
FACULTY FORUM

What Employers Want From Psychology Graduates

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Most undergraduate psychology majors do not opt for graduate school but attempt to enter the workforce. We surveyed employers in 3 regions of the United States to assess the importance of qualities, skills, and abilities that psychology graduates need. Results indicate that the 5 most important qualities, skills, and abilities to employers are listening skills, desire and ability to learn, willingness to learn new and important skills, getting along with others, and ability to work with others as part of a work team. Faculty members advising students may wish to emphasize the importance of these people and teamwork skills in an effort to ensure that students have a sense of what is important to employers.

In the last few years, psychology's popularity has grown tremendously at the undergraduate level. In the 1997–1998 academic year, higher education institutions awarded 73,972 bachelor's degrees in psychology (National Center for Education Statistics, 2001). This number puts additional pressure on students to perform well to gain a competitive edge. Because of this pressure, graduates need to be aware of (and acquire) the qualities, skills, and abilities that will make them more marketable in the workforce.

Eison (1988) identified skills that employers wanted among applicants. Employment interviewers looked for characteristics such as enthusiasm and motivation, grades, communication and interpretation skills, the nature of students' noncollege jobs, and types of extracurricular activities. Self-presentation was of utmost concern to job interviewers. Similarly and more recently, Appleby (2000) found that social skills, personal skills, and communication skills were the highest ranked sets of skills identified by employers.

This emphasis on self-presentation appears to differ from findings by Edwards and Smith (1988). They conducted a structured telephone survey of 118 employers to determine the skills and knowledge employers sought among bachelor's-level psychology graduates. They reported that the highest rated skills included writing proposals and reports, the ability to identify problems and suggest solutions based on knowledge of human behavior, conducting interviews, and performing statistical analyses.

There are many reasons to reevaluate the qualities, skills, and abilities employers desire. First, there are record numbers of psychology graduates, and because most do not go to graduate school (American Psychological Association, 1994), graduates need to be prepared for workforce challenges. Second, the limited evidence lacks consensus about the types of

skills and abilities employers desire. Third, skill sets may change over time. For instance, none of the ranked items in the Edwards and Smith (1988) study included technology and Internet skills. The purpose of this study was to determine empirically employers' value of various qualities, skills, and abilities for psychology graduates.

Method

Participants

Using contacts from three states (Idaho, Illinois, Ohio), we surveyed business leaders in companies large enough to be likely to hire psychology graduates (i.e., with at least 75 employees) about the relative importance of skills and abilities. We mailed a survey to 323 businesses. The overall response rate was 26.9% ($N = 87$). For the states, the responses were: Idaho 60 of 181 (33.1%), Illinois 20 of 100 (20.0%), and Ohio 7 of 42 (16.6%).

Materials

An 88-item survey included skills and abilities used in previous research and career development resources. Employers indicated level of importance on a 4 point Likert-type scale from 0 (*not at all important*) to 3 (*extremely important*). The instructions read, in part: "Thank you for taking the time to provide feedback about the value of particular skills and abilities in the psychology graduates you may hire for employment." Another section of the instructions read: "Please rate the importance of these qualities, skills, and abilities listed below. Think of these items in the context of what makes employees successful in your organization."

Procedure

We mailed the surveys from Boise, Idaho, to cities in Idaho, Illinois, and Ohio. Surveys sent to Idaho and Ohio had a return date of November 24, 1999. Those sent to Illinois were sent later with a return date of March 1, 2000. (The later mailing was because of the availability of mailing addresses.) The survey packet contained a cover letter from the authors, the survey items (see Table 1), and a self-addressed business reply envelope addressed to the director of human resources.

Results

Table 1 presents the means and standard deviations for the 88 items rated for importance. As a quick summary, we present the top 10 qualities, skills, and abilities here. The top 10 most

Table 1. Means and Standard Deviations of Employer Perception of Importance Ratings for 88 Qualities, Skills, and Abilities

Quality, Skill, or Ability	M	SD
Listening skills	2.86	0.34
Ability to work with others as part of a work team	2.84	0.45
Getting along with others	2.83	0.40
Desire and ability to learn	2.80	0.45
Willingness to learn new, important skills	2.80	0.43
Focus on customers/clients	2.78	0.44
Interpersonal relationship skills	2.75	0.51
Adaptability to changing situations	2.75	0.48
Ability to suggest solutions to problem	2.74	0.46
Problem solving skills	2.73	0.49
Ethical decision making	2.71	0.52
Critical thinking	2.66	0.54
Ability to see the big picture	2.66	0.59
Flexibility/shifting gears	2.65	0.52
Being able to identify problems	2.61	0.55
Working smarter to improve productivity	2.61	0.64
Timely decision making	2.60	0.56
Time management	2.58	0.52
Problem-definition skills	2.54	0.59
Personality	2.53	0.59
Building team spirit	2.48	0.63
Managing with vision and purpose	2.46	0.77
Leadership skills	2.45	0.62
Coping skills and abilities	2.42	0.73
Versatility	2.41	0.68
Understanding of human behavior	2.41	0.68
Motivating others	2.37	0.82
Proper grammar usage	2.34	0.61
Commitment to total quality management	2.33	0.72
Collaboration/negotiation skills	2.32	0.68
Prior successful work experience	2.29	0.73
Effective writing	2.28	0.70
Organization understanding	2.25	0.66
Priority setting	2.24	0.64
Rapport in college	2.21	0.77
Business understanding	2.21	0.72
Telephone skills	2.18	0.74
Innovation skills	2.18	0.70
Ability to influence others	2.16	0.72
Public relations skills	2.16	0.82
Networking skills	2.15	0.79
Negotiation skills	2.10	0.83
Presentation skills	2.09	0.73
Global thinking skills	2.03	0.75
Use of technology	1.97	0.73
Strategic planning skills	1.86	0.87
Diversity of education/knowledge	1.84	0.73
Enterprising	1.79	0.87
Writing proposals and reports	1.78	0.90
Public speaking	1.77	0.81
Investigative abilities	1.74	0.77
Marketing talents	1.70	0.98
Communicate using e-mail	1.70	0.94
Industry or corporation awareness	1.64	0.82
Conducting interviews	1.63	0.97
How to run a meeting	1.63	0.80
Understanding of how bureaucracies work	1.63	0.89
Prior experience in dealing with diversity/multiculturalism	1.62	0.79
Consulting skills	1.59	1.04
Reputation of recommenders	1.55	0.96
Letters of recommendation	1.54	0.72
Computational ability	1.51	0.80

(continued)

Table 1 (Continued)

Quality, Skill, or Ability	M	SD
Clerical ability	1.39	0.79
Interpreting trends	1.38	0.77
Affirmative action needs	1.34	0.91
Able to work with hands-on physical tasks	1.33	1.00
Able to research effectively on the Internet	1.31	0.82
Knowledge of interventions	1.29	1.03
Job analysis	1.23	0.93
Cumulative grade point average	1.20	0.71
Knowledge of research findings	1.13	0.89
Contracting skills	1.06	0.82
Difficulty of courses taken	1.05	0.78
Reputation of school(s) attended	1.01	0.80
Using canned computer programs to analyze data	0.98	0.79
Doing statistical analyses	0.95	0.85
Knowing how to design and conduct research projects	0.93	0.86
Speaking/writing ability in a second language	0.92	0.84
Honors and awards earned in college	0.90	0.69
Coding data	0.86	0.77
Participation in extracurricular activities in college	0.78	0.73
Able to work with machines or tools	0.76	0.86
Artistic abilities	0.76	0.79
Constructing tests and questionnaires	0.75	0.89
Administering standardized tests	0.67	0.77
Interpreting standard test scores	0.65	0.77
Publication in college	0.43	0.66
Musical abilities	0.29	0.50

Note. Based on a scale ranging from 0 (*not at all important*), 1 (*slightly important*), 2 (*moderately important*), to 3 (*extremely important*).

important qualities, skills, and abilities to employers were (a) listening skills, (b) ability to work with others as part of a work team, (c) getting along with others, (d) desire and ability to learn, (e) willingness to learn new important skills, (f) focus on customers or clients, (g) interpersonal relationship skills, (h) adaptability to changing situations, (i) ability to suggest solutions to problems, and (j) problem-solving skills.

Discussion

The importance of interpersonal skills (e.g., listening, relationship skills), teamwork (e.g., work with others, getting along with others), and work ethic (e.g., desire and ability to learn, willingness to learn new skills) emerged as qualities important to employers. We expected to find somewhat similar results to Edwards and Smith (1988), but did not. Three possible explanations emerge to help explain the different outcomes. First, Edwards and Smith interviewed employers seeking to hire a person whose duties would include research, whereas in this study we did not include that limitation. Second, Edwards and Smith conducted telephone interviews in one region of the country, whereas we used mail surveys in three states. Third, the results may have changed because of our use of a comprehensive set of potential qualities, skills, and abilities (88), compared to Edwards and Smith's list of 11 items.

For the sake of comparison, however, we did include all 11 of Edwards and Smith's (1988) items in our listing of 88 skills

and abilities. The most useful skill that Edwards and Smith found was “writing proposals and reports.” In our survey, this item ranked 49th and had a mean score of 1.78. “Being able to identify problems” was 15th in our findings ($M = 2.62$), and it was the second most useful skill from Edwards and Smith (1988).

Carroll, Shmidt, and Sorensen (1992) suggested students should choose electives that would meet the needs of future employers, such as being knowledgeable about the field under consideration and participating in volunteer experiences to enhance their desirability to future employers. Our comprehensive listing may provide some insight concerning attributes currently desirable to employers. The organization of Appleby’s (2000) categories mirrored the results of this study. Our study extends the results of Appleby due to a larger sample size, greater representativeness (three regions vs. one region), and a more comprehensive listing of potential skills and abilities. These important categories (i.e., social skills, personal skills, communication skills, information gathering skills, and numerical and computer skills) are helpful when trying to communicate the complexity of employer needs to students. However, the goal of a liberal arts education in psychology is much more than job training; it is preparation for life-long learning and good citizenship. Although educators want to help students increase their marketability, they should not lose sight of the overarching goals.

