Development of psychosocial risk factors instrument in a multi-ethnic Asian working population in Singapore

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Background

Work-related psychosocial health is an emerging and critical area that has not been well studied in multi-ethnic Asian working population. Yet, a valid and reliable instrument to assess psychosocial risk factors at workplace which can be applied across companies and industries are notably lacking for Asian working population in Singapore.

Purpose

The objective of this study was to develop a self-administered instrument that covers all key and culturally appropriate domains of psychosocial risk in Singapore.

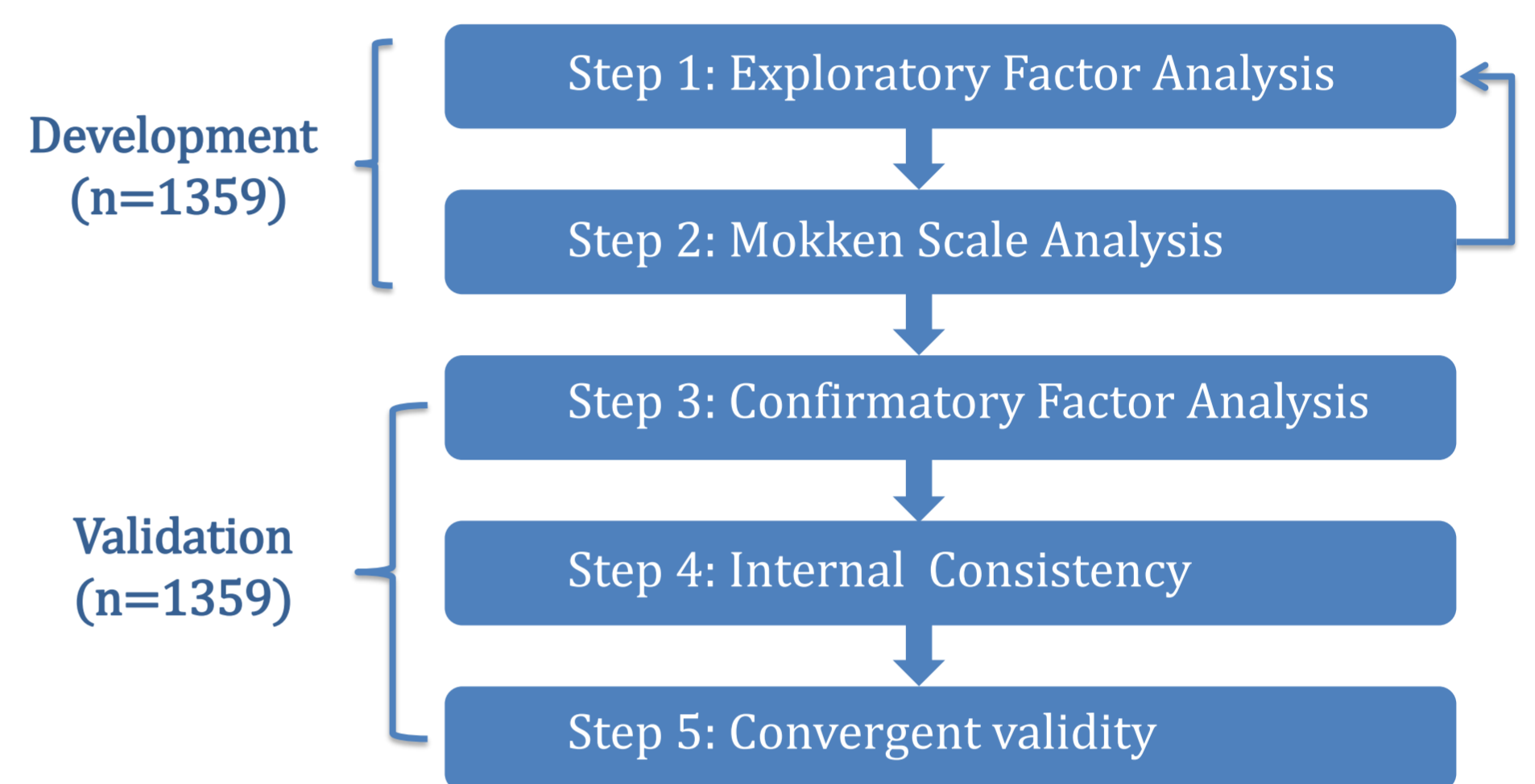## Methodology

Study Sample.

