How Often is Often?
Testing the Meaning of Vague Quantifiers

Amber D. Dumford (adlamber@indiana.edu)
Yi-Chen Chiang (chiangy@indiana.edu)
Thomas F. Nelson Laird (tflaird@indiana.edu)
Allison BrckaLorenz (abrckalo@indiana.edu)

IU Center for Postsecondary Research
Indiana University Bloomington

Abstract

Survey researchers often wonder about the meaning of vague quantifiers such as "sometimes" or "often" as employed by surveys. This study focuses on assessing the equivalence reliability of the updated Faculty Survey of Student Engagement (FSSE), with particular emphasis on whether two parallel forms of items produce similar results (e.g., have equal means, variances, and errors). These analyses examined a set of FSSE questions asked in two different ways, first with vague quantifiers and second with a quantifiable time allocation. This poster will provide details about the methods and results of these analyses using data from the 2014 administration of FSSE.

Background & Purpose

The National Survey of Student Engagement (NSSE) and Faculty Survey of Student Engagement (FSSE) annually collect information about student engagement both in and out of the classroom at hundreds of baccalaureate degree-granting colleges and universities. After years of pilot testing, NSSE and FSSE were updated in 2013 and continue to closely parallel one another. The updated surveys respond to recent developments in higher education and continue to provide institutions with the best available information regarding student engagement. FSSE staff conducted a wide array of analyses and tests to evaluate the quality of the FSSE instrument administered in 2013 and 2014.

The most important components of survey quality to test are reliability and validity. Without reliability, valid score interpretation is meaningless (Throndike & Throndike-Christ, 2010). Based on the NSSE Psychometric Reliability Framework (NSSE, 2009) and a similar study conducted earlier (Nelson Laird, Korkmaz, & Chen, 2008), this study focuses on assessing the equivalence reliability of the updated FSSE. In particular the emphasis is on whether two parallel forms or different versions of survey items produce similar results (e.g., have equal means, variances, and errors). Survey researchers often wonder about the meaning of vague quantifiers such as "sometimes" or "often" as employed by surveys. These analyses examined a set of FSSE questions asked in two different ways, first with vague quantifiers and second with a quantifiable time allocation. If the two versions of items were essentially asking for the same information, we would expect much of the following to be true: each response option will have a distinct meaning (e.g., "often" means something different than "sometimes"), the intervals between response options would progressively increase in frequency from "never" to "very often," and the intervals would be approximately equal (e.g., "very often" means nine times per week, "often" means six times per week, and "sometimes" means three times per week).

Data

The data from this study come from the 2014 administration of the Faculty Survey of Student Engagement (FSSE). FSSE was designed to complement the National Survey of Student Engagement by measuring faculty perceptions and expectations of undergraduate engagement in educationally purposeful activities, the extent to which faculty promote learning and development in their courses, the extent of faculty interaction with students, and how faculty allocate their time. FSSE 2014 was administered to faculty at 143 institutions. Approximately, 18,900 faculty responded, 41% of the faculty that were contacted to respond. An additional set of items for this study was appended at 22 institutions.

Sample

The sample for this study consists of the 2,101 faculty who responded to the additional set of item-testing questions appended to the end of the 2014 FSSE. The largest proportions of the sample were in Arts & Humanities (24%), Social Sciences (12%), and Health Professions (12%) fields. Smaller proportions were in Education (11%); Physical Sciences, Mathematics & Computer Science (11%); Business (9%); and Biological Sciences, Agriculture, & Natural Resources (7%). The smallest proportions were in Communications, Media, & Public Relations (3%); Social Service Professions (2%); and Engineering (2%). Academic rank was distributed with 28% full Professors, 22% Associate Professors, 23% Assistant Professors, 17% full-time Lecturers/Instructors, and 11% part-time Lecturers/Instructors. Around half (52%) identified as women, and 44% identified as men. Nearly all (98%) were U.S. citizens and most (71%) identified as White. The remaining faculty identified as Black or African American (8%); Asian, Native Hawaiian, or other Pacific Islander (6%); Hispanic or Latino (3%); and American Indian, Alaska Native, other, or multiracial (5%). The average age of faculty was 49, and 60% had an earned doctorate degree. They had an average of 15 years of teaching experience, and had an average course load of 6 undergraduate and graduate courses.