There are limitations to this study. Sampling respondents from three regions of the country did not provide a national sample, so generalizations are somewhat limited. However, based on this study, faculty members can advise students entering the workforce with a bachelor’s degree in psychology to focus on developing listening skills, working with groups, and developing an eagerness to learn and adapt to new situations. The employment market continues to be volatile, and advisors of undergraduate psychology majors need to be aware of these changes. Studies such as this one should be repeated at regular intervals to keep abreast of the rapid changes occurring in the marketplace.

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Student and Faculty Perceptions of Effective Teaching: A Successful Replication

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We surveyed comprehensive community college faculty and students concerning their perspectives on effective teaching. Our results closely paralleled Buskist, Sikorski, Buckley, and Saville (2002). Both students and faculty ranked the following among the top 10 qualities or behaviors of effective teachers: (a) approachable, (b) creative and interesting, (c) encouraging and caring, (d) enthusiastic, (e) flexible and open-minded, (f) knowledgeable, (g) realistic expectations and fair, and (h) respectful. The few differences in faculty and student rankings in both samples reflected faculty emphasis on teaching technique and student emphasis on the student–teacher relationship.

Investigations into what constitutes effective teaching follow three primary approaches: general writings on effective teaching (e.g., Roth, 1997), analyses of the credentials of award-winning teachers (e.g., Lowman, 1995), and analyses of student evaluations of teachers (e.g., Feldman, 1976). Each approach defines effective teaching primarily on the basis of a simple listing of the characteristics possessed by “master teachers”: committed, inspiring, engaging, and so on (e.g., Baiocco & DeWaters, 1998). However, what causes a teacher to be perceived as committed or enthusiastic? Focusing on the acquisition of specific behaviors reflective of effective teaching would seem a more useful strategy for teachers to develop these traits or otherwise improve their teaching. For example, acquiring behaviors reflective of enthusiasm is likely to be more beneficial than merely telling oneself or someone else to be more enthusiastic.

Buskist, Sikorski, Buckley, and Saville (2002) determined the personality characteristics of teachers and then identified specific behaviors exhibited by these individuals. Undergraduates listed the primary characteristics of “master teachers” at the college and university level, generating a list of 47 characteristics. A second undergraduate group then assigned

behavioral descriptors to each quality, producing a final list of 28 qualities and behaviors after combining qualities containing identical descriptors.

Next, Buskist et al. (2002) recruited undergraduate and faculty participants at a doctoral and research-university-extensive institution to select the top 10 qualities and behaviors most important to master teaching at the college and university level from among the 28 qualities and behaviors. Of the top 10, students and faculty agreed on 6: (a) realistic expectations and fair, (b) knowledgeable, (c) approachable and personable, (d) respectful, (e) creative and interesting, and (f) enthusiastic. In the remaining 4, students emphasized aspects of the student–teacher relationship (understanding, happy/positive/humorous, encouraging, and flexible) and faculty emphasized specific teaching techniques (effective communication, prepared, current, and promotion of critical thinking).

Using a similar procedure, Wann (2001) produced similar results involving students and faculty at a baccalaureate college general institution. Again, in terms of important differences in perspective, faculty emphasized teaching technique and students emphasized the student–teacher relationship.

The Buskist et al. (2002) and Wann (2001) studies suggest that students and faculty view the qualities and behaviors of effective teachers at 4-year institutions similarly. Do students and faculty at 2-year institutions share that same perspective? To answer this question, we examined community college student and faculty perceptions on effective teaching.

Method

Participants

Ninety-nine faculty (55 women, 44 men) and 231 students (137 women, 94 men) at a midwestern community college participated in the study. We distributed surveys to 238 faculty (42% return rate) and 248 students (100% return rate). We eliminated 1 faculty survey and 17 student surveys because of respondent errors.

Sixty-five faculty taught full-time and 34 taught part-time. We surveyed both day and evening classes and main campus and regional classes.

Instrument and Procedure

The survey instrument was the Teacher Behavior Checklist used by Buskist et al. (2002). It lists 28 qualities and behaviors reflective of each quality. Instructions to faculty and students stated:

Please select the 10 qualities/behaviors that are most important to “master teaching” at the college level. By a master teacher, we mean an individual who is highly effective as a classroom teacher—think of the best teachers you know. Select the “top 10 qualities/behaviors” by placing a check mark in the little box to the immediate left of the descriptions given for these qualities/behaviors. Please do not check fewer than, or more than, 10 qualities/behaviors.

Thus, each student and faculty member cast 10 votes. Participants did not rank order their choices.

We sent one copy of the survey and informed consent information to each faculty mailbox with a cover letter requesting their participation and explaining the study’s purpose. In addition, faculty distributed surveys and informed consent sheets to students enrolled in their classes (thus the 100% student return rate). Respondents completed surveys anonymously. Following data collection, we rank ordered the 28 qualities and behaviors based on the number of endorsements that each category received separately from faculty and students.

Results and Discussion

We limited analyses to comparisons between faculty and students for two reasons. First, we found no appreciable differences among participants in each group. Faculty members endorsed similar items regardless of gender and whether they held full-time or adjunct appointments. Likewise, female and male students endorsed items similarly regardless of age and whether they took day or evening classes. Second, we wished to make a direct comparison to Buskist et al.’s (2002) data, which compared faculty as a whole to students as a whole.

Table 1 compares faculty and student responses. For each group, the number of endorsements (n) for each quality or behavior category appears, followed by the percentage of participants who rated that quality in the top 10 and the overall ranking of that quality or behavior category. The last two columns show faculty and student rankings reported by Buskist et al. (2002).

Relative to one another and Buskist et al. (2002), faculty and students in this sample provided strikingly similar rankings. Although the specific order of the items differed, faculty and students agreed on 8 of the top 10: (a) approachable, (b) creative and interesting, (c) encouraging and caring, (d) enthusiastic, (e) flexible and open-minded, (f) knowledgeable, (g) realistic expectations and fair, and (h) respectful. Faculty rounded out their top 10 by endorsing qualities or behaviors that underscored teaching technique (i.e., presents current information, promotes critical thinking, and strives to be a better teacher), whereas students endorsed qualities or behaviors involved in the student–teacher relationship (i.e., happy/positive/humorous and understanding).

We conducted Spearman rho analyses to determine the correlation in the overall rankings of the 28 qualities or behaviors within and across the doctoral/research-university-extensive and the comprehensive community college samples. For all comparisons ($n = 28$), the analysis yielded significant results (one-tailed): faculty at both institutions, $\rho = .88, p < .001$; students at both institutions, $\rho = .96, p < .001$; doctoral/research-university-extensive faculty and students, $\rho = .39, p < .05$; and comprehensive community college faculty and students, $\rho = .64, p < .001$. Although students at both institutions and faculty at both institutions showed extremely high agreement, faculty–student agreement across the spectrum of these qualities or behaviors also matched closely.

Table 1. Comparison of Faculty and Student Ratings of the 28 Qualities/Behaviors and the Rankings Reported by Buskist et al. (2002)

Quality/Behavior Category	Community College						Buskist et al. (2002)	
	Faculty ^a			Students ^b			Faculty ^c Rank	Students ^d Rank
	<i>n</i>	%	Rank	<i>n</i>	%	Rank		
Accessible	26	26	16.5	96	42	12	11	12
Approachable	58	59	<u>6</u>	146	63	<u>2</u>	<u>5</u>	4
Authoritative	5	5	27.5	32	14	26.5	23	26
Confident	25	25	18.5	75	33	15	17	16
Creative/interesting	51	52	<u>8</u>	119	52	<u>5</u>	<u>8</u>	<u>6</u>
Effective communicator	37	37	12	64	28	17	<u>6</u>	15
Encourages/cares for students	38	38	<u>10.5</u>	110	48	<u>8</u>	12	<u>8</u>
Enthusiastic about teaching	78	79	<u>2</u>	114	49	<u>7</u>	<u>2</u>	<u>10</u>
Establishes goals	12	12	25	47	20	24	19	23.5
Flexible/open-minded	43	43	<u>9</u>	107	46	<u>9</u>	13	<u>9</u>
Good listener	26	26	16.5	61	26	19.5	20	18
Happy/positive/humorous	15	15	24	116	50	<u>6</u>	27.5	<u>7</u>
Humble	16	16	23	34	15	25	27.5	21
Knowledgeable about topic	85	86	<u>1</u>	160	69	<u>1</u>	<u>1</u>	<u>2</u>
Prepared	35	35	13	61	26	19.5	<u>4</u>	20
Presents current information	38	38	<u>10.5</u>	63	27	18	<u>9.5</u>	23.5
Professional	11	11	26	31	13	28	25	28
Promotes class discussion	30	30	15	60	26	21	16	19
Promotes critical thinking	61	62	<u>3</u>	51	22	22	<u>3</u>	23.5
Provides constructive feedback	33	33	14	101	44	11	14	13
Punctuality/manages class time	23	23	20.5	50	22	23	18	23.5
Rapport	23	23	20.5	89	39	14	26	11
Realistic expectations/fair	52	53	<u>7</u>	135	58	<u>3</u>	<u>9.5</u>	<u>1</u>
Respectful	60	61	<u>4</u>	126	55	<u>4</u>	<u>7</u>	<u>5</u>
Sensitive/persistent	18	18	22	90	39	13	22	14
Strives to be a better teacher	59	60	<u>5</u>	66	29	16	15	17
Technologically competent	5	5	27.5	32	14	26.5	24	27
Understanding	25	25	18.5	106	46	<u>10</u>	21	<u>3</u>

Note. Underlined numbers represent top 10 rankings for students and faculty within both samples.

