A CONSTRUCT VALIDITY STUDY OF JOB INVOLVEMENT AND WORK INVOLVEMENT: A COMPARISON OF THREE METHODS

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The purpose of this study is to examine the construct validity of job involvement and work involvement, and to compare the results using three different methods of analysis. Overall the results provide support for the conceptual distinction between job involvement and work involvement, but also indicate the difficulties related to their measurement. The results of the three different methods yield quite different conclusions regarding the measurement of job involvement and work involvement.

The general concept of job involvement as a type of work-related attitude has long been of interest to behavioral scientists. Over the past two decades, the growing number of studies utilizing the concept indicates renewed interest in it. Despite these studies, our understanding of the concept is still rather incomplete and fragmented (Igbaria, Parasuraman & Badawy (1994); Paullay, Alliger, & Stone-Romero (1994). A selective literature review indicates that there are several different definitions of job involvement, including job involvement defined as: (1) the degree of importance of a job to one's self image (Dubin 1956; Lodahl & Kejner 1965), (2) the extent to which an individual is actively participating in his/her job (Allport 1947), and (3) the degree to which an individual's self esteem is affected by his/her perceived performance level (French & Kahn 1962). In addition, Rabinowitz and Hall (1977) in their review of the research literature also cite several items, e.g., morale, ego involvement, intrinsic motivation, and central life interest that have been used by researchers to describe the concept. Furthermore, a number of studies have failed to differentiate between job involvement and work involvement and the two concepts have even been used synonymously, thereby further exacerbating the ambiguities surrounding this construct.

Attempts have been made to clarify the construct of job involvement. (Blau, 1995; Brooke, Russel & Price, 1988; Hollenbeck, Connolly & Rabinowitz, 1982; Rabinowitz & hall 1977; Saleh & Hosek, 1976). It is Kanungo (1979; 1982a) who appears to be the first researcher to note this problem and has attempted to distinguish between these two constructs. In response to concerns about construct redundancy (Morrow 1983) and the dimensionality and discriminant validity of the construct (Saal 1981), Kanungo (1979;1982) used a motivational framework to redefine job involvement as a unidimensional construct and proposed that a clear distinction should be made between job involvement and work involvement. According to Kanungo (1979), job involvement should be viewed as a "generalized cognitive state of psychological identification with the job." Likewise, work involvement is viewed as a "generalized cognitive state of psychological identification with work." Involvement, therefore, in a particular job is somewhat different from an individual's involvement with work in general. Whether an individual is involved in a job is dependent upon the extent, to which the job satisfies his/her

salient needs, and hence job involvement in this respect, is more situationally determined. The individual's present perception of the need satisfying potentialities of the job is a major determinant of the state of involvement. On the job, the salience of a need in any individual may be reinforced when the person finds that through job behaviors he or she is capable of meeting the needs (Argyris 1964; Bass 1965). Work involvement, on the other hand, is a broader and more complex concept. It is considered a normative belief about value of work in one's life, and is more a function of one's past cultural conditioning and socialization (Kanungo 1982b). It is considered to be a more stable and psychological characteristic, which is not necessarily dependent on the ability of a particular job to satisfy one's salient needs (Kanungo 1979).

Evidence of this conceptual distinction has been provided by Gorn and Kanungo (1980); Kanungo (1982a); Misra, Kanungo, Von Rosenthal, and Sthuler (1985). In another study Elloy and Terpening (1992), found further support for this conceptual differentiation by exploring the causal antecedents of the two constructs. Work involvement was hypothesized to be a function of stable personality characteristics and job involvement to be a function of the job's ability to satisfy salient needs. The results provided strong support for the model and additional evidence of a theoretical distinction between job involvement and work involvement.

Construct validity studies generally attempt to answer two questions, namely (a) what is the psychological construct being measured by a test or other procedure, and (b) how well does the test or procedure measure this construct. It should be kept in mind that construct validity is not accomplished in a single study, but instead requires accumulation of evidence from different sources. The purpose of this study, therefore, is to re-examine the construct validity of job involvement and work involvement by using three commonly used methods of construct validation namely: (1) the Campbell and Fiske (1959) multitrait-multimethod approach, (2) the analysis of variance technique (Stanley 1961; Boruch and Wolins 1970; and Kavanaugh et al 1971) and (3) confirmatory factor analysis (Wertz et al 1974; Schmitt et al. 1977; Bagozzi, 1980). Previous studies (Kanungo 1982a; Elloy and Cornelius 1986) have used only the first two techniques. This study uses an additional method, namely confirmatory factor analysis, to provide a more rigorous analysis of the data. One previous study has shown that this approach can lead to different conclusions regarding construct validity (Elbert, 1979).

