EMORY UNIVERSITY
2015-2017 Assessment Report for Educational Programs
Assessment Period Covered: September 1, 2015 - August 31, 2017

Program: PSYCHOLOGY	**Date Submitted: 3/21/2018**
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I. STUDENT LEARNING OUTCOMES

1. Statistical Competency-CAOS Statistical Inventory and senior survey
2. Ethical Values-CITI Certification and senior survey
3. Research Involvement-Participation in departmental research and senior survey
4. Presentation Skills
5.

II. ASSESSMENT SUMMARY

FIRST METHOD OF ASSESSMENT FOR OUTCOME #1:

Method of Assessment:

Statistical Competency – The 2015-2017 academic years marked the third and fourth years that our students did not enroll in Psych 230: Applied Statistics for Psychologists to fulfill the major foundation requirement for an applied course in elementary statistics. Psych 230 was offered for the last time in the spring semester of 2012. Since then, students fulfilled the requirement by enrolling in QTM 100: Introduction to Statistical Inference. Therefore, information presented in this report will be a combination of the experiences of students who took Psych 230 and those who took QTM 100 to fulfill the same requirement. Approximately 94 % of students responding to the senior survery in both 2016 and 2017 reported taking QTM 100; less than 3% reported taking Psyc 230. Data will not be broken down into students who took Psyc 230 and those who took QTM 100; there are too few students who took Psyc 230 to offer a valid comparison. This means that the majority of students enrolling in Psych 200 (which is the follow-on course to the required statistics class) who graduated in either in the 2015-16 or 2016-17 academic years did so after completing QTM 100.

A. Direct Assessment

1. Basic statistical competency –
We have utilized the Comprehensive Assessment of Outcomes in a First Statistics Course (CAOS, 2005) to assess student statistical knowledge at the time of enrollment in Psyc 200: Laboratory Methods following completion of QTM 100. Eighteen items that measured students' ability to define core concepts (e.g., p-value), understand graphical presentation of results, and interpret findings were drawn from this assessment tool. The development of this measure was funded by the National Science Foundation. The statistical literacy test was administered to students online in the departmental experimental methods course in the Fall 2015, Spring 2016, Fall 2016 and Spring 2017 semesters. Students were asked to take the test approximately 6 weeks after the beginning of the semester at the point in the course where they were required to analyze data they had collected for their first study. Students in the fall classes took the exam a minimum of 5 ½ months after completing the statistics class. Students in the spring classes took the exam a minimum of 2 ½ months after completing their statistics instruction. In addition, we also included 10 items that examined advanced statistical concepts not assessed in the national test (e.g., conditional probability, statistical interactions, kappa coefficients, and multiple regressions).

Achievement Target:

Our goal was that students will score within 10 percentage points of norms on selected items drawn from the CAOS test of statistical literacy.

Summary of Assessment Results:

A.) CAOS data from 2 academic years, two fall semesters and 2 spring semesters, will be reported. Student performance in the Fall 2015 class was within 10% of national norms on 9 of the 18 items and exceeded national norms on an additional 2 items. Therefore, students were at or exceed national norms on 11 of the 18 items. Performance was below the 10% benchmark on 7 items (p-value significance, causal interpretation, application of concept of standard error, regression prediction, histogram interpretation and sampling distributions and interpretation). Student performance in the Spring 2016 class was within 10% of national norms on 6 of the 18 items and exceeded national norms on an additional 7 items. Students were at or exceeded national norms on 13 of the 18 items. Performance was below the 10% benchmark on five items (t-test interpretation, confidence intervals, application of concept of standard error, regression prediction and sampling distributions interpretation).

Student performance in the Fall 2016 class was within 10% of national norms on 8 of the 18 items and exceeded national norms on an additional 4 items. Students were at or exceed national norms on 12 of the 18 items. Performance was below the 10% benchmark on 6 items (t-test interpretation, confidence intervals, causal interpretation, application of concept of standard error, regression prediction, and histogram interpretation). Student performance in the Spring 2017 class was within 10% of national norms on 5 of the 18 items and exceeded national norms on an additional 5 items. Students were at or exceeded national norms on 10 of the 18 items. Performance was below the 10% benchmark on 8 items (p-test significance, t-test interpretation, confidence intervals, application of concept of standard error, regression prediction, histogram interpretation

and sampling distributions and interpretation).

These results revealed acceptable mastery and retention of a number of statistical concepts at a level that would allow application in the research methods course. However, it does reveal several areas of ongoing weakness in the understanding of statistical concepts from the introductory statistics course.

Use of Assessment Results to Improve Program:

A.) A major change in statistics instruction occurred in the 2012-2013 academic year. Introductory statistics is now taught in a general statistics class offered by the Institute for Quantitative Theory and Methods rather than at the department level. The majority of students in Psych 200 who completed the CAOS assessment took QTM 100 to fulfill the applied statistics requirement. These students appeared to have difficulty with the concepts of t-test interpretation, application of concept of standard error, regression prediction, histogram interpretation and sampling distributions when assessed following the completion of the statistics course, suggesting some concern with retention of concepts.

Results also revealed that students had some difficulty with advanced concepts and may need review and practice with more difficult applications (e.g., standard error interpretation, causal inference). Faculty teaching the methods course will continue to incorporate additional review of concepts below the 10% benchmark and advanced concepts into the methods course prior to students beginning their statistical analysis. The Psych 200 course continues to undergo revision as we become more aware of the state of statistical knowledge students have available at the onset of the course. The course instructor has incorporated additional statistical instruction in the areas dealing with the more difficult applications and where the retained knowledge base appears to be less strong. However, the incorporation of additional statistical review into the research methods class has impacted the content of that class, requiring the reduced coverage or elimination of some topics that were previously part of the course syllabus.

