

The Construct Validity of the Nurse Stress Index, Coping Strategy Indicator, and Minnesota Satisfaction Questionnaire among Nurses in Thailand

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Abstract

The analysis was based on a sample of 200 Thai nurses working at 14 hospitals in Bangkok and three provinces along the eastern seaboard. Each questionnaire's construct validity was evaluated by five criteria. Internal reliability was acceptable in all questionnaires, however factor redundancy, factor loadings, loadings on other factors, and factor replicability only provided excellent support for the Coping Strategy Indicator.

The present research is guided by the belief that studying a variety of people in diverse cultures, but limited to one specific occupation, may make it possible to identify those sources of stress and coping strategies that compose the common denominators of humans working in a particular profession. Studies of the nursing profession have used the Nurse Stress Index (NSI) to extract five major sources of stress (Harris, 1989). However, NSI replications suggest that for different groups of nurses, there may be slightly different factor structures that would be more appropriate for construct and predictive validity (Cooper & Mitchell, 1990; Tyler & Cushway, 1992). For studies involving normative comparisons, it is critical to maintain the existing NSI factor structure, but for those

experimental studies exploring stress-outcome relationships new factor structures should be explored.

Most researchers in the area of occupational stress have been influenced by the transactional approach (Lazarus, 1966; 1993): not only does the worker mediate the impact of environmental demands upon the response they invoke, but, in addition, the worker's coping responses become a major component of the work environment (Derogatis & Coons, 1993). Stemming directly from this approach, the Ways of Coping questionnaire identified eight coping strategies (Lazarus & Folkman, 1984). Recently, Edwards and Baglioni (1993) found that the reliability estimates were low, item loadings were significant for only four of the eight factors, and 35 items yielded

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significant loadings on other factors. The Coping Strategy Indicator (CSI) attempted to simplify the factor structure of the questionnaire by focusing on selecting items to produce independence among three different coping strategies (Amirkhan, 1990).

In 1960, Menzies pointed out that workers in caring professions are faced with a number of sources of stress and nurses' level of occupational stress is a significant factor in determining job satisfaction. Research during this decade used the Minnesota Satisfaction Questionnaire (MSQ) and divided job satisfaction into intrinsic and extrinsic factors (Weiss, Dawis, England, & Lofquist, 1967). Current research supports the validity of the MSQ as a measure of job satisfaction that is independent of negative affectivity and yet consistently related to measures of occupational stress (Day & Bedeian, 1991; Decker & Borgen, 1993).

In the present study five aspects of construct validity were calculated for the NSI, CSI, and MSQ. The first two aspects consisted of internal reliability and intercorrelations among factors extracted by previous research studies. To measure the construct integrity for this sample, scale items were submitted to an orthogonal, varimax-rotated principal components analysis. The resulting factors were examined for low item loadings, items loading on other factors, and generalizability of factor structure. By comparing workers in diverse cultures, studies of stress and coping will attempt to clearly define the underlying factor structure, generate scale items that convincingly represent these dimensions, and assess the ethnocentricity of these measures.

METHOD

Research Setting

The present study was conducted in seven hospitals in Bangkok and in seven hospitals in three provinces along the eastern seaboard of Thailand. Of the 240 questionnaires distributed to nurses, 209 were returned for subsequent analysis. The results to be reported are based on 200 female professional nurses to avoid confounding the female sample with the 6 male respondents and 3 technical nurses who have two years of training (Pongruengphant & Tyson, 1995).

Measures

The 30-item Nurse Stress Index has been subdivided into six subscales assessing five major sources of occupational stress: Managing Workload, Organizational Support, Dealing with Patients, Home and Work Conflicts, and Confidence in Role (Harris, 1989). The 15-item Coping Strategy Indicator has been subdivided into three types of coping strategies: Problem Solving, Social Support, and Avoidance (Amirkhan, 1990). The 20-item Minnesota Satisfaction Questionnaire has been subdivided into intrinsic and extrinsic satisfaction subscales (Weiss et al., 1967).

RESULTS and DISCUSSION

Construct validity of a questionnaire is a measure of the degree to which the factors represent the intended underlying constructs (Edwards & Baglioni, 1993). Internal reliability coefficients (Cronbach's alpha) were calculated for each questionnaire (Table 1) and the average inter-item correlation within each factor reached an acceptable level (Cooper & Mitchell, 1990). Factor redundancy

is suggested by high intercorrelations among factors within a questionnaire. Judging from the intercorrelations within these three measures (Table 1), it appears that CSI is the only questionnaire with a relatively independent factor structure.

The greater the scale item loading or overlap in variance between the item and factor, the more that item is a genuine measure of the factor (Tabachnik & Fidell, 1983). After the principal components were extracted, four of the six NSI factors contain one item (1/5) with a moderately small loading (<.50) and no items below the .30 criterion (Table 1). These results contrast with Cooper and Mitchell's (1990) validity study which found 12 of 30 items loaded below .30 and were excluded from the analysis because less than 9% of the variance overlapped between the item and factor. Unfortunately, almost half of the NSI items were correlated with more than one factor which means the underlying constructs are not independent.