METHOD

Subjects

Data were collected from 180 individuals from five departments of the state government of Western Australia and one financial organization from the private sector. Of the respondents, 87.6% were from the public sector and 12.4% from the private sector. Sixty percent of the respondents had spent more than four years with their respective organizations and 60.8% were aged 30 years and under. Of the respondents, 54% were female and 42.2% were male. Their education levels ranged from high school to a graduate qualification with the majority (49.3%), having at least an undergraduate degree. Of the respondents, 37.1% were clerical, 6.5% administrative, 33.4% professional, and 19.9% technical. Fifty four percent were female and 43 percent were male.

Job Involvement

Three different measures of job involvement were used. (1) Kanungo's (1982a) 10-item questionnaire, which uses a 6-point scale. Internal consistency and test-retest reliabilities of the scale are .87 and .85 respectively (Kanungo 1982a). (2) Kanungo's (1982a) two-item graphic scale consisting of overlapping circles between a person and a desk relationship. Both items use a seven-point response format. The internal consistency and test-retest reliabilities of this scale are .87 and .85 respectively (Kanungo 1982a). (3) The final method consisted of supervisor ratings using Kanungo's graphic scale. However, the instructions for completing the scale were modified to enable the supervisor to make a more accurate assessment of the construct. The scale, as described above, consisted of two items, overlapping circle and person-desk relationship, designed to measure job involvement. The supervisor was asked to rate the job involvement of the individual employee working for him/her based on their observations of their job behavior.

Work Involvement

Three different measures of work involvement were used. (1) Kanungo's (1982a) 6-item work involvement questionnaire. The work involvement questionnaire uses a six-point scale from strongly agree to strongly disagree. The internal consistency and test-retest reliabilities are .75 and .67 respectively (Kanungo 1982a). (2) Kanungo's (1982a) two-item graphic scale consisting of overlapping circles and a person-desk relationship designed to measure work involvement. The internal consistency and test-retest reliabilities of this scale are .68 and .67 respectively (Kanungo 1982a). (3) A supervisor rating on work involvement was also obtained using Kanungo's (1982a) graphic scale. As described above, the scale consisted of two items, overlapping circle, and person-desk relationship, designed to measure work involvement with modifications to the instructions to enable the supervisor to make a more accurate assessment of the construct. The supervisor was asked to rate the work involvement of the individual working for him/her based on their observations of their job behavior. Therefore, the design of the present study results in a two trait (job involvement and work involvement) by three methods (self-report questionnaire, self-report graphical and a supervisor graphical rating) MTMM matrix.

Procedure

Data was collected during the respondent's normal work hours. A short meeting was held with groups of 10 to 20 respondents at a time, where the purpose of the study was explained. They were told to read the instructions carefully preceding each of the sections. The necessity of honest responses and the confidentiality of the information was stressed. In order to match the supervisor rating with the respondent's questionnaire, subjects were asked to write their names on the top right hand corner of the front page of the questionnaire. They were told that this was required in order to match the results of the questionnaire with other measures. The subjects were given a week to complete the questionnaire. To ensure confidentiality, respondents were asked to return the completed questionnaire, sealed in the envelope provided, to the

administrative offices in each of the respective organizations, which were then later collected by the author.

One hundred and eighty questionnaires were distributed, out of which 145 were returned, and 138 questionnaires usable. Even these 138 questionnaires contained a few missing values on some of the questionnaire items. To avoid the problems of computing correlation matrices with pairwise deletion of missing values, and to maintain as large a sample size as possible, the missing values on the questionnaire items were replaced with the average value across respondents. Across the 138 respondents and 16 scale items a total of 24 values were replaced in this manner. The number of replacements, ranged from 1 to a maximum of 7 for one of the job involvement items.

