

Teaching, Learning, & Assessing in a
Developmentally Coherent Curriculum

APA Board of Educational
Affairs Task Force on
Strengthening the
Teaching and Learning
of Undergraduate
Psychological Science



AMERICAN
PSYCHOLOGICAL
ASSOCIATION

Teaching, Learning, & Assessing in a **Developmentally Coherent Curriculum**

APA Board of Educational Affairs Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Science

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The Task Force Charge

This report presents the work of the American Psychological Association (APA) Board of Educational Affairs (BEA) Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Sciences. This task force, appointed in April 2005, was charged with bridging the gap between the *National Standards for the Teaching of High School Psychology* (*National Standards*; APA, 1999)¹ and the *APA Guidelines for the Undergraduate Psychology Major* (*Guidelines*; APA, 2007).² The *National Standards* established a set of benchmark learning objectives, designed initially for use in high schools, for teaching the first course in psychology, but it quickly became apparent that these standards could apply to the first psychology course offered at any level. The *Guidelines* set a standard for the competencies that should be expected of students graduating from colleges and universities as undergraduate psychology majors.

The two documents provided guidance in designing the beginning of the academic study of psychology and establishing behavioral expectations for outcomes upon completion of undergraduate study, but they left unaddressed the elements of development that transpire between that first course and receipt of the baccalaureate degree. Accordingly, the charge of the current task force was to consider the development of the psychology student from the first course to the bachelor's degree and to propose a set of intermediate outcomes or abilities that these students attain en route.

Background

The initiative for the task force originated with the leadership of the APA Committee of Psychology Teachers at Community Colleges (PT@CC) and was based on several practical concerns. PT@CC cited evidence that enrollment patterns have shifted over the past 10 years, with students increasingly attending more than one institution in pursuit of a bachelor's degree. Forty-six percent of all U.S. undergraduates are enrolled at public and private community colleges, and 41% of first-year students begin their academic careers at community colleges (American Association of Community Colleges, 2008). Others start out at a university/college and later transfer to a smaller liberal arts college, another university, or their local community college. Concurrent enrollment at multiple institutions is not unusual, a phenomenon referred to as “swirling” (Bordons, 2004). Further, students may enroll as “course takers” at one institution while maintaining their primary enrollment status at another. Fifty-nine percent of students completing their bachelor's degree in 1999–2000 attended more than one institution (Peter & Forrest Cataldi, 2005).

These changing enrollment patterns raise serious concerns about the coherence and integration of the course of study followed by students who engage in them. Should students string together course combinations that are not guided by the goals and objectives of a coherent curriculum, there may be gaps in the educational preparation they receive as undergraduate psychology majors. This concern guided the work of the present task force.

¹These were revised in 2005 and titled *National Standards for High School Psychology Curricula* (see www.apa.org/ed/natlstandards.html).

²An earlier iteration of the *Guidelines* known as the *Undergraduate Psychology Major Learning Goals and Outcomes* (APA, 2002) was used in the early work of the current task force.

Process for Developing the Report

In 2005, the APA Council of Representatives approved a request to support the BEA Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Sciences. The six-person task force, with equal representation of community college and college/university faculty, was appointed to develop a report that would identify developmentally appropriate competencies that serve as benchmarks of student success as students progress from their first course through degree attainment, along with models for teaching, learning, and assessment.

BEA, in collaboration with PT@CC, appointed the following members to serve on this task force: Patricia Puccio, EdD; Jerry Rudmann, PhD; Joe Mayo, EdD; Drew Appleby, PhD; Ted Bosack, PhD; and Retta Poe, PhD. Jane Halonen, PhD, served as a consultant to the task force.

The task force met July 22–24, 2005, to prepare a report identifying the developmentally appropriate competencies for undergraduate psychology courses, along with models of “best practices” for teaching, learning, and assessment. The task force spent considerable time discussing trends and issues that have converged to form the current zeitgeist of accountability. Key considerations included sensitivity to creating a document that could be used by faculty to enhance their teaching. Hence, the task force determined that the report would focus on student learning outcomes across the continuum of learning. The *Guidelines* offers outcomes for the liberal arts degree and those specific to the discipline. Given the nature of the task, the group focused their efforts on extending the goals specific to psychology. Learning goals were identified as *basic*, *developing*, or *advanced* for each of five content areas (i.e., knowledge base, research methods, critical thinking skills, applications of psychology, and values of psychology).

Public comment on the document took place during fall 2006. APA boards and committees received a cross-cutting agenda item requesting review and comment on the report. Announcements were published in the *APA Monitor* (October 2006) and *Division Dialogue* (September/October 2006) inviting comments on the report, and responses were supportive. The Committee on Women in Psychology (CWP) and the Committee on Disability Issues in Psychology (CDIP) provided specific feedback for consideration. In early October 2007, Education Directorate staff provided these comments to the task force, along with feedback from the Society for the Teaching of Psychology (APA Division 2). The BEA task force reviewed these comments and made final edits to the report. The report was received by BEA at its meeting on March 28–30, 2008. BEA expressed thanks and appreciation to the BEA Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Sciences, which has completed its work and has been dismissed.

ORGANIZATIONAL FRAMEWORK

The task force adapted and combined the organizational frameworks from prior APA-initiated efforts as a starting point. For the developmental conceptualization, the task force selected a model constructed by Halonen, Bosack, Clay, and McCarthy (2003) to guide teaching, learning, and assessment of scientific inquiry, an important element of education at all levels of psychology. Halonen et al., working within the context of the APA-sponsored Psychology Partnerships Project (see Mathie & Ernst, 1999), defined eight domains of scientific inquiry and traced developmental outcomes

in these domains through five levels of proficiency, beginning prior to exposure to scientific training and ending at a professional level. The middle three levels of this model identified expected behavioral outcomes in the undergraduate years, and we incorporated them into our developmental curricular structure as follows:

- **Basic:** Skills that students should acquire in introductory-level psychology courses such as general psychology and psychology of adjustment
- **Developing:** Skills that should emerge as students progress through lower- and upper-division courses in an undergraduate psychology curriculum
- **Advanced:** Skill levels expected of students completing capstone educational experiences and nearing the end of a psychology major

Furthermore, to strengthen the cognitive developmental character of this model, we integrated the three levels with the sequencing elaborated by Krathwohl (2002), such that *basic* represents “retention and comprehension,” *developing* represents “application and analysis,” and *advanced* is associated with “evaluation and creation.”

In addition, we adopted the curricular competencies model reported by the Task Force on Undergraduate Psychology Major Competencies, appointed in 2001 by the BEA. In developing the *APA Guidelines for the Undergraduate Psychology Major* (APA, 2007), the Task Force on Undergraduate Psychology Major Competencies identified 10 goals and related learning outcomes to be achieved in the undergraduate psychology major. These goals and outcomes were grouped into two broad categories:

- *Knowledge, skills, and values consistent with the science and application of psychology*
- *Knowledge, skills, and values consistent with liberal arts education that are further developed in psychology*

Because the target of the current task force was the curricular structure of the psychology major, we limited our focus to the five goals associated directly with the science and application of psychology (*Knowledge Base of Psychology, Research Methods in Psychology, Critical Thinking Skills in Psychology, Application of Psychology, and Values in Psychology*). Combining these two frameworks, we sought to identify a progression of learning outcomes for each goal that moves from basic to developing to advanced levels of proficiency. The resulting developmental model offers guidance for articulation of student learning outcomes as learners progress through the undergraduate curriculum.

