2016-2017 Assessment Update for:

School of Psychology: Master of Science
School of Psychology: MS in Psychology

Program Purpose

The purpose of the MS program in psychology and HCI is to prepare the graduate for continued education at the Ph.D. level or, if the student exits the program at the Master's level, directly for a job in academia or industry. We note that Psychology does not have a 'terminal' MS degree -- all students are directly admitted into the PhD program, and we expect them to finish the PhD degree rather than finish with an MS degree.

Responsibility and Implementation Process

Assessment takes the form of faculty ratings of student work (such as the Dissertation Quality Assessment Instrument (Lovitts, 2007), and performance evaluations. These ratings are typically obtained after the student completes a milestone (e.g., thesis defense). The graduate coordinator is responsible for obtaining the data and maintaining the data set. The Graduate Policy Committee (3 faculty members, one student), which meets at least once a semester, is responsible for suggesting and implementing changes based on the assessment results. Major proposed changes are always discussed in full faculty meetings.

Operational Objectives

The operational objects include:

1 Students demonstrate mastery of core knowledge in the field of psychology and in their subfield of specialization.

2. Students demonstrate necessary emerging methodological skills to conduct independent research in the field.

3. Students demonstrate the necessary data-analytic skills to independently analyze data from psychological studies.

Objective 1: Core area knowledge

Graduates will be able to demonstrate a working knowledge of concepts and theories in both general psychology and their specific area of concentration (industrial/organizational psychology, engineering psychology, cognitive aging, quantitative psychology, or cognition and brain science), as evidenced in their ability to articulate this knowledge and to use it effectively to inform their research questions.

Method 1: Items on the DQAI

Theory' is a specific item on the Dissertation Quality Assessment Instrument, taken from Lovitts (2007; *Making the Implicit Explicit: Creating Performance Expectations for the Dissertation*, Stylus Publishing) that assesses the student's critical understanding and creative application of theories and theoretical concepts in the field. This instrument is filled out after each MS defense by the committee and signed by the chair of the committee, based on the thesis document. The item is scored on a 4-point scale (1=unacceptable, 2=acceptable, 3=very good, 4=outstanding), using criteria explicitly outlined in Lovitts (2007). Given that we expect our students to go beyond demonstration of a basic level of competence, we expect 100% of students to score above 3 on all components.

	Quality levels			
Component	4-Outstanding	3-Very good	2-Acceptable	1-Unacceptable
Theory	Creative, original; has a theory; discusses and works with more than one theory or model; articulates and compares competing theories; shows how competing theories are complementary; uses competing ideas to make hypotheses and develop studies; identifies and	Students has sophisticated knowledge of and ability to use relevant theories; figures out where the gaps are in theories and extracts what is useful; uses theory to inform the research questions and measures; discusses how observations are consistent or	No clear theoretical framework; provides a laundry list of relevant theories; question is not integrated into a theoretical perspective; does not critically analyze the theories' underlying assumptions or boundary conditions;	Has no theory; does not have a good guiding theory; theory is misunderstood, misclassified, or underdeveloped; overlooks a certain body of theory; theory is unrelated to the literature review

	critically analyzes key theoretical assumptions and boundary conditions; identifies the theories' implications for the student's study; advances theory	inconsistent what prevailing theory; suggests how diverse observations can be pulled together; makes some progress	accepts theories at face values; hypotheses are not logical deductions from theoretical premises; hypotheses do not synthesize multiple theories or test competing theories	

Results of Items on the DQAI:

For 2016-2017, we have DQAI *Theory* data on four students. Range for *Theory* was 3 to 4, mean was 3.5. These scores are at the level where we want them: 3 or higher. This directly demonstrates that students are competent in the domain of core knowledge. Mean for 2014-2015 was 3; for 2015-2016, mean was 4. We see no obvious trend in the data (for better or for worse), and so no action is required for the time being.

Action/Improvement Summary for Learning Objective Core area knowledge :

Results are within our goals, and we see no obvious trend in the data (for better or for worse), and so no action is required for the time bein, over and beyond continued monitoring.

Objective 2: Methodological skills

Graduates will be able to demonstrate emerging skills (i.e., aided by their mentor) in explaining, using, and applying appropriate psychological methods so as to design and to assist others in designing and interpreting psychological experiments.

