Psychometrics & Design Considerations

Validity and Reliability
The MSL survey includes more than 400 variables, scales, and composite measures. As such, it would be impossible to detail full information related to the validity and reliability of measures. Much of this information can be found in academic articles published using the various scales. These are listed in the MSL web library accessible via the following web address: www.leadershipstudy.net.

The Socially Responsible Leadership Scales (SRLS), which comprise the core of the MSL survey instrument, have undergone extensive psychometric work. Rigorous methods were used in the creation of the original SRLS to establish content validity of the measures. This process is explained in detail in the original dissertation from which the instrument is derived (Tyree, 1998). Construct validity was further examined for the SRLS in early pilot studies of the MSL instrument as well as with the 2006 and 2009 iterations of the study and demonstrated appropriate and consistent relationships amongst outcomes variables and other theoretically supported measures.

Reliability levels across all eight scales in the original version, revised form, MSL pilot studies, MSL 2006 study, and current form demonstrate consistent performance levels. Given reliability is a function of using an instrument with a specific population and not the instrument itself (Mertens, 2005), Cronbach alphas were calculated for each institution in the 2006 study as well as by categories in each major student sub-population (i.e., race, gender, sexual orientation). Reliabilities across all of these were consistent across all scales and did not deviate by more than .12. Reliability levels for these scales and all other composite measures for the MSL are available in the appendices to your institutional report.

Accuracy of Self-Report Data
The MSL instrument relies largely on student self-report data. Student self-reports have received considerable attention with regard to their accuracy and ability to adequately measure educational gains, despite the fact that researchers suggest that they can produce accurate results under specific conditions (Anaya, 1999; Astin, 1993; Bauer, 1992; Gonyea, 2005; Pace, Barahona, & Kaplan, 1985; Pike, 1995). These conditions include rigorous methodological standards as well as ease of participant use (Gonyea). The participant component is characterized by the ability to comprehend questions, the ability to retrieve necessary information, perceived value of the questions being asked, and clarity of response options (Gonyea). When the above is in place, self-reports can generally be considered appropriate. This study was consistent with these considerations given the primary outcome measures have undergone field-testing in a variety of studies (Dugan, 2006a, 2006b; Dugan & Komives, 2007; Gehrke, 2008; Humphreys, 2007; Meixner, 2000; Morrison, 2001; Rickets, Bruce, & Ewing, 2008; Rubin, 2000) as well as multiple pilot studies. Additionally, the Crown-Marlowe measure of social desirability was employed as a means to remove items in which the responses appeared to be biased. Furthermore, a study of self and peer-reported leadership behaviors and the quality of those behaviors found self-reports of leadership to be generally accurate (Turrentine, 2001).
Cross-Sectional Designs
This study employs a cross-sectional research design in which students were asked to reflect retrospectively on past knowledge and experiences as a means to capture input data. Researchers indicate that when measuring leadership development as an educational outcome, retrospective questions may provide a stronger indication of student gains due to concerns associated with response-shift bias that emerge in traditional time elapsed studies (Howard, 1980; Howard & Dailey, 1979; Rohs, 1999, 2002; Rohs & Langone, 1997). The inherent assumption in measurement of change is a common metric at each point in time and that:

A person's standard for measurement of the dimension being assessed will not change from pretest to posttest. If the standard of measurement were to change, the posttest ratings would reflect this shift in addition to the actual changes in the person's level of functioning. Consequently, comparisons of pretest with posttest ratings would be confounded by this distortion of the internalized scale. (Rohs & Langone, p. 51)

Researchers suggest cognitive dimensions associated with understanding leadership may cause a shift in the standards of measurement and as such cross-sectional designs offer an appropriate approach in addressing the effect (Howard; Howard & Dailey; Rohs, 1999, 2002; Rohs & Langone).

Weighting of Data
When surveying any population it is nearly always the case that there are nonrespondents. To the extent that respondents differ systematically in one way or another from nonrespondents, a bias may result when drawing conclusions from the data. To minimize this potential for bias, a nonresponse adjustment has been calculated for each school.

An individual school's nonresponse adjustment will be used for all analysis and reporting that looks at an individual school's data. Weighting for nonresponse involves applying a weight to each individual respondent so that he or she represents a certain number of nonrespondents that are similar in terms of selected characteristics. The size of the weights depends on the level of under- or over-representation.

Weighting classes for 2012 were constructed using three demographic variables: gender, race/ethnicity, and class standing. Three-way cross-tabulations were conducted using those variables from the school provided sample to calculate the cell percentage of each weighting class for both the sample data and the response data. The sample data contains all cases that were selected to be fielded in the data collection period; the response data contains only those cases that responded to the survey, including complete and partial responses.

A detailed description of the weighting classes and the construction of nonresponse weights for your institution are provided in separate documentation on the MSL Exchange, accessible via the archived 2012 school guide at: www.mysl.net/2012.
Selected References


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