Recognizing the importance of a strong statistical foundation, particularly for those students planning to enter graduate programs, the department has added an advanced statistics/methods course (Psych 430: Advanced Statistics and Research Methods), as well as other more statistically sophisticated courses, to our regularly offered classes. The Advanced Stats and Methods class was initially offered as a special topics course in the fall 2014 and was offered as a regular course for the first time in the fall 2015. It was also offered in the spring of 2017. Generally, students taking this course have already completed Psyc 200; Laboratory Methods as well as QTM 100. This course is an elective for the undergraduate major and provides an opportunity for a more comprehensive experience involving active learning strategies through the analysis of student-generated data. This course description states:

> *This course provides an introduction to advanced statistics and the research questions and designs that require their use. Topics include mediation and moderation in multiple regression, complex ANOVA, data reduction techniques, multivariate ANOVA, advanced regression, and resampling methods. This course is designed for students who are planning-conducting honors research that may require advanced statistical analysis or those considering graduate study and/or a career in research.*

Students engaged in the Honors program, other independent research projects or planning graduate work in the area of psychology and related sciences should have a solid understanding of these more advanced topics and will be encouraged to enroll in this class.

The addition of new faculty with quantitative interests have permitted us to expand our course offerings at the undergraduate level beyond a general course in basic statistics. We have been able to increase our course offerings in other areas of statistical understanding with two special topics classes. In the spring of 2016, we offered a course in multiple regression, Psyc 385: Multiple Regression. The course description for this course is as follows:

Content: *In this course we will examine multiple regression analysis and the general linear model as a comprehensive statistical analytical framework, including a mix of theoretical, conceptual and "hands-on" approaches. We will begin with basic statistical concepts and their assumptions and then explore some useful graphical statistical methods, the relation of regression to ANOVA, model adequacy and regression diagnostics, and models containing additive, interactive, curvilinear, and indirect effects. Time permitting, we will also examine analyses of categorical and of multiple dependent variables.*

Texts: *Selected articles and chapters, and text(s).*

Particulars: *By consent of instructor only. There will be four or five assignments integrating statistical analyses on computer with concepts learned in class, as well as two exams to test students' knowledge of the material covered.*

Pre-requisite: *Students must have taken QTM100, or Psych 230, or an equivalent class in basic statistics.*

In the fall of 2016, we offered a course on multi-variate analysis, Psyc 385: Applied Multivariate Statistics which was cross-listed with QTM. The course description for this course is as follows:

Introduction to Applied Multivariate Statistics. In most scientific disciplines, much of the data collected involves multiple outcome variables. A full understanding of such data sets often requires simultaneous or multivariate analyses of these variables. This course provides an introduction to multivariate analysis techniques including principal component analysis, multidimensional scaling, exploratory factor analysis, cluster analysis, confirmatory factor analysis and structural equation modeling, and the analysis of repeated measures data. Students will learn to use the R programming language to implement these analyses and interpret the results. Data examples from the fields of business studies, economics, education, health sciences, political science, psychology, and sociology will be used.

Text: *Everitt and Hothorn (2011). An Introduction to Applied Multivariate Analysis with R*

The addition of these courses to our undergraduate offerings provides an opportunity for students to enhance their statistical competency beyond that possible through the completion of a broadly-focused, elementary statistics course such as QTM 100. Both of these courses contribute to the major as electives.

SECOND METHOD OF ASSESSMENT FOR OUTCOME #1:

Method of Assessment:

B. Indirect Measure

All graduating psychology majors are required to complete the departmental senior survey as part of the degree application process. There are 5 items on the senior survey which pertain to student experiences with statistics instruction and the utilization of statistics knowledge. These survey items are presented below:

22. I learned a lot in my statistics course.
23. My statistics class was difficult for me.
24. My statistics class prepared me for other classes.
25. The statistics class should be required.
34. I know how to use statistical measures appropriately.

Achievement Target:

Our goal was that 75% of students would report agreement with the 5 statements regarding their experience with the statistics class required for the major.

Summary of Assessment Results:

B.) The majority of students in the Classes of 2016 and 2017 took QTM 100 to fulfill their statistics requirement. For both those classes, approximately 95% of students completing the senior survey reported taking QTM 100, while approximately 3% reported taking Psyc 230. Because Psyc 230 has not been offered since the spring of 2012, this suggests that students who reported taking Psyc 230 were students who had been away from Emory for a time or were students who required more than the traditional 8 semesters to complete the undergraduate curriculum. Because 95% of students took QTM 100 to fulfill the statistical competency requirement for the major, there was no longer a need to separate responses to the five statistical items on the survey according to completion of QTM 100 as opposed to Psyc 230

In general, the results of the departmental senior survey for the 2015-17 academic years are similar to those of the previous years. Survey items and percentage of students in agreement (select 'agree' or 'somewhat agree') with the item are presented below:

					Class of		
	2017	2016	2015	2014	2013	2012	2011
22. I learned a lot in my statistics course.	67%	65%	76%	83%	79%	66%	66%
23. My statistics class was difficult for me.	61%	62%	56%	65%	65%	57%	77%
24. My statistics class prepared me for other classes.	59%	57%	61%	67%	55%	61%	64%

25. The statistics class should be required.

71%	70%	75%	77%	70%	77%	73%

34. I know how to use statistical measures appropriately.

67%	77%	70%	72%	67%	69%	57%

Class of 2016

For the Class of 2016, 65% of the graduating seniors reported that they learned "a lot in my statistics class"; this is in comparison to 76% for the Class of 2015. 62% of the 2016 graduating seniors reported that they found the material difficult; this value is higher than the 56% reported by the Class of 2015. Many recognized the value of such a course and that it should be required for a psychology major (70%). 77% felt that, by the end of their undergraduate education, they could use statistics appropriately. It is important to note that, by the end of the undergraduate education, students had been exposed to both theoretical and applied statistics in Psyc 200: Laboratory Methods as well as QTM 100. However, there continues to be a disconnect between the acquisition of statistical knowledge in QTM 100 and the level of statistical expertise required in other psychology classes. Only 57% of the class of 2016 felt the QTM 100 course prepared them for other classes; this value is lower than that of the previous year (61%).

