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IRB Notice

1 message

IRB <irb_no_reply@cayuse.com> Fri, Feb 28, 2014 at 11:15 AM
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To: Erin Buchanan
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Approval Date: 2/25/2014
Expiration Date of Approval: 2/24/2015

RE: Notice of IRB Approval by Expedited Review (under 45 CFR 46.110)
Submission Type: Initial
Expedited Category: 7.Surveys/interviews/focus groups
Study #: 14-0322

Study Title: Using Item Response Theory to Explore Scale Psychometrics

This submission has been approved by the above IRB for the period indicated. It has been determined that the risk involved in this research is no more than minimal.

Study Description:

Item response theory (IRT) is a type of statistical analysis that allows a researcher to examine the underlying pattern of data in a set of questions. IRT is often called latent trait theory because it examines questions or items to determine if there is a primary concept that causes the way that someone answers a questionnaire. For example, the Depression, Anxiety, and Stress Scale is thought to measure different psychological constructs in a way that a participant's depression or stress levels will be shown through subscale scores. Traditional approaches to scale development and assessment usually are analyzed with factor analysis, through both exploratory and confirmatory approaches. These statistical tools allow a researcher to understand 1) how many latent variables their scales are measuring, 2) which questions appropriately measure those latent variables (and alternatively, which questions are not useful), and 3) model fit of the questionnaire (i.e. underlying variables match theory and explain the data collected) (Buchanan, Valentine, & Schulenberg, 2013). Further, complex designs, such as multi-trait multi-method and multigroup confirmatory factory analysis can be used to determine exactly how items are answered across groups indicating group differences in question answering (Trent et al., 2013). However, these analyses are limited in their ability to detect particular participant profiles in the data, which can be determined by using item response theory.

Customarily, item answers are averaged to totaled to create an overall score for a questionnaire. If a particular scale has four question, two participants may arrive at the same overall score by marking a) low, low, high, high or b) high, high, low, low on the items. By using IRT, we can answer three different types of research questions about participant answers on these scales. First, we can do tailored testing, which will show how participants arrived at their overall scores, thus answering the low-high discrimination problem. Second, we can measure item bias across subpopulations that take our scales. These questionnaires are conventionally designed and tested on college students, but this analysis would allow us to examine how a college student population differs from a clinical or adult

population. Each item can be equated for discrimination or difficulty, which can be used to explore the interesting interactions found within the meaning in life research field (o.e. men show a strange interaction with alcohol use and purpose in life scores, while females do not; Schnetzer, Schulenberg, & Buchanan, 2012). Lastly, IRT can be used to equate scales (or conversely, show divergent validity). This ability is especially useful to create short form versions of scales to decrease the amount of time necessary to screen or test participants. Short forms have become especially popular for evaluating clinical and adult populations who often are short on time for research experiments.

Scale development work in this particular research area has been published using exploratory and confirmatory factor analysis. The Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006), Seeking of Noetic Goals questionnaire (Schulenberg, Baczwaski, & Buchanan, 2013), and Purpose in Life Test (Morgan & Farsides, 2009) have been explored for their reliability and validity by examining factor structure. Meaningfulness has been applied extensively to other psychological issues, such as positive affect (King, Hicks, Krull, & Del Gaiso, 2006), religiosity (Steger & Frazier, 2005), drug problems (Newcomb, Vargas-Carmona, & Galaif, 1999) and alcohol use (Palfai, Ralston, & Wright, 2011). However a literature search of the application of IRT to meaning in life reveals a dearth in publications. Oishi (2007) has published a chapter on how research in positive psychology should apply both structural equation modeling and IRT to their measurement scales. this lack of publications indicates an excellent avenue of potential unexplored research on these scales and their applications.

Specific Goals. IRT theory will be applied to specific questionnaires to answer the following questions: 1) What is the discriminability of each item for participant scores? 2) Are items consistently answered across specific subpopulations (gender, ethnicity, age)?, 3) Are these scales equivalent measurements of meaning in life?, and 4) Are equivalent short form measurements possible? 5) Is the delivery method of the scale an important component to scores (Weigold, 2013)?

Investigator's Responsibilities:

Federal regulations require that all research be reviewed at least annually. It is the Principal Investigator's responsibility to submit for renewal and obtain approval before the expiration date. You may not continue any research activity beyond the expiration date without IRB approval. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.

You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented (use the procedures found at http://orc.missouristate.edu). Should any adverse event or unanticipated problem involving risks to subjects or others occur it must be reported immediately to the IRB following the adverse event procedures at the same website.

This study was reviewed in accordance with federal regulations governing human subjects research, including those found at 45 CFR 46 (Common Rule), 45 CFR 164 (HIPAA), 21 CFR 50 & 56 (FDA), and 40 CFR 26 (EPA), where applicable.

CC:
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