About a third (35%) of respondents were from private institutions. Respondents were concentrated at Master's-granting colleges and universities (65%), with the remaining at bachelor's-granting colleges (21%), unclassified or special focus institutions (12%), and at doctoral-granting universities (2%). The sample were at institutions in varying size with 4% at very small (fewer than 1,000 undergraduate enrollment) institutions, 14% at small (1,000-2,499), 42% at medium (2,500-4,999), 31% at large (5,000-9,999) and 9% at very large (10,000 or more) institutions.

Measures

Four items from the core FSSE survey and six items from the item-testing experimental set are included in this study. These questions were items that focused on student-faculty interaction. The faculty members were reminded of their original response to the item (using vague quantifiers) and then asked to quantify their response by indicating how many times they did the activity per day, week, month, academic term, or year. Two different versions of scales were created, the first with the vague quantifier survey items and the second with the quantifiable survey items. Faculty-level controls consisted of racial/ethnic identification, rank, employment status, gender identity, citizenship, adjunct status, tenure status, discipline, earned doctorate, age and years of teaching experience. Institution-level controls were Carnegie type and control.

Original question:

During the current school year, about how often have you done each of the following with the undergraduates students you teach or advise?

Very often, Often, Sometimes, Never

a. Talked about their career plans
b. Worked on activities other than coursework (committees, student groups, etc.)
c. Discussed course topics, ideas, or concepts outside of class
d. Discussed their academic performance

Follow-up question:

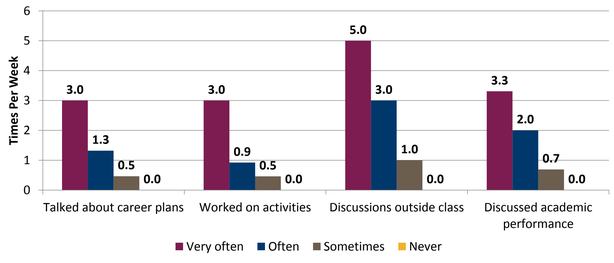
Please specify the number of times you typically did this activity and in what timeframe (unit). Enter a number: (1, 2, 3, etc.)

Time(s) per unit: ____

- Day
- Week
- Month
- Academic tem
- Academic year

Research Questions & Results

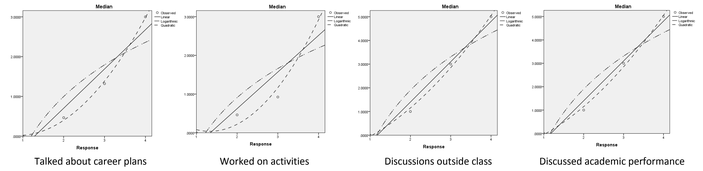
1. How does the meaning of vague quantifiers differ by item?



2. Is there a linear relationship between the vague quantifiers and respondent interpretations of these categories?

Table 2. R-square for linearity, logarithm, and quadraticity assumptions for responses.

Items	Assumptions	Adj. R-square	Sig.
Talked about career plans with the undergraduate students you teach or advise	Linear	.89	*
	Logarithmic	.70	
	Quadratic	1.00	*
Worked on activities other than coursework with the undergraduate students you teach or advise	Linear	.78	*
	Logarithmic	.56	
	Quadratic	.93	
Discussed course topics, ideas, or concepts outside of class with the undergraduate students you teach or advise	Linear	.97	**
	Logarithmic	.83	
	Quadratic	.99	
Discussed their academic performance with the undergraduate students you teach or advise	Linear	.97	**
	Logarithmic	.84	
	Quadratic	.99	