We adopted the stance of the earlier curricular work groups in avoiding specification of a course-based curriculum structure. Recognizing that institutions differ with respect to their missions, departmental missions, available resources, student characteristics, and level of individual program autonomy, we proposed a developmental model that provides a general framework for structuring the curriculum and setting goals and outcomes while permitting flexibility for institutional and student differences. Our model is shown in Appendix A, Tables A1–A5.

Finally because assessment is an essential part of what good teachers do, both to evaluate students’ success in achieving course objectives and to guide students’ learning, the task force went beyond identifying developmentally appropriate skills as benchmarks for student success to consider concomitant models for teaching, learning, and assessing those benchmarks. In the sections that follow, we present a rationale for effective assessment, characterize the components and essential conditions for effective assessment, suggest a strategy for aligning programs with the developmental outcomes that the task force has formulated, and offer samples of embedded, authentic assessments to show how these may be integrated into program assessment practices.

Individual institutions, departments, and faculty are encouraged to develop a variety of assessments to evaluate the skill development of all learners. Efforts should be made to design outcomes measures that do the following:

- Allow for multiple means of reaching the desired outcome
- Use a variety of pedagogical models
- Reflect unique institutional and departmental missions
- Maximize the unique strengths of diverse undergraduate students

ASSESSMENT OVERVIEW

As Angelo and Cross (1993) noted, “to improve their learning, students need to receive appropriate and focused feedback early and often” (p. 9). Student assessment provides evidence regarding mastery of knowledge and skills, and the results may be used to improve their performance as well as assign grades. A similar rationale for using a thoughtful approach to program assessment is that faculty need program assessment data to improve teaching, make program modifications, and provide evidence to various constituencies—administrators, alumni, legislatures, state boards of education, parents, prospective students, voters, accrediting organizations, and others—regarding the program’s success. Although Halpern (2004) acknowledged the controversial role of program assessment at some higher education institutions, pressures from outside academe have necessitated some attention to program assessment at nearly all postsecondary institutions. Allen (2004a) reported that all six regional accrediting organizations require “serious examination of educational effectiveness, and they expect campuses to document their impact on student learning” (p. 18).

Psychology’s emphasis on empiricism provides faculty with an awareness of the necessity for program assessment (i.e., to document that students are learning what we think we are teaching). What some faculty may lack, however, are the skills to develop a plan that accomplishes assessment goals: developing faculty consensus on program objectives; collecting data related to those objectives; determining program strengths and weaknesses; and providing guidance for making program changes (Stoloff, Apple, Barron, Reis-Bergan, & Sundre, 2004).

In other cases, environmental factors inhibit faculty willingness to collect meaningful program assessment data. For example, some faculty may fear that assessment results will be used to make decisions regarding program continuance or to make personnel decisions about individual faculty members. For this reason, the establishment of an assessment-friendly campus climate cannot occur without administrative policies that facilitate trust—for example, that program assessment data will not be analyzed in a way that identifies individual faculty, results will not be used punitively in faculty evaluations, and decisions about program continuance or resource allocation will not be based solely on program assessment results (Allen, 2004a).

Moreover, faculty members who lead assessment efforts should expect recognition that these efforts are valued and will be rewarded (Allen, 2004a). An ideal campus climate for assessment is one in which there are clear administrative expectations for assessment; written policies indicating who is responsible for assessment, what must be assessed and when, and how results will be used; commitment of resources to support assessment; and recognition of assessment efforts (Suskie, 2004).

A formal system of program assessment is a major link in the overall institutional effectiveness cycle. Program assessment data provide evidence of program strengths and weaknesses, which may lead faculty to make recommendations for curricular change. This may require creating new courses or applied experiences, modifying existing courses and experiences, revising admissions policies, or changing instructional methodology. Implementing program improvements may require hiring new faculty members, providing professional development opportunities to update skills of current faculty, and acquiring other physical, financial, and personnel resources. The commitment to making these changes may then be reflected in the strategic plan adopted for the department in which the program is housed.

Beginning or revising the program assessment planning process involves five steps. First, program faculty develop a list of learning outcomes for graduates of the program; these are descriptions of what the faculty “intend for students to know (cognitive), think (attitudinal), or do (behavioral) when they have completed their degree programs” (Nichols & Nichols, 2000, p. 17). Program outcomes should be consistent with the institutional mission; reasonable, given students’ abilities; and measurable. Outcomes may be academic (e.g., critical thinking skills, content knowledge in a discipline, oral presentation skills), occupational (i.e., skills related to a particular occupation), or developmental (e.g., respect for diversity, personal development, ethical judgment) (U.S. Department of Education, 1997).

Potential program outcomes may be derived from several sources, either alone or in combination, including a review of course syllabi, standards recommended or required by professional associations or accrediting associations, outcomes developed by colleagues at other institutions, and formal or informal descriptions of employers’ expectations for program graduates.

The developmental learning outcomes we present are intended to serve as a starting point for faculty efforts to create an institution-specific set of learning outcomes. Following this first step in developing learning outcomes, Steps 2–5 in the assessment-planning process:

- Examine the alignment between the selected learning outcomes and the curriculum (“Where in our program do we think students are taught the desired knowledge, skills, and attitudes?”)
- Select a means of assessing the outcome and determine the criteria for success
- Collect assessment data
- Review assessment data to determine what changes are needed for program improvement

Once changes are made, the subsequent assessment cycle should be designed to provide evidence of whether the changes were successful in achieving program outcomes.

AN EMBEDDED ASSESSMENT MODEL

A typical approach to establishing a departmental or program assessment system is to plan assessment activities at the completion of a program or at the end of a course when mastery of course-specific goals is being evaluated. These summative assessments (Dockrell, 1995) often take the form of locally or commercially produced comprehensive tests, exit surveys, and observation of performance of skills. Although capable of providing an accurate assessment of student outcomes, summative program assessment has the disadvantage of typically requiring standardized administration in specially arranged time blocks, or else relying on the willingness of students to take time out of their own schedules to, for example, complete a survey or take a test. In addition, since summative evaluations are structured to occur at the end of programs and courses, there is often little that can be done after administration to remediate substandard performances that may occur, although Wininger (2005) has reported an exception to this generalization for course evaluations.

An important distinction should be made between student assessment and program assessment. Although student and program assessment are alike in the methods that may be used and in the unit of measurement (i.e., the student, or some product produced by the student), the two approaches differ in purpose, use of results, and unit of remediation. Student assessment is undertaken to determine individual students' mastery of knowledge and skills, whereas program assessment provides “big picture” data about overall instructional performance so that program improvements can be made. Faculty members use student assessment data to determine grades and/or initiate remedial action (e.g., tutoring); therefore, the unit of remediation is the individual student. By contrast, program assessment is for the purpose of ensuring the accomplishment of program objectives, and the unit of remediation is the program itself. As noted previously, program assessment is often conducted at the end of a program, such as in a capstone course, and though it often occurs as summative assessment, this is not the only option.