Class of 2017

For the Class of 2017, 67% of the graduating seniors reported that they learned "a lot in my statistics class"; this is in comparison to 65% for the Class of 2016. 61% of the 2017 graduating seniors reported that they found the material difficult; this value is similar to the 62% reported by the Class of 2016. Many recognized the value of such a course and that it should be required for a psychology major (71%). 67% felt that, by the end of their undergraduate education, they could use statistics appropriately. It is important to note that, by the end of the undergraduate education, students had been exposed to both theoretical and applied statistics in Psyc 200: Laboratory Methods as well as QTM 100. However, there continues to be a disconnect between the acquisition of statistical knowledge in QTM 100 and the level of statistical expertise required in other psychology classes. Only 59% of the class of 2016 felt the QTM 100 course prepared them for other classes; this value is marginally higher than that of the previous year (57%).

For both the Classes of 2016 and 2017, these numbers indicate that they left the QTM 100 course with some uncertainty about their ability to use the statistical knowledge from the course in their psychology classes.

Use of Assessment Results to Improve Program:

B). We will continue to assess student perception of statistical mastery through questions on the Psychology Department's senior survey. We will continue to ask the questions about experiences with statistical instruction and utilization of statistical knowledge that we have in the past. The majority of students, 95% in both the class of 2016 and 2017 completed QTM 100 for the elementary statistics. Considering survey results from this report and those of previous years, the data suggests that students who complete Psych 230 and those who complete QTM 100 emerge from those experiences with different statistical competencies. These different areas and levels of strength in statistical concepts will be addressed in the requirements of the follow-on laboratory methods course. We are currently in a transitional period where we are moving from a situation where

students in laboratory methods can be expected to have an extensive background in statistical methods and concerns from a psychological perspective to a situation where students enrolled in laboratory methods will have a more broadly focused background in general statistical methods. We are working to determine how to structure the demands of the laboratory methods class to retain the experimental rigor which is a hallmark of that course while taking into account the more general statistical background of the students.

The statistical preparation afforded undergraduate majors was one of the topics of conversation in the recent self- study of the department and subsequent external review. The external reviewers note "We are not surprised that a centralized course, however well- resourced and run, is problematic for some disciplines; given the pedagogical value of discipline-specific content in statistics training".

FIRST METHOD OF ASSESSMENT FOR OUTCOME #2:

Method of Assessment:

Ethical Behavior and Values in Psychological Research

A. Direct Assessment

As a requirement for Psych 200: Laboratory Methods, students are required to complete certification process in the Social/Behavioral Focus through the Collaborative IRB Training Initiative Program (CITI) under the direction of the Office of Research Education at the University of Miami. This training program tests knowledge in the following areas: history and ethical principles, defining research with human subjects, regulations guiding research, assessing risk, informed consent, privacy and confidentiality as well as conflict of interest. Students are required to earn 80% correct responding in order to complete the certification process.
Completion of Psyc 200 is a foundation requirement for the psychology major. All students intending to be a psychology major must take and successfully complete this course to fulfill the requirements for the major. There are no exceptions to this requirement.

Achievement Target:

Our goal is to have 100% of students enrolled in Psyc 200: Laboratory Methods successfully complete the CITI certification process by scoring 80% or higher on the CITI Certification assessment.

Summary of Assessment Results:

A. 100% of Psyc 200 students enrolled for fall 2015, spring 2016, fall 2016 and spring 2017 successfully completed the CITI certification process prior to planning their own research studies and independently collecting data. The enrollment numbers for Psyc 200 over the two year period covered in this report were:

Fall 2015 – 84
Spring 2016 – 77
Fall 2016 – 80
Spring 2017 – 78
Each academic year, approximately 155 to 160 undergraduates are certified knowledgeable in the area of research ethics and the appropriate treatment of human participants through completion of Psyc 200.

Use of Assessment Results to Improve Program:

A. We do not foresee any changes in this area in the near future. We will continue to require CITI certification before Psych 200 students are permitted to independently conduct research with human subjects.

SECOND METHOD OF ASSESSMENT FOR OUTCOME #2:

Method of Assessment:

B. Indirect Assessment

1. All graduating psychology majors are required to complete the departmental Senior Survey as part of the degree application process. We will analyze student responses to those items on the survey that are relevant to issues of ethical values in research.

2. We surveyed faculty in the psychology department who teach undergraduate courses to determine if they covered ethics and ethical concerns as part of the course curriculum. We were interested in courses that students might be expected to take early in their undergraduate careers prior to enrolling Psych 200, such as introductory courses and other 200 level classes, as well as more advanced classes that students would be expected to take near the end of their undergraduate careers.

Achievement Target:

We would like to maintain the high level (90^{th} percentile) of confidence that students report regarding their understanding of ethical values.

Summary of Assessment Results:

B. 1. Senior Survey
Item #40 on the senior survey is relevant to issues of ethical values in research. This item states "I have a good understanding of ethical values in research."

Class of 2016 - 96% of the graduating seniors responding to this item indicated that they either strongly agreed or agreed with the statement, with the remaining 4% indicating that they were

uncertain. This value is slightly higher than the 94% agreement for spring 2015, but lower than the 97% for spring 2014.

Class of 2017- 95% of the graduating seniors responding to this item indicated that they either strongly agreed or agreed with the statement, with the remaining indicating that they were uncertain. This value is very similar to the 96% agreement for spring 2016 and to the 94% for spring 2015, but lower than the 97% for spring 2014.

Item #90 on the senior survey asks about discussion of ethical issues in the introductory courses, Psyc 110 and Psyc 111. This item states "Research ethics and ethical considerations in the treatment of research participants were discussed in my Introduction to Psychology classes."

Class of 2016 – 85% of students responding indicated that they were exposed to ethical considerations in either Psyc 110, Psyc 111 or both. 42% responded that they were exposed in only Psyc 110, 11% in Psyc 111 only and 32% in both Psyc 110 and Psyc 111.

Class of 2017 – 94% of students responding indicated that they were exposed to ethical considerations in either Psyc 110, Psyc 111 or both. 46% responded that they were exposed in only Psyc 110, 14% in Psyc 111 only and 34% in both Psyc 110 and Psyc 111.