Assessment of Convergent and Discriminant Validity

Convergent and discriminant validity are both part of the overall concept of construct validity. Construct validity refers to the extent to which a measurement instrument is a valid or true reflection of the underlying construct. Convergent validity means that different measures which should theoretically be related to one another, especially measures of the same construct, as in fact related or in practice correlated with one another. Discriminant validity means that measures the theoretically should not be related, such as measures of different constructs, are in fact not highly correlated. The seminal paper in this area was that of Campbell and Fiske (1959) which proposed to measure convergent and discriminant validity in terms of examining measure of multiple traits each measured with multiple methods, the multitrait-multimethod approach. Historically, three different approached have been used to assess convergent and discriminant validity.

Campbell and Fiske

In this procedure, convergent and discriminant validity of job involvement and work involvement are examined by looking at the monotrait-heteromethod, heterotrait-monomethod, and heterotrait-heteromethod values in the multitrait-multimethod matrix proposed by Campbell and Fiske, (1959). It is expected that items measuring the same trait but using different methods (monotrait-heteromethod) should have a higher correlation than items measuring different traits using the same method (monomethod-heterotrait). The weakest associations should exist among items measuring different traits using different methods (heterotrait-heteromethod).

The Analysis of Variance Approach

This approach analyzes multitrait-multimethod data using an analysis of variance three-way classification model first suggested by Stanley (1961) and further developed by Boruch and Wolins (1970) and by Kavanaugh, MacKinney and Wolins (1971). According to this model, individual respondents are treated as random effects, and methods are treated as fixed effects. This method allows for the explicit differentiation of method and trait variability.

Confirmatory Factor Analysis

The third approach to validity utilized in this study was confirmatory factor analysis, originally proposed by Bagozzi, (1978, 1980) and Joreskog & Sorbom (1986) and refined by

Widaman (1985). This method attempts to model both trait and method variance within a structural equation model which also accounts for measurement error, i.e. less than perfectly reliable measures. Both traits and methods are explicitly represented as factors in a confirmatory factor analysis.

RESULTS

Reliabilities of the Scales

The internal consistency (Cronbach alpha) reliabilities of the three involvement scales are presented in Table 1. The reliabilities range from .77 to .85 indicating that the internal consistency reliabilities are adequate for these scales.

TABLE 1
Reliability Coefficients for Involvement Scales

Job Involvement	Reliability Coefficient
Questionnaire (J.I.Q.)	.815
Graphic (J.I.G)	.795
Supervisor (J.I.G.S.)	.779
Work Involvement	**Reliability Coefficient**
Questionnaire (W.I.Q.)	.771
Graphic (W.I.G.)	.853
Supervisor (W.I.G.S.)	.854

The Campbell and Fiske Approach

Convergent and discriminant validity of job involvement and work involvement were examined by looking at the monotrait-heteromethod, heterotrait-monomethod, and heterotrait-heteromethod values in the multitrait-multimethod matrix proposed by Campbell and Fiske, (1959). It is expected that items measuring the same trait but using different methods (monotrait-heteromethod) should have a higher correlation than items measuring different traits using the same method (monomethod-heterotrait). The smallest correlations should exist among items measuring different traits using different methods (heterotrait-heteromethod). Table 2 shows the multitrait-multimethod matrix using the three methods, i.e. questionnaire, graphic and supervisor rating (also graphic).

To assess convergent validity, the correlations in the validity diagonals (boxed correlations) should be large, and statistically significant. The average of the coefficients on the validity diagonals in Table 2 (the validity coefficient) is .45. All of the individual correlations on the validity diagonals are statistically significant ($p < .0001$). However, the correlation between the

supervisor rating on work involvement (WIGS) and the work involvement questionnaire (WIQ) (r = .1941) is quite low. The same is true about the correlation between the supervisor ratings and the work involvement graphic scale (WIG) (r = .3569), suggesting less convergence than the correlations between the graphic (JIG, WIG) and questionnaire (GIQ, WIQ) involvement scales (r = .6520 and r = .5479).