Adoption of the guiding developmental principles suggested in this report introduces another assessment option that may possess advantages for students, faculty, and programs. The developmental principles lend themselves to *formative assessment*—that is, determination of student progression toward meeting stated goals at preset points in courses or curricula (McAlpine, 2004). Clearly, formative assessment presents greater flexibility than does summative assessment in a number of ways:

- Evaluation before the end of courses or programs allows students and faculty to recognize deficiencies while there is still opportunity to remediate them. Additional assignments, tutoring, or other remedial instruction may be provided, and the failed goal may eventually be met.
- Formative assessments for courses or program assessment may be administered in the form of instruments or assignments integral to courses while they are being taught. This *embedded assessment* (Wilson & Sloane, 2000) may take the form of examinations, papers, oral reports, in-class writing samples, or any other product for which expected outcomes and evaluation criteria consistent with departmental goals have been clearly articulated.
- Evaluations occur as a regular part of course work and do not require commitment of additional student or faculty time typically associated with summative assessment.

- Formative assessment eliminates expenses associated with the purchase of commercial testing instruments.

For embedded assessment to be used effectively for program evaluation in departments that have adopted the developmental principles presented in this report, several conditions should be met. First, all courses offered in a program should meet specific goals of the program, and all program goals must be addressed in the curriculum. Second, multiple faculty members who are not involved in the teaching of a specific course should participate in determining whether the goals articulated for a course are actually covered in that course and in determining if the outcomes assessed truly evaluate the stated goals. Finally, there should be reliability checks on the outcome assessments used. We offer the *developmental model* as one way to meet these needs and to produce accurate and effective assessment.

The developmental model requires that teachers of all courses in a program identify which of the learning goals and outcomes each course actually meets (Levy, Burton, Mickler, & Vigorito, 1999), the assignments they employ to produce those outcomes, and the outcome assessments they use in the courses to determine that the outcomes have been achieved. Small subcommittees review these materials and subsequently meet with the instructors of the courses they reviewed to resolve any questions that may have arisen; they may also tweak assignments and assessment measures to ensure that the goals and outcomes are being appropriately addressed and measured.

Upon completion of this process, program faculty review the matrix of courses and goals to determine that all students in the program will be exposed to the teaching of all of the goals, regardless of the paths that they take through the curriculum. Should there be paths that do not produce exposure to the teaching of all the goals, faculty must agree on adjustments to courses or to the curriculum to ensure that all students have exposure to the content and skills identified as essential by the faculty.

Finally, to ensure accurate and unbiased outcome assessment, criteria for good practice suggest that program faculty implement a schedule for periodic reliability checks of the agreed upon embedded outcome assessments. In other words, faculty members other than the course instructor review a sample of student products used for embedded assessment to confirm that scoring reflects program standards. Some may view this step in the model as burdensome and intrusive. Nonetheless, it is necessary to ensure the integrity of assessment, and devising a rotating schedule of reliability checking at a frequency acceptable to the faculty may reduce any negative effect.

Authentic assessment, discussed in the next section of this report, can be an excellent means of achieving embedded assessment. Halonen et al. (2003) and Bosack, McCarthy, Halonen, and Clay (2004) illustrated ways in which authentic teaching, learning, and assessment may yield scholarly course products and applications that can be objectively evaluated by using a developmental rubric. The principles that these researchers demonstrated in the area of scientific inquiry may be readily adapted to the five goals addressed by the present task force, as indicated in the examples provided in the box on page 9.

This model of formative, embedded assessment clearly requires considerable front-loaded effort to yield a coherent curriculum. However, the reward is the integration of virtually all assessment efforts into the routine conduct of courses, and doing this saves the time and money associated with summative assessments.

APPLYING AUTHENTIC ASSESSMENT TO THE DEVELOPMENTAL MODEL

Effective assessment strategies should promote student competence (Wlodkowski & Ginsberg, 1995) and improve the quality of teaching (Austin, 1993). However, not all forms of assessment are equal in accomplishing educational goals. Traditional approaches to assessment typically rely on standardized or teacher-generated tests that focus on recall or recognition of knowledge on multiple-choice, matching, or true–false questions (Wiggins, 1990). As an alternative method of assessment, *authentic assessment* deemphasizes rote learning and passive test taking in favor of real-world situations that push students in the direction of more meaningful, task-relevant construction, integration, and application of knowledge (Mueller, 2003). Consequently, authentic assessment is both direct and performance based, requiring students to demonstrate proficiency by actually doing something in contexts that replicate the priorities and challenges faced in daily life.

As Mueller (2003) argued in support of a performance-based assessment model, teaching and learning are integrated in the practice of authentic assessment. At the same time that students are learning to solve real-life problems and teachers are facilitating this process of authentic task involvement, the solutions offered by students gauge their abilities to apply knowledge meaningfully.

Rubrics can serve as versatile tools for specifying assessment criteria (Allen, 2004b). Teachers can weave rubrics into the fabric of their courses as a way to communicate behavioral expectations, provide formative feedback, and grade students in a manner that more clearly articulates the strengths and weaknesses of their work.

The developmental model we propose allows for generation of rubric-based performance criteria in authentic assessments flowing logically from authentic teaching applications. Authentic teachers use real-life examples and problems to help students generalize learning from classroom environments to situations that they will experience in everyday life (Halonen et al., 2003). As a vehicle for evaluating higher level cognitive competencies, the instructional designs used by authentic teachers encourage active learning (Barr & Tagg, 1995) and incorporate contexts that are realistically connected to the student experience (Wiggins, 1990).

Comparable to the rubric offered by Halonen et al. (2003) that also consists of behavioral descriptors in developmental progression, the present model is sufficiently flexible to cover the gamut of assignments normally found in courses across an undergraduate psychology curriculum. Consistent with Bosack et al.'s (2004) analysis of the usefulness of the P3 developmental rubric for evaluating student performance, the current developmental paradigm also exhibits maximal utility in the context of psychology courses with well-designed learning goals.

In such courses, each performance-based assignment contributes to progress toward those goals. By relating the behavioral descriptors of the model to performance expectations embodied within their course assignments, teachers can use the rubric to appropriately match proficiency levels and learning goals to corresponding courses and the students involved. In line with the prior work of Bosack et al. (2004), who presented concrete examples of translating the general language of the P3 rubric into behavioral expectations of authentic assessments targeted for different levels of sophistication, we undertook similar efforts relative to the current developmental model.

AUTHENTIC TEACHING APPLICATIONS

To aid teachers who elect to use this schema of developmental outcomes in creating their own course assignments, we offer an example of authentic assessment at each of the three levels of proficiency outlined in the model: basic, developing, and advanced. Each example, which is derived from previously employed classroom assignments recast in the light of the current rubric, includes the following descriptive elements:

- Developmental and situational context of the assignment
- Purpose of the assignment
- Instructional methodology for assignment completion
- Learning goals consistent with the science and application of psychology that are represented in the assignment
- Component learning outcomes within each goal
- Specific student behaviors demonstrating each component outcome
- Discussion of grading criteria

It may be particularly useful when reviewing the following examples to closely examine the tables corresponding to each of the five learning goals and associated outcomes fitted to each of the three levels of proficiency (see Tables A1–A5 in Appendix A). For ease of review, we made a conscious effort to match each example with one specific level of student proficiency. However, it is important to note that when applying the proposed model to learning assignments, a flexible assessment instrument is represented in which assignments may actually cover more than one level of student proficiency, despite the course designation in the undergraduate curriculum (i.e., 1000, 2000, 3000, or 4000).

Example 1: Basic Level

As shown in Appendix B, the **observational diary** (Mayo, 2003b) taps into all five learning goals: Knowledge Base of Psychology, Research Methods in Psychology, Critical Thinking Skills in Psychology, Application of Psychology, and Values in Psychology. In the context of an introduction to psychology course, this term-length journal-writing project requires students to identify psychological applications in their own lives and the lives of others.

