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Confirmatory factor analysis of the Penn State Worry Questionnaire

David M. Fresco, Richard G. Heimberg *, Douglas S. Mennin, Cynthia L. Turk

Adult Anxiety Clinic of Temple University, Department of Psychology, Weiss Hall, 1701 North 13th Street, Philadelphia, PA 19122-6085, USA

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Abstract

Worry is often assessed with the 16-item Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990. *Behaviour Research and Therapy*, *28*, 487–495), but the factor structure of the PSWQ is not well articulated. Three factor analyses of the PSWQ have been conducted, with two (Brown, Antony, & Barlow, 1992. *Behaviour Research and Therapy*, 30, 33–37; van Rijsoort, Emmelkamp, & Vervaeke, 1999) retaining a unifactorial solution and one (Stöber, 1995) retaining a two-factor solution. We sought to determine the relative strengths of these solutions. Seven hundred eighty-eight undergraduates completed the PSWQ and measures of depression and anxiety. Confirmatory factor analyses indicated that the two-factor solution provided a better fit to the data. There was also evidence for a higher order worry factor. Multiple regression analyses revealed that factor 1 (Worry Engagement) explained the majority of the variance in the symptom measures. The higher order worry factor also accounted for variance in some measures. Compared to the PSWQ total score, Worry Engagement demonstrated slightly higher internal consistency and significantly stronger correlations with most measures of depression and anxiety. Factor 2 (Absence of Worry) demonstrated moderate negative correlations with Worry Engagement and the PSWQ Total Score but only modest correlations with depression and anxiety.

Keywords: Worry; Assessment; Confirmatory Factor Analysis; Self-report; Anxiety; Depression

1. Factor structure of the Penn State Worry Questionnaire

Worry is a universal experience, but a clear understanding of this phenomenon remains elusive. Throughout the first half of the twentieth century, few psychological investigators wrote about

* Corresponding author. Tel.: +1-215-204-1575; fax: +1-215-204-5184.
E-mail address: rheimber@nimbus.ocis.temple.edu (R.G. Heimberg).

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the nature of worry. Worry first received empirical attention in the test anxiety literature. Liebert and Morris (1967; Morris & Liebert, 1970) discovered that responses on a test anxiety questionnaire were composed of two distinct factors, which they labeled Worry and Emotionality. The Worry factor represented self-evaluative negative cognition about test performance. The Emotionality Factor appeared to focus on awareness of feeling states and physiological activity. Worry was repeatedly found to have a stronger relationship than Emotionality to actual test performance, task-generated attentional interference, and grade point average (see Deffenbacher, 1980, for a review).

Beginning in the early 1980s, research devoted to worry in its own right emerged. In examining the psychological aspects of insomnia, Borkovec (1979) noted that many individuals who had difficulty sleeping were engaged in excessive, negatively-valenced cognitive activity that could best be described as worrying. Borkovec, Robinson, Prusinsky, and DuPree (1983) advanced a definition that describes worry as:

> …a chain of thoughts and images, negatively affect-laden and relatively uncontrollable; it represents an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes; consequently, worry relates closely to the fear process (p. 10)

Borkovec (1994) later extended this definition by stating that worry involves predominantly thought activity rather than imagery.

Determining the nature and function of worry is an important goal if we are to understand the human experience of anxiety. Worry is associated with all of the anxiety disorders (Barlow, 1988) and is the central feature of generalized anxiety disorder (GAD). Worry also appears to be a common phenomenon in depression (Molina, Borkovec, Peasley, & Person, 1998; Starcevic, 1995). Borkovec, Alcaine, and Behar (2001) have suggested that the most significant function of worry is probably in its use as an internal avoidance response. Specifically, worry allows individuals to process emotional topics at an abstract, conceptual level and, consequently, to avoid aversive images, autonomic arousal, and intense negative emotions in the short-run. In this way, worry is negatively reinforced. Consequently, worry is likely to prevent full access to fear structures in memory and may inhibit emotional processing necessary for anxiety reduction.