B. 2. Course content survey reported by teaching faculty

Results of the faculty survey indicated that students are exposed to ethical issues and concerns in their most basic courses in psychology. For many students, Psych 200: Laboratory Methods is not the first exposure to ethical considerations in research, and nor is it the only exposure to these ideas. Ethical issues are covered in both Introduction to Psychology courses, Psych 110 and Psych 111. The Introduction to Psychology courses enrolls Psych majors, majors in other departments as well as students who have not yet declared a major. In Psych 110, the emphasis is on ethical considerations for studies involving non-human subjects since the majority of literature discussed in this class is based on that type of research. In Psych 111, the emphasis is on considerations of research with human participants. In both Psych 110 and Psych 111, coverage of these topics included assigned textbook chapters, class discussion and items on tests. This early exposure to ethical concerns emphasizes to both potential psych majors and the general student population how important integrity and ethical treatment of participants is in any experimental setting. The results of Item #90 on the senior survey indicates that student in the introductory courses are exposed to the importance of considering ethical issues and considerations at a very early point in their academic careers. .

Many of the courses which follow the introductory sequence also expose students to ethical considerations. There is similar coverage of ethical issues with non-human subjects in Psych 103: Brain and Behavior that students tend to take after completing Psych 110. A number of 200 level courses, which tend to enroll psych majors, non-psych majors and undeclared students, offer additional discussions of specific ethical issues facing that result from the specific nature of the topics. Psych 205: Child Development, Psych 218: Infancy and Psych 311: Adolescence involves coverage of the unique challenges of working ethically with an immature and still developing human population. The Summer Study Abroad programs which have a developmental focus (Psych 386/Psyc 387: Cross Cultural Studies in Psychological Research and Psyc 388: Child Development in the South Pacific) cover the unique ethical considerations for developmental work undertaken in a cross-cultural setting. Both of these programs required enrolled students to interact with children and adults in the United Kingdom and Samoa respectively in order to gather research data. Psych 212: Social Psychology

introduces the challenges of research involving deception as a data gathering technique. Psych 210: Adult Abnormal and Psych 211: Childhood Psychopathology addresses issues relating to the special protections and concerns of research with populations considered to be at risk. In those classes, attention is directed to the treatment of the mentally ill in the judicial system. Concepts related to the judicial system are also explored in Psych 340: Crime and Criminal Behavior and Psych 341: Psychology of Evil (Maymester course).

In addition, a number of upper level courses, including Psych 476: Hormones, Brain and Behavior discuss ethical concerns of research with non-human populations at an advanced level. Ethics, both from the perspective of participant protection and as well as scientific misconduct on the part of researchers, is part of the syllabus for students enrolled in the Honors Program through Psych 495A. Coverage of the topic is more extensive in this class than in Psych 200, as Psych 495 prepares these students to conduct the independent research required by the department for an Honors project and often serves as a springboard to graduate work involving human and/or non-human participants.

Use of Assessment Results to Improve Program:

B. We do not foresee any major changes in the area of CITI certification area in the near future. Student responses on the senior survey indicate a high level of understanding of the responsibilities that are placed on researchers who work with human participants.

One possible expansion of ethical concerns may accompany the change in the model we utilize for instruction in Psyc 200. For over 20 years, instruction in Psyc 200 was the responsibility of one faculty member. We will be moving to a model of rotating the responsibility for overseeing Psyc 200 among three instructors. Although all instructors will be working form a commonly agreed upon syllabus and curriculum, each brings with them a unique background and experimental emphasis. With a change in the model, we are considering a greater discussion of research ethics with animals. One faculty member who will be teaching Psyc 200 in the coming academic year has a background in animal work and is interested in expanding the focus of the Psyc 200 projects to include the possibility of non-human research projects. The historical emphasis in this class has been on projects involving human participants only, but it may be possible to expand the scope of the permissible projects to include animals. If we do offer students the opportunity to conduct animal research as part of the Psyc 200 independent research requirement, we will need to provide students with appropriate training in the ethical treatment of non-human research animals. This training will take place in addition to the CITI certification required for all students in Psyc 200.

We will continue to encourage faculty to initiate early discussion of research ethics in introductory classes as well as higher level classes. It appears that many faculty teaching courses other than Psych 200 do include a consideration of ethic and ethical issues in their course. We will continue to encourage faculty teaching undergraduate courses, especially the introductory course, to include a discussion of ethics and ethical issues as part of the syllabus while all psychology majors must successfully complete Psych 200 and are therefore exposed to ethical concerns as part of that class, it is clear that this course in not their only exposure to ethics. There are other classes offered by the department which discuss ethical concerns. That this coverage begins in the introductory sequence, followed by additional conversations in 200, 300 and 400 level classes indicates the department's commitment to valuing research ethics and integrity. It emphasizes the point that such considerations are not secondary in any conversation about research and underscores the

department's efforts to expose students to these values in multiple classes, even at very early points in their careers as psychology majors.

Approximately 40% of each graduating class who completed the psychology major began their undergraduate education on the Oxford campus. By gathering information about how and when concepts related to ethical practices are introduced through the psychology courses offered on the Oxford campus, we will have a better idea about the exposure our majors have to these concepts early in their undergraduate careers. If Psyc 200: Research Methods is again offered on the Oxford College campus in the future, we will request that a specific discussion of ethics, ethical practices and completion of the CITI certification be included in the syllabus.

FIRST METHOD OF ASSESSMENT FOR OUTCOME #3:

Method of Assessment:

<u>Undergraduate Involvement in Psychological Research</u> - We gathered information about the variety of ways that undergraduates in the psychology department have an opportunity to engage in the research process through hands-on applied experience. Although all psychology majors are required to engage in research as part of the Psych 200: Laboratory Methods course, we were interested in determining how many students were also involved in research projects in faculty laboratories, both within and outside the psychology department. Students who work in research labs as lab assistants often have a different, more informed view of the research process than those who do not.

A. Direct Assessment

Determine the number of undergraduates involved in research across a number of possibilities:

1) Psych 499 – Academic year: Some undergraduates enroll in Psych 499: Supervised Research for academic credit. Academic credit earned by this type of participation varies with the number of hours per week undergraduates are available to work in the laboratory. Students enrolled in Psych 499 assist in many areas of a research laboratory's work. One enrollment in Psyc 499 in a psychology faculty research lab for 3 or more academic hours may be counted toward the requirements of the undergraduate major as an elective. Students may have either Psyc 499 or 494 count as an elective for the major; they may not have both.