Example 2: Developing Level

Appendix C describes the **analogies log** (Mayo, 2006), an assignment in a life span developmental survey course requiring students to maintain an ongoing record of co-constructed, learner-generated analogies that are reflective of important developmental principles. The primary purpose of this assignment is to improve students' conceptual understanding of prominent developmental theories. The analogies log targets the following three learning goals: Knowledge Base of Psychology, Critical Thinking Skills in Psychology, and Values in Psychology.

Example 3: Advanced Level

A classroom application of the **repertory grid technique** (Mayo, 2004a), the centerpiece for assessing conceptual systems in Kelly's (1955) personal construct theory, appears in Appendix D. In a series of assignments in a history and systems of psychology course, students rate the positions of contributors to prescientific and scientific psychology over a series of bipolar constructs (e.g., nature–nurture, mind–body). Like the observational diary, the repertory grid assignments address all of the five learning goals.

CONCLUSIONS

We have presented a tripartite framework that articulates the developmental sequence of learning outcomes across the five domains of the undergraduate curriculum. Furthermore, we have offered guidance for use of this model in a departmental or program review process. The model can be used to evaluate one aspect of program effectiveness: student learning. However, utility of this model can also be connected to the original goal of the task force—to provide helpful criteria that facilitate student transitions between institutions.

We constructed developmental student learning outcomes to aid in clarifying how students obtain skills as they progress in an undergraduate psychology curriculum. Earlier we suggested that these outcomes could be linked to specific courses. We created learning outcomes that are independent of courses because courses differ significantly by institution. Explicit articulation of learning outcomes (i.e., listed on syllabi) can provide clear guidance for students. Student expectations can be communicated early, and student evaluation can produce objective measures of program effectiveness that can inform program evaluation. Linkages of learning outcomes with specific courses can provide clear and convincing evidence that programs are indeed accomplishing their respective missions.

Extending beyond an individual program and providing developmental milestones throughout the curriculum offer an added level of clarity. This level of specificity provides objective criteria that can also be used to evaluate course work that may differ with respect to course title, number of credit hours, or level of institution. Transferability of course work among institutions is often facilitated by statewide articulation agreements, yet these agreements may not allow for every contingency. The proposed model provides an additional level of specificity to facilitate objective evaluation across institutions. For example, if the developmental outcomes are listed on a syllabus, this will enable the institution to which a student transfers to compare course outlines and determine what the student has been exposed to prior to transferring. Additionally, if authentic assessment is used consistently with these criteria, students will be expected to demonstrate competencies at the appropriate developmental level.

CONSIDERATIONS FOR THE FUTURE

This task force report should clearly not be considered the final product of the BEA's efforts to strengthen the teaching and learning of undergraduate psychology. More work remains to assist psychology faculty nationwide in articulating meaningful learning outcomes for undergraduates, providing educational experiences designed to achieve those outcomes, and assessing the results of those experiences so that program improvements are continuous and ongoing. The ultimate objectives of this work should be to provide guidance for meaningful course articulation from one institution to another and to develop a consistent framework for program design and assessment.

At some point the validity of the developmental model should be investigated. While the model has been grounded in theory, those who intend to base decisions on it will reasonably expect empirical support for it. Also, the model is likely to be more useful if it is accompanied by suggestions for assessment of each level of each outcome. As mentioned earlier, in response to accountability pressures, postsecondary faculty members

at all types of institutions are expected to provide evidence that students have achieved identified student learning outcomes; many faculty would welcome the availability of a set of model program assessment tasks addressing the accomplishment of student learning outcomes commonly viewed as desirable.

Ideally, wherever appropriate, these assessments would be authentic assessments designed for implementation at the program level, similar to the course-level authentic assessments described earlier in this report. A very useful document would be one that combines the *APA Guidelines for the Undergraduate Psychology Major* (APA, 2007), the developmental model proposed in the present report, and links to specific assessment strategies for each outcome.

In the future, a further effort could be undertaken to develop tasks for the remaining five undergraduate psychology major goals (Goals 6–10) identified in the *Guidelines* (APA, 2007, pp. 17–21):

II. Knowledge, Skills, and Values Consistent With Liberal Arts Education That Are Further Developed in Psychology

Goal 6: Information and Technological Literacy

Students will demonstrate information competence and the ability to use computers and other technology for many purposes.

Goal 7: Communication Skills

Students will be able to communicate effectively in a variety of formats.

Goal 8: Sociocultural and International Awareness

Students will recognize, understand, and respect the complexity of sociocultural and international diversity.

Goal 9: Personal Development

Students will develop insight into their own and others' behavior and mental processes and apply effective strategies for self-management and self-improvement.

Goal 10: Career Planning and Development

Students will emerge from the major with realistic ideas about how to implement their psychological knowledge, skills, and values in occupational pursuits in a variety of settings.

Further tasks could also include development of criteria for using the developmentally coherent curriculum model in curriculum design and revision, as well as empirical identification of recommended teaching strategies for facilitating student learning in each outcome area.

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APPENDIXES

APPENDIX A

TABLE A1

Goal 1: Knowledge Base of Psychology

Demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.

Outcome Areas	BASIC <i>retention and comprehension</i>	DEVELOPING <i>analysis and application</i>	ADVANCED <i>evaluation and creation</i>
Nature of psychology	Define psychology as the science that studies behavior and mental processes and the profession that applies that science	Distinguish the similarities and differences between the professional and scientific communities in psychology	Evaluate the influence of context in the evolving definition of psychology
Relationship of psychology to science	Explain how psychology meets the criteria of science	Analyze how psychological research reflects scientific principles	Evaluate psychological science as a means of understanding behavior and mental processes
Role of behavior in psychology	Describe behavior and mental processes empirically, including operational definitions Distinguish behavior from inferences about behavior	Identify antecedents and consequences of behavior and mental processes Predict likely patterns of behavior from context	Interpret behavior and mental processes at an appropriate level of complexity
Structure of psychology	List and explain the major research and applied subfields of psychology	Differentiate appropriate subfields to address specific research areas and/or assist in addressing specific behavioral concerns	Speculate about psychology's continuing evolution and refinement of subfields
Relationship of psychology to other disciplines	Identify the connections between psychology and other disciplines	Compare and contrast the assumptions, methods, and choice of problems of psychology with those of other disciplines	Integrate knowledge derived from psychological science with that of other disciplines
Objectives of psychology (Describing, understanding, predicting, and controlling behavior and mental processes)	Identify and explain the primary objectives of psychology	Compare and contrast the primary objectives of psychology	Evaluate the strengths and limitations of the primary objectives of psychology
Historical perspectives in psychology	Describe the key eras of the major schools of thought in the history of psychology (including their founders, assumptions, explanatory concepts, and methods)	Compare and contrast historical perspectives	Assess the relative importance of the major schools of thought in the history of psychology Defend a historical perspective

Table A1 (continued)

