

**A tale of two construct validation analysis: Rasch model and exploratory factor analysis approach for Three-Factor Eating Questionnaire (TFEQ-R21) among Malaysian male workers**

**ABSTRACT**

**Introduction:** This study aims for construct validation using two approaches, i.e., exploratory factor analysis and Rasch Model.

**Methods:** A cross sectional of 313 male workers from multiple worksites had completed self-administered Malay translated version of Three-Factor Eating Questionnaire- R21. Data quality was assessed by misfit person criteria, dimensionality, summary statistic, item measure and rating (partial credit) scale followed by exploratory factor analysis and internal consistency reliability assessment.

**Results:** The dual approaches of construct validation analysis were complement to each other. Rasch analysis supported the theoretical constructs of three eating behaviour dimensions among respondents. In contrary to exploratory factor analysis, it did show presence of a newfound factor ( $\lambda = 0.04$ ) came up from the separation of the cognitive restraint and uncontrolled eating however, the correlation between the two respective sub-factors were fair ( $r = 0.39$ ) and weak ( $r = 0.08$ ). Both analyses had detected three problematic items but those items were psychometrically fit for used for current study setting. The data had adequate psychometric properties. Cronbach's alpha for cognitive restraint, uncontrolled eating and emotional eating were 0.66, 0.79 and 0.87 respectively. Rating scale quality was conformed to standard criteria.

**Conclusion:** Malay version TFEQ-R21 with promising psychometric properties and valid measures for eating behaviour dimensions among male workers aged between 20 to 60 years old is now available. Further development should focus on the items in relation to Malaysian cultural adaptation before its use for daily practice in future setting.

**Keyword:** Factor analysis; Male; Psychometrics; Three-Factor Eating Questionnaire-R21; Workplace