^a*n* = 99. ^b*n* = 231. ^c*n* = 118. ^d*n* = 916.

These results replicated Buskist et al.'s (2002) findings. Six qualities or behaviors jointly endorsed by faculty and students in their sample also ranked in the top 10 by our sample of faculty and students: (a) approachable, (b) creative and interesting, (c) enthusiastic, (d) knowledgeable, (e) realistic expectations and fair, and (f) respectful. These data revealed two additional qualities or behaviors—encourages and cares for students and flexible and open-minded—as highly important (ranked in the top 10) to community college faculty and students, suggesting slightly more faculty–student agreement in this sample. However, these two qualities or behaviors ranked in the top 10 for students and fell closely outside the top 10 (12 and 13, respectively) for faculty in the Buskist et al. sample.

A separate comparison of the participants in this sample with the Buskist et al. (2002) participants revealed four primary points. First, the two samples of students showed perfect agreement on which quality or behavior categories ranked in the top 10. Second, the two samples of faculty members agreed on 8 of the top 10. (However, note the tie for the two qualities or behaviors ranked 10th among the community college faculty.) Third, for any given quality or behavior category, the ranking in one faculty or student sample generally fell within one or two rankings in the counterpart sample (e.g., knowledge, enthusiasm, and pro-

moting critical thinking ranked 1, 2, and 3 in both faculty samples). Finally, among the qualities or behaviors that faculty and students jointly ranked in the top 10, it is interesting to note the largest discrepancy: For both this sample and the Buskist et al. sample, the quality or behavior categories of “enthusiastic about teaching” and “realistic expectations/fair” showed the greatest discrepancy. At both the community college and the university levels, faculty ranked enthusiasm second, whereas students at both institutions ranked enthusiasm 7th and 10th, respectively. In contrast, the students ranked realistic expectations/fair in the top three at both institutions (community college = 3, university = 1). Faculty at the community college and the university ranked it toward the bottom of their top 10 categories (7 and 9.5, respectively).

Nonetheless, students and faculty disagreed strongly on some dimensions of effective teaching. Faculty at both institutions ranked promotion of critical thinking third overall, whereas students ranked it near the bottom (community college = 22, university = 23.5). Likewise, faculty ranked presenting current information fairly high (community college = 10.5, university = 9.5), whereas students ranked it considerably lower (community college = 18, university = 23.5). Critical thinking skills and currency of information are highly important: Current facts provide the substance with which

faculty attempt to teach their students critical thinking skills. However, thinking is hard work for many students and they simply may not appreciate the value of acquiring these skills or the value of cutting-edge information.

Several discrepancies in student and faculty rankings also occurred outside the top 10 qualities or behaviors. For example, students placed greater emphasis on rapport (community college = 14, university = 11) than did faculty (community college = 20.5, university = 26). Similarly, students ranked being sensitive and persistent (community college = 13, university 14) higher than did faculty (22 in both faculty samples). These findings bear further testimony to the idea that students place greater value than do faculty on the interpersonal dimensions of the student–teacher relationship.

In summary, faculty and students in both samples agreed strongly on which qualities or behaviors constitute effective college and university-level teaching. In addition, comparison across the two samples suggests that the differences found between faculty and students appear relatively consistent across size or type of school. This trend suggests that a potentially useful strategy for becoming a more effective teacher, or training others to become effective teachers, may be to focus on the acquisition of specific behaviors that constitute broader based qualities characteristic of master teachers.

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Notes

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Multiple-Choice Exams: Explanations for Student Choices

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This study examined relations among 3 variable domains: (a) students' explanations for their answers to difficult multiple-choice items, (b) generic critical thinking, and (c) performance on different types of exam items. Students took a critical thinking test at the beginning of a large human development course and 5 multiple-choice exams during the course. Prior to turning in each exam, students prepared written explanations for their answers to the 4 items judged most difficult by the instructors. All explanatory dimensions and critical thinking significantly predicted exam performance measures, but the number of exam options explained proved to be the strongest predictor of exam measures. Critical thinking and student explanations were marginally linked.

High enrollment makes multiple-choice exams an expedient means of assessing student performance in entry-level psychology courses. However, the cognitions underlying student responses to multiple-choice items often are unclear to instructors. For example, to what degree do student responses reflect recall of information versus higher order reasoning? Furthermore, how can instructors help students examine and improve their use of information and reasoning in responding to exam items?

Although multiple-choice tests primarily assess knowledge, several experts contend that multiple-choice items also can assess higher order reasoning (Aiken, 1982; Fuhrman, 1996; Karras, 1978; Morrison & Free, 2001). Given this potential for multiple-choice exams, what distinguishes the knowledge and reasoning cognitions that high and low scorers report in answering exam items? Although research related to this question is limited, McClain (1983) found that A students read more options and identified more reasons for eliminating particular choices than C or F students. However, McClain did not describe qualitative differences (e.g., accuracy of information, quality of logic) in reasons advanced by the two groups.

In a large human development course emphasizing both knowledge and critical thinking, we examined (a) the relations between students' explanations for their answers to difficult multiple-choice items and their performance on different types of exam items, (b) the relation between critical thinking and the same performance measures, and (c) the relation between critical thinking and the explanatory dimensions.

Method

Participants

Students in two sections of an undergraduate human development course ($N = 157$) participated in the study. The

sample consisted of 69 sophomores, 47 juniors, 27 seniors, and 10 graduate students (academic classification not indicated for 4 students). Although more women ($n = 124$) than men ($n = 33$) participated, the gender groups did not differ significantly on any of the predictor or performance variables in the study.

We also identified groups of high- and low-performing students on the combined unit exams. A criterion-referenced grading system indicated that 14% of the students earned As or B+s (high performing) on the exams and 14% made Ds or Fs (low performing). The following standards differentiated these grade levels: A = 90% and above correct; B+ = 88% to 89% correct; D = 60% to 69% correct, and F = below 60% correct.

Procedures

Students took the California Critical Thinking Skills Test (Facione & Facione, 1994) at the beginning of the semester. Critical thinking metrics for the current sample indicated slightly higher central tendency measures and a slightly more restricted range than those reported for the standardization sample. To encourage critical thinking in the course, we interspersed higher order questions related to course content in class discussions.

During the course, students took five 40-item multiple-choice exams and explained in writing (prior to turning in each exam) the reasons for their answers to the four items that we judged most difficult. We based difficulty ratings on (a) past student performance on these items and (b) level of cognition presumably required by items. Subsequent student performance confirmed that the target items were difficult (63% correct on target items vs. 78% correct on all items).

Three graduate students rated students' written explanations for accuracy of information and number of options explained. The accuracy rating represented the level of relevant accurate information included in the written explanation (range from 0 to 4 per item), whereas the options rating signified how many options students analyzed for each item (range 0 to 4 per item). Where applicable, raters also computed a faulty-thinking or error score for student explanations. Raters assigned an error score when an explanation for an incorrect answer reflected one or more of the following faulty thinking strategies: *misinterpretation*—altering the meaning of the stem or an option; *mismatch*—invoking accurate but irrelevant information; *bias*—relying on personal experiences, values, or opinions as the basis for an answer; *inconsistent standards*—varying criteria for supporting or rejecting options within the same item; and *naivete*—not knowing a common word or common information germane to a question.

One graduate student (primary rater) rated all the students' written responses for accuracy, options, and the five subcategories of error; two other graduate students (secondary raters) rated the written responses of 20 students per exam. Primary and secondary raters achieved adequate interrater agreement across exams for all explanatory categories: 81% average agreement for accuracy, 90% average agreement for options, and 81% average agreement for the error categories.

A team of graduate teaching assistants also classified items on the exams as direct recall or comprehension. Direct recall items assessed memory of facts, with the context of the question stems and options closely paralleling information presented in class or the course readings. Comprehension items required use of facts in a context different from the context presented in class or in the course readings. For all exams, raters judged 26% of the items as direct recall and 58% as comprehension, with an average interrater agreement of 73%. We designated items receiving less than 66% agreement across raters as mixed items (16% of the items). Defensible differences in cognitive perspectives of the same exam items likely lessened interrater agreement on item types (Fuhrman, 1996).

Results

Correlational Analyses

Table 1 shows that all explanatory ratings and critical thinking correlated significantly ($p < .01$ minimum) with all item types. However, the number of options explained correlated highest with item types. Regression analyses confirmed that options was the prime predictor of performance on all types of items, accounting for 35% to 41% of the variance across the item types. Accuracy and critical thinking also contributed to prediction of all types, whereas error contributed to prediction of comprehension and mixed items. Item-type variance explained by the combined predictors ranged from 43% for the recall items to 54% for comprehension items.

The findings showed marginal relations between generic critical thinking and the explanatory dimensions. The correlations were .21 ($p < .05$) for accuracy, .33 ($p < .01$) for options, and $-.14$ for error (*ns*). Regression analyses revealed that critical thinking predicted 11% ($p < .001$) of the options variance, 4% ($p < .01$) of the accuracy variance, and 2% (*ns*) of the variance in error.

Group Comparisons

Findings indicated that high-performing students obtained significantly ($p < .001$) different scores from

Table 1. Correlations Between Explanatory Dimensions/Critical Thinking and Exam Performance Measures

Independent Variables	Exam Performance Measures			
	Total Items	Recall Items	Comprehension Items	Mixed Items
Accuracy	.54**	.50**	.57**	.50**
Options	.63**	.60**	.62**	.58**
Error	-.22*	-.20*	-.33**	-.29**
Critical thinking	.41**	.39**	.42**	.38**

Note. $N = 157$ except critical thinking ($n = 150$).
* $p < .05$. ** $p < .01$.