<p>Contemporary perspectives in psychology</p> <ul style="list-style-type: none"> • Behavioral • Biological • Cognitive • Evolutionary • Humanistic • Psychodynamic • Sociocultural 	<p>Identify and describe the major contemporary perspectives of psychology</p>	<p>Compare and contrast the assumptions, methods, and other elements of the major contemporary perspectives in psychology</p>	<p>Evaluate the utility and effectiveness of contemporary psychological perspectives</p> <p>Describe how each perspective applies its findings to promote human welfare</p>
<p>Overarching themes of psychology</p> <ul style="list-style-type: none"> • Interaction of heredity and environment • Variability and continuity of behavior and mental processes within and across species • Free will vs. determinism • Subjectivism vs. objectivism • Interaction of mind and body • Applicability of theories and measures across societal and cultural groups 	<p>Identify the overarching themes of psychology</p>	<p>Apply the overarching themes of psychology to explain specific behaviors</p> <p>Debate the merits of each side of the overarching themes of psychology</p>	<p>Evaluate the appropriateness of scientific explanations of behavior and mental processes from the standpoint of psychology's overarching themes</p>
<p>General content domains of psychology</p> <ul style="list-style-type: none"> • Learning and cognition • Individual and sociocultural differences • Biological bases of behavior and mental processes • Development across the life span 	<p>Identify and explain basic concepts, theories, and research represented in the general content domains</p>	<p>Apply and analyze concepts, theories, and research in the general content domains</p>	<p>Evaluate and synthesize concepts, theories, and research in the general content domains</p>
<p>Role of ethics</p>	<p>Describe relevant ethical issues, as addressed by the APA code of ethics</p>	<p>Apply relevant ethical principles, as addressed by the APA code of ethics</p>	<p>Evaluate policies and procedures related to behavior and mental processes using relevant ethical principles, as addressed by the APA code of ethics</p>
<p>Career opportunities</p>	<p>Identify broad career opportunities associated with psychology at the bachelor's, master's, and doctoral levels</p>	<p>Compare and contrast the credentials, skills, and experiences required for a career in psychology</p>	<p>Create an appropriate career plan related to a specialized goal</p>

TABLE A2

Goal 2: Research Methods in Psychology

Understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.

Outcome Areas	BASIC <i>retention and comprehension</i>	DEVELOPING <i>analysis and application</i>	ADVANCED <i>evaluation and creation</i>
Scientific method	Describe the basic characteristics of the scientific method in psychology	Analyze how primary behavioral research adheres to scientific principles	Design research that adheres to the principles of the scientific method
General research methods • Descriptive • Correlational • Experimental	Describe various general research methods, including advantages and disadvantages of use Distinguish the nature of designs that permit causal inferences from those that do not	Select and apply general research methods to address appropriate kinds of research questions Categorize research articles that employ methods permitting causal and noncausal inferences	Evaluate the effectiveness of a general research method in addressing a research question
Correlation	Define correlation	Interpret the meaning of correlational findings	Speculate about and evaluate the significance of correlational findings
Correlation vs. causation	Explain the difference between correlation and causation	Match research questions to appropriate method	Evaluate whether a specific research method warrants a cause–effect conclusion
Controlled comparison	Describe the role of controlled comparison in justifying a cause–effect claim	Analyze research claims to identify legitimacy of cause–effect claims	Develop research strategies that appropriately address controlled comparison
Research elements	Define hypotheses, variables, and operational definitions	Formulate hypotheses, variables, and operational definitions from research articles and scenarios	Deduce testable research hypotheses, based on operational definitions of variables
Experimental design	Describe experimental design strategies to address research questions	Compare and contrast different research methods used by psychologists Design basic experiments	Design appropriate experiments to maximize internal and external validity and reduce the existence of alternative explanations
Participant selection and assignment	Describe random sampling and assignment	Analyze the potential influence of participant variables	Design appropriate controlled conditions to minimize their effects, including random assignment to conditions
Design quality (internal validity)	Define validity and describe conditions that enhance valid findings	Analyze conditions that will enhance or detract from the validity of conclusions	Evaluate the validity of conclusions derived from psychological research

Table A2 (continued)

Generalization (external validity)	Describe the relationship of research design to generalizability of results	Analyze the generalizability of research findings based on strengths or weaknesses of research design	Generalize research conclusions appropriately based on the parameters of particular research methods Recognize that individual differences and sociocultural contexts may influence the applicability of research findings
Reporting research findings	Apply basic APA standards and style in writing about research	Explain (in writing) the methods, results, and conclusions of a data collection project	Write all sections of a research report applying APA writing standards
Research ethics	Describe the basic principles of the APA code of ethics for research with human and animal participants, including the role of an institutional review board (IRB)	Adhere to the APA code of ethics in the treatment of human and nonhuman participants in the design, data collection, interpretation, and reporting of psychological research	Evaluate the contributions and constraints entailed in adherence to the APA code of ethics and appropriately adjust the research design Complete an IRB application
Body of evidence	Articulate how an individual research study addresses a behavioral question	Analyze differences across related research studies	Integrate findings from several studies to produce a coherent set of conclusions
Sociocultural context	Identify variations in behavior related to sociocultural differences	Apply sociocultural framework to research strategies and conclusions	Incorporate sociocultural factors in the development of research questions, design, data collection, analysis, and interpretation
Database skills	Identify and locate relevant journals and databases in psychology	Develop and adjust search strategies to represent adequate range of research	Create efficient and effective search strategies to address research questions
Statistical skills	Describe the differences between descriptive and inferential statistical analysis	Conduct and interpret simple statistics from research results and in journal articles	Evaluate statistical power in results by addressing effect size and confidence intervals
Statistical significance	Define statistical significance and its role in interpreting research findings	Distinguish between statistical and practical significance	Speculate about the implications of using the conventions of statistical significance in interpreting results
Limits of scientific reasoning and evidence	State how evidence is contextual and tentative	Discuss the reasons why empirical findings and conclusions may change or require adjustment	Justify the evolving nature of scientific findings

TABLE A3

Goal 3: Critical Thinking Skills in Psychology

Respect and use critical and creative thinking, skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.

Outcome Areas	BASIC <i>retention and comprehension</i>	DEVELOPING <i>analysis and application</i>	ADVANCED <i>evaluation and creation</i>
Use of evidence in psychology	Discern difference between personal views and scientific evidence in understanding behavior	Collect and use scientific evidence in drawing conclusions and in practice	Evaluate the quality, objectivity, and credibility of scientific evidence in drawing conclusions and in practice
Association skills	State connections between diverse facts and theories	Relate connections between diverse facts and theories Apply diverse facts and theories over a wide range of contexts	Assess the quality of connections between diverse facts and theories
Argumentation skills	Identify arguments based largely on anecdotal evidence and personal experience	Deduce contradictory and oversimplified arguments based on a growing knowledge of the available facts and theories	Develop sound, integrated arguments based on scientific reasoning and empirical evidence
Detection of errors in psychological reasoning	Identify claims arising from myths, stereotypes, common fallacies, and poorly supported assertions regarding behavior	Detect and reject claims arising from myths, stereotypes, common fallacies, and poorly supported assertions regarding behavior	Evaluate the errors involved in claims arising from myths, stereotypes, common fallacies, and poorly supported assertions regarding behavior
Questioning skills	Explain the appropriateness and relevance of questions with direction and guidance	Differentiate independently between ill-defined and well-defined questions	Evaluate and modify questions to eliminate ambiguity throughout the process of scientific inquiry
Creativity	Describe elements of creativity	Apply alternative strategies to known protocols	Generate novel insights about the psychology of humans and nonhumans
Problem solving	Define the stages of problem solving	Apply problem-solving strategies to develop solutions to problems in diverse contexts	Appraise the quality of solutions Select an optimal strategy from multiple alternatives

TABLE A4

Goal 4: Application of Psychology

Understand and apply psychological principles to personal, social, and organizational issues.