Given the importance of the construct of worry, its reliable and valid assessment is essential. Probably the most widely utilized measure of worry is the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990), a 16-item inventory designed to capture the generality, excessiveness, and uncontrollability dimensions of pathological worry. Each item is rated on a 1 (“not at all typical of me”) to 5 (“very typical of me”) Likert-type scale. Eleven items are worded in a way such that higher numbers indicate more worry (e.g., “My worries overwhelm me”; “I worry all the time”). Five items ask the person to endorse the lack of problems with worry (e.g., “I find it easy to dismiss worrisome thoughts”; “I never worry about anything”) and are reverse-scored prior to computing the total score. In student samples, the PSWQ has demonstrated good internal consistency and good test–retest reliability over intervals as long as 8–10 weeks and exhibited moderate to strong correlations with measures of anxiety and depression (Meyer et al., 1990). The PSWQ has also demonstrated strong sensitivity and specificity in dis-

criminating individuals with GAD from those without GAD (Fresco, Mennin, Heimberg, & Turk, 2000b).

Three studies, using exploratory factor analysis, have examined the factor structure of the 16-item PSWQ. Brown, Antony, and Barlow (1992) reported a unifactorial solution for the PSWQ scores of 436 patients with anxiety disorders. Varimax rotation yielded two factors with eigenvalues greater than 1.0 (Factor 1=8.17; Factor 2=1.23) accounting for 51.1 and 7.7% of the variance, respectively. However, Brown et al. (1992) chose the unifactorial solution based on an examination of a scree plot and the strong internal consistency of the 16-item PSWQ (α=0.93). van Rijsoort et al. (1999) also submitted the PSWQ scores of a community sample of 161 Dutch citizens to exploratory factor analysis. Scree plot examination suggested that a two-factor solution should be retained:

1. "General worry" (the 11 positively worded items), which accounted for 39.6% of the variance and had an internal consistency of 0.92; and
2. "Not-worry" (the five reverse-scored items), which accounted for 13.6% of the variance and had an internal consistency of 0.62. Eigenvalues for the two-factor solution were not reported in this paper.

However, van Rijsoort et al. (1999) decided to retain a 16-item unifactorial solution because of the widespread acceptance of the 16-item PSWQ and the relatively robust internal consistency of the 16-item PSWQ in their sample (α=0.88). In contrast, Stöber (1995), in an analysis of the scores of 224 German college students and members of the community who completed a German translation of the PSWQ, retained a two-factor solution identical to the one reported by van Rijsoort et al. (1999). Stöber's (1995) 11-item factor had an eigenvalue of 5.83 and accounted for 36.5% of the variance. His second factor had an eigenvalue of 1.71 and accounted for 10.7% of the variance. Thus, the three exploratory factor analyses revealed very similar solutions even though the investigators made different judgments about the retention of factors. Although two of the studies (Brown et al., 1992; van Rijsoort et al., 1999) elected to retain a 16-item unifactorial solution, an argument could be made for the appropriateness of the two-factor solution. Thus, the current study was undertaken with two primary goals in mind. First, using confirmatory factor analytic techniques, we sought to test the relative strengths of the one-factor versus two-factor structures of the PSWQ. Second, if more support was found for the two-factor model, we wished to assess the relationship of the PSWQ factor scores to measures of anxiety and depression symptoms.

2. Method

2.1. Participants

Seven hundred eighty-eight undergraduate students participated in return for partial course credit in an introductory psychology class. Women comprised the majority of the sample (67.1%). The racial composition of the sample was 39.5% African–American, 36.2% Caucasian, 12.5% Asian, 3.1% Latino/Hispanic, 0.3% Middle Eastern, 0.2% Native American, and 8.2% mixed

racial heritage. The average age of participants was 20.4 years (SD=4.2 years). This sample was drawn from a previous study of the relationship between worry and rumination (Fresco, Frankel, Mennin, Turk, & Heimberg, 2000a), but none of the analyses presented in this paper have been previously reported.

2.2. Measures

The *Penn State Worry Questionnaire* (Meyer et al., 1990) is a 16-item inventory designed to assess pathological worry and to capture the generality, excessiveness, and uncontrollability characteristic of pathological worry.

The *Beck Depression Inventory* (BDI; Beck, Rush, Shaw, & Emery, 1979) is a 21-item instrument that assesses the symptoms of depression including the affective, cognitive, behavioral, somatic, and motivational components as well as suicidal wishes. Beck, Steer, and Garbin (1988) conducted a meta-analytic study of the BDI and reported the mean coefficient alpha across 25 years of studies to be 0.86 in psychiatric populations and 0.81 in non-psychiatric populations.