Table 2. High- and Low-Performance Group Comparisons for Raw Score Means and Percentages of Maximum Scores for Explanatory Categories, Item Types, and Critical Thinking

Comparison Variable	Group Comparisons			
	High-Performance		Low-Performance	
	<i>M</i>	%	<i>M</i>	%
Explanation				
Accuracy	37.06	46	14.83	19
Options	54.77	68	35.20	44
Error	2.36 ^a		4.45 ^a	
Item type				
Target ^b	16.13	81	9.50	48
Recall	47.68	92	34.00	66
Comprehension	95.91	90	65.37	62
Mixed	38.59	92	27.04	64
Critical thinking	19.38	57	13.33	39

Note. All high- and low-performance means were statistically different at the .001 level. % = percentage of maximum score represented by raw score means.

^aThese numbers represent the average number of reasoning errors across the 20 target items. Variation in the structure of exam items precluded determination of maximum errors. ^bTarget = score for the 20 difficult items targeted for written analysis.

low-performing students on all explanatory dimensions, all item types, and critical thinking (see Table 2). The low-performing students used less accurate information, analyzed fewer options, and made more reasoning errors than high-performing students in responding to difficult exam items.

Discussion

The results provide a framework for helping students understand and apply commonly recommended guidelines for improving exam performance. First, the findings of this study empirically confirm the efficacy of such guidelines. For example, two common guidelines are to read items slowly and carefully (our findings indicated that item misinterpretation was the most common reasoning error) and make sure the information used matches the question or option (our findings identified mismatch of information as the second most common reasoning error). The findings of this study underscore the importance of providing review questions for students to practice using these guidelines in responding to multiple-choice items.

A primary strategy for helping students better understand and improve their performance is to provide samples of student explanations for incorrect choices. When shown such explanations, a number of students identified the specific faulty thinking strategies used and pinpointed examples that illustrated their thinking errors. One student reported that this analysis of faulty thinking helped her achieve her best score ever on a multiple-choice test the following day in another course. Any instructor who asks students to provide written explanations of selected items will soon develop a

repertoire of explanations that illustrate test-taking problems similar to those cataloged in this study.

To this point, our attempts to improve exam performance have been more effective at the upper end of the grade scale than at the low end. For example, 21% of students this past semester earned As and B+s (compared to 14% in this study), but the percentage earning Ds and Fs remained unchanged. The critical thinking deficiencies of the low performers—their mean fell in the bottom quartile of the standardization distribution—may impede their application of our explanatory dimensions to improve exam performance. Although marginally related to the explanatory dimensions, critical thinking significantly contributed to the prediction of exam measures. We wonder whether students with low critical thinking skills may need individualized assistance to understand and apply the explanatory dimensions. Having low performers submit written explanations for their answers to difficult exam items and then examining their rationales with them on a one-to-one basis would likely be more effective than simply providing sample explanations in a group setting.

In summary, having students write explanations for selected exam items could produce multiple benefits: provide a basis for instructor and students to examine information and reasoning used in responding to items, pinpoint items that need to be clarified (many students may have misinterpreted the same item), and highlight the need for better instruction related to an item (the item may be well designed but course content may have omitted some information crucial to the item). One result of our requiring written explanations for difficult items is that students appear more likely to acknowledge the legitimacy of such items and exert greater effort to improve their exam performance. Additionally, the process has provided valuable input to us in refining both exam items and our instruction related to those items.

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Academic Career Exploration: A Field Experience Approach

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Although field placements often provide career exploration opportunities in the human services, few structures exist to help undergraduates explore academic careers. We describe a field placement alternative to help interested upperclass students experience the diversity of faculty responsibilities, clarify their educational and career goals, and receive early career mentoring.

Psychology students are often well prepared for entering human services positions or for the research aspect of graduate training. Unfortunately, few structures exist to help undergraduates explore academic careers. Recent interest in preparing future faculty at the doctoral level is encouraging (Preparing Future Faculty, n.d.), but undergraduates interested in faculty careers know little of the multidimensional nature of academia. Some structures to provide academic career exploration do exist. One example reported by Zechmeister and Reich (1994) is a senior seminar in which students and faculty primarily discuss issues related to college teaching; a secondary goal is for students to gain some ad hoc teaching experience. A more hands-on program trains bright undergraduates as psychology laboratory instructors (Newcomb & Bagwell, 1997). Both programs are commendable and should be imitated where possible. However, neither of these approaches allows students to experience the broad range of tasks required of faculty. The career-exploration strategy of shadowing (e.g., Mariani, 1998; Norton & Field, 1998) affords observation of a range of professional activities but students are usually not able to personally participate in those tasks. In this article we describe a unique means of academic career exploration by using an undergraduate field placement approach.

Placement Goals and Activities

We have found that students interested in becoming professors know little about academic life beyond giving lectures and grading papers. To help upperclass psychology majors explore academia as a career option, we recently modified our three-credit (120-hr) field experience program by placing interested students with a professor instead of a human service agency. Our goals for this placement alternative are to help students appreciate the variety of work in which professors engage, clarify students' educational and career goals, introduce and develop teaching-related skills, and deepen students' understanding of psychological concepts. We also strive to enhance students' relationships with psychology faculty through the one-on-one mentoring more commonly found at the graduate or professional level (e.g., Knox & McGovern, 1988; Petrie & Wohlgemuth, 1994; Swerdluk &

Bardon, 1988; Zalk, 2000). What follows is an overview of the activities designed to accomplish our placement goals.

Background Reading

Supervising professors choose relevant readings to help students understand the broad range of academic responsibilities and concerns, with a special focus on teaching. Good books include Boice's (2000) *Advice for New Faculty Members*, McKeachie's (2001) *Teaching Tips*, and Zanna and Darley's (1987) *The Compleat Academic*. Articles describe academic life (e.g., Boice & Myers, 1987; Dunn & Zaremba, 1997), classroom techniques (e.g., Bernstein, 1994; Mester & Tauber, 2000; Sternberg, 1999), or other teaching-related tasks (e.g., Dewey, 1995). The readings educate students about the tasks and demands of academic life and also alert them to the availability of helpful resources. In addition, students explore other helpful resources on the Internet (e.g., American Psychological Association, 2001; Office of Teaching Resources in Psychology, 2001).

Teaching-Related Activities

Building on their readings, students complete several teaching-related activities. Students critically observe the pedagogy of at least two classes in which they are not enrolled and write detailed reviews that they subsequently discuss with the instructors. In this way, students connect their readings with classroom practice and realize the benefits of faculty peer observations. To appreciate the work of preparing course goals, policies, and schedules, students develop a syllabus for a course the department does not offer. Students also write a thorough review of a chapter from two introductory psychology textbooks to enhance their understanding of how instructors select texts. Finally, because assessment is such a significant part of teaching, students develop and grade an introductory psychology course assignment.

The culminating teaching activity is students' debut as a professor-for-a-week. Students develop and deliver three consecutive lectures to an introductory psychology class, which may include demonstrations, video clips, and small-group activities. The supervising professor and another faculty member observe the classes, give written reviews after each, and meet with the student lecturers to discuss their observations. The introductory psychology students also give anonymous feedback to the student lecturer. One class period is videotaped so students can observe and critique themselves. Teaching requires students to synthesize and apply their knowledge of pedagogy, learning objectives, and learning styles. Although challenging and stressful for them, the teaching experience is the high point of the semester.

Nonteaching Professional Activities

To experience nonteaching faculty responsibilities, students complete several other activities. As a corequisite to the placement, students conduct a full range of research activities (literature review, data collection and entry, APA

style paper) in collaboration with a faculty member or as part of our senior research course. Students also attend at least one faculty meeting, which alerts them to the politics and the work involved in curricular planning. They assist with course advising for underclass students to become more aware of the different goals of students. To prepare for their graduate career, students develop a curriculum vita and draft personal statements for graduate school applications.

Mentoring and Reflection Activities

To foster the relationship between the professor and student, they meet for weekly discussions on such topics as pedagogy, professional responsibilities, and balancing work and family obligations. The supervising professor provides students with feedback on their tasks, and students usually revise and resubmit written materials in light of the feedback. Students keep a weekly journal to document and reflect on their placement activities and consider any challenges while completing the activities (on the effectiveness of journaling, see Connor-Greene, 2000). Students also write a final paper in which they reflect on their personal growth, their educational and career goals, and the degree to which the placement accomplished its goals.

Suggested Variations and Conclusions

Our goals and activities will not be suitable for every situation, and we suggest some other options. Students may wish to shadow professors for a day to better understand the typical range of their daily tasks. Another option is for students to interview professors about their career paths and teaching philosophies. Finally, as an alternative to writing a personal statement or a final reflection paper, students could develop their teaching philosophies based on readings and teaching activities.

In our experience, this placement is well worth the work for both faculty and students. Two senior students have completed our placement since its inception last year. Both reported that it was highly rewarding, and they have confirmed their initial intentions to pursue an academic career. Through this kind of placement experience, students better understand professional activities and challenges, are better equipped to assess whether their abilities are a good fit with an academic career, and enter graduate training with clearer goals and knowledge that will be useful as teaching assistants and professors. Although still too early to know, we expect that our students' graduate school applications will be viewed more favorably because of their documented exposure to a broad range of professional activities and the evidence of their professional goals. Supervising professors should consider this experience as a faculty development opportunity in which they can further develop their teaching philosophies and refine pedagogical techniques (see also the benefits described by Zechmeister & Reich, 1994). Finally, the faculty member is rewarded with the opportunity to witness personal growth in promising students as they learn about the joys and challenges of academia.

