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European Association of Work  
and Organizational Psychology

Alternatives to Difference Scores: Polynomial Regression and Response Surface  
Methodology

Jeff Edwards



**Biography:** Jeff Edwards' research and teaching focus on individual and organizational change, person-organization fit, stress and coping in organizations, and strategies that jointly promote employee well-being and corporate competitiveness. He also conducts methodological work concerning the design, measurement and analysis of research in organizations.

Dr. Edwards is an award-winning teacher and researcher. At UNC, he received the Distinguished Teaching Award for Post-Baccalaureate Instruction, the Weatherspoon Award for Excellence in PhD Teaching and the Weatherspoon Award for Excellence in Research. In his field, he has been elected as a fellow of the Academy of Management, American Psychological Association, Society for Industrial and Organizational Psychology and Center for the Advancement of Research Methods and Analysis. He also received the Distinguished Career Award from the research methods division of the Academy of Management.

He has also consulted, conducted applied research, and taught executive development courses with numerous organizations, including Alcoa, Burlington Industries, ExxonMobil, General Electric, General Motors, GlaxoSmithKline, Johnson & Johnson, Kaiser Permanente, Misys Healthcare, Quintiles, SonyEriccson, Wachovia, W.C. Bradley, Westinghouse, Whirlpool and the U.S. Department of Defense.

Dr. Edwards served as the chair of the management, organizational behavior and strategy, and organizational behavior areas at UNC Kenan-Flagler from 2000-10. He has served on the School's research committee since 1997. Previously he held positions with the University of Virginia and the University of Michigan.

He has held leadership positions at the Academy of Management, serving as chair of the research methods division and representative-at-large for the research methods and organizational behavior divisions. He has served as editor of *Organizational Behavior and Human Decision Processes* and as associate editor of the *Journal of Organizational Behavior*, *Organizational Research Methods* and *Management Science*.

He received his PhD and MBA from Carnegie Mellon University and his BA from UNC-Chapel Hill.

**Abstract:** For decades, difference scores have been used in studies of congruence in organizational research. Despite their widespread use, difference scores have numerous methodological problems. These problems can be overcome by using polynomial regression and response surface methodology, which can examine a wide range of congruence hypotheses. This workshop will review problems with difference scores, introduce polynomial regression and response surface methodology, and illustrate the application of these methods using empirical examples. Participants will be provided data to analyze during the workshop with the goal of creating a hands-on experience that will clarify and reinforce the methods discussed. Participants should bring a laptop with access to SPSS or STATA.