiety research. The starting point was the seminal work of Liebert and Morris (1967), who were the first to discriminate between a cognitive component (worry) and a physiological component (emotionality) in test anxiety. Moreover, they demonstrated that worry, and not emotionality, is mainly responsible for the detrimental effects that test anxiety has on performance (Morris & Liebert, 1970). While these findings stimulated a great deal of worry research over the next two decades, the primary focus of this research remained on academic performance and achievement (Seipp, 1991). In the 1980s, however, a second line of worry research emerged when the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1987) established generalized anxiety disorder (GAD) as an independent diagnostic category within the canon of anxiety disorders. For a diagnosis of GAD, the cardinal criterion was pathological worry, defined as chronic, excessive, and uncontrollable worry. With this, worry research not only received renewed attention, but also expanded its focus to include affective, physiological, and interpersonal factors (for a review, see Borkovec, Ray, & Stöber, 1998).

Whereas most of this research focused on pathological worry as experienced by individuals diagnosed with GAD, some researchers directed their attention to nonpathological worry, that is, worry as experienced by individuals free of psychopathology (Tallis, Davey, & Capuzzo, 1994; Tallis, Eysenck, & Mathews, 1992). To measure nonpathological worry, Tallis et al. (1992) constructed the Worry Domains Questionnaire (WDQ). First, a community sample was asked to list their worries. From the answers, a 155-item General Worry Questionnaire was constructed. This questionnaire was then given to another sample of respondents who gave frequency and intensity ratings for each item. Responses were analyzed using cluster analysis. Six coherent clusters were found, representing six fundamental domains of worry: (D1) Relationships, (D2) Lack of Confidence, (D3) Aimless Future, (D4) Work, (D5) Financial, and (D6) Socio-Political. From each cluster, the five most representative items were selected to construct a first, 30-item version of the WDQ (Tallis

et al., 1992). The subscale D6, however, was dropped from the final version of the WDQ because it showed low correlations with the other domain subscales and answers were assumed to be biased by social desirability. Hence, the final version of the WDQ contains 25 items that are subsumed to five domain subscales (Tallis, Davey, & Bond, 1994).

Research has demonstrated that the WDQ shows high reliability and substantial validity. Internal consistency (Cronbach's alpha) is usually above .90; and test-retest stability across four weeks is .85 (Stöber, 1998). As to factorial validity, confirmatory factor analysis has corroborated the five-factor structure of the WDQ (Joormann & Stöber, 1997). The WDQ has also shown substantial convergent correlations with other measures of worry (e.g., Davey, 1993; Stöber, 1995, 1998; Tallis, Davey, & Bond, 1994), supporting the convergent validity of the WDQ. Finally, research has demonstrated that the WDQ captures unique associations which are not shared by measures of pathological worry such as the Penn State Worry Questionnaire (PSWQ) (Meyer, Miller, Metzger, & Borkovec, 1990). For example, Davey and associates found that, after partialling out trait anxiety, only the WDQ (but not the PSWQ) displayed positive correlations with adaptive ways of coping (Davey, 1993; Davey, Hampton, Farrell, & Davidson, 1992). Moreover, we recently found that, after controlling for the substantial overlap between the two worry measures, only the WDQ (but not the PSWQ) showed substantial correlations with procrastination and perfectionism (Stöber & Joormann, 2001).

In sum, the WDQ is an important measure for researchers interested in a comprehensive assessment of all aspects of worry. However, with 25 items, it is somewhat lengthy. The aim of the present study was therefore to construct a short form of the WDQ that would show the same psychometric and structural properties as the long form.

Method

A sample of 1,080 students attending introductory psychology classes was recruited at the Pennsylvania State University, State College. All students completed a comprehensive battery of questionnaires including the Worry Domains Questionnaire (WDQ) (Tallis, Davey, & Bond, 1994). The WDQ was presented with standard instructions and the usual five-point answer scale of *Not at all* (0) to *Extremely* (4). Of the participants, 69.6% were female and 30.2% male (0.2% missing values). The average age was 18.5 years ($SD = 1.3$; range = 16-30; 2.7% missing values). The ethnicity of students was 88.1% Caucasian, 4.9% Asian/Pacific, 3.3% African American, and 2.3% Hispanic (1.3% missing values). Participation was voluntary in exchange for two hours of extra course credit.

