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Validity and model-based reliability of the Work Organisation Assessment Questionnaire among nurses

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ABSTRACT

Background: The Work Organisation Assessment Questionnaire (WOAQ) was developed as part of a risk assessment tool for the manufacturing setting (Griffiths, Cox, Karanika, Khan, Tomás, 2006). The WOAQ was used in this study to assess its validity and model-based reliability among Australian nurses using a conventional second-order and a bifactor confirmatory factor analysis (CFA).

Methods: This article reports a study of Australian participants ($N = 312$) to validate a multidimensional measure of the WOAQ. Data were collected from a group of Australian community nurses. CFA was performed comparing a conventional second-order model and a bifactor model of one WOAQ summative factor and its five subfactors, which together described the most common issues of work design and management in organizations. A group of close fit indices that include relatively greater penalties for model complexity (i.e., the root mean square error of approximation, Non-normed Fit Index, and the Akaike Information Criterion) were chosen to interpret the results.

Results: The results of reliability and validity analysis revealed some evidence for the summative measure of the WOAQ. Results indicate that the questionnaire is a valid and reliable scale, but some subfactors are more plausible than others within the Australian nursing community.

Conclusion: The study provides future researchers some guidance for bifactor modeling in organizational studies of this type. The WOAQ provides flexibility to measure risk assessment and management procedures.

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One of the greatest challenges for society is sustaining an individual's health and the quality of life in the workplace (Cox, 1997). There is a broad body of research revealing damages to health and well-being in workplaces. Increasing awareness of the possible effects of work-related factors on health has led to the enforcement of regulations and the introduction of legislation in many developed countries to ensure that organizations make the health of their employees a high priority (Faragher, Cooper, & Cartwright, 2004). As a result, management has also been encouraged to conduct risk assessments for psychosocial hazards with a view to protecting employees' health and safety in the workplace (Rick & Briner, 2000).

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There are several driving forces that contribute to making the workplace a less convivial place for employees to work in. For instance, the growing competitiveness of the marketplace, the constant need to improve organization efficiency and profitability, and radical changes in employment conditions are among the major driving forces responsible for increasing stress in the workplace (Faragher et al., 2004); but, in particular, an inability to incorporate proper work design in the workplace leads to a negative effect on both the employees and the organization (Griffiths, Cox, Karanika, Khan, & Tomas, 2006).

Much of the attention in the occupational health and safety (OHS) literature has focused on linking this inability to incorporate a suitable work design with the right assessment tools and decreasing negative work-related outcomes for individuals and organizations (Griffiths et al., 2006). However, the efficacy of an OHS tool in assessing the risk factors in the workplace environment depends greatly on how well it is designed, implemented, and adapted to the nature of the work (LaMontagne, 2004).

Adapting such approaches provides a benchmark to identify the main organizational hazards and to progressively improve OHS by improving safe work design and practices. The main challenge is to use a suitable instrument to improve the capture of OHS indicators.

Based on recommendations from previous studies, a good risk assessment process can only be achieved by using multiple methods of assessment. A well-designed assessment should recognize the risks in the workplace and also identify the employees at risk (The Health and Safety Executive Guidelines, 2010). The organizational risk assessment is obtained using questionnaire/survey scales. To evaluate risk and stress effectively, this questionnaire must meet some important criteria such as being reliable and valid; being easy to complete; measuring the possible risks, their predictability of outcomes related to the employees' health, their size, and impact on the target population; and applying to both organizations as a whole and at different work levels. To be able to meet such criteria, the questionnaires are usually quite lengthy. As a result, the large amount of time it takes to complete a questionnaire leads to a low response rate (Faragher et al., 2004).

A short yet comprehensive risk assessment questionnaire is desirable. One such instrument called the Work Organisation Assessment Questionnaire (WOAQ) developed by Griffiths et al. (2006) may be applicable as a substitute to overcome problems identified in previously validated measures because of its short length and comprehensive content. The methodology developed in WOAQ was based on identifying and collecting employees' opinions on their work, health, and workplace design and management (Griffiths et al., 2006). It was designed to measure risk factors pertaining to the work design and management that may influence employee health and health-related behaviors in a manufacturing setting (Griffiths et al., 2006; Wynne-Jones et al., 2009). The overall score on WOAQ indicates the extent to which the respondents believe that these dimensions of work are problematic and can be used as predictors of well-being, subjective health, and job satisfaction. A high score on WOAQ indicates that the respondents perceive dimensions of work as good, and a low score on WOAQ indicates that the respondents perceive dimensions of work as problematic (Griffiths et al., 2006).

WOAQ was initially developed for a manufacturing setting and implemented in a private sector; however, this comprehensive approach to risk assessment may be extended to other settings including a nonmanufacturing or health setting. In this regard, it is important to make sure WOAQ can be implemented in other work settings or professions (Wynne-Jones et al., 2009). Only a few studies evaluated the utility of WOAQ in other workplaces. For example, Wynne-Jones et al. (2009), in their study of two large public sector organizations in South Wales, evaluated the validity and reliability of WOAQ in a public sector. Using a second-order confirmatory factor analysis (CFA), the researchers only found a marginal fit for the original five subfactors of WOAQ. In the end, they identified a two-factor structure of the WOAQ assessing management and work design and work culture. Therefore, one of the aims of this study was to find out if the general and five subfactors of WOAQ can be implemented in a nonmanufacturing, health setting in Australia. Also, in addition to the conventional second-order model of CFA used heavily by other scholars in the field (including Wynne-Jones's study), a more practical bifactor modeling was used to assess the general factor of WOAQ and the plausibility of its five subfactors in an Australian community nursing setting.

Bifactor Versus Second-order Modeling

Constructs are often operationalized as multidimensional units (Diamantopoulos, 2010; Edwards & Bagozzi, 2000). When there are a number of dimensions or related attributes required to form a latent factor, it is considered multidimensional. In a multidimensional construct, dimensions can be constructed under an overall concept or a second-order (higher-order) construct (Law, Wong, & Mobley, 1998). In second-order constructs, two levels of constructs exist: the first-order level with indicators and the second-order level with first-order constructs (Jarvis, MacKenzie, & Podsakoff, 2003). Such models are known as hierarchical (higher-order or second-order) models.

By default, the majority of the researchers in behavioral sciences use higher-order modeling to evaluate multidimensionality. However, this seems not to be the only procedure and not always the best

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