Method 1: First-year project

All first-year students are required to design and if possibly conduct a psychological study, assisted by their mentor. The results of this process are first written down in a proposal (Fall), and then in a final paper (Spring, or earlier). We use the following rubric (patterned after a specific item on the Dissertation Quality Assessment Instrument, taken from Lovitts (2007; *Making the Implicit Explicit: Creating Performance Expectations for the Dissertation*, Stylus Publishing), for the assessment of the level of methodological skill evident in the final product. This scale is filled out at the end of the academic year for every first-year student by the advisor. We expect all students to score a 2 or higher, demonstrating at least emerging sophistication in methodology.

	Quality levels			
Component	4-Outstanding	3-Very good	2-Acceptable	1-Unacceptable
Methods (First Year Project)	High quality; a well-designed experiment with proper controls; has a level of complexity that goes beyond the obvious; has done some pilot testing to nail down the characteristics of the methods; creatively applies an existing method to a new question; uses a new method; comes up with useful measures	Applies methods in correct and creative ways; describes why they are using a particular task, what it does, and how it fits with the study; creates new tasks; uses multiple measures of the same constructs; shows interest in convergent and divergent validity issues	Shows basic level of competence; method fits the problem; follows the rules for samples, measures, and analyses; uses one measure for each construct	Uses wrong or poor methods to answer the question; has a major confound; uses an inappropriate population to test a theory; does not have appropriate controls or control groups; does not have controls

Results of First-year project:

For 2016-2017, we have DQAI data pertaining to the first-year project for 9 students. Average score on *Methods* was 3.4, range was 3 to 4. This demonstrates that all our first-year students were able to 'correctly and creatively apply methods to their projects', exceeding our goal of a 'basic level of competence'. This was the first year such data were gathered, so we have no historical comparison. No action seems warranted at this point.

Method 2: Item on the DQAI

Methods' is a specific item on the Dissertation Quality Assessment Instrument, taken from Lovitts (2007; *Making the Implicit Explicit: Creating*

Performance Expectations for the Dissertation, Stylus Publishing), that is relevant for measuring skills in designing empirical studies in the field of psychology. This instrument is filled out after each thesis defense by the committee and signed by the chair of the committee, based on the thesis document. The item is scored on a 4-point scale (1=unacceptable, 2=acceptable, 3=very good, 4=outstanding), using criteria explicitly outlined in Lovitts (2007). Given that we expect our students to go beyond demonstration of a basic level of competence, we expect 100% of students to score above 3.

	Quality levels			
Component	4-Outstanding	3-Very good	2-Acceptable	1-Unacceptable
Methods (Thesis)	High quality; a well-designed experiment with proper controls; has a level of complexity that goes beyond the obvious; has done some pilot testing to nail down the characteristics of the methods; creatively applies an existing method to a new question; uses a new method; comes up with useful measures	Applies methods in correct and creative ways; describes why they are using a particular task, what it does, and how it fits with the study; creates new tasks; uses multiple measures of the same constructs; shows interest in convergent and divergent validity issues	Shows basic level of competence; method fits the problem; follows the rules for samples, measures, and analyses; uses one measure for each construct	Uses wrong or poor methods to answer the question; has a major confound; uses an inappropriate population to test a theory; does not have appropriate controls or control groups; does not have controls

Results of Item on the DQAI:

For 2016-2017, we have DQAI data pertaining to *Methods* for the MS thesis for 4 students. Average score was 3.25, range was 3 to 4. This demonstrates that at the thesis level, our thesis students were able to 'correctly and creatively apply methods to their projects', as was our goal. In 2014-2015, mean was 3.5; in 2015-2016, it was 4. There is no clear discernible downward trend in the data.

Action/Improvement Summary for Learning Objective Methodological skills :

For both assessment methods, results were within our goals, so no action seems necessary, over and beyond continued monitoring.

Objective 3: Data-analytic skills

Graduates will demonstrate a working knowledge of the statistical and other data-analytic tools needed to correctly collect data and analyze the results, and report the findings.

Method 1: Locally Developed Exam

Within our basic statistics class (Stats I), two components explicitly measure the student's ability to perform independent data analysis, including both correct interpretation of research questions and what a suitable methodology for these questions is, and the correct calculations. The first component is the lab in Stats I, which consists of weekly exercises, performed individually on PC (scored as percent correct); the second component is a question on the third test for the class, which explicitly assesses interpretation and calculation (scored as percent correct).