To obtain two independent samples with parallel characteristics--a first sample for the construction of the WDQ-Short Form and a second sample for its factorial cross-validation--the data were ordered by participants' gender, ethnicity, and age (in this sequence). Participants with even case-numbers represented sample 1 ($n = 540$) and participants with odd case-numbers sample 2 ($n = 540$). As intended, the samples were identical with respect to the distribution of gender and near-identical with respect to the distribution of ethnicity, $\chi^2(3) = 0.33, p > .95$, and mean age, $t(1,049) = 0.08, p > .93$.

Results

Sample 1: Construction of WDQ-Short Form

Sample 1 was used to construct a 10-item short form of the WDQ. From each domain subscale, two items were selected that showed (a) high correlations with the WDQ, (b) high correlations with the respective WDQ domain subscale, and (c) high intercorrela-

tions so that, for the short form, (a) the total score would show high correlations with the WDQ long form, (b) the items would be representative of the respective WDQ domains, and (c) the domain subscales would show satisfactory reliabilities (Cronbach's alphas). The 10 selected items, representing the WDQ-Short Form (WDQ-SF), are displayed in Table 1. Where the selection criteria are concerned, the items showed correlations between .60 and .76 with WDQ total scores; correlations between .76 and .89 with the respective WDQ domain scores; and--when combined to domain subscales--Cronbach's alphas between .66 and .86 (Table 2). For the WDQ-SF, items displayed item-total correlations between .51 to .71 (Table 1). WDQ-SF total scores showed a Cronbach's alpha of .89 and a correlation of $r = .97$ with the WDQ long form (Table 2).

Sample 2: Replication and Factorial Validation

Sample 2 was used to cross-validate item and scale characteristics from sample 1 in an independent sample. Moreover, it was used for confirmatory factor analysis to test if the WDQ-SF also showed the clear five-factor structure demonstrated for the WDQ long form (Joormann & Stöber, 1997). With regard to the first aim, results showed that all item and scale characteristics in sample 2 were near-identical to those in sample 1. The WDQ-SF items showed correlations between .59 and .76 with WDQ total scores and correlations between .75 and .89 with the respective WDQ domain subscale scores (Table 1); and--when combined to domain subscales--Cronbach's alphas between .65 and .86 (Table 2). The WDQ-SF displayed item-total correlations between .51 and .71 (Table 1) and a Cronbach's alpha of .88 (Table 2). As in sample 1, the WDQ-SF and the WDQ long form showed a correlation of $r = .97$.

To examine the five-factor structure of the WDQ-SF, a confirmatory factor analysis was conducted in which the domains represented the latent factors, each with its two domain items as indicator variables. Factor loadings, uniquenesses, and factor intercorrelations were estimated using LISREL 8.3 (Jöreskog & Sörbom, 1999). Results are displayed in Tables 3 and 4. As expected, the five-factor solution showed high factor loadings (between .64 and .94) and low standard errors (between .03 and .05) (Table 3). Factor correlations ranged from .46 (Financial with Relationships and Lack of Confidence) to .92 (Relationships with Lack of Confidence). Hoyle and Panter (1995) recommend that one should not rely on the χ^2 statistic alone to judge the fit of a structural equation model, but report a range of different fit indices. The reason for this is that the χ^2 statistic is highly sensitive to sample size. In large samples, even trivial deviations of a hypothesized model from the true model may lead to rejection of the model (Bentler, 1990; Bentler & Bonett, 1980). Accordingly, even though we obtained a significant χ^2 statistic, $\chi^2(25) = 113.66$, $p < .001$, the goodness-of-fit indices indicated good congruence between hypothesized model and data: the Goodness of Fit Index (GFI) was .96; the Adjusted Goodness of Fit Index (AGFI) was .91; and the Normed Fit Index (NFI) was again .96. The Root Mean Square Error of Approximation (RMSEA) was .08. According to Browne and Cudeck (1993, p. 144) a value of .08 or less indicates a "reasonable error of approximation" whereas a value greater than .10 should lead to the rejection of the model. Thus, all normed fit-indices were above .90 and the RMSEA was .08, indicating a good overall fit of the five-factor model.