2) Psych 494 – Summer study abroad: Undergraduates who participate in the Psychology Department's Summer study abroad program are enrolled in Psych 494 and develop a research project under the supervision of faculty as part of the program. The Summer Study Abroad program will go to the United Kingdom only in coming years. The research projects developed by students are a reflection of the culture in that part of the world. One enrollment in Psyc 494 during a Psychology summer program abroad may be counted toward the requirements of the undergraduate major as an elective. Students may have either Psyc 499 or 494 count as an elective for the major; they may not have both.

3) SIRE Program sponsored by Emory College: This program was created to encourage undergraduates to become involved with research early in their academic career. A number of different programs geared to the needs and experiences of participants. The SIRE program sponsors the Research Partners program for less experienced students, and the SIRE independent research grants for more experienced students, funding for conference travel to present research findings and Research Symposium. Selection of participants in this program is a competitive process with students submitting an application to a faculty committee that makes the awards.

4) Enrollment in Psych 200: Laboratory Methods: All psychology majors are required to complete the laboratory research methods course, Psych 200. According to the course description, the purpose of the course is:

Introduction to research design and scientific thought in psychology, including observational, survey, and experimental approaches. Lectures and laboratory exercises provide students with a basis for (a) understanding and evaluating published research; (b) planning, executing, and reporting the results of research studies, and (c) communicating research findings clearly and concisely with APA style.

The course requires students to conduct small research projects across the semester and culminating in the planning and execution of an independent group research project. Because this course is one of the foundation courses, all psychology majors have this experience with research.

5) Enrollment in the College Honors Program: During the senior year, each Honors student in Psychology conducts an independent research project. In concert with a faculty advisor from the Psychology Department, the student collects and analyzes data, prepares an Honors thesis based on the data, and defends the thesis in front of a committee of three faculty members. This committee recommends Honors, High Honors, or Highest Honors to be granted to the student's degree. Students must arrange to work with a faculty advisor before the beginning of their senior year. Normally, an arrangement should be reached before the end of the student's junior year. Faculty members usually give preference to students whom they know - either from volunteer work in their laboratory or from a small class. Students who think they may be eligible and interested in the Honors Program are therefore encouraged to get to know a faculty member during their sophomore and junior years. Volunteering in a professor's laboratory also assists students in making more informed decisions about whether or not to participate in Honors. Honors students must have completed the Statistics and Laboratory Methods classes – QTM100 and Psyc 200 respectively - by the end of the junior year.

Achievement Target:

We would like to maintain the high level of research participation demonstrated in the past years. We want to ensure that students are aware of research opportunities in the department and are aware of how to approach faculty to avail themselves of those opportunities. We will attempt to facilitate the process of finding research positions by encouraging psychology faculty to more broadly advertise research vacancies in their labs and by ensuring that majors receive timely e-mails about College research opportunities. It is difficult to set a specific target for undergraduate participation in research since not all undergraduates have a desire to be involved in research.

Summary of Assessment Results:

A.1.) Academic year Psych 499: The number of undergraduates earning academic credit for research participation was determined by examining course enrollment in psych 499 for each semester of the 2013-2014 academic year. Data from previous academic years (2011-2012 and 2010-2011) are also presented below to provide an historical context for the current enrollment data:

Academic Year	Fall	Spring	Summer
2016-2017	2016 – 71 students	2017 – 81 students	2017 – 1 student
2015-2016	2015 – 62 students	2016 – 73 students	2016 – 2 students
2014-2015	2014 – 46 students	2015 – 71 students	2015 – 3 students
2013-2014	2013 - 46 students	2014 - 49 students	
2012-2013	2012 - 58 student s	2013 – 62 students	2013 – 5 students
2011-2012	2011 – 54 students	2012 – 61 students	
2010 -2011	2010 – 63 students	2011 - 52 students	

These numbers reflect all students enrolled in Psych 499. Not all students in Psych 499 are psychology majors and some students may appear in enrollment numbers more than once if they are working in two or more labs or are enrolled in Psych 499 for more than one semester.

A.2.) Summer study abroad psychology programs: As part of the summer study abroad program in the United Kingdom offered by the psychology department, students are enrolled in Psych 499 (prior to the summer of 2014) or Psych 494 (during or after the summer of 2014). The most recent summer enrollment data are presented below, as are data from previous academic years (summer 2013, summer 2012 and summer 2011) to provide historical context

Summer 2017: 28 students (2 programs – UK (single site) and Samoa)
Summer 2016: 48 students (2 programs – UK (2 sites) and Samoa)
Summer 2015: 27 students (1 program – UK (2 sites))
Summer 2014: 37 students (2 programs – UK (2 sites) and Samoa)
Summer 2013: 23 students (1 program – UK (2 sites))
Summer 2012: 28 students (1 program – UK (2 sites))
Summer 2011: 27 students (1 program – UK(2 sites))

A.3.) Participation through Emory College SIRE Program –Although we are aware that psychology majors are participating in the SIRE Program either through Research Partners or the independent grants program, we were unable to obtain information about the number of psychology students participating in these programs for the 2015/16 and 2016/17 academic years. Because we felt that participation in the SIRE program was a valuable component to the undergraduate research experience, we added some questions about participation in this program to the senior questionnaire for the Class of 2017. Those responses will be discussed in the section of the report that looks at the second or indirect method of assessment related to undergraduate participation in research.