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Notes

1. An earlier version of this article was presented at the eighth Midwest Institute for Teachers of Psychology in Glen Ellyn, IL, February 23–24, 2001.

2. We thank the three anonymous reviewers whose helpful suggestions significantly strengthened this article.
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Making Statistics Come Alive: Using Space and Students' Bodies to Illustrate Statistical Concepts

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This article describes several exercises that illustrate statistical concepts using students' bodies and the physical space in the classroom. The concepts of central tendency, variability, correlation, and regression are among those illustrated. These exercises encourage both active learning and the visual-spatial representation of data and quantitative relations. Students evaluated the exercises as both interesting and useful.

Many psychologists have observed that statistics is an important course in the psychology curriculum (Bartz, 1981), but also an extremely challenging one for faculty to teach effectively (Connors, Mccown, & Roskos-Ewoldsen, 1998). Many students have negative associations of mathematics from previous encounters, few psychology students describe themselves as inherently interested in the subject matter of statistics, and many consider the subject matter "dry" or "boring" (Hembree, 1990; Tobias, 1995).

In this article I describe several exercises I have used in the undergraduate statistics course that students find interesting and useful. The exercises incorporate students' bodies and their locations and arrangement in the classroom to convey statistical concepts. The exercises may also be helpful for students who learn best from visual or spatial representations, rather than through the exclusive use of verbal or mathematical symbols.

First Day of Class

At the first class period I explain that I find it useful at the beginning of a course to explore students' reasons for enrolling in my class. "How can I find out why you are taking the class?" I ask. They often suggest constructing a survey. "But I would like to find out right now," I say. Eventually, I tell them that I am going to read a list of reasons students might have for taking this course, and I ask them to indicate whether each of these reasons is, in fact, one of their reasons. However, instead of simply having them raise their hand, providing dichotomous data, I explain that I find it more useful to collect data in such a way that there is a potential range of responses. So, if they find they do not agree at all with a particular reason for taking the course, they are to keep their hands completely down at their side (they are all standing). If they agree slightly, they should raise their hands slightly; if they

agree more strongly, they should raise their hands higher, with the height they raise them corresponding to the extent to which they agree with that reason. For total agreement they should raise their hands completely and move them about vigorously, indicating their enthusiastic agreement with that reason.

I read the list of reasons: "because a friend recommended this as a good course," "because it sounded interesting," "because I have always had a curiosity about statistics," and "because it is a required course for the major." Invariably, the students are quiet and inactive until I read the last reason, at which time almost all the students have their hands fully raised and are moving about. They laugh, and it seems that tension is reduced as we talk about why students often feel anxious about taking this class, what assistance is available, and related concerns. We discuss different kinds of variables in the context of this exercise: dichotomous versus multivalued, discrete versus continuous, and quantitative versus qualitative. We talk about other ways that I could have obtained the same or similar information. For example, the students could have rated their support or nonsupport for each reason by using a numerical scale, varying their facial expressions, or applauding. Each of these approaches would yield a different type of data, with somewhat different characteristics. Presumably, the basic underlying information about why the students were taking the course would be the same.

Central Tendency, Variability, and Shapes of Distributions

In a class of 50 or fewer students I conduct the following demonstration with the whole class. In a larger class I ask for 10 to 20 volunteers (approximately half men and half women).

I ask the students to visualize a number line going across the front of the room from left to right, in front of the first row of seats. At the extreme left of the number line, against the left-hand wall is the number 0, which stands for *absolutely do not like at all*. At the extreme right is the number 10, which stands for *completely and totally like*. The spot in the middle stands for 5, *neither like nor dislike*. I ask the volunteers to position themselves on this number line according to how they feel about the stimuli that I describe. If there is more than one person who has the same feeling about a stimulus, then one person stands on the number line at the appropriate location representing that feeling, and the others stand single file in front of that person. What emerges, of course, is a human frequency distribution or histogram.

I choose stimuli that elicit distributions that differ in shape, central tendency, and spread and that do not require the students to reveal information that would make them uncomfortable. The request "Position yourself on the number line according to how you feel about using computers" typically elicits a relatively symmetrical distribution with a center around 5. I ask students in the class to try to describe this distribution verbally, so that we might characterize how it differs from other distributions we observe. Where is the center? How spread out is the set of scores? What is the range? Do the scores cluster? I position myself on the line about where the median is to facilitate a discussion of central tendency.

When I say “Position yourself on the number line according to how you feel about chocolate” I typically get a pile-up of students at 9 or 10 and a few trailing down to 5, yielding a negatively skewed distribution. I also get an interesting pattern in response to the instruction “Position yourself on the number line according to how you feel about watching football on television.” This question frequently yields a bimodal distribution (often differentiated by gender). Usually there is no or little overlap between the male and female distributions. Sometimes, however, the responses to this question will include an outlier—a man who intensely dislikes watching football or a woman who likes it intensely.

Correlation, Scatterplot, and Regression

One of my favorite demonstrations is what I call the human scatterplot. This demonstration involves the whole class and requires some advanced planning, especially when done in a large lecture hall, but I routinely use this demonstration with as many as 200 participants. Students position themselves in a given row in the lecture hall according to their value on one variable and then move toward the left or right end of the row, according to their value on another variable.

Two variables that I have used that always seem to result in a successful demonstration are height and shoe size. The week before the demonstration I ask the students to submit a piece of paper with their height, shoe size, and gender. I use this information to determine which heights to assign to which rows and what shoe size labels to give to the endpoints of the rows. I also use it to calculate the exact equation for the regression line, which I present in the lecture and discussion that follow. Naturally, the heights and shoe sizes differ for men and women. I usually do this demonstration with the men and women separately, so that each group can both participate in the exercise and view the scatterplot as a whole, but it does work with the genders combined.

In my classroom there are 10 rows of seats. I designate each row for a particular height; for women I might use Row 1: 60.9 in. or shorter; Row 2: 61.0 in. to 61.9 in., and so on. Then I tell the women that the left-most part of each row stands for shoe size 5 and the right-most part stands for shoe size 10+. They are to position themselves in a particular row and part of the row according to this information. After a little noise and commotion we discuss the pattern that results. I ask them to note that there are no people in the front rows on the right end. Why is this? They can readily see that there are no women who are about 5 feet tall and have shoe sizes larger than 10. Similarly, the left-end rear is empty. Again, they see that women who are 6 feet tall do not have size 5 shoes. I have them notice the tendency for people to fall on a diagonal line through the classroom, indicating a positive relation between the two variables. I ask all people 64 in. tall to raise their hands and to call out their shoe sizes. The students see that there is variability in the shoe sizes of this group of people, but that there is less variability than in the class as a whole. I do the same with people whose height is 68 in. or so that the students can see both the relation between height and shoe size and the variability about the regression line. On the basis of the information in the human scatterplot I ask them to predict the shoe size for an individual of a particular height. I also

ask the middle person in each row to raise his or her hand to make the regression line more visible. (An anonymous reviewer suggested that the middle persons might all hold onto a long piece of crepe paper or ribbon.) Later when I present the formal calculations using the information they provided, I show how the slope of the regression line indicates the number inches in height (typically around 2) associated with an increase of approximately one shoe size.

In a small classroom with a small class it is fun to try this activity with a number of different pairs of variables, again trying to use variables that are not too sensitive and that illustrate relations of varying strength and direction. Such variables might include the number of children in their family, the size of the town or city in which they grew up, the size of the town or city in which they would most prefer to live, the number of minutes per week they engage in exercise or sports, the number of hours per week they watch sports on television, or the number of math courses they have had.

Other Applications

With a little practice it is not difficult to develop other applications. I have used the same basic approach to illustrate the effects of linear transformations on the central tendency and variability of scores as well as a demonstration illustrating the central limit theorem. As a side benefit, I invariably find that the physical activity associated with moving about the classroom has a positive effect on the students' attentiveness when they return to their seats.

Evaluation and Conclusions

These demonstrations routinely receive a very positive response from the students. In an end-of-the semester survey, a sample of 165 students evaluated these demonstrations along with several other components of the course for interest and usefulness, on a scale from 1 (*not at all interesting or useful*) to 7 (*extremely interesting or useful*). Repeated-measures ANOVAs showed that the students made distinctions among these components, $F(4, 656) = 31.8$, $LSD = 0.5$ for interest ratings, and $F(4, 656) = 8.3$, $LSD = 1.0$ for usefulness ratings. The students perceived the exercises as similar in interest value to the videos ($M = 6.7$ and 6.4 , respectively) and more interesting than the text ($M = 4.9$), the lectures ($M = 5.1$), and the computer assignments ($M = 4.4$). They viewed the exercises as similar in usefulness to the text ($M = 6.5$ for exercises; $M = 6.6$ for text), the lectures ($M = 5.6$), and the videos ($M = 6.1$), but more useful than the computer assignments ($M = 4.1$).

I find that these exercises are helpful in reducing the negative associations that many students have with statistics and mathematics. They help to make the concepts concrete, which can facilitate learning (Connors et al., 1998), and they involve active learning, which improves student motivation and learning (Benjamin, 1991). They may also assist with the development of spatial intelligence (Gardner, 1993). Finally, there is no doubt that the exercises are memorable, a characteristic not typically associated with the content of statistics courses (Connors et al., 1998). Years after students have

taken my course and forgotten the phrase “regression line,” they have described the scatterplot exercise to me, how the students were clustered along the diagonal of the room, and the relation between height and shoe size that was reflected in the fact that there were no short students with very big feet or tall students with very small feet.