Discussion

The present article described the construction and factorial validation of the WDQ-SF, a 10-item short form of the Worry Domains Questionnaire (WDQ) (Tallis et al., 1992; Tallis, Davey, & Bond, 1994). Even though the questionnaire length was reduced by 60%,

the short form showed psychometric and structural properties that were near-identical to those of the 25-item original version. Internal consistency (Cronbach's alphas) was close to .90, and internal structure was identical to that of the WDQ. As was corroborated for the original scale (Joormann & Stöber, 1997), confirmatory factor analysis revealed a clear five-factor structure for the WDQ-SF, with separate factors for the five domains Relationships, Lack of Confidence, Aimless Future, Work, and Financial. Moreover, because the WDQ-SF showed near-perfect correlations ($r_s = .97$) with the WDQ, researchers using the short form can be confident that their results are comparable to those attained with the full scale. Thus, the WDQ-SF (see Appendix) represents a reliable and economical alternative to the full 25-item scale.

In concluding, we see three main advantages of applying the WDQ-SF instead of the full scale. First, with only 10 items, the WDQ-SF is suitable for highly cost-intensive research applications such as large surveys or mass testings. Second, due to its brevity, the WDQ-SF may be less susceptible to "measurement-induced improvement in anxiety," a reactivity effect that may lead to within-test improvements in questionnaires with items that indicate maladjustment (Knowles, Coker, Scott, Cook, & Neville, 1996). Finally, in clinical research, the WDQ-SF is an ideal supplement to measures of pathological worry such as the Penn State Worry Questionnaire, as it may capture (a) more functional aspects of worry not covered by measures of pathological worry and (b) unique characteristics of worry that differentiate worry from other closely-related constructs such as trait anxiety and depression (Davey, 1993; Stöber & Joormann, 2001). Thus, with little additional effort, the WDQ-SF may help to further clarify differences between nonpathological and pathological worry.

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Table 1

WDQ-SF: Item Statistics

WDQ items: I worry ...	Domain	<i>M</i>	<i>SD</i>	Correlation ^a		
				WDQ	D-WDQ	WDQ-SF
19. that I am unattractive	Relationships	1.32 [1.23]	1.11 [1.15]	.73 [.71]	.76 [.78]	.67 [.68]
21. that I will lose close friends	Relationships	1.15 [1.04]	1.20 [1.17]	.67 [.67]	.77 [.79]	.60 [.60]
10. that I feel insecure	Lack of Confidence	1.28 [1.19]	1.17 [1.18]	.71 [.74]	.85 [.86]	.66 [.69]
18. that I lack confidence	Lack of Confidence	1.19 [1.11]	1.12 [1.16]	.73 [.72]	.87 [.86]	.68 [.69]
5. that I'll never achieve my ambitions	Aimless Future	1.57 [1.49]	1.22 [1.17]	.73 [.69]	.84 [.83]	.67 [.62]
22. that I haven't achieved much	Aimless Future	1.01 [0.84]	1.09 [1.01]	.76 [.76]	.82 [.82]	.71 [.71]
6. that I will not keep my workload up to date	Work	1.96 [1.95]	1.08 [1.08]	.66 [.64]	.76 [.75]	.59 [.56]
17. that I leave work unfinished	Work	1.06 [0.98]	1.05 [1.03]	.62 [.59]	.77 [.75]	.54 [.49]
9. that I am not able to afford things	Financial	1.32 [1.29]	1.16 [1.13]	.63 [.66]	.89 [.89]	.54 [.58]
11. that I can't afford to pay bills	Financial	1.04 [1.02]	1.16 [1.16]	.60 [.60]	.88 [.88]	.51 [.51]

Note. Sample 1 with $n = 540$; sample 2 with $n = 540$ [in square brackets]. WDQ = WDQ full version. D-WDQ = WDQ domain subscale.

^aCorrected item-total correlation.