A.4.) Psych 200 enrollment: All students majoring in psychology must successfully complete Psych 200: Laboratory Methods. This hands-on class provides opportunities for students to generate and analyze their own empirical data as part of the class curriculum. Data from previous academic years are also presented below to provide an historical context for the current enrollment data:

2016/2017	Fall 2016: 80 students	Spring 2017: 78 students
2015/2016	Fall 2015: 84 students	Spring 2016: 77 students
2014/2015	Fall 2014: 80 students	Spring 2015: 78 students
2013/2014	Fall 2013: 77 students	Spring 2014: 88 students
2012/2013	Fall 2012: 66 students	Spring 2013: 88 student
2011/2012	Fall 2011: 75 students	Spring 2012: 81 students
2010/2011	Fall 2010: 73 students	Spring 2011: 74 students

A.5.) College Honors Program enrollment: Academically eligible seniors are invited to participate in the College Honors Program through the psychology department. These students are enrolled in Psych 495A for the fall semester. To fulfill the College Honors Program requirements, students engage in original independent research under the supervision of a faculty mentor. Data from previous academic years are also presented below to provide an historical context for the current enrollment :

2016/2017: 12 students
2015/2016: 11 students
2014/2015: 10 students
2013/2014: 12 students
2012/2013: 7 students
2011/2012: 14 students
2010/2011: 16 students

Use of Assessment Results to Improve Program:

2011-2012 was the first year that we gathered data in a systematic way about the number of undergraduate majors who were involved with research and the types of research opportunities available to them. During 2015-2016 and 2016-2017 academic years, we continued to gather data to add to our information about our majors and research participation. The data from this and previous years indicate that a large number of students availed themselves of the numerous possibilities for engaging in research inside the department. Due to administrative changes in the office that oversees the SIRE programs, we were again unable to get data about psychology's involvement with these programs for the 2015-2016 and 2016-2017 academic years. While we will attempt to obtain those data for the coming year, we recognize that it may not be possible. From our perspective, information about the Research Partners program is particularly important since it represents an entry point for research participation for freshmen and sophomores. We are interested in knowing if students who participate in the Research Partners Program as freshmen and sophomores continue their interest in research through enrollment in Directed Research (Psych 499 or 494) and participation in the College Honors Program (Psych 495). Therefore, we added a question to the senior survey concerning student involvement in the SIRE Program to get an idea of the number of psychology majors who participated in any form of the SIRE Program

SECOND METHOD OF ASSESSMENT FOR OUTCOME #3:

Method of Assessment:

B. Indirect Assessment – All graduating psychology majors are required to complete the departmental senior survey as part of the degree application process. We will analyze student responses to those items on the survey relevant to research experience. Items relevant to research experiences and opportunities were:

Item #59: I was an undergraduate research assistant for a psychology faculty member.
Item #60: There were no positions available for me to do undergraduate research.
Item #61: I received academic credit for my laboratory assistant work.
Item #62: I worked in a lab as a volunteer research assistant
Item #63: I worked in more than one lab as a research assistant.
Item #64: I worked as a research assistant in a non-psychology research lab (e.g. NBB, Bio, Anthro, School of Medicine, etc).
Item # 86: At some point in my years at Emory, I participated in the SIRE/SURE research program sponsored by the College.

Item #64 was added to the survey for the 2015 graduating class because students indicated that they were engaged in research, just not in psychology, and we wanted a way to acknowledge and represent those experiences.
Item #86 was added to the survey beginning with the 2016 graduating class to gather information about involvement in research experiences through the College sponsored SIRE/SURE Program.

Achievement Target:

Our goal was to see 40% or more students reporting that they had experience in a faculty research laboratory. Regarding students who were unable to secure a research position, our goal was that the percentage of such students would be maintained at no greater than the 16% reported in 2013.

Summary of Assessment Results:

B. Psychology Department senior survey – As part of the 2016/2017 senior surveys, there were 7 items pertaining to research experiences and opportunities. These items and the percentage of students who responded that they agreed or strongly agreed with the statement are:

Item #59: I was an undergraduate research assistant for a psychology faculty member.
2017 – 45% 2016 – 41% 2015 – 42% 2014 – 44% 2013 – 42% 2012– 40%

Item #60: There were no positions available for me to do undergraduate research.
2017 – 22% 2016 – 14% 2015 – 22% 2014 – 13% 2013 – 16% 2012 – 15%

Item #61: I received academic credit for my laboratory assistant work.
2017 – 39% 2016 – 40% 2015 – 36% 2014 – 34% 2013 – 34%

Item #62: I worked in a lab as a volunteer research assistant.
2017 – 32% 2016 – 24% 2015 – 29% 2014 – 27% 2013 – 32%

Item #63: I worked in more than one lab as a research assistant.
2017 – 17% 2016 – 12% 2015 – 12% 2014 – 15% 2013 – 11%

Item #64: I worked as a research assistant in a non-psychology research lab (e.g. NBB, Bio, Anthro, School of Medicine, etc.).
2017 – 22% 2016 – 17% 2015 – 21%

Item # 86: At some point in my years at Emory, I participated in the SIRE/SURE research program sponsored by the College. (results are reported as number of students, rather than percentages)

	2017	2016
Research Partners only	8	7
Independent grants only	8	6
Partners and grants	5	1
Other	4	3

Use of Assessment Results to Improve Program:

B. Of the graduating seniors in 2016 and 2017, over 40% said they had participated in research as an assistant in a psychology laboratory. For 2016, the value was 41% and for 2017, the value was 45%. In addition to working in psychology labs, a number of our majors found research experience in non-psychology labs through NBB, biology, anthropology and SOM, among others. 17% of 2016 graduates and 22% of 2017 graduates report this experience. These aggregate numbers indicate that many of our majors, approximately a half assuming some overlap between those two categories, have had the opportunity to be engaged in the research process and the generation of new scientific knowledge. This number meets and exceeds the 40% that was our targeted value for this assessment. It is also clear that students both worked as volunteers in labs and worked in labs to receive academic credit.

These numbers remain encouraging for the number of students who were able to find a position in a research lab. However, not all student looking for lab experience were able to identify an appropriate lab. We continue to fall short of the goal targeting 16% or fewer of graduating seniors who report that they were unable to secure a research position during their academic career. In 2016, 14% of students report no positions available and in 2017, that number was 22%. There are a number of contributing factors in our difficulty in consistently meet this goal. Some of those factors include the attractiveness of psychology lab experience to non-psychology majors, changes in the requirements for the major and student perceptions about the recruitment process into labs.