TABLE 2
Multitrait-Multimethod Matrix for Job and Work Involvement Scales

	JIQ	WIQ	JIG	WIG	JIGS	WIGS
Questionnaire						
Job Involvement (JIQ)	——					
Work Involvement (WIQ)	.5261	——				
Graphic						
Job Involvement (JIG)	.6520	.4628				
Work Involvement (WIG)	.4667	.5479	——			
Supervisor Rating			.6052	——		
Job Involvement (JIGS)	.4361	.1935	.4456	.3930	——	
Work Involvement (WIGS)	.2634	.1941	.3654	.3569	.6627	——

Validity coefficient = .4388
Correlations enclosed in boxes represent monotrait-heteromethod values (validity diagonals)

According to Campbell and Fiske, (1959), discriminant validity is established when the monotrait-heteromethod correlations (i.e., agreement between different ways of measuring the same trait) exceed the heterotrait-heteromethod correlations (i.e., agreement between different traits measured in different ways). The results indicate that the monotrait-heteromethod values (boxed correlations) are in most cases higher than the heterotrait-heteromethod values (unboxed correlations). The major exceptions to this are the correlations between supervisor ratings of work involvement and the corresponding questionnaire and graphic measures, which are quite low. The validity coefficient (average of the monotrait-heteromethod correlations) is larger than the heterotrait-heteromethod correlations in 4 out of the 6 cases and only slightly less in the remaining two instances.

A more rigorous requirement for the establishment of discriminant validity requires that the monotrait-heteromethod correlations (correlations on the validity diagonals) should exceed the heterotrait-monomethod correlations (i.e., agreement between different traits using the same method). An inspection of Table 2 indicates that this requirement is not often met. In particular, the correlations between the supervisor ratings and other similar measures are all lower than any of the heterotrait-monomethod correlations.

Overall the analysis of the multitrait-multimethod matrix provides some support for convergent validity of the two constructs but mixed evidence regarding discriminant validity. However, there are a number of problems with the Campbell and Fiske approach (Widaman, 1985). First, the Campbell and Fiske procedure is a very subjective process and does not provide for any statistical tests of significance. Although some attempts have been made to derive such tests (Humbert & Baker 1978, 1979) they have been limited in scope and practical utility. Second, the Campbell and Fiske approach does not allow for precise estimates of the trait related and method related variance in the measures. The next two techniques provide a more objective method for evaluating validity and also allow the estimation of method variance in the measurement process.

The Analysis of Variance Approach

The multitrait-multimethod matrix was further analyzed using an analysis of variance. Three-way classification model first suggested by Stanley (1961) and further developed by Boruch and Wolins (1970) and by Kavanaugh, MacKinney and Wolins (1971) was used. According to this model, individual respondents are treated as random effects, and traits and methods are treated as fixed effects. The intention of this particular analysis is to estimate three effects, namely: (1) Respondent ® effect, (or the degree to which the alternative methods and traits yield similar involvement scores or agreement within respondents). While significance is an indication of convergent validity; (2) Respondent X Trait (RXT) interaction effect, (the amount of disagreement on traits by respondents) which provides an overall estimate of discriminant validity; and (3) Respondent X Method interaction effect, which is an estimate of method bias. Convergent validity will exist if there is a significant respondent main effect. Discriminant validity will exist if there is a significant effect for the Respondent X Trait interaction. A non-significant result should exist for the method X Respondent interaction thereby indicating minimal method bias.

The results of the analysis of variance presented in Table 3 indicate that there is a Respondent main effect which was statistically significant indicating convergent validity. The Respondent by Trait interaction is also statistically significant indicating a small amount of discriminant validity. However, there is also a significant. Respondent by Method interaction that indicates the presence of method bias. Although the evidence for convergent validity is quite strong, the Respondent by Trait and Respondent by Method interaction effects are quite small. The F values are not large and the variance component estimates are less than that for error. Thus, although statistically significant, the evidence for trait and method effects is quite weak.

The ANOVA approach is more "objective" than the Campbell and Fiske approach, and allows for the specific computation of method variance. However, this approach also has been critical for several reasons including the inherent assumptions in the analysis of variance may not be satisfied (Boruch, Larkin, Wolins, and MacKinney, 1970), the definition of convergent validity is not the same as that used in the Campbell and Fiske approach (Schmitt, Coyle, and Saari, 1977), and, like the Campbell and Fiske approach, the method cannot account for measurement error. The final approach used in this study responds to these criticisms.

