ABSTRACT

Development and Validation of a Scale for Measuring Instructors' Attitudes toward Concept-Based or Reform-Oriented Teaching of Introductory Statistics in the Health and Behavioral Sciences

By

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The emergence of evidence-based practice has highlighted the training of healthcare professionals, particularly with regard to evaluating and using research data to facilitate effective decision-making and optimum patient care. Consequently, statistics is increasingly becoming a core requirement for college majors in the health and behavioral sciences. Associated with this development, is ongoing reform in statistics education, as in general, traditional teaching strategies have failed to promote statistical literacy. But in spite of a decade of reform efforts, desired learning outcomes are lacking. Moreover, there is strong theoretical and empirical evidence that instructors' attitudes impact the quality of teaching and learning.

The objective of this study was to develop and validate a scale for measuring instructors' attitudes toward concept-based (reform-oriented or constructivist) teaching of introductory statistics in the health and behavioral sciences, at the tertiary level. Data were obtained from a cross-sectional study of 227 instructors (USA and international), and analyzed using primarily factor analysis and multidimensional scaling. The scale will be referred to as **FATS** (**F**aculty **A**ttitudes **T**oward **S**tatistics), and it consists of five

subscales **(perceived usefulness, personal teaching efficacy, perceived difficulty, avoidance-approach**, and **intention).** These represent cognition, affect, and intention (consistent with the tripartite attitude model) with a total of 25 items, and an overall alpha of .89. These 5 subscales (alphas between .65 and .85) explained 51% of the total variance, and all of the common variance underlying the items.

Construct validity of the attitude scale was established. Specifically, the overall scale, and subscales plausibly, and significantly (except perceived difficulty) differentiated between low-reform and high-reform practice instructors, and explained 28% of the variance in teaching practice. The teaching practice scale consists of two dimensions (behaviorist and constructivist). Statistically significant differences in overall attitude and some subscales were observed with respect to age and teaching area. This scale can be considered a reliable and valid measure of instructors' attitudes toward concept-based teaching of introductory statistics, and can facilitate the use of reform-oriented strategies. Faculty development programs should address perceived usefulness, the primary determinant of intention, which was the strongest predictor of practice. Additional studies are required to confirm these structural and psychometric properties.