The *Mood and Anxiety Symptom Questionnaire — Short Form* (MASQ; Watson & Clark, 1991) is a 62-item measure assessing symptoms that commonly occur in the mood and anxiety disorders. The MASQ Short Form is comprised of four subscales. The General Distress: Anxious Symptoms subscale (GDA) includes 11 items that are indicators of anxious mood but do not provide strong differentiation from depressed mood (e.g., “Felt nervous”; “Had an upset stomach”). The General Distress: Depressive Symptoms subscale (GDD) contains 12 items that are indicators of depressed mood but do not provide strong differentiation from anxious mood (e.g., “Felt sad”; “Felt like crying”). The Anxious Arousal subscale (AA) is comprised of 17 items assessing anxiety-specific symptoms of somatic tension and hyperarousal (e.g., “Startled easily”; “Was trembling or shaking”). The Anhedonic Depression subscale (AD) consists of 22 items assessing symptoms relatively specific to depression such as loss of pleasure in usual activities, disinterest, low energy (e.g., “ Felt like nothing was very enjoyable”) and reverse-keyed items assessing positive emotional experiences (e.g., “Felt cheerful”). Each item is rated on a 1 (“not at all”) to 5 (“extremely”) Likert-type scale. Factor analytic examinations of the MASQ with student, community, and patient samples have consistently yielded three-factor solutions (General Distress, Somatic Anxiety, AD) that broadly correspond to the instrument’s conceptually derived subscales (Watson et al., 1995). Using the same samples, Watson et al. (1995) demonstrated that the AA and AD subscales differentiated anxiety and depression better than the General Distress subscales while maintaining good convergent validity.

2.3. Procedure

Introductory psychology students were given a battery of self-report questionnaires that included the PSWQ, BDI, and MASQ. The battery was taken home to complete and returned the following week. Participants who completed the packet received credit towards fulfillment of course requirements. This procedure was followed for two successive semesters (Semester 1, n=533; Semester 2, n=255). The return rate of packets was 76%. The subsamples for each semester did not differ on sex, race, or age. Thus, all analyses are based on the entire sample.

3. Results

3.1. Confirmatory factor analysis

Using the structural equation modeling software program AMOS 4 (Arbuckle, 1999) a structural model with all 16 PSWQ items as indicators of a single latent factor was tested. This model yielded a chi-square statistic that was highly significant [$\chi^2(104)=683.28$, $p<0.0001$], indicating a relatively poor fit.

The χ^2 statistic is highly sensitive to large sample sizes and, hence, may overstate the lack of fit of a structural model (Bollen, 1989). Consequently, a number of additional fit indices have been developed that attempt to account for problems associated with the χ^2. Hu and Bentler (1999) recently provided a test of the "rules of thumb" cutoffs (p. 27) for the most commonly used fit indices. They also advocated a two-index strategy to assess the adequacy of fit of structural models. Hu and Bentler (1999) suggest that a cutoff of 0.95 or above on either the Tucker Lewis Index (TLI; Tucker & Lewis, 1973) or the Comparative Fit Index (CFI; Bentler, 1990) combined with either a root mean squared error of approximation (RMSEA) "close to 0.06" (p. 1) or standardized root mean squared residual (SRMR) "close to 0.08" (p. 1) provides a good combination of fit indices to conclude an adequate or better fit of a structural model. According to the recommendations of Hu and Bentler (1999), the unifactorial solution demonstrated an inadequate fit to the observed data (CFI=0.912; TLI=0.898; RMSEA=0.086; SRMR=0.079).

The next model tested was the two-factor solution, with 11 positively worded items and five negatively worded items representing each of the respective indicators. This model also had a significant chi-square [$\chi^2(103)=428.90$, $p<0.0001$]. However, the two-factor model satisfied the Hu and Bentler (1999) recommendations (CFI=0.950; TLI=0.942; RMSEA=0.065; SRMR=0.054), indicating a good fit to the observed data. Loadings on Factor 1 ranged from 0.557 to 0.871. Loadings on Factor 2 ranged from 0.433 to 0.703.

The one- and two-factor models are nested models. A test of the difference in these nested models yielded a significantly better fit for the two-factor solution [$\chi^2(1)=254.39$, $p<0.0001$].

Often, when factor scores are highly correlated, a higher-order factor may be present. In the current study, the 11-item factor 1 (which we labeled Worry Engagement) and the five-item factor 2 (which we labeled Absence of Worry) were correlated strongly with one another ($r=-0.69$). However, with only two lower-order factors, a structural model testing for the presence of a higher-order model could not be fit because such a model cannot be identified. One model that could be fit was a two-factor model in which Worry Engagement and Absence of Worry were orthogonal. If this model demonstrated a superior fit to the oblique (correlated) two-factor model, then the presence of a higher order factor would be unlikely. Thus, we fit a third model in which the correlation between Worry Engagement and Absence of Worry was constrained to zero. The third model provided an inadequate fit to the data [$\chi^2(104)=728.51$, $p<0.0001$, CFI=0.905; TLI=0.890; RMSEA=0.089; SRMR=0.282] and was significantly poorer than the two-factor model [$\chi^2(1)=299.62$, $p<0.0001$].

3.2. Higher order model

A Schmid–Leiman transformation (Loehlin, 1992) was performed to examine the variance of the items accounted for by the higher-order factor as well as the unique variance accounted for

by the lower-order factors after the influence of the higher-order factor had been partialled out. To obtain item loadings on both the lower-order factors, a principal components analysis with varimax rotation was performed. These loadings were used in the subsequent Schmid–Leiman transformation. Because a higher-order structural model could not be fit, the square root of the correlation between the two lower-order factors was used as their loading on the higher-order factor (Gorsuch, 1983). To determine an item's loading on the higher-order factor, the product of that item's loading on each of the two lower-order factors and the lower-order factor's loading on the higher-order factor was computed and these products were then summed. For example, the loading of PSWQ Item 1 on Worry Engagement was multiplied by the loading of Worry Engagement onto the higher-order factor. This product was then added to the product of PSWQ Item 1 on the Absence of Worry factor and the loading of Absence of Worry onto the higher-order factor. To obtain the residual loading of an item on a lower-order factor, its untransformed loading was multiplied by the square root of one minus its squared loading on the higher-order factor. Again using PSWQ Item 1 as an example, the value obtained as a loading on the higher-order factor was squared and then subtracted from 1. The square root of this difference score was then multiplied by the untransformed lower-order factor loadings to derive the residualized loadings. Table 1 presents the loadings on the higher-order General Worry factor as well as the

Table 1
Factor loadings for the higher order factor model of the PSWQ: one higher order factor and two residualized lower order factors

PSWQ item	General worry (higher order factor)	Worry engagement (residualized)	Absence of worry (residualized)
PSWQ7 I am always worrying about something	0.939	0.281	0.104
PSWQ15 I worry all the time	0.889	0.371	0.112
PSWQ14 Once I start worrying, I can't stop	0.846	0.430	0.106
PSWQ13 I notice that I have been worrying about things	0.908	0.313	0.138
PSWQ4 Many situations make me worry	0.916	0.291	0.146
PSWQ12 I've been a worrier all my life	0.754	0.466	0.122
PSWQ2 My worries overwhelm me	0.831	0.373	0.176
PSWQ5 I know I shouldn't worry about things, but I just can't help it	0.899	0.292	0.176
PSWQ9 As soon as I finish one task I start to worry about everything else I have to do	0.707	0.452	0.142
PSWQ6 When I am under pressure, I worry a lot	0.821	0.328	0.228
PSWQ16 I worry about projects until they are all done	0.618	0.411	0.166
PSWQ8 I find it easy to dismiss worrisome thoughts	−0.761	−0.185	−0.401
PSWQ10 I never worry about anything	−0.703	−0.167	−0.427
PSWQ3 I don't tend to worry about things	−0.680	−0.165	−0.427
PSWQ1 If I don't have enough time to do everything, I don't worry about it	−0.467	−0.077	−0.414
PSWQ11 When there is nothing more I can do about a concern, I don't worry about it any more	−0.482	−0.164	−0.337

residualized loadings on Worry Engagement and Absence of Worry. The presence of a general, higher-order factor was supported by the strong magnitude of the item loadings.

3.3. General and specific components of worry

Using a multiple regression strategy proposed by Watson and Clark (1992), the simultaneous association of General Worry and specific components of worry (Worry Engagement or Absence of Worry) to measures of depression and anxiety symptoms was examined. We ran three sets of five regression analyses. In each case, the dependent variable was a MASQ subscale or the BDI total score.

In the first set of analyses, worry engagement and absence of worry were entered simultaneously. This model's R^2 statistic represents a measure of the total variance explained by the combination of the lower order factors and the higher order factor. In the next set of analyses, worry engagement and absence of worry were entered in separate steps. In these analyses, the change in R^2 from step 1 to step 2 represents the unique variance associated with the residualized absence of worry factor. Finally, in the third set of analyses, absence of worry was entered first followed by worry engagement to obtain the unique variance associated by the residualized worry engagement factor.

Once the respective R^2 statistics were obtained, the two R^2 statistics associated with the residualized factors were summed and subtracted from the R^2 from the simultaneous regression model to arrive at the unique variance associated with the higher-order factor. The proportion of variance associated with the higher-order factor is the ratio of this difference to the R^2 from the simultaneous regression models.

As can be seen in Table 2, the proportion of variance that was uniquely associated with the higher order worry factor ranged from 00.0% (MASQ-AA) to 37.5% (MASQ–AD). Worry Engagement accounted for the largest amount of variance with proportions ranging from 62.5% (MASQ–AD) to 90.9% (MASQ–AA). These findings indicate that consideration of lower-order factors, particularly Worry Engagement, is important in understanding the association of worry to depression and anxiety symptoms.

Table 2
The amount of variance explained by the hierarchical structure of PSWQ components in total and separately[a]

	Higher order model total variance explained (R^2)	Worry engagement unique variance (ΔR^2) and proportion (%)	Absence of worry unique variance (ΔR^2) and proportion (%)	Higher order unique variance (R^2) and proportion (%)
MASQ–GDA	0.23	0.19 (82.6%)	0.01 (4.3%)	0.03 (13.0%)
MASQ–GDD	0.28	0.21 (75.0%)	0.01 (3.5%)	0.06 (21.4%)
MASQ–AA	0.11	0.10 (90.9%)	0.01 (9.1%)	0.00 (00.0%)
MASQ–AD	0.16	0.10 (62.5%)	0.00 (00.0%)	0.06 (37.5%)
BDI	0.24	0.18 (75.0%)	0.00 (00.0%)	0.06 (25.0%)

[a] Note: MASQ–GDA, Mood and Anxiety Symptom Questionnaire — General Distress Anxiety Scale; MASQ–AA, Mood and Anxiety Symptom Questionnaire — Anxious Arousal Scale; MASQ–GDD, Mood and Anxiety Symptom Questionnaire — General Distress Depression Scale; MASQ–AD, Mood and Anxiety Symptom Questionnaire — Anhedonic Depression Scale; BDI, Beck Depression Inventory; percentages may not sum to 100% due to rounding.

3.4. Internal consistencies

Having arrived at a hierarchical model with one general worry factor and two lower order specific worry factors, Cronbach's (1951) coefficient alpha was computed for the factor scores. Worry Engagement had an alpha of 0.94, while Absence of Worry had an alpha of 0.70. The PSWQ Total Score had an alpha of 0.90.

3.5. Descriptive statistics

Sample means and standard deviations for all measures are presented in Table 3. Levels of depression and anxiety symptoms, as assessed by the BDI and MASQ suggest that, on average, participants were generally high functioning and similar to other unselected college samples (Joiner, Catanzaro, & Laurent, 1996; Watson et al., 1995). Levels of worry were also similar to those reported in other published studies (Blagden & Craske, 1996; Meyer et al., 1990)

3.6. Zero-order correlations

As noted above, Worry Engagement demonstrated a strong zero-order correlation with Absence of Worry ($r=-0.69$). It also was strongly correlated with the PSWQ Total Score ($r=0.97$). Absence of Worry was strongly negatively correlated with the PSWQ Total Score ($r=-0.67$). Table 4 presents zero order correlations among the PSWQ Total Score, Worry Engagement, Absence of Worry, and the measures of depression and anxiety. Both the PSWQ Total Score and Worry Engagement were strongly and positively correlated with measures of anxiety and depression. Interestingly, tests of dependent correlations (Bruning & Kintz, 1987) revealed that Worry Engagement was more strongly correlated than the PSWQ Total Score with all but one measure of depression or anxiety (MASQ–Anhedonic Depression). The magnitude of the differences was generally in the range of a small effect as measured by Cohen's (1977) *d* statistic.

Absence of Worry was modestly and negatively correlated with measures of depression and anxiety. In all cases, the magnitude of the relationship between Absence of Worry and measures of depression and anxiety was significantly smaller than the relationship of PSWQ Total Score

Table 3
Sample means and standard deviations for all self-report measures[a]

	Mean	SD
PSWQ — Total Score	48.39	13.87
PSWQ — Worry Engagement	30.92	10.89
PSWQ — Absence of Worry	7.42	4.00
MASQ — General Distress Anxiety	20.08	7.14
MASQ — Anxious Arousal	24.95	8.15
MASQ — General Distress Depression	22.51	9.11
MASQ — Anhedonic Depression	53.51	11.21
Beck Depression Inventory	7.38	6.38

[a] Note: MASQ, Mood and Anxiety Symptom Questionnaire.

Table 4
Differences in dependent correlations between PSWQ Total, Worry Engagement and Absence of Worry[a]

	PSWQ Total (*a*)	Worry Engagement (*b*)	Absence of Worry (*c*)	Difference *a* vs *b*		Difference *a* vs *c*		Difference *b* vs *c*	
				t(785)	*d*	*t*(785)	*d*	*t*(785)	*d*
MASQ–GDA	0.43**	0.46**	−0.16**	3.98**	0.27	10.58**	0.75	9.47**	0.67
MASQ–AA	0.27**	0.30**	−0.05	3.63**	0.26	8.07**	0.57	7.37**	0.52
MASQ–GDD	0.50**	0.53**	−0.23**	4.08*	0.29	10.97**	0.78	9.89**	0.70
MASQ–AD	0.39**	0.39**	−0.19**	0.00	0.00	7.58**	0.54	6.06**	0.43
BDI	0.45**	0.48**	−0.20**	3.95**	0.28	9.83**	0.70	8.93**	0.63

[a] Note. **$p<0.001$ (two-tailed), *$p<0.01$ (two-tailed); PSWQ Total, Sum of 16-item PSWQ; MASQ–GDA, Mood and Anxiety Symptom Questionnaire — General Distress Anxiety Scale; MASQ–AA, Mood and Anxiety Symptom Questionnaire — Anxious Arousal Scale; MASQ–GDD, Mood and Anxiety Symptom Questionnaire — General Distress Depression Scale; MASQ–AD, Mood and Anxiety Symptom Questionnaire — Anhedonic Depression Scale; BDI, Beck Depression Inventory; *d*, Cohen's (1977) *d*, effect size conventions, small=0.20, medium=0.50, large=0.80.

and Worry Engagement to these measures. The magnitude of the difference, in general, was in the range of a medium effect.

4. Discussion

Findings from the present study are fourfold. First, confirmatory factor analysis indicated the superiority of a two-factor solution compared to a unifactorial solution. The 11 positively-coded items formed a highly internally consistent factor that separated from the five reversed-scored items. In fact, the Cronbach's alpha for the 11-item Worry Engagement Scale (α=0.94) represented a slight improvement over that of the PSWQ Total Score (α=0.90).

Second, the factor structure also indicated the presence of a higher order general worry factor. Examination of the association of the lower order factors and the higher order factor to measures of depression and anxiety symptoms indicated that the lower order factor of Worry Engagement made the largest unique contribution to the prediction of symptom measures.

Third, although highly correlated with the PSWQ Total Score, Worry Engagement demonstrated significantly stronger relationships to most measures of depression and anxiety. However, the magnitude of the difference was small and may not represent a clinically meaningful difference. Thus, using the 11-item Worry Engagement Scale seems to be no worse and may be superior to using 16-item Total Score to measure the component of worry most highly associated with anxiety and depression. The savings of five items may also benefit studies with a heavy assessment load.

Fourth, the Absence of Worry scale demonstrated modest negative relationships to measures of depression and anxiety that were of smaller magnitude than that of the positive correlations between Worry Engagement and depression and anxiety. Although it is customary in scale construction to include negatively worded items, as Meyer et al. (1990, p. 488) say "to reduce the effects of acquiescence", it would seem that these items do not measure a component of worry that is associated with anxiety and depression. Perhaps Absence of Worry represents a measure

of social desirability. However, future research is required before this speculation can be addressed. Still, it would seem that the five items comprising the Absence of Worry factor do not contribute directly to the essence of pathological worry that is strongly associated with anxiety and depression.

The most significant limitation of the current study is that the sample consisted of relatively high functioning college students. Meyer et al. (1990) found different relationships between the PSWQ and measures of depression and anxiety in student versus patient samples. The PSWQ scores of patient samples tended to have smaller correlations with measures of depression and anxiety compared to the correlations in college student samples. Thus, broader generalization of the current findings must await replication in patient samples. Similarly, all of the symptom measures used in the current study were self-report and provided continuous indices of depression and anxiety. Future research would benefit from the inclusion of clinician-rated measures of depression and anxiety symptoms as well as structured diagnostic interviews to see if the two factors of the PSWQ demonstrate similarly meaningful relationships to the mood and anxiety disorders.

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