Outcome Areas	BASIC <i>retention and comprehension</i>	DEVELOPING <i>analysis and application</i>	ADVANCED <i>evaluation and creation</i>
Healthy lifestyle	Describe elements of healthy lifestyle	Analyze personal lifestyle reflecting, among other factors, awareness of alternative cultural perspectives	Evaluate courses of action that could produce more beneficial outcomes
Abnormal behavior	Summarize general criteria of abnormality	Define criteria for abnormality relative to a given set of symptoms or characteristics	Evaluate the significance of symptoms in a sociocultural context
Psychological tests	Explain the elements and importance of effective testing	Differentiate between effective and less effective methods of testing and ensure that these methods show respect for alternative cultures and gender	Design and evaluate strategies to assess psychological phenomena
Potential for psychology as a change agent	List ways that psychological principles can facilitate personal, social, and organizational change	Apply a psychological principle to facilitate positive change in a personal, social, or organizational behavior	Evaluate the power of psychological strategies to promote change
<p>Major applied areas in psychology (e.g., clinical, counseling, school, industrial/organizational, etc.)</p> <p>Emerging applied areas in psychology (e.g., health, forensic, media, military, etc.)</p>	Identify major and emerging applied areas in psychology	Link major and emerging applied areas to an appropriate psychological career	Determine whether an applied specialty can produce a solution for a given psychological problem

TABLE A5

Goal 5: Values in Psychology

Value empirical evidence, tolerate ambiguity, act ethically, and reflect other values that are the underpinnings of psychology as a science.

Outcome Areas	BASIC <i>retention and comprehension</i>	DEVELOPING <i>analysis and application</i>	ADVANCED <i>evaluation and creation</i>
Curiosity	Describe how curiosity assists the scientific process	Apply curiosity to psychological phenomena of personal interest	Sustain curiosity for investigating complex behavioral questions
Skepticism	Define skepticism and its role in psychological thinking	Distinguish between scientific and pseudo-scientific explanations of human behavior and compare their relative value	Maintain rigorous standards related to the quality of scientific evidence in support of a behavioral claim
Tolerance of ambiguity	Define tolerance of ambiguity and explain its role in psychological science	Analyze behavioral explanations with the intent of finding an alternative explanation	Evaluate psychological explanations with an expectation of complexity, tentativeness, and variance
Ethical orientation	Describe some elements of the ethical code	Apply an ethical orientation to hypothetical ethical dilemmas	Implement ethical orientation in novel psychological contexts
Protection of human dignity	Describe issues pertaining to psychological aspects of human dignity	Predict potential outcomes of scenarios in which protection of human dignity does not occur	Design psychology projects that protect human dignity and respect alternative cultural and gender perspectives
Human diversity	Recognize and respect human diversity	Anticipate that psychological explanations may vary across populations and contexts	Exhibit sensitivity to issues of power, privilege, and discrimination
Academic integrity	Describe academic integrity and explain its role to the discipline, profession, and society as a whole	Predict appropriate outcomes for actions that reflect academic integrity or violations thereof	Integrate academic integrity with personal code of honor
Personal responsibility/ service learning	Describe how psychology can foster positive civic, social, and global outcomes	Identify personal opportunities to apply psychological knowledge for enhancing positive outcomes	Evaluate a personal plan for engagement with respect to civic, social, and global responsibilities

APPENDIX B

BASIC LEVEL

Course: Introductory Psychology

Assignment: Observational Diary

Context

In numerous psychology courses, an effective way to match course content to learners' everyday experiences is through the use of student journals (Grasha, 1998; Hettich, 1976, 1980; Klos, 1976; Mayo, 2001a, 2002, 2003a, 2004c; McManus, 1986). The *observational diary* (Mayo, 2003b) is a term-length, case-based, journal writing assignment designed for use in introductory psychology. In composing an observational diary, students record the times that they observe basic psychology being applied in their lives and in the lives of others. When journal writing is linked to case-based methodology, journal entries serve as brief case descriptions that represent some real-life experiences through which students are offered the opportunity to identify applications of psychological principles.

Purpose of the Assignment

Because psychology is an applied science, it is important for undergraduate psychology educators to stress practical applications of psychological principles. Creating a functional connection between the classroom environment and the real world is especially important to students who are just beginning their studies in psychology. The observational diary is a pedagogical tool that helps to bridge the gap between theory and practice in the teaching of psychology.

Instructional Methodology for Assignment Completion

Each observational diary contains 40–50 entries on a variety of psychology topics. The prescribed format for writing each diary entry includes the date, source, case description (five sentences or fewer), and psychological application (five sentences or fewer). A different library reference (cited in APA style) in support of each corresponding psychological application is required in a minimum of 15 diary entries. A student-generated example appears below:

Date	Source	Case Description	Psychological Application
9-15-00	Home	For the past few weeks, my three-year-old son intently watched me set the dinner table. Unexpectedly today, when I was chatting on the telephone shortly before dinner, he took the personal initiative to correctly set the table on his own. Just as he was completing this task, he glanced over at me, pointed to the table settings, and said, "Look Daddy, just like you."	In this situation, my son learned from personal observation to imitate my behavior. This illustrates the concept of modeling through observational or vicarious learning, as discussed in Albert Bandura's (1977) social learning theory. In short, Bandura's view highlights the notion that "examples speak louder than words," which accounts for the fact that my son first watched me and then set the table on his own personal accord without verbal instructions.

Grading Rubric for the Observational Diary

Knowledge Base of Psychology: Nature of Psychology

_____ Defines psychology as the applied science that investigates behavior and mental processes

Knowledge Base of Psychology: Relationship of Psychology to Other Disciplines

_____ Identifies connections between psychology and other disciplines

Knowledge Base of Psychology: Contemporary Perspectives in Psychology

_____ Describes major contemporary perspectives for understanding behavior

Knowledge Base of Psychology: Overarching Themes of Psychology

_____ Identifies the overarching themes of psychology, such as free will vs. determinism, subjectivism vs. objectivism, and the interaction of heredity and environment and of mind and body

Knowledge Base of Psychology: General Content Domains of Psychology

_____ Identifies and explains basic psychological principles representing one or more of the following general domains: learning and cognition, individual and sociocultural differences, biological foundations of behavior and mental processes, and developmental changes across the life span

Research Methods in Psychology: Scientific Method

_____ Describes basic features of scientific methodology in psychology

Research Methods in Psychology: Correlation vs. Causation

_____ Explains the difference between correlation and causation

Research Methods in Psychology: Sociocultural Context

_____ Demonstrates an understanding that there may be variations in behavior and mental processes related to sociocultural differences

Critical Thinking Skills in Psychology: Association Skills

_____ States connections between diverse facts and theories

Critical Thinking Skills in Psychology: Argumentation Skills

_____ Identifies arguments based largely on anecdotal evidence and personal experience

Critical Thinking Skills in Psychology: Detection of Errors in Psychological Reasoning

_____ Identifies myths, stereotypes, and common fallacies in psychological reasoning

Application of Psychology: Healthy Lifestyle, Abnormal Behavior, and/or Psychological Interventions

_____ Identifies appropriate applications of psychology in solving problems that may include the pursuit and effect of healthy lifestyles, origin and treatment of abnormal behavior, and/or psychological interventions in diverse contexts