TABLE 3
Analysis of Variance of Multitrait-Multimethod Matrix

Source	DF	SS	MS	F	P	Variance Component
Respondent	137	502.049	3.665	9.60	0.000	.547
Trait	1	0.746	0.746	1.22	0.271	
Method	2	222.212	111.106	110.77	0.000	
Respondent*Trait	137	83.841	0.612	1.60	0.001	.077
Respondent*Method	274	274.825	1.003	2.63	0.000	.311
Trait*Method	2	3.605	1.802	4.72	0.010	
Error	274	104.605	0.382			.382
Total	827	1191.884				

The Confirmatory Factor Analysis Approach

The third approach to validity utilized in this study was Confirmatory Factor Analysis, originally proposed by Bagozzi, (1978, 1980) and Joreskog & Sorbom (1986) and refined by Widaman (1985). Widaman suggested a hierarchical approach to extracting trait and method variance in a multitrait-multimethod matrix. In practice, four of the nested models suggested by Widaman are most often used (Cote and Buckley 1987). Model 1 is a null model in which only random error is present in the model (no trait or method factors). It is this model that most closely represents the original Campbell and Fiske notions of convergent and discriminant validity (Worthke, 1996). Model 2 is a trait-only model in which only trait factors and random error are present in the model. Model 3 is a method-only model in which only method variance is accounted for in the model. Finally, Model 4 is a trait and method model in which both traits and methods are present with freely estimated correlations among the trait factors and freely estimated correlations among the method factors but with zero intercorrelations between trait and method factors (Model 3C in Widaman). Model 4 allows the specification of both trait and method variability and the relative amounts of each. The difficulty with this approach is that Model 4 is not identified when there are fewer than 3 methods or traits (Kenny 1979) and even when the model is identified it may well suffer from empirical underidentification (Kenny and Kashy 1992, Marsh 1989). In practice, such an analysis often produces poorly defined solutions (failure to converge, Heywood cases or excessively large standard errors). To get around these problems various solutions have been proposed. The most widely used is known as the correlated uniqueness approach (Kenny and Kashy 1992, Marsh 1989, Marsh and Bailey 1991, Marsh, H. W., Byrne, B. M., & Craven, R. 1992). In this approach, the method effects are not represented by separate method factors but by correlated errors between same method measures. This approach is used in this study rather than Model 4.

An additional problem arises in estimating the correlated uniqueness model using all of the questionnaire items. With 10 job involvement items and 6 work involvement items the number of estimated parameters exceeds the sample size for this model. To get around this problem, the two questionnaire scales were split into subscales consisting of 5 items each for the job

involvement scale, and 3 items each for the work involvement scale. As a check that this did not introduce bias into the analysis, the split was performed in two different ways. The first split combined the top half of the items and the bottom half. The second split combined the even number and odd number items. Results are presented for both sets of data.

The results of the LISREL analysis of the four models are presented in Table 4. As can be seen, the results from the two subscale procedures are virtually identical. The null, trait only, and method only models all produce a poor fit with significant model discrepancies. The model with trait effects and correlated errors to represent the method effects performed much better. Although the chi-square is significant in one case and almost so in the other, the other fit indices indicate an acceptable fit. Thus it appears that both trait and method effects have to be accounted for to explain the relationships between the scales.

Since the two subscale procedures are nearly identical, and it is clear that both traits and methods have to be accounted for, further results are presented only for Model 4 for the first subscale procedure.

TABLE 4
LISREL Fit Measures for the Four Models

	Model	Chi-Square	df	P-Value	RMSR	GFI	NFI	RFI
Subscale 1	Model 1: Null Model	960.92	66	.000	.390	.34	.00	.00
	Model 2: Trait Only	377.68	53	.000	.130	.67	.61	.51
	Model 3: Method Only	225.68	51	.000	.081	.79	.77	.70
	Model 4: Trait & Method	54.95	35	.017	.052	.94	.94	.89
Subscale 2	Model 1: Null Model	987.06	66	.000	.390	.33	.00	.00
	Model 2: Trait Only	394.62	53	.000	.140	.66	.60	.50
	Model 3: Method Only	239.32	51	.000	.082	.78	.76	.69
	Model 4: Trait & Method	48.97	35	.059	.050	.94	.95	.91

RMSR: Root Mean Square Residual (Should be .05 or less)
GFI: Goodness of Fit Index (Should be .90 or higher)
NFI: Normed Fit Index (Should be .90 or higher)
RFI: Relative Fit Index (Should be .90 or higher)

Table 5 presents the factor loadings on the two trait factors in Model 4. As can be seen, the loadings on the appropriate traits are all statistically significant but the supervisor ratings are relative weak indicators of the two constructs as compared to the questionnaire items and the graphics self ratings. The error terms are small and the percent of variance extracted is quite large for all of the scale items. Thus, there seems to be strong support for the existence of the two trait factors but the correlation between the two constructs of .81 indicates that the two factors, although distinct, are quite highly correlated.