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Note

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Helping Students Gain Insight Into Mental Set

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Difficulty in problem solving is an important topic in the thought-language chapter in introductory textbooks. Textbook authors typically use water-jar problems to illustrate mental set, one of the major barriers to successful problem solving. Such problems, however, only exemplify mental set created within the actual problem setting. To extend such discussions, I describe an engaging class activity that uses 4 related series problems to illustrate mental set and its more general negative effect on problem solving. Student reports indicated that they found the activity both engaging and instructive. I also provide resource references to extend class discussion of the activity to the broader issue of mindless versus mindful behavior.

Difficulties in problem solving comprise a key section in the thinking-language chapter in introductory textbooks. Two barriers to problem solving are functional fixedness (viewing the objects in the problem environment as having fixed functions) and mental set (repeating the same solution strategies used in the past for similar problems). Textbook authors typically illustrate these two concepts by using two

mental-puzzle type problems studied by Gestalt psychologists, usually Duncker’s (1945) candle mounting problem and Luchins’s (1942) water-jar problems, respectively.

Although Matlin (1999; see also 2002, pp. 380–383) employed these two Gestalt problems as examples of functional fixedness and mental set, she discussed these difficulties as examples of a more encompassing hindrance to problem solving—Langer’s (1989) concept of mindlessness. As Matlin pointed out, mindlessness is a form of automatic thinking in which people use information too rigidly, look at a problem from only one perspective, and rely too heavily on old information at a cost of not being aware of new information in the environment.

In addition to a set of water-jar problems, Matlin (1999) used a series problem to illustrate mental set. Series problems require the solver to induce the structure of a series of numbers, words, or symbols and then project the next item in the series. The structure of Matlin’s series problem required a novel solution approach. Thus, repeating the typical strategies for past series problems (mental set) hinders the solution process. The interfering past experience relevant to water-jar problems stems from solving previous water-jar problems in the current set of problems. For series problems with novel structures, the interference arises from past solution experiences with these problems outside of the current setting. In addition, whereas mental set usually prevents only the most efficient solutions to water-jar problems, it typically prevents solution for these novel series problems.

The activity described in this article expands Matlin’s use of a novel series problem to illustrate the broader sense of mental set by including four such problems that all have essentially the same, very familiar solution but remain independently difficult because each requires a different novel solution strategy. The nature of the interfering mental set therefore varies across the four problems. Thus, these problems both exemplify the general nature of mental set and its key role in making problems more difficult and set the stage for a discussion of the more general concept of mindlessness.

Activity Materials and Procedure

For a better understanding of this activity, you should attempt to solve the four series problems given in Table 1 before reading further. One can present the four problems on a chalkboard, overhead transparency, or Microsoft PowerPoint slide. Present each problem one at a time and in the order given in the table. As you proceed from one problem to the next, leave all prior problems in view and do not give any of the answers until you have presented all of the problems.

Ask students who have seen a problem before or solve a problem not to give the answer, but rather to think of clues to help their classmates overcome mental set and gain insight into the problem’s solution. These students can also testify that the problems all have rather simple answers, which keeps other students motivated to search for solutions. In addition, the students providing clues gain a better understanding of mental set and its negative effect on problem solving via their attempts to find facilitating clues. The clues inevitably lead to some in-class “Aha!” insight experiences that students cannot suppress. In addition to student clues, provide

Table 1. The Four Series Problems Used in the Activity

(1)	O T T F F S S	_ _
(2)	E O E R E X N	_ _
(3)	M 8 8 4	_ _
(4)	∞ π π ₣	_ _

one final clue that all of the problems have essentially the same answer. Following a brief period to allow one more opportunity for solutions, solicit answers and carefully relate the answers to the mental sets involved for each series problem.

The solutions to all four problems involve the simple digit series (1, 2, 3, 4, 5, 6, 7, 8, ...), but each requires overcoming mental set in a different way. For Series 1, the structure is that each alphabetic character represents the first letter of the successive digit words (O for ONE, T for TWO, ...) so the answer is E for EIGHT. Based on one's past experiences with series problems, the mental set involves viewing the alphabetical characters as single entities (letters) and not as parts (the first letters) of some related larger entities (the digit words). For Series 2, the structure is that each alphabetic character represents the last letter of the successive digit words (E for ONE, O for TWO, ...) so the answer is T for EIGHT. The mental set created by past experience is the same as in Series 1 but further compounded by the normal ordering of words by their first letters and not their last. In addition, students who have solved Series 1 may become victims of the mental set of using the solution strategy for Series 1 in their attempts to solve Series 2. They may try to find a series of words in which the letters in Series 2 are the first letters of words.

For Series 3, the structure is that each of the successive digits is paired with its mirror image so the answer is 5 paired with its mirror image, 8. The relevant mental set in this case involves perceiving each character at a wholistic level (e.g., seeing the third character in the sequence as the number 8). You can relate this difficulty to previous material in the introductory course on sensation and perception, specifically on pattern recognition, in which the brain automatically pieces the parts of the patterns together to interpret their meaning at the holistic level. Consciously dividing the characters into parts and thus overriding this automatic processing via past experience is a very difficult endeavor. For Series 4, the structures of Series 1 and 3 are combined so the answer is F combined with its mirror image, ₣. Thus, the interfering past experiences are the same as those for Series 1 and 3 com-

bined. However, because many students with answers to Series 1 and 3 do not readily solve Series 4, this series reinforces the strong negative influence of the mental set created by these past experiences.

Discussion

This activity is appropriate for use in any course that includes coverage of thinking (e.g., cognitive psychology). It is not limited by class size. I have used variations of it in the introductory course, with class size ranging from 10 to 20 up to 200 to 300 students, and in cognitive psychology with intermediate enrollment sizes.

This term in my introductory class ($N = 24$), I surveyed my students about their engagement in the activity and their perceived value of the activity with respect to understanding mental set and the difficulty it creates in problem solving. For both aspects, the responses were unanimously positive. These data coincide with those for more informal assessments I have conducted in past terms. In brief, students both enjoy the activity and find it instructive.

To enhance the activity's value, you should relate the difficulties created by mental set to the more encompassing concept of mindlessness using Matlin's (1999, p. 263) discussion as a guide. By doing so, you will help the students to generalize their knowledge about mental set as a hindrance to problem solving. Be sure to contrast mindlessness with mindfulness. A more mindful approach allows for better problem solving because one is open to new approaches and aware of the possible relevance of multiple perspectives in a particular situation. Langer (1989, 1997) provided very good resource material for this discussion. In these two brief books, she not only described excellent examples of mindlessness that impact everyday thinking but also instructions for combating it with more mindful behavior.

Regardless of how much you extend this discussion, make sure to include this brief finish to the activity. Although your students will have developed a specific mental set for 1, 2, 3, 4, ... solution strategies, general mental set will hinder their solution to this final problem. Have your class do the following series problem: **2 P E S**_. What's the answer? View this series in a mirror. Aha!

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What Are Students Telling Their Friends? Teaching Responses to Lay Psychopathology Questions

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Undergraduate abnormal psychology students are likely to know people with mental disorders and thus may apply the material they learn in class to their friends and family. However, typical abnormal psychology courses offer students little to no instruction on how to apply course material to their real-life experience with mental illness. I present a technique to teach students to respond appropriately to questions about mental illness from others by using small-group-generated lay questions and appropriate answers followed by an individual oral examination. Student ratings suggest that the technique is useful in teaching them how to respond to lay questions.

Students enrolled in abnormal psychology courses are likely to know someone with a mental disorder. Mental illnesses affect 20% of Americans during their lifetimes (U.S. Department of Health and Human Services, 1999). Connor-Greene (2001) found 94% of students enrolled in an abnormal psychology course knew at least one person with a mental illness, with a mode of four people. These figures suggest that students have ample opportunities to apply class material to friends and family. Whether they apply the material appropriately is a question I propose can be partially addressed by a lay question–answer activity and related oral examination.

This activity grew out of my personal undergraduate experience when a friend asked me about his anxiety disorder. Despite my great interest in anxiety disorders—and my A in abnormal psychology—I was baffled. Many of my students report similar encounters followed by their own similarly bewildered responses. Although many psychology courses have an oral communication component, such activities usually focus on professional or research communication (e.g., Klugh, 1983; Moeller, 1985; Nadelman, 1990) or on development of counseling skills (e.g., Jackson, 1984). Few communication activities show students how to apply material learned in abnormal psychology to daily life (see Nolen-Hoeksema, 2001, for an exception).

I developed the following technique to give students direct practice applying course material to lay questions. Students

work in small groups throughout the semester, writing questions lay people might ask about the current topic, then answering those questions. I use the best question–answer pairs in an individual oral examination at the end of the semester. The small-group work and the oral exam are worth 5% each toward the course grade.

At the end of the first class, students list past psychology courses, majors, and career interests. I then create small groups with varied experience and interests. I use groups of 5 or 6 students to ensure a critical mass for good discussion (a minimum of 3) when students are absent or (occasionally) drop the course. For my typical enrollment of 25 to 28 students, I have five groups per section. At the end of each major topic (50% to 75% of class periods), students break into their small groups. Before the first assignment, I instruct students in basic active listening (e.g., Moursund, 1985), have them use active listening to get to know another group member, then discuss the experience in class. This first, ungraded assignment takes 20 to 30 min.

For the remainder of the semester, each group writes a question a lay person might ask members about the current major topic, along with an appropriate answer. My observation of these groups suggests that they generate meaningful questions—in fact, many questions come directly from students' experiences. This activity usually takes about 10 min at the end of class, while I remain to answer questions. I then grade the written question–answer pairs, correcting any misperceptions or inappropriate responses. I modify any answer that goes beyond an undergraduate level of knowledge (e.g., "I think you should take some Prozac," "You have panic disorder") to something appropriate for undergraduate expertise (e.g., "There are drugs that can treat depression," "I'm not an expert, but it sounds like it might be panic disorder"). I strongly encourage students to refer the questioner to a mental health professional if appropriate. I return photocopies of the corrected sheets to each student at the next class period, at which time I also discuss any serious or common misconceptions.