Application of Psychology: Potential for Psychology as a Change Agent

_____ Describes how psychological principles can be used to facilitate personal, social, and/or organizational change

Application of Psychology: Applied Specialties in Psychology

_____ Identifies applied specialties in psychology

Values in Psychology: Curiosity

_____ Demonstrates curiosity about the psychology of humans and nonhumans

Values in Psychology: Ethical Orientation

_____ Identifies relevant ethical principles applied in psychological contexts

Values in Psychology: Personal Responsibility/Service Learning

_____ Describes how psychology can foster positive civic, social, and/or global awareness

Grading Criteria

The observational diary assignment, which is due one week before the final examination date for the course, counts as 20% of the final course grade. Three equally weighted criteria are used in evaluating this assignment: (a) completeness in adhering to the guidelines for assignment completion; (b) accuracy between each case description and its respective psychological application; and (c) creativity and variety in the psychological applications. The grading scale appears below:

- A** Reflects exemplary completion of all assignment criteria
- B** Meets most criteria, but displays minor difficulties with concept accuracy and/or creativity and variety in psychological applications
- C** Demonstrates limited ability to accurately and broadly apply psychological principles
- D** Evidences missing entries, inaccurate psychological applications, and a general absence of variety across applications
- F** Fails to meet most or all assignment criteria

APPENDIX C

DEVELOPING LEVEL

Course: Life Span Developmental Psychology

Assignment: Analogies Log

Context

Teachers from all disciplines rely on analogies as explanatory tools to integrate new information with preexisting knowledge in students' long-term memories. By prefacing their explanations with analogous expressions such as “likewise,” “similarly,” and “comparably,” teachers routinely incorporate analogies in their classroom presentations (Glynn, Law, & Doster, 1998).

The *analogies log* (Mayo, 2006) assignment in a survey life-span developmental psychology course is grounded in the use of analogies to accurately depict the nature of human development. For example, in epitomizing the stage theories of Freud, Erikson, and Piaget, the staircase analogy (Case, 1992) portrays development as a discontinuous process of qualitative change observed at “developmental peaks” that alternate with “developmental plateaus.” As another illustration of the utility of analogical reasoning within a developmental framework, the analogy of a strand of ivy in a forest (Kagan, 1992) reflects the importance of overarching sociocultural and contextual factors in Bronfenbrenner’s ecological theory.

Purpose of the Assignment

In line with findings in other disciplines (e.g., McCloskey, 1995; Rayner-Canham, 1994; Sengstock, 1992; Sincar & Tandon, 1996), empirical evidence (Mayo, 2001b) favors the pedagogical efficacy of teacher-generated analogies within the context of a developmental psychology curriculum. Classroom-based evidence from Mayo’s systematic investigation of analogical reasoning also points to the even greater heuristic effectiveness of individual student-generated analogies in a single assignment pertaining to a chapter on developmental theories. As a more expansive project that builds on this use of student-generated analogies in developmental psychology, the analogies log is designed to extend the learning gains that flow from the active and interactive processes of student co-construction of analogies with minimal prompting from the instructor.

Instructional Methodology for Assignment Completion

1. Each student formulates one or more analogies for each of a series of developmental theories (ethological, contextual, psychodynamic, learning, cognitive, humanistic, and sociocultural), identifying the similarities and differences between the *analog* (familiar) and *target* (unfamiliar) concepts.
2. Student exchanges his or her log with a minimum of three classmates, who constructively critique each analogy.
3. As deemed necessary, the student either modifies his or her original analogies or offers new analogies consistent with the peer feedback, providing supporting rationale for any reported changes in analogical reasoning.
4. The week before mid-term exams, each student brings his or her revised log to class to participate in a whole-class discussion in which students share their analogies, critique those of their classmates, and are exposed to facilitating comments from the instructor.
5. Student records feedback from the class discussion that led to any changes in analogical reasoning.

6. Student undertakes a final revision of the applicable analogies in accordance with the aforementioned feedback. Once again, the student offers supporting rationale for any such changes.
7. Student submits the completed log—reflecting a cumulative product of a generative process of conceptual growth and refinement—to the instructor for grading purposes.

Grading Rubric for the Analogies Log

Knowledge Base of Psychology: Contemporary Perspectives in Psychology

- _____ Analyzes major contemporary perspectives in developmental psychology into their basic assumptions and explanatory concepts
- _____ Compares and contrasts major contemporary perspectives in developmental psychology

Knowledge Base of Psychology: Overarching Themes of Psychology

- _____ Explains behavior on the basis of overarching developmental themes, such as free will vs. determinism, subjectivism vs. objectivism, variability and continuity of behavior within and across species, and the interaction of heredity and environment

Critical Thinking Skills in Psychology: Association Skills

- _____ Relates connections between developmental theories over a wide range of analogous contexts

Critical Thinking Skills in Psychology: Questioning Skills

- _____ Differentiates between well-conceived and poorly conceived developmental analogies
- _____ Analyzes the pitfalls inherent in each developmental analogy

Critical Thinking Skills in Psychology: Creativity

- _____ Applies novel analogies to explain developmental theories

Values in Psychology: Curiosity

- _____ Applies curiosity to the examination of developmental theories through a generative process of analogy refinement

Grading Criteria

The final version of the analogies log is due at midterm. The assignment is worth 15% of the final course grade. The grading scale follows:

- A** Demonstrates mastery of developmental theories and significant refinement in analogical reasoning from first to last draft of the log
- B** Reflects an overall understanding of developmental theories and above-average refinement in analogical reasoning
- C** Evidences difficulties in comprehending developmental theories and limited refinement in analogical reasoning
- D** Reflects major difficulties in theory comprehension and analogy creation and refinement
- F** Fails to meet assignment criteria in most or all respects

APPENDIX D

ADVANCED LEVEL

Course: History and Systems of Psychology

Assignment: Repertory Grid Technique

Context

As the hallmark of assessment in personal construct theory, the *repertory grid technique* (RGT) is an offshoot of Kelly's (1955) Role Construct Repertory Test that was created to explore personal construct systems within clinical settings. Personal constructs are bipolar meaning dimensions (e.g., conscious–unconscious) that each person uses to organize and interpret knowledge on the basis of the perceived similarities and differences between these dichotomous extremes. Although originally intended for clinical use, successful applications of RGT have been found in various contemporary educational venues (e.g., Bezzi, 1999; Mayo, 2004b; Olsson, 1997; Winer & Vazquez-Abad, 1997). The present assignment applies RGT in the context of a history and systems of psychology course (Mayo, 2004a).

Purpose of the Assignment

Teaching a history of psychology course presents special challenges to undergraduate educators. Aside from a barrage of important names, dates, terms, and events, it calls for the integration of divergent intellectual, philosophical, and theoretical perspectives into a coherent historical mosaic of psychology that captures the spirit of the times in which competing views were put forth. At the same time, it affords an excellent opportunity to synthesize the diverse contents of other undergraduate psychology courses (Tobacyk, 1987). Because of this instructional opportunity and its accompanying classroom challenges, instructors often search for pedagogical strategies to enhance student comprehension and active involvement. As a teaching and learning instrument in a history of psychology course, RGT can be used to organize course content and bolster student understanding and enthusiasm for the subject matter.

Instructional Methodology for Assignment Completion

The course is designed to provide an overview of the intellectual history of psychology, tracing its roots from antiquity through the present. Course content is divided into three units: (a) the evolution of prescientific psychology; (b) the emergence and development of competing psychological systems during the early decades of scientific psychology; and (c) the chronological development of the principal subfields of psychology over the past century.