TABLE 5
Factor Loadings for Trait Factors in Model 4
All loadings are statistically significant.

Scale Item	Job Involvement			Work Involvement		
	Loading	Error	Extracted	Loading	Error	Extracted
Questionnaire Scale 1	.689	.088	.984	.599	.092	.977
Questionnaire Scale 2	.685	.089	.983	.586	.093	.975
Graphic Scale 1	.791	.093	.986	.827	.098	.986
Graphic Scale 2	.770	.092	.986	.715	.101	.980
Supervisor Scale 1	.516	.085	.974	.345	.089	.938
Supervisor Scale 2	.386	.085	.954	.401	.086	.956

The methods effects are represented in this model by the correlations between the error terms of scale items measured using the same methods. If there are method effects then these correlations should be large and significant. The intercorrelations of the error terms from Model 4 are presented in Table 6.

TABLE 6
Intercorrelations Between the Error Terms of Scales Measured with the Same Method

Questionnaire Scales				
	JIQ(1)	JIQ(2)	WIQ(1)	WIQ(2)
JIQ(1)	——			
JIQ(2)	.219*			
WIQ(1)	.157*	.142*	——	
WIQ(2)	.076	.156*	.287*	——
Graphical Self Ratings				
	JIQ(1)	JIQ(2)	WIQ(1)	WIQ(2)
JIQ(1)	——			
JIQ(2)	.000			
WIQ(1)	.062	-.072	——	
WIQ(2)	-.091	.116	.112	——
Graphical Supervisor Ratings				
	JIQ(1)	JIQ(2)	WIQ(1)	WIQ(2)
JIQ(1)	——			
JIQ(2)	.410*			
WIQ(1)	.388*	.416*	——	
WIQ(2)	.445*	.520*	.593*	——

* Correlations significant at the .05 level (t-values greater than 2.00)

As can be seen, there is a moderate method exhibited by the questionnaire scale and much larger method effect of the supervisor ratings. The graphical self-ratings did not exhibit any method effect.

DISCUSSION

The results of the three different methods of analysis yield quite different conclusions regarding the measurement of job involvement and work involvement. The Campbell and Fiske analysis indicates relatively good convergent validity, with the possible exception of the supervisor rating scale, and mixed support for discriminant validity. The analysis of variance approach indicated good convergent validity, no discriminant validity, and no significant method variance. The results of the confirmatory factor analysis provides further support for convergent validity, but also indicates a substantial problem with method variation which was not suggested by the other two methods. The strength of the CFA approach is its ability to estimate trait, method, and error variation as separate components. These results provide further support for Elbert's (1979) contention that this approach can provide a more thorough and penetrating examination of validity and potential problems with method variation.

Overall, the results provide support for the conceptual distinction between job involvement and work involvement, but also indicate the difficulties involved in their measurement. Particular difficulties were noted in the use of the graphic scales, both by the respondents and by the supervisors. It should be pointed out that the graphic scales used the same overlapping circles and person-desk pictures to describe both job involvement and work involvement. As a consequence, the dichotomy between job and work involvement may not have been as apparent to the respondents as one would have liked. The supervisor rating scales exhibited especially poor discriminant validity. It is possible that the supervisor was not able to rate an individual's work involvement, which is more akin to a value and hence not easily observable. By comparison, job involvement is more easily observable, and hence easier to assess. This may have resulted in a generalized halo effect with respect to rating involvement. For whatever reason, the present results indicate that the graphic scales should be used with caution in the future.

Although the present results provide mixed support for the validity of these two constructs the real test of this conceptual distinction will depend on how useful the constructs are in explaining empirical phenomena.

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