To simplify interpretation of the underlying construct, it is important to have independence or orthogonality among scale items representing the factor. All of the original NSI factors (Harris, 1989) contain scale items which loaded substantially on other factors, for example, four of five "Managing Workload 1" items and 14 of 30 scale items loaded above .30 on two or more factors. For comparison, the CSI had only one scale item which loaded on another factor and four MSQ items loaded on more than one factor (Table 1). A scale item which is correlated with more than one factor either reflects an inherent ambiguity in the scale item or the underlying factor structure.

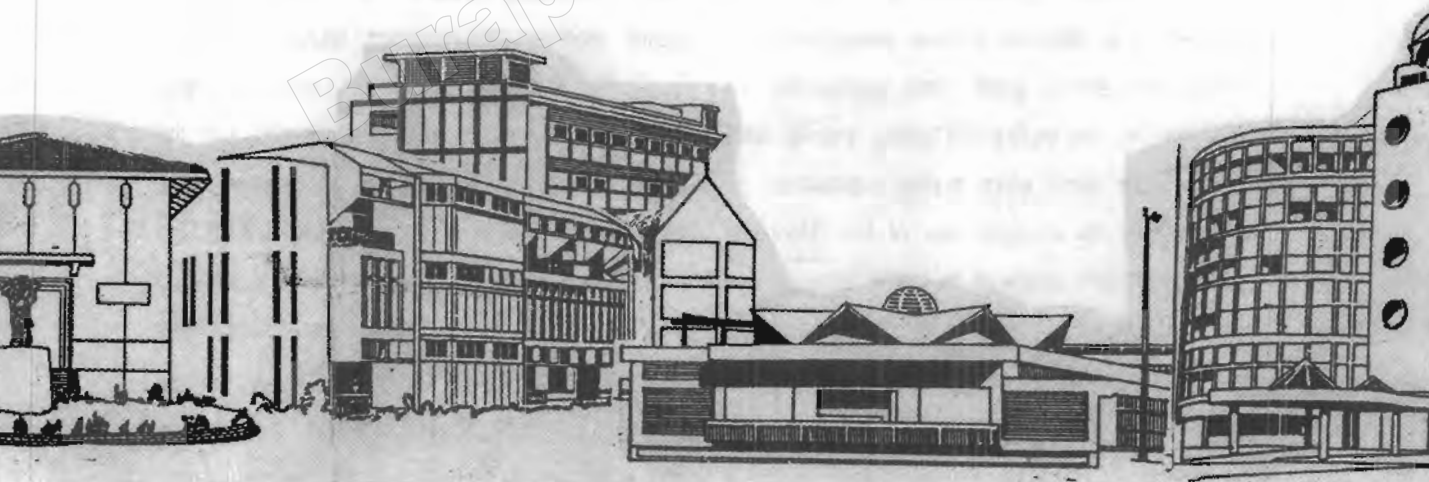
Another method of testing construct validity of the underlying factor structure of a questionnaire is to replicate the factor structure using an independent sample. Harris' (1989) "Dealing with Patients" factor had four of five items (4 F1) replicated by the first factor and one item loaded on the second factor (1 F2). Beginning with the same pool (Hingley & Cooper, 1986) of 71 stress items used to construct the NSI, Baglioni, Cooper, and Hingley (1990) found that 21 of 30 NSI items reappeared in this independent factor analysis. The two NSI factors replicated in the present study ("Dealing with Patients" and "Home and Work Conflict") were replicated by the Baglioni et al. (1990) study. Although not obvious in the present study, Harris' (1989) third factor ("Organizational Support") has been replicated by other studies (Cooper & Mitchell, 1990; Baglioni et al., 1990). The current version of the NSI has several problems with construct validity which could be improved by concentrating on defining distinct orthogonal constructs with scale items that clearly represent the intended source of stress.

The Minnesota Satisfaction Questionnaire was intended to assess a person's satisfaction with the intrinsic and extrinsic sources of reinforcement associated with working (Lofquist & Dawis, 1991). The present study correlated these factors and determined that 41% of the variance of the two factors was redundant. A principal components analysis extracted four factors, instead of two, and found low loadings and items loading substantially on more than one factor. Although the internal reliability coefficients were acceptably high, the other four criteria of construct validity suggest that the underlying

dimensions of job satisfaction do not correspond to the original factor structure of the MSQ (Weiss et al., 1967).

The results of this study provide excellent support for the construct validity of the CSI and for the procedures employed by Amirkhan (1990) to convert an unstable questionnaire into a construct-valid measure of three coping strategies. Many researchers have found the factor structure of the Ways of Coping questionnaire (Lazarus & Folkman, 1984) unstable, yielding from three to eight factors, items assigned to different factors or dropped entirely from the analysis, and little evidence of homogeneous item subsets representing coping

strategies (Edwards & Baglioni, 1993.) From items borrowed from the Ways of Coping questionnaire and other sources, Amirkhan (1990) retained only those scale items that repeatedly demonstrated their psychometric accuracy as representatives of one coping strategy. The present study found very little factor redundancy among the three coping strategies, no scale items loading below .50, only one item that loaded on another factor, and one item that did not replicate the original factor structure. Overall, the Coping Strategy Indicator seems to be a reliable, construct-valid measure of three reasonably orthogonal coping strategies.



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