There are three take-home repertory grid assignments, one relating to each of the three units. Students work independently in completing each assignment as a paper-and-pencil task. Students are presented with a teacher-generated list of bipolar constructs tied to 11-point rating scales (see Figure D1) on which they rate 24 preselected contributors to the historical development of psychology (refer to Figure D2). The first six constructs (mind–body, nature–nurture, subjectivism–objectivism, holism–elementalism, free will–determinism, and utility–purity) represent ongoing debates with deep roots in the intellectual history of psychology.

Note. Portions of Appendix D were derived from “A Pilot Investigation of the Repertory Grid as a Heuristic Tool in Teaching Historical Foundations of Psychology,” by Joseph A. Mayo, 2004, *Constructivism in the Human Sciences*, 9, pp. 32–36 (www.constructivism123.com). Copyright 2004 by the Society for Constructivism in the Human Sciences. Reprinted with permission.

Figure D1*Eight, 11-Point Construct Scales Used in the Repertory Grid Assignments*

		Ratings												
		1	2	3	4	5	6	7	8	9	10	11		
1. mind		—	—	—	—	—	—	—	—	—	—	—	body	
2. nature		—	—	—	—	—	—	—	—	—	—	—	nurture	
3. subjectivism		—	—	—	—	—	—	—	—	—	—	—	objectivism	
4. holism		—	—	—	—	—	—	—	—	—	—	—	elementalism	
5. free will		—	—	—	—	—	—	—	—	—	—	—	determinism	
6. utility		—	—	—	—	—	—	—	—	—	—	—	purity	
7. verity		—	—	—	—	—	—	—	—	—	—	—	falsity	
8. major contribution		—	—	—	—	—	—	—	—	—	—	—	minor contribution	

Source. From “A Pilot Investigation of the Repertory Grid as a Heuristic Tool in Teaching Historical Foundations of Psychology,” by Joseph A. Mayo, 2004, *Constructivism in the Human Sciences*, 9, p. 36. Copyright 2004 by the Society for Constructivism in the Human Sciences. Reprinted with permission.

Figure D2*Contributors Covered in Each Unit of the History of Psychology Course*

Unit 1	Unit 2	Unit 3
Aristotle	Wilhelm Wundt	Gordon Allport
Saint Thomas Aquinas	William James	Jean Piaget
Rene Descartes	Mary Whiton Calkins	Francis Cecil Sumner
John Locke	Sigmund Freud	Margaret Floy Washburn
Herbert Spencer	Ivan Pavlov	Kurt Lewin
Immanuel Kant	John B. Watson	William McDougall
Hermann von Helmholtz	B. F. Skinner	Abraham Maslow
Gustav Fechner	Max Wertheimer	Richard Dawkins

Source. Adapted from “A Pilot Investigation of the Repertory Grid as a Heuristic Tool in Teaching Historical Foundations of Psychology,” by Joseph A. Mayo, 2004, *Constructivism in the Human Sciences*, 9, p. 35. Copyright 2004 by the Society for Constructivism in the Human Sciences. Reprinted with permission.

Through preliminary lectures at the start of the term, students are familiarized with the factors defining the two construct poles of each of these six meaning dimensions. The final two constructs (verity–falsity and major contribution–minor contribution) assess students’ views on purely subjective matters. With regard to these last two constructs, students are asked to assign their ratings on the basis of existing sociocultural, historical, and other overtones within the context of both contemporary times and the times in which each contributor lived.

In each of the three, unit-based RGT assignments, students complete the eight, 11-point construct scales one contributor at a time and then submit their completed grids for all eight contributors at the respective due dates for each assignment. In recording their construct-specific ratings on each grid, students print an X on the appropriate line within the rating continuum—somewhere between lines 1 and 11—that best matches the perspective of each contributor. In the blank space provided at the bottom of each rating grid (continued on the back of this sheet and on additional attached sheets if more space is needed), students offer a justifying rationale for each rating.

Once each of the three repertory grid assignments is graded and returned, 30–45 minutes of class time is allotted for whole-class discussion of students’ scored grids. Throughout these teacher-led discussions, students openly share their analyses and constructively critique the expressed views of their classmates.

Grading Rubric for the Repertory Grid Assignments

Knowledge Base of Psychology: Objectives of Psychology

_____ Evaluates the descriptive, explanatory, and predictive validity of different intellectual, philosophical, and theoretical perspectives throughout the history of psychology

Knowledge Base of Psychology: Overarching Themes of Psychology

_____ Evaluates the appropriateness of various intellectual, philosophical, and theoretical perspectives over the history of psychology, based on ongoing debates including nature vs. nurture, mind vs. body, free will vs. determinism, subjectivism vs. holism, holism vs. elementalism, and utility vs. purity

Knowledge Base of Psychology: General Content Domains of Psychology

_____ Evaluates and synthesizes the work of important contributors to the principal subfields of psychology

Research Methods in Psychology: Sociocultural Context

_____ Demonstrates awareness that historical and sociocultural context may shape the work of prominent intellectuals, philosophers, theorists, and researchers throughout the historical evolution of psychology

Critical Thinking Skills in Psychology: Use of Evidence in Psychology

_____ Analyzes and evaluates the quality, objectivity, and credibility of evidence in diverse contexts as it relates to the formation of influential intellectual, philosophical, and theoretical perspectives across the historical development of psychology

Critical Thinking Skills in Psychology: Argumentation Skills

_____ Develops sound, integrated supporting arguments that relate to diverse intellectual contributions throughout psychology’s history

Critical Thinking Skills in Psychology: Detection of Errors in Psychological Reasoning

_____ Evaluates the errors involved in poorly supported assertions by contributors to psychology's intellectual history

Critical Thinking Skills in Psychology: Problem Solving

_____ Evaluates the quality of solutions to problems in diverse contexts offered by key contributors to the intellectual history of psychology

Application of Psychology: Potential for Psychology as a Change Agent

_____ Evaluates the intellectual, sociocultural, and other changes stemming from the work of key contributors to psychology's historical evolution

_____ Evaluates (within the context of both contemporary times and the times in which each contributor lived) contributions to societal change resulting from the work of prominent intellectuals, philosophers, theorists, and researchers throughout the historical development of psychology

Application of Psychology: Applied Specialties in Psychology

_____ Evaluates the contributions of influential historical figures throughout the chronological development of psychology's applied subfields

Values in Psychology: Curiosity

_____ Sustains curiosity for investigating psychological claims pertaining to the contributions of key figures to the emergence and development of scientific psychology

Grading Criteria

Each unit-based repertory grid assignment is worth 10% of the final course grade. The assignments allow for sufficient depth and clarity in examining each student's work because they include numerical ratings in conjunction with corresponding written justifications. Students are advised that ratings are opinions that must be backed by logical supporting arguments. Accordingly, in scoring these assignments, the instructor offers written feedback in terms of the underlying logic and connection between students' numerical ratings and accompanying written justifications. The grading scale appears below:

- A** Evidences thorough evaluation of each contributor's views and well-conceived arguments in support of all numerical ratings
- B** Reflects an overall understanding of each contributor's views, but shows a few inaccuracies in providing rating justifications
- C** Demonstrates limited understanding of contributor's views and inconsistencies in arguing logically in support of numerical ratings
- D** Reflects consistent difficulties in connecting numerical ratings to logical supporting arguments
- F** Fails to support numerical ratings with logical justifications in most or all instances



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