

Multidimensionality and Bipolarity of a Spanish Version of Warr's (1990) Well-Being Measures

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ABSTRACT. The validity and reliability of the Spanish version of the 2 scales measuring work-related well-being proposed by P. Warr (1990; Anxiety–Contentment and Depression–Enthusiasm) were examined in a cross-sectional questionnaire study among 299 Spanish factory employees. Two methods suggested by Warr (1990) to control the response bias (acquiescent response set) were used. The 1st method involved separate analyses for the 6 positive and 6 negative items that make up the 2 scales. The 2nd was a series of 4 principal component analyses with oblique rotation on the estimated response set controlled in partial correlation between each item. The results support the existence of these 2 independent scales for measuring work-related psychological well-being as hypothesised by Warr (1990). However, 2 main problems appear: the cross-loading of the items contented and cheerful and the fact that only 1 factor appears in the pre-rotated solution. Possible explanations for these results are discussed.

Key words: Anxiety–Contentment, Depression–Enthusiasm, Spanish version, well-being

THE STUDY OF PSYCHOLOGICAL WELL-BEING has been based on the assumption of its multidimensionality and bipolarity since the beginning of the 1940s. Following the tradition started by Russell (1980), Warr (1987, 1990) hypothesized a multidimensional model of work-related psychological well-being in which well-being is represented by two orthogonal dimensions (pleasure and arousal) but is measured by three dimensions: pleasure, anxiety–contentment and depression–enthusiasm. Warr (1990) proposed two scales to measure these last two dimensions, as he suggested that the dimension of pleasure had already been successfully measured in the literature by the construct of job satisfaction.

Taking into account the two new scales proposed by Warr, some researchers have tried, on the one hand, to validate the bidimensionality and bipolarity of the

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two proposed measures of work-related well-being (Daniels, Brough, Guppy, Peters-Bean, & Weatherstone, 1997; Daniels & Guppy, 1994; Sevastos, Smith, & Cordery, 1992; Warr, 1990) and, on the other hand, to identify the adjectives that best measure every proposed dimension (e.g., Daniels et al., 1997; Sevastos et al., 1992). Although most of these studies confirmed the bidimensionality and bipolarity of these two scales (Daniels & Guppy, 1994; Sevastos et al., 1992; Warr, 1990), there have been some problems in identifying the adjectives that best measure each dimension. Most of the problems were related to the adjective *contented*, on the Anxiety–Contentment scale, because it seems to present cross-loading with the Depression–Enthusiasm scale (e.g., Sevastos et al., 1992, and Warr, 1990). This problem seems also to be present in studies in which the original scales have been translated into a different language (e.g., Schalk, Keunen, & Meijer, 1995, in Dutch).

From our point of view, it is important to validate the measures of work-related well-being in different languages to justify its generalization. Thus, our aim in the present study was to test the validity and reliability of the two scales proposed by Warr (1990) in its Spanish version (Lloret & Tomás, 1994).

Method

Sample

Data were gathered from 299 white- and blue-collar employees from 12 factories in the ceramic sector of Castellón (in the eastern part of Spain). The average age of the sample was 32.94 years ($SD = 8.49$), and 67% were men. The education level varied; 50.12% had completed elementary school; 33.8% had completed high school or had a professional degree attained by studying some course parallel to high school; 16.08% were university graduates.

Procedure

We administered a standardized questionnaire between May 1996 and December 1997. We forwarded the questionnaires to the Human Resources Department in each factory, and they distributed the questionnaires in envelopes. A cover letter explained the purpose of the study, that participation was voluntary, and that confidentiality of answers was guaranteed. Participants could choose to mail the completed questionnaires to their human resource manager or directly to our research team.

Instruments

The two measures of anxiety–contentment and depression–enthusiasm were tapped using the two scales of the same name developed by Warr (1990). High

scores on these scales are held to represent positive aspects of work (contentment and enthusiasm); lower scores indicate increasing levels of anxiety and depression with the work environment. Respondents were asked to think of the past few weeks and indicate the extent to which they felt tense (*tenso*), uneasy (*incómodo*), worried (*preocupado*), calm (*tranquilo*), contented (*contento*), relaxed (*relajado*), depressed (*deprimido*), gloomy (*pesimista*), miserable (*desgraciado*), cheerful (*alegre*), enthusiastic (*entusiasmado*), and optimistic (*optimista*). Scores ranged from *never* (1) to *all the time* (6).

Results

The mean score on the Anxiety–Contentment scale was 4.06 ($SD = 0.89$), and the mean score on the Depression–Enthusiasm scale was 4.65 ($SD = 0.78$). Alpha coefficients of reliability were .86 for Anxiety–Contentment and .77 for Depression–Enthusiasm. The correlation between scales was .70. The magnitude of this interscale correlation was comparable to those reported by Warr (1990), Sevastos et al. (1992), and Daniels and Guppy (1994).

To test the factor structure of the two scales, we followed the two methods suggested by Warr (1990) to control the response bias (acquiescent response set). The first method involved separate analyses for the six positive and the six negative items making up the two scales. Four principal component analyses were carried out separately for positive and negative items in the job-related scales. Each varimax-rotated two-factor solution contained distinct three-item components representing quadrants above and below the horizontal axis of pleasure, supporting the structure proposed by Warr (1987, 1990) in the pleasure/arousal model. An exception was contented (*contento*), which showed a cross-loading of .77 with the scale Depression–Enthusiasm (see Table 1).

The second way to examine the structure of the job-related well-being items without possible interference from differential acquiescent response set for positive and negative items was proposed by Lorr, Shi, and Youniss (1989). Following this method (also used by Daniels & Guppy, 1994; Sevastos et al., 1992; Warr, 1990), we estimated response set as the total score across all items without any reverse scoring, and this was controlled in partial correlations between each item. We carried out principal component analyses with varimax (Warr, 1990) and oblimin (Daniels & Guppy, 1994) oblique rotation on the matrix of these partial correlations. As many of the items were significantly positively skewed, they had been transformed in log10 (Norusis, 1988) to avoid hampering the data matrix. The Meyer-Olkin test of sampling adequacy came to 0.88 for this analysis; therefore, the data were suitable for a principal component analysis (Norusis, 1988).

Prior to the rotations, the analysis extracted two factors with eigenvalues greater than 1. However, all the items had a greater loading on the first factor (all the items loaded above .61; see Table 2). After rotation, the pattern matrix indicated that each item loaded on its hypothesized factor with loadings that ranged

TABLE 1
Varimax-Rotated Factor Loading Greater Than .40,
From Separate Principal Components Analyses for the
Six Positive and the Six Negative Adjectives,
Controlling for Response Set, With the Scales of
Anxiety-Contentment and Depression-Enthusiasm

Item	Factor			
	1	2	3	4
Tense	.85			
Uneasy	.74			
Worried	.82			
Depressed	.49	.64		
Gloomy		.74		
Miserable		.86		
Calm			.86	
Contented			.42	.77
Relaxed			.86	
Cheerful				.76
Enthusiastic				.86
Optimistic				.76

TABLE 2
Pre-Rotated Factor Loadings Greater Than .40
for the Scales of Anxiety-Contentment and
Depression-Enthusiasm

Item	Factor	
	1	2
Tense	.71	.45
Uncasy	.73	
Worried	.72	
Calm	-.65	
Contented	-.76	
Relaxed	-.73	
Depressed	.75	
Gloomy	.66	
Miserable	.61	-.45
Cheerful	-.74	
Enthusiastic	-.61	
Optimistic	-.53	.52

TABLE 3
Varimax-Rotated Factor Loadings Greater Than .40,
From Partial Correlations Between Affective Well-Being
Items, Controlling for Response Set

Item	Factor	
	1	2
Tense	.83	
Uneasy	.65	
Worried	.80	
Calm	-.65	
Contented	-.59	-.47
Relaxed	-.77	
Depressed		.70
Gloomy		.71
Miserable		.73
Cheerful	-.51	-.53
Enthusiastic		-.52
Optimistic		-.74
Eigenvalues without rotation	5.71	1.26
Percentage of explained variance	47.6	10.5

from $-.53$ to $.83$. Cross-loading of the items *contented* and *cheerful* presented a quite high load in both factors. Results of this varimax rotated solution are shown in Table 3. The oblimin solution presented very similar results.

Discussion

The results support a three-dimensional model of the work-related psychological well-being measurement as hypothesized by Warr (1987, 1990) in its Spanish version, although some considerations in relation to the items *contented* and *cheerful* should be addressed. The adjective *contented* has already shown cross-loadings in previous studies in the English language (Sevastos et al., 1992; Warr, 1990) and in other non-English languages (Schalk et al., 1995). In Spanish, this could be explained by the almost indistinguishability of these two adjectives (*contento-alegre*) is almost indistinguishable for Spanish speakers. One possible solution could be changing the adjective *contented* (*contento*) to comfortable (*cómodo*), as Warr did in the new versions of the instrument (Warr, 1994, 1996, 1998).

Finally, and following the results of the Daniels and Guppy (1994) study, the facts that only one factor appears in the pre-rotated solution and that the eigenvalue and the explained variance are always much bigger in the first factor could

lead us to consider the possibility of only one general factor of work-related psychological well-being with two (or three) subsidiary factors.

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