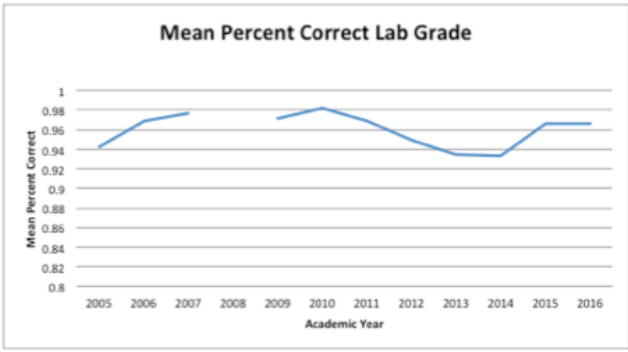
We expect 100% of all students to get a passing grade (70% or higher) on both components.

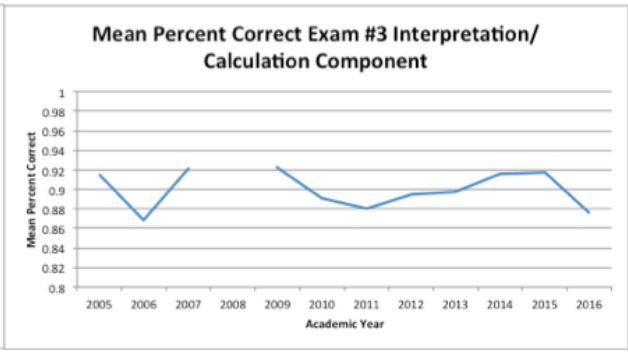
Results of Locally Developed Exam:

In 2016-2017, the range for the lab component was 92-99%, with a mean of 97%, indicating that, on average, students do superbly in independent data analysis. Clearly, our students were exceeding the School's goal on this component. The average of the years 2010-2016 was 96%, indicating little change in a superb score, and no need to action.

In 2016-2017, the range for the specific exam question was 88%, with a range from 69-100%, indicating that, on average and as a whole, our students do superbly in interpretation and calculation. One student fell (barely) below the cut-off for this component. The average of the years 2009-2015 was 90%, indicating little change in a superb score, and therefore no need for immediate action beyond careful monitoring.

More complete historical data are presented in the figures below, again indicating no clear historical trend (fitted trend lines are essentially flat).





Method 2: Item on the DQAI

'Results/data analysis' is a specific items on the Dissertation Quality Assessment Instrument, taken from Lovitts (2007; *Making the Implicit Explicit: Creating Performance Expectations for the Dissertation*, Stylus Publishing) that taps into working knowledge of statistical tools and reporting. This instrument is filled out after each thesis defense by the committee and signed by the chair of the committee, based on the thesis document. The item is scored on a 4-point scale (1=unacceptable, 2=acceptable, 3=very good, 4=outstanding), using criteria explicitly outlined in Lovitts (2007). Given that we expect our students to go beyond demonstration of a basic level of competence, we expect all students to score 3 or 4.

	Quality levels			
Component	4-Outstanding	3-Very good	2-Acceptable	1-Unacceptable
Results/data analysis	Creative; uses proper, defensible statistical and analytical methods; uses best, most powerful, and sensitive analytic procedures to address the experimental question; uses cutting-edge techniques; takes existing commercial software and develops new models; applies newer and different models to the data set; provides information about why each analysis is being conducted; analysis is thorough and seamless; integrates among and across levels of analysis; develops new ways to look at the data and makes the most of the data; tells a story; makes a theoretical argument; analyses map	Appropriate; clear; does not conduct supplementary analyses; leaves open data analysis opportunities	Meets the standard of thoroughness or comprehensiveness; has done the minimum analysis required for address the original questions; results go back to the hypothesis; does not develop a meaningful story	Analyses are wrong, inappropriate, or not well matched to the research question; analyses are not reported completely enough; presents the results poorly; does not follow up on alternative interpretations allowed by the analyses

	back to the hypotheses and answer the questions; shows curiosity through relentless exploration of the data; iteratively explores questions raised by each analysis; pays attention to detail; communicates analyses very clearly; discusses the limitations of the analysis			

Results of Item on the DQAI:

For 2016-2017, we have DQAI *Results/data analysis* data on four students. Range of scores was 3 to 4, mean was 3.5. These scores are at the desired level: 3 or higher. This directly demonstrates that our MS students are competent in the domain of data analysis and presentation of results, using analysis methods that are 'appropriate' and 'clear'. Mean for 2014-2015 was 3.25; for 2015-2016, mean was 3.75. We see no obvious trend in the data (for better or for worse), and so no action is required for the time being.

Action/Improvement Summary for Learning Objective Data-analytic skills :

Currently, our students perform within the range set by our goals, and there are no negative historical trends, so no immediate action over and beyond monitoring seems necessary.

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