Looking over enrollments in both Psyc 499 and Psyc 494 research experiences from summer 2015 through spring 2017, there were a total of 399 students enrolled. Of those 399 enrollments, 80 or approximately 20% of students were not psychology majors. They were majors from related disciplines such as NBB, linguistics and QTM. Because many of our faculty are associated with other academic areas in addition to psychology, research experience in those labs is of interest to students outside the major as well as those inside the major. There are a limited number of undergraduate research assistants that can be accommodated in any given lab and labs that are attractive to large numbers of students simply cannot accommodate all student requests. Thus, there appears to be competition for available positions.

Another factor impacting student interest in undergraduate research positions, especially those offering academic credit are the changes in the requirements of the major that were instituted in the beginning of the 2013/2014 academic year. These changes were the consequence of changes in how course credit hours are allocated. The number of elective courses for the major increased from 3 to 5 and one of those 5 electives may now be enrollment in a directed research opportunity (either Psych 499 or 494). The faculty chose this option as another means of encouraging students to get involved in ongoing faculty research and to experience research outside the classroom setting of Psych 200. We anticipate that undergraduate majors will be increasingly interested in locating a research position to complete the undergraduate requirements. As students become more aware of this option for completing an elective requirement for the major, we anticipate that interest in 499/494 enrollment will remain high. It may be unrealistic to anticipate that it will consistently fall below the 16% value obtained in 2013 before research credit

One area that we continue to monitor is how students are recruited into research labs or find out about research opportunities. New majors or students new to the Emory campus are often at a loss as to how to identify labs that might be a good match for their research interests. To help interested students identify possible lab positions, we continue to encourage faculty to post undergraduate research openings to the undergraduate bulletin board in the PAIS Building. By making the recruitment process for research assistants more transparent and increasing the visibility of lab openings, we hope to make it easier for students who are less well-connected within the department to find appropriate positions. This is particularly important for transfer students or Oxford continues who arrive on campus at an advanced point in their careers as psych majors without connections to or detailed information about the various research labs in the department. As an explicit part of the orientation workshops for transfer students and Oxford continuees, there was specific discussion about research opportunities available to undergraduates. During Orientation, students new to the campus were introduced to the role of undergraduates in research at Emory and were provided with resources about investigating research opportunities and faculty research interests through easily available information such as the departmental website, and the undergraduate bulletin board.

To further educate interested students about finding research opportunities and developing good research assistant skills, our faculty is has established the position of Director of Undergraduate Research and in the spring of 2017, Dr. Jessica Barber was appointed to this position. This position is similar to ones in other research-oriented departments and its purpose is to educate students about undergraduate research in general and more specifically about the opportunities available to undergrads interested in doing research with human and non-human participants. In the spring of 2017, Dr. Barber, with the assistance of Drs. Kim and Kazama, offered a workshop on research involvement to interested undergraduates. Although the workshop was sponsored by Psi Chi, all undergraduates were welcome to attend. Approximately 30 chose to attend the event. Topics

included motivation for engaging in research, types of research (basic, translational, applied), non-university research opportunities in the Emory area (including CHOA, the VA, Rollins, Grady) and steps to take to contact research laboratories. At the end of the event, the participants reported that they had a better sense of the research process and the appropriate steps necessary to become involved. Our plan is to offer this workshop each year or each semester depending on student demand. We do plan to move the workshop to the fall semester to offer this information as early as possible to help students looking for a research home early in the academic year.

FIRST METHOD OF ASSESSMENT FOR OUTCOME # 4:

Method of Assessment:

Outcome Presentation Skills – interest in written and oral presentation skills. In discussing psychological research, both oral and written presentation skills are necessary. During the 2015 – 2017 academic years, we again focused on both presentation skills. For those years, we focused our attention on the results from the senior survey (indirect assessment), rather than the more subjective evaluation data gathered through direct assessment obtained as the end of semester Psyc 200: Laboratory Methods poster session.

ASSESSMENT FOR OUTCOME # 4:

Method of Assessment:

A.) Indirect Assessment

All graduating psychology majors are required to complete the departmental Senior Survey as part of the degree application process. We analyzed student responses to those items on the survey that are relevant to questions about communication of scientific ideas and findings. These items are:

Item # 36: I know how to write a research paper according to APA style.

Item # 37: I can verbally discuss scientific research findings so that others can understand them.

Item # 38: I am able to discuss scientific research findings in writing so that others can understand them.

Two of these items (#37 and #38) have been reported in previous years. This year we looked at Item #36 for additional information on how confident students feel reporting research findings in the format preferred by the psychological community.

Achievement Target:

We would like to maintain the high levels of reported perceived competency in both verbal (I can verbally discuss scientific research findings…) and written form (I am able to discuss scientific research findings in writing…). Our target value for these perceived competencies is set at 90%, based on values from the results of previous years.

Summary of Assessment Results:

A.) Survey items and percentage of students in agreement (select 'agree' or 'somewhat agree') with the item are described below:

Item # 36 on the Senior Survey asks students for their perceptions of their ability to present research findings in the written format and structure preferred by the psychological community ("I know how to write a research paper according to APA style."). Students graduating in both 2016 and 2017 strongly agreed with this statement; for the class of 2016, 94% agreed and for the class of 2017, 96% agreed.

Item#37 on the Senior Survey asks students for their perceptions of their ability to communicate scientific research findings verbally ("I can verbally discuss scientific research findings so that others can understand them"). The 2016 and 2017 graduating seniors were fairly unanimous in their assessment of this statement, with 94% from both years expressing agreement.

Item#38 on the Senior Survey asks students for their perceptions of their ability to communicate scientific research findings in writing ("I am able to discuss scientific research findings in writing so that others can understand them"). The 2016 and 2017 graduating seniors were likewise confident of their ability in this area, with 93% agreeing with the statement.

The percent of agreement and strong agreement in the area of verbal communications (94%) for 2016 and 2017 graduates is somewhat higher than the corresponding value for the 2015 graduates (88%). It is very similar to the level of agreement in the area of written communication for 2016 and 2017 graduates (93%). These numbers suggest that the 2016 and 2017 graduates are uniformly confident in their ability to both write about and talk about research findings.

Use of Assessment Results to Improve Program:

B.) The survey items dealing with verbal and written communication of scientific ideas and findings suggests that students are confident in their communication skills. We looked separately at students' perceptions of their written and verbal communication skills. Student perception of both written and oral skills is high; they feel confident in both types of skills.