Table 2

WDQ-SF: Intercorrelations and Descriptives for Domain Subscale Scores and Total Score

Scale	Domain	WDQ item	1	2	3	4	5	6
1. D1-SF	Relationships	19, 21	--	.69 [.70]	.63 [.64]	.54 [.45]	.40 [.38]	.81 [.82]
2. D2-SF	Lack of Confidence	10, 18		--	.60 [.58]	.47 [.46]	.36 [.39]	.80 [.82]
3. D3-SF	Aimless Future	5, 22			--	.61 [.55]	.44 [.45]	.82 [.82]
4. D4-SF	Work	6, 17				--	.37 [.39]	.74 [.72]
5. D5-SF	Financial	9, 11					--	.65 [.68]
6. WDQ-SF	Total score							--
<i>M</i>			2.47 [2.27]	2.47 [2.31]	2.58 [2.33]	3.02 [2.93]	2.36 [2.31]	12.91 [12.15]
<i>SD</i>			1.99 [2.04]	2.13 [2.19]	2.09 [1.95]	1.84 [1.82]	2.17 [2.15]	7.96 [7.86]
Cronbach's alpha			.66 [.71]	.84 [.85]	.78 [.74]	.67 [.65]	.86 [.86]	.89 [.88]
<i>r</i> with WDQ			.81 [.78]	.77 [.78]	.82 [.81]	.74 [.72]	.65 [.67]	.97 [.97]

Note. Sample 1 with $n = 540$; sample 2 with $n = 540$ [in square brackets]. Items = see Table 1. D1-SF to D5-SF = WDQ-SF domain subscales. WDQ = WDQ full version.

All correlations are significant, $p < .001$.

Table 3

WDQ-SF: Confirmatory Factor Analysis--Factor Loadings and Uniquenesses

WDQ items	Domain	Factor loading	Uniqueness
19	Relationships	.83 (.04)	.31 (.03)
21	Relationships	.67 (.04)	.55 (.04)
10	Lack of Confidence	.85 (.04)	.28 (.03)
18	Lack of Confidence	.88 (.04)	.22 (.03)
5	Aimless Future	.73 (.04)	.47 (.04)
22	Aimless Future	.83 (.04)	.31 (.04)
6	Work	.75 (.05)	.43 (.05)
17	Work	.64 (.05)	.59 (.05)
9	Financial	.94 (.04)	.12 (.05)
11	Financial	.81 (.04)	.35 (.04)

Note. Sample 2 with $n = 540$. For WDQ items, see Table 1. Values in parentheses are standard errors.

Table 4

WDQ-SF: Confirmatory Factor Analysis--Factor Intercorrelations

Factor	WDQ items	1	2	3	4
1. Relationships	19, 21	--			
2. Lack of Confidence	10, 18	.92 (.02)	--		
3. Aimless Future	5, 22	.86 (.03)	.72 (.03)	--	
4. Work	6, 17	.63 (.05)	.61 (.04)	.76 (.04)	--
5. Financial	9, 11	.46 (.04)	.46 (.04)	.55 (.04)	.50 (.05)

Note. Sample 2 with $n = 540$. For WDQ items, see Table 1. Values in parentheses are standard errors.

Appendix: The Worry Domains Questionnaire-Short Form (WDQ-SF)

Items

I worry ...

1. that I'll never achieve my ambitions
2. that I will not keep my workload up to date
3. that I am not able to afford things
4. that I feel insecure
5. that I can't afford to pay bills
6. that I leave work unfinished
7. that I lack confidence
8. that I am unattractive
9. that I will lose close friends
10. that I haven't achieved much

Note

Items are taken from Tallis, Davey, and Bond (1994, p. 288). Instruction = "Please tick an appropriate box to show how much you WORRY about the following." Answer categories = *Not at all* (0), *A little* (1), *Moderately* (2), *Quite a bit* (3), *Extremely* (4). Domain subscales: D1-SF = Relationships (Items 8 and 9), D2-SF = Lack of Confidence (Items 4 and 7), D3-SF = Aimless Future (Items 1 and 10), D4-SF = Work (Items 2 and 6), D5-SF = Financial (Items 3 and 5).