This study was part of Evaluating Resilience and Stress in Employment (ERASE) survey. The survey was conducted among 2718 employees from 5 companies in selected industries.

Company A n=1013	**84% Participation Rate** Doctors, Nurses, Psychologists, Social Workers, Corporate Services etc. (Excluded non-executive staff)
Company B n=690	**76% Participation Rate** Service Operations, Support Operations, Corporate Services etc. (Excluded medical staff)
Company C n=521	**71% Participation Rate** Lawyers, Corporate Services etc.
Company D n=298	**73% Participation Rate** Lawyers, Corporate Services etc.
Company E n=196	**70% Participation Rate** Banking, Corporate Services etc.

Statistical Analysis.

2718 participants were randomly divided into two halves for development and validation analyses of the scale.

Development (n=1359)
- Step 1: Exploratory Factor Analysis
- Step 2: Mokken Scale Analysis

Validation (n=1359)
- Step 3: Confirmatory Factor Analysis
- Step 4: Internal Consistency
- Step 5: Convergent validity

Key Findings

Sample characteristics: The proportion of women were double than men (69.1% vs 28.9%) in the overall sample. Majority of the respondents were Chinese (65.2%) followed by Malays (15.8%), Indians (11%), and those of other ethnic groups (8%), respectively.

Step 1: A series of exploratory factor analyses were conducted to determine the dimensionality of the instrument. The plot of eigenvalues for the initial 45-item indicated five-,six- and seven-factor solutions were plausible. Upon examination of each of the rotated solutions including pattern of factor loadings i.e. cross-loading & loadings > 0.40, 6 items were removed and concluded that the six-factor solution with 39-item was optimal.

Step 2: Item performance and item reductions were tested using Mokken Scale Analysis. 12 items with poor item fit were deleted. Reexamination of factor structure using 27 items concluded that the five-factor solution was optimal.

Step 3: Confirmatory factor analysis of the five-factor model using the remaining 27 items resulted in acceptable fit (CFI = 0.95, TLI = 0.94, CFI = 0.95)

Step 4: The Cronbach's α coefficient for the job demand, job control, employee engagement and management, supervisor support and colleague support were 0.79, 0.83, 0.86, 0.92, and 0.90, respectively. We concluded the internal consistency of the instrument was good.

Step 5: The convergent validity of the instrument with other existing scales were acceptable. For example, high job demand scores was significantly and positively associated with high Copenhagen Burnout Inventory, i-Work Health Stress and Patient Health Questionnaire scores, respectively.

Factor loading, Cronbach's α and H scalability of Psychosocial Risk Factors instrument			
Dimensions	**Factor loadings**	**Cronbach's α**	**H scalability***
1) Job demand	0.45 to 0.80	0.79	0.528
2) Job control	0.62 to 0.84	0.83	0.463
3) Employee engagement & management	0.61 to 0.84	0.86	0.536
4) Supervisor support	0.57 to 0.93	0.92	0.741
5) Colleague support	0.87 to 0.98	0.90	0.756
Model fit indices: RMSEA = 0.08; CFI = 0.95; TLI = 0.94			
*Mokken scale analysis: H < 4 = weak, 4=medium, >5 =strong scalability			

Conclusion and Recommendation

The 27-item instrument with five domains of psychosocial risk (job demand, job control, employee engagement and management, supervisor support and colleague support) is a reliable and valid instrument that can be used to measure and compare the level of psychosocial risk factors across companies and industries in Singapore.

Research to Practice - iWorkHealth

The instrument will be translated into an online assessment tool (iWorkHealth) that companies can use to identify the psychosocial risks that their employees may be facing. This will allow companies to implement interventions that can improve employees wellbeing and productivity at work.

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