3. How does the meaning of vague quantifiers vary by faculty and institutional groups?

Table 3. Regression coefficients for student-faculty scale

		Student-Faculty Interaction (regular)		Student-Faculty Interaction (absolute)	
		Coef(SE)	Sig.	Coef(SE)	Sig.
Intercept		-.24(.34)		-.05(.37)	
Racial/ethnic identification (White as reference)	Asian, Native Hawaiian or Other Pacific Islander	.25(.13)		.05(.14)	
	Black or African American	.79(.12)	**	.54(.13)	**
	Hispanic or Latino	.15(.18)		-.11(.20)	
	American Indian or Alaska Native, Other or Multiracial	.21(.13)		-.03(.15)	
	I prefer not to respond	.49(.13)	**	.14(.14)	
Rank	Associate professor	-.07(.09)		-.00(.10)	
	Assistant professor	.04(.11)		.02(.12)	
	Full-time lecturer	-.28(.13)	*	.07(.00)	
	Part-time lecturer	-.37(.17)	*	.06(.19)	
Employment status	Full-time	.34(.19)		.33(.20)	
Gender identity (Man as reference)	Woman	.19(.06)	**	-.01(.07)	
	I prefer not to respond	-.02(.22)		.08(.23)	
U.S. citizen		.19(.21)		.01(.22)	
Adjunct		-.03(.14)		.10(.15)	
Tenured		.11(.10)		.09(.11)	
Discipline	Biological Sciences, Agriculture & Natural Resources	-.04(12)		-.04(.13)	
	Physical Sciences, Agriculture & Natural Resources	-.35(.10)	**	-.12(.11)	
	Social Sciences	.03(.10)		.02(.11)	
	Business	-.03(.12)		.28(.13)	*
	Communications, Media & Public Relations	.29(.18)		.06(.19)	
	Education	.15(.12)		-.04(.13)	
	Engineering	-.06(.32)		-.02(.35)	
	Health Professions	.21(.11)		.38(.12)	**
	Social Service Professions	.13(.22)		.07(.23)	
	Other	-.08(.12)		-.13(.13)	
Earned doctorate		-.05(.08)		-.06(.08)	
Age		-.01(.00)	*	-.01(.00)	**
Years of teaching		.00(.00)		.01(.00)	
Carnegie classification	Doctoral universities	.00(.26)		.08(.28)	
	Baccalaureate Colleges	.15(.10)		.25(.10)	*
	Other	.06(.10)		.32(.10)	**
Control	Private	.20(.09)	*	.03(.10)	
R square		.16		.07	

Note: * p<.05, ** p<.01

Discussion & Significance

First, the results show that on average faculty assigned distinct and increasing absolute value quantities to "never," "sometimes," "often," and "very often." Additionally, for all four items the average score for "never" was indeed zero. Interestingly, the meaning of vague quantifiers does seem to differ by item. Faculty seem to adapt the meaning of "sometimes," "often," and "very often" based on the appropriate reference for the question.

Second, median frequencies associated with the vague quantifiers were very close to linearly related. For most items the intervals between response options are roughly even. The NSSE items used in this study get used often in analyses that assume these ordinal measures are, in fact, close enough to interval to proceed. Our findings show that a linear function fit the median values quite well, though, it is worth noting, other forms also fit the median values at times too. For those who have been looking for empirical evidence on which to base their use of vague quantifiers as linear items for their analyses, these results should be quite encouraging!

Finally, the meaning of the vague quantifiers does seem to differ by some faculty and institutional characteristics, but the differences in those effects on the vague scale and absolute scale are trivial. In other words, there differences by faculty and institutional characteristics (such as race, discipline, and Carnegie classification) in the amount of student-faculty interaction that faculty are reporting, but we see similar differences when using both the vague and the absolute value versions for measuring student-faculty interaction.

This study suggests that vague quantifiers, while they might not be precise, might be good proxy measures for more exact absolute value measures.

See more about FSSE and this study at
fsse.iub.edu/html/publications_presentations.cfm