We will continue to emphasize both written and verbal communication skills as we work to restructure the Psyc 200 curriculum as part of the departmental self-study this year. It is clear that the strategies we have adopted in the Psyc 200 class to promote both written and verbal presentation

skills have been successful and our plan is to continue to utilize those strategies and incorporate them into whatever changes are made in the Psych 200 curriculum.

III. FACULTY INVOLVEMENT

Describe how your faculty members were involved in this year's assessment procedures.

Faculty members are involved in the assessment process through discussions in departmental curriculum committee meetings. We spent time discussing the department's learning goals and considering ways to evaluate progress toward achieving the learning goals. Faculty who choose to be more involved in the process work collaboratively on the yearly assessment report. Faculty who teach classes which are integral to the assessment process provide data for the report itself.

During the 2015-2016 academic year, the Psychology department undertook a departmental self-study. The feedback we received from the outside reviewers was very helpful in guiding our faculty conversations about the composition of the undergraduate curriculum. Much has changed in the department, in the University and in the field of psychology since we last reviewed our curriculum over 10 years ago. One of the areas the reviewers focused on was whether our current curriculum and structure offers majors the courses and experiences they need to be competitive for graduate study or other career plans. Discussions about the undergraduate experience will initially involve the departmental curriculum committee and then later the entire faculty over the next two years. We are beginning the process with an examination of the structure of the undergraduate major, considering whether the three-breadth-course model is best suited to the knowledge base, we would like our majors to take with them when they leave Emory. We have had fruitful discussions in curriculum committee and are beginning to plan how best to frame our expectations for studetns completing the major.

Other areas of discussion will certainly include statistical preparation, research experiences in classes like Psyc 200 and in faculty laboratories, renumbering courses to reflect a more sequential approach, greater utilization of pre-reqs for upper level classes, and the development of a Bachelor of Science option for majors, among other topics.

IV. What learning outcomes will your program assess next year?

Outcome: Statistical Competency

Method:	**Achievement Target:**
Direct Assessment – We plan to continue to assess basic statistical skills and competency at the beginning of the semester in Psych 200 using the Comprehensive Assessment of Outcomes in a first Statistics Course (CAOS, 2005).	**Direct Assessment** - Our goal will be that students will score within 10 percentage points of norms on selected items drawn from a national test of statistical literacy.

Method:	**Achievement Target:**
Indirect Assessment – We will analyze graduating senior responses to questions about experience with the statistical requirement for the major on the senior survey as in previous years.	**Indirect Assessment** – We would like 75% of our graduating seniors to report agreement with senior survey items relating to "learned a lot in my statistics class", "should be required" and "able to use statistical measures appropriately".

Outcome: Ethical Values	
Method:	**Achievement Target:**
Direct Assessment – As a requirement for Psych 200: Laboratory Methods, students are required to complete certification process in the Social/Behavioral Focus through the Collaborative IRB Training Initiative Program (CITI) under the direction of the Office of research education at the University of Miami. Students are required to earn 80% correct responding in order to complete the certification process.	**Direct Assessment** – We anticipate that 100% of Psych 200 students will successfully complete the CITI certification program. Faculty teaching the introductory courses will include a discussion and/or reading concerning ethical values in psychological research. This topic will be noted on the class syllabus.
Method:	**Achievement Target:**
Indirect Assessment – We will analyze student responses to the items on the Senior Survey that are relevant to issues of ethical values in research. We will add a new item to the senior survey: "I learned about ethics and ethical concerns in psychology classes prior to enrolling in Psych 200."	**Indirect Assessment** – We would like to maintain the high levels (in the 90th percentile) of confidence that students report regarding their understanding of ethical values. Our goal is for 75% of students to indicate agreement with the new survey item.

Outcome: Research Involvement-Participation in departmental research and senior survey	
Method:	**Achievement Target:**
Direct Assessment – We are interested in knowing about the number of psychology majors who work in research laboratories with psychology faculty. By working in a research lab,	**Direct Assessment** – We would like to continue to offer 100% of undergraduate majors the opportunity to engage in psychological research through enrollment in Psyc 200: Research

students are able to develop a better perspective on what skills are necessary for the conduct of good science and develop a better perspective on what skills are necessary for the conduct of good science and develop a better appreciation of the importance of foundational skills such as statistics and laboratory methods. We will look at class enrollment for the fall and spring semesters to determine the number of students enrolled in psych 499 for academic credit.	Methods. We would like to maintain the high level of research participation through enrollment in Directed Research within the Psychology Department as well as other College wide opportunities. We will collect data on the number of graduating seniors who include research experience as an elective for the major.
Method: **Indirect Assessment** – We will continue to analyze graduating senior responses to questions related to research experience on the senior survey.	**Achievement Target:** **Indirect Assessment** – We would like to continue to see the high percentage of students who report working as a research assistant in a faculty lab. We would like to see 40% or more students reporting that they have experience in a faculty research laboratory. We would like the percentage of students who report that they were unable to secure a research position to be reduced to no greater than 15%.

Outcome: Presentation Skills	
Method: **Indirect Assessment** – We will analyze student response to questions about perception of written and verbal communication abilities on the Senior Survey.	**Achievement Target:** **Indirect Assessment –** We would like to maintain the high levels (90th percentile) of reported perceived competency in both verbal (I can verbally discuss scientific research findings…) and written form (I am able to discuss scientific research findings in writing…) in the senior survey.

V. SUPPORTING DOCUMENTATION

Please remember to attach supporting documentation such as rubrics, sample assignments, test results, surveys, questionnaires, tables, and charts. If you have questions about what should or should not be included with the report, please contact the Office of Institutional Research, Planning, and Effectiveness.

VI. REVIEW PROCESS

Please forward your 2015-2017 assessment report to the associate dean of your college/school for review and signature. This review will ensure that the information included in this report is accurate and that your program is engaged in a systematic process of continuous improvement.

_____ _____

Associate Dean Date

VII. SUBMISSION OF REPORTS

Please email reports to David Jordan, Director of Institutional Effectiveness (David.M.Jordan@emory.edu) by October 1, 2017.