The best question–answer pairs become possible oral exam questions. At the end of the semester, students receive photocopies of these pairs. Following a problem method approach (McBurney, 1995), I emphasize that although the answers on the photocopies are good ones, other answers may be equally acceptable. Students then sign up for 3-min individual appointments with me. In larger enrollment courses, this duty could be divided among teaching assistants. During the appointment, the student draws a folded-up question out of a basket and hands it to me. I ask the question and grade the student's response on a 0- to 2-point system. Zero points is failing, reserved for harmful answers such as providing seriously incorrect information, belittling the questioner, or pretending more expertise than appropriate. One point is passing, easily obtained by simple active listening and referral to a mental health professional. Two points is good, reserved for answers that are helpful, include active listening, are appropriate for students' level of knowledge, and demonstrate a knowledge of course material. The majority of students earn 2 points, with a few earning 1, and no one yet earning 0. I purposely restrict the upper end of this scale to minimize both anxiety and incentives for students to overlearn answers to

Table 1. Means, Standard Deviations, and Confidence Intervals for Student Evaluations

Question	<i>M</i>	<i>SD</i>	95% CI
Specific evaluation of question/answer and oral exam exercise, on a scale of 1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>) ^a			
Preparing for the oral examination (including in-class groups to write questions and reviewing the packet of selected questions) has helped me learn the course material.	4.1	0.7	3.8 to 4.4
After taking the oral examination, I believe that I will know what to say if a friend or family member asks for advice or support.	4.4	0.6	4.2 to 4.6
Writing questions for the oral examination has been a valuable learning experience.	4.0	0.8	3.7 to 4.3
Preparing for the oral exam has increased my empathy for people with mental disorders	3.8	0.9	3.4 to 4.2
The oral exam was a valuable addition to the class.	4.1	0.9	3.7 to 4.5
Selected evaluations from university-sponsored course evaluations, on a scale of 1 (<i>not at all</i>) to 5 (<i>very much</i>) ^b			
How much has this course improved your ability to apply psychological research to real-world or realistic problems?	4.6	0.8	4.2 to 4.9
How much has this course improved your ability to interpret and understand data?	3.3	1.0	2.9 to 3.8

^a*N* = 23. ^b*N* = 21. These evaluations were conducted on different days.

the specific questions in their packets. In fact, students do not appear to be memorizing the sample answers as they give replies that are substantially different from those in the photocopied packet.

Students generally have positive comments about the lay questions and oral exam. Students frequently mention the technique favorably in course evaluations, particularly the group component. To gain empirical data about the technique, I asked one section (*N* = 23) of my students to complete a separate evaluation of the lay person question–answer and oral exam combination. Most students (21 of 23) recommended that I use similar exercises in the future for this course, and only 1 recommended I not use it, even if modified. As shown in Table 1, students agreed that they would know how to respond to a friend or family member with a mental health question following the oral examination, which is the major goal of the exercise. Two ratings from the university-sponsored evaluations are included for comparison.

Although I have no way to determine how students are applying course material in their real lives, I do see improvement in their written answers throughout the semester. Additionally, all students to date (approximately 150) have answered the oral exam question appropriately.

Although students reported this exercise helped them learn academic material, a regression analysis of a different section's data (*N* = 24) suggested that attendance on question-writing days did not surpass attendance on lecture-only days in predicting exam grades. Using lecture-only attendance to predict exam grades resulted in an *R*² of .20 ($\beta = .48$); adding question-writing attendance as a predictor increased *R*² only to .29, $F(1, 21) = 2.66$, *ns*, lecture $\beta = .39$, question $\beta = .32$. Thus, the question–answer development component appears to be teaching simple, personal application of course material rather than a way to improve academic knowledge beyond lecture. I did not assess the influence of preparation for the oral examination on written exam performance.

Based on student feedback, the lay question–oral exam exercise has become a routine part of my abnormal psychology course. Although it does not appear to affect academic learning as reflected on written exams, it does appear to promote

comfort with the material as well as a way to apply course information to everyday life. It also gives me periodic feedback about how well the students as a group understand material. Most important, it gives me a way to assess how students might apply course material to family and friends in the future, while I still have a chance to shape their answers.

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Notes

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Simulated Clinical Training in an Advanced Undergraduate Seminar

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In this article, I describe an approach to teaching an undergraduate clinical seminar that incorporates assignments to simulate clinical training. Students reacted to this approach with enthusiasm and indicated that the methods used helped them understand clinical work and training.

Many psychology departments offer advanced undergraduate seminars in clinical psychology to prepare students for graduate clinical training. However, such courses often focus on abstract information that leaves students unclear about what clinical work entails (Efran, Lukens, & Lukens, 1990). Furthermore, in graduate programs, most supervisors assume that beginning students already know the nature of clinical training and therefore do not explain it (Berger & Buchholz, 1993). Consequently, students have difficulty integrating theoretical concepts with clinical practice (Minuchin & Fishman, 1981), and they often experience doubt or ambivalence about their career choice (Friedman & Kaslow, 1986).

When I started teaching this seminar, one of my goals was to prepare students for graduate training. I wanted to incorporate teaching methods that would help students understand the relation between theory and clinical application as well as training methods such as supervision. I considered the more traditional approach of showing videotapes of well-known therapists or even showing segments of feature films as examples (e.g., Nissim-Sabat, 1979; Paddock, Terranova, & Giles, 2001). However, I wanted to use methods that would be more personally relevant to students and involve them actively. Supervision of clinical work at the graduate level usually involves methods such as role-playing or using videotapes to help students apply knowledge as well as develop a professional identity (Akamatsu, 1980; Romans, Boswell, Carozzi, & Ferguson, 1995). I decided to make the course a simulated experience of graduate training by including elements analogous to working with clients and clinical supervision. In this article, I describe techniques and assignments that I use as well as the way I integrate those techniques with lectures and more traditional requirements such as examinations.

Course Structure and Assignments

General Format

The course is an advanced seminar for psychology majors in their senior year, most of whom are in the process of applying to graduate schools. Abnormal psychology is a prerequisite, and the majority of the students also have taken personality, which is a requirement of our program's clinical track. The course is comparable to other advanced electives

offered by our department, and students earn three credits as well as a traditional grade. The main focus of my lectures is on psychoanalytic, cognitive-behavioral, family, and phenomenological approaches to therapy. Other topics that I cover in depth include ethics, professional issues, clinical research, and interviewing methods. I do not focus on psychological testing because it is covered in another course. I use individual readings instead of a textbook. These readings provide in-depth information on topics such as the nature of supervision and clinical training, professional identity development, ethics and legal requirements, interviewing and treatment techniques, transference, therapy termination, special populations, and so forth. I divide class time equally between lecture and discussion. I give four essay examinations that require students to integrate information from the lecture, readings, and assignments.

In the beginning of the course, each student selects a partner with whom they will alternate playing the roles of therapist and client. I assist students who do not know others in finding a partner. If the class has an odd number of students, one group consists of three students who rotate playing the required roles. Throughout the semester, students meet with their hypothetical client to conduct interviews and write clinical reports as if the cases were real. They also videotape the first interview. I inform students that I will use the tapes to provide supervisory feedback similar to that given to graduate students and that I will show selected tape segments in class to illustrate theoretical concepts. To avoid discussion of personal information, I advise them to enact the client role by selecting a hypothetical psychological problem and a life situation that is different from their circumstances and personal issues. I also explain to them that the purpose of these assignments is not to teach them how to do therapy, but rather to make them more familiar with the work that a therapist does and the clinical training that they will obtain in graduate school. Finally, to make students more comfortable during class discussions of their videotapes, I share with them some of my experiences in graduate school and the anxiety I felt concerning my performance as a therapist.

Hypothetical Client Folder

Throughout the semester, students maintain a folder for their hypothetical clients and write clinical reports. Each folder includes an intake form, case history, release form, progress notes, treatment plan, and termination report. I collect the folders several times during the semester and return them to students with formative comments. I expect students to use information they learn from the lecture and readings in completing the assignment. For example, when we discuss confidentiality issues, I advise them to obtain their client's permission before they submit the folder.

Videotape

Students videotape the first interview with their hypothetical client as a homework assignment. They have the option of using either their own video camera at home or the department's interviewing room and video equipment. I use the

tapes for two purposes: to provide students with an example of supervisory feedback and to illustrate theoretical concepts that I cover during lectures.

For the feedback, I write a short evaluation (100 to 150 words) of each student similar to the kind of feedback supervisors give graduate students. I comment on their control of the session, genuineness, and ability to focus on relevant issues. I also include a realistic goal for them to strive toward in future sessions. I avoid being overly critical and attempt to balance encouraging comments with suggestions for improvement.

To illustrate theoretical concepts, I copy relevant portions of the original videotapes onto separate tapes that I make for each lecture. I use the tapes in class to facilitate discussion of points illustrated in the corresponding tape segments. To integrate information from the lecture, videotapes, and folder assignments, I have structured the course so that I cover related topics along with these assignments. For example, before students conduct the first interview with their hypothetical clients, I cover topics such as establishing rapport and using open-ended questions. After they complete the assignment, we have a more in-depth discussion of these issues along with videotape examples. Similarly, toward the end of the course, I cover information relevant to ending therapy, along with the termination report assignment.

Evaluation

I examined students' views of these methods by asking my class to indicate, anonymously, their agreement with seven statements that I developed, on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Out of 34 enrolled students, 30 completed the questionnaire. Their responses suggested that they enjoyed the folder assignment ($M = 5.7, SD = 1.47$) as well as the videotape assignment ($M = 5.97, SD = 1.30$) and that they preferred the folder ($M = 6.23, SD = 1.28$) and the videotape ($M = 6.13, SD = 1.33$) over traditional methods such as readings and lectures. Furthermore, they indicated that the folder ($M = 6.37, SD = 1.13$) and the videotape ($M = 6.33, SD = .88$) helped them understand the work of a therapist and that the feedback helped them understand the nature of clinical supervision ($M = 6.67, SD = .71$).

On our university's course evaluation form, the students rated the course, on a scale ranging from 1 (*very poor*) to 5 (*excellent*), as excellent ($M = 4.8, SD = .55$). Unfortunately, it is not possible to compare this rating to other courses because our university's policy does not make those data available. Written comments consistently indicated that the students enjoyed the range of activities and the applied focus of the course.

Overall, students reacted to the methods I described with enthusiasm, preferred them to more traditional methods, and believed that these methods increased their understanding of clinical training. In fact, two students asked whether they could do an additional videotape even though it was not required. In my experience, these assignments consistently promote excitement about the learning process and prepare students for future clinical training.

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Note

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Teaching an Undergraduate Course in Political Psychology

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I describe the goals, content, and format of an undergraduate course in political psychology. The purpose of this course is to teach students about the psychological factors that explain political behavior and increase students' political awareness, interest, and behavior. Multiple teaching methods and assignments engage students and help them to experience political psychology. I assessed students' political knowledge, behaviors, and interest on the first and last days of the semester. These data, along with course evaluation data, demonstrate that students learned a great deal, enjoyed the course, and became more politically active and interested.

For more than two decades, the field of political psychology has been burgeoning in numerous disciplines, including psychology, political science, history, sociology, and communications. Professional organizations in both psychology and political science recognize political psychology as a subsdiscipline and numerous graduate programs now exist in

this field. Course offerings in political psychology have also increased for both graduate students (Sears & Funk, 1991) and undergraduate students (Funk & Sears, 1991).

As an interdisciplinary course, students encounter theory, research, and methodology in several social sciences and must hone their critical thinking and evaluation skills by integrating work in these disciplines. As McNeal and D'Avanzo (1997) noted, integrating material in multiple disciplines contributes to students' intellectual maturity. Such integration should also encourage students to think in more global, flexible, and creative ways. This course requires students to apply psychological theory and research to the real world.

This article describes the goals, content, and format of an interdisciplinary course in political psychology designed specifically for undergraduate psychology students. I hope that this article encourages psychology departments to increase their course offerings to include this course.

Course Goals and Structure

This course has four main goals. The first goal is to teach students about the psychological factors that help to explain political behavior and the ways in which psychological theories can explain real-world political phenomena. Given that many citizens are politically apathetic and have limited knowledge of how the political system works, a second goal of this course is to increase students' interest in politics and their knowledge of the political system. A third goal is to provide students with a well-rounded understanding of the political process by providing them with opportunities to interact with politicians and other guest speakers who are actively involved in politics or political psychology research. Finally, a fourth goal is to expose students to theory and research in several different social sciences and teach them about the different research methods used to address important real-world questions. Taken together, the goals of this course allow students to experience political psychology through active learning, while helping them to hone their critical thinking skills in the three important domains of psychology (theoretical, methodological, practical) that Halonen (1999) outlined.

The course had an enrollment limit of 22 students, and I conducted it as an advanced undergraduate seminar. The class met for 75 min twice a week for 15 weeks. Because much of the application of psychological theories to politics comes from theory and research in social psychology, there were two prerequisites: introductory social psychology and research methods.

Course Outline

Political psychology is a diverse field and an introductory political psychology course may cover any number of topics. Given that there is no introductory textbook, instructors face the challenge of selecting the content for their course and choosing a way to organize the field (Levin, 2000). A few introductory social psychology textbooks have either an entire chapter (Taylor, Peplau, & Sears, 2000) or a large section of a chapter (Feldman, 2001) devoted to political psychology. These chapters provide an overview of many topics and instructors may want to use them as a starting point when designing their courses. In addition, numerous excellent edited volumes (Ferejohn & Kuklinski, 1990; Hermann, 1986; Iyengar & McGuire, 1993; Knutson, 1973; Kressel, 1993; Kuklinski, 2001a, 2001b; Lodge & McGraw, 1995; Ottati et al., 2002) provide reviews of many political psychology topics.

The International Society for Political Psychology (ISPP) Web site (<http://ispp.org/>) provides a link to numerous syllabi for graduate and undergraduate political psychology courses. A review of these syllabi reveals that there are many different ways to structure a political psychology course (for suggestions, see Levin, 2000). Table 1 provides an outline of the topics that I cover in my course as well as representative readings and the approximate amount of time I devote to each topic.

Course Activities and Requirements

Education should be multifaceted and instructors should use active learning techniques to engage and challenge their

Table 1. Course Topics (in Order), Representative Readings, and Approximate Number of Weeks Devoted to Each Topic

Weeks	Topics	Representative Readings
1	Introduction to political psychology	
	Review of American politics	Fiorina & Peterson (1998)
1	History of political psychology topics	McGuire (1993)
	Methodological history of political psychology	
1	Personality approaches to the study of politics	
	Voters' personalities	Milburn (1991)
	Assessment of politicians' personalities	George (1998); Renshon (1995); Winters (1995)
1	Political socialization	
	Overview of theory, research, and methods	Kinder & Sears (1985)
	Development of political attitudes	Greenstein (1960)
	Stability and change of political attitudes	Alwin, Cohen, & Newcomb (1991); Jennings & Niemi (1975)
2	Political information processing	
	Information processing models and politics	Lodge, McGraw, & Stroh (1989); Ottati & Wyer (1990)
	Political schemas, partisan stereotypes	Fiske (1986); Lodge & Hamill (1986); Milburn (1991)

(continued)

Table 1 (Continued)

Weeks	Topics	Representative Readings
2	Affect in politics Affect as a basis for candidate evaluation, the role of affect in political information processing	Isbell & Ottati (2002); Isbell & Wyer (1998; 1999); Marcus & MacKuen (1993); Marcus, Neuman, & MacKuen (2000)
1	Political attitudes, persuasion, and propaganda	Milburn (1991)
2	Mass media and advertising in politics The news Effects of the media on policy decisions Effects of the media on candidate evaluations Attack campaigning in the media	Alger (1989) Graber (1997); Iyengar (1991) Iyengar, Peters, & Kinder (1982) Jamieson (1992, 2000)
1	Gender and politics Race and politics	Kahn (1996) Terkildsen (1993)
2 to 3	Guest speakers (throughout the semester)	

students (see McNeal & D'Avanzo, 1997). This course allows students to experience political psychology firsthand and learn about it from several different, but complementary perspectives. The course consists of (a) reading and integrating literature in psychology, political science, and communications (see Table 1); (b) listening to and interacting with politicians and other guest speakers; (c) analyzing and critically evaluating a current or recent presidential campaign; (d) viewing videos selected to illustrate certain concepts in political psychology; (e) writing numerous short thought papers and reaction papers; (f) writing a research proposal; and (g) completing several short quizzes. The course activities and requirements are described in Table 2.

Method for Assessing Achievement of the Course Goals

Student Characteristics

Twenty-two students (8 men, 14 women) enrolled in the course. Most of the students were White (91%) and were graduating seniors (82%). The mean age of the students was 22.05 years old. Twenty of the 22 students completed a background questionnaire on the first day of class.¹ All indicated that they were psychology majors, and only 30% indicated that they had taken a college course in either introduction to political science or American politics.

Questionnaires

In addition to completing the background questionnaire, students also completed a political questionnaire on the first and last days of class. On both occasions, students were unaware that the assessment was to occur. The purpose of the political questionnaire was to assess students' political knowledge, their political behaviors and intentions, and their level of political interest. After completing the political question-

naire on the last day of class, students completed a course evaluation questionnaire.²

Results

Change in Students' Political Knowledge, Behaviors and Intentions, and Interest in Politics

Students entered this class with minimal political knowledge and little or no background in American government. Students' knowledge of politics was limited when they entered the class in September, but increased substantially over the course of the semester. The mean score on the test of political knowledge was significantly greater on the last day of class than on the first day, (17.12 vs. 12.35; maximum score = 21), $t(16) = 6.62, p < .001, \eta^2 = .73$.

As shown in Table 3, students were more likely to have engaged in political behaviors or formed intentions to do so at the end of the course than at the beginning (4.88 vs. 3.24), $t(16) = 4.97, p < .001, \eta^2 = .61$. In addition, all of the students reported that they watched the Election Day returns, whereas only 54% reported that they had ever watched Election Day returns in the past.

Finally, as shown in Table 4, students' reports of how much attention they paid to political news and politics was greater at the end of the semester than at the beginning. Students also reported that they would be more likely to attend to political news in the future. All students reported that they watched at least one presidential debate, but only 21% reported that they had ever watched a debate before, and 95% indicated that they planned to watch the debates in the future.

Students' Evaluations of the Course

Overall, students responded very positively to this course. On a scale ranging from 0 (*not at all*) to 10 (*very much*), stu-

²Nineteen students completed these two questionnaires. Seventeen students completed the political questionnaire on both the first and last days of class. Thus, analyses of students' political knowledge, behaviors and intentions, and interest at the beginning and end of the semester are based on these 17 students. Course evaluation data are based on the 19 students who completed the course evaluation questionnaire.

¹Two students added the class to their schedules late and did not attend the first day of class.

Table 2. Course Activities and Requirements

	Description
Guest speakers	Politicians (recruited from different levels of government, political parties, and genders) discuss their experiences running for office, serving in office, and interacting with other legislators and constituents. In addition, established political psychology researchers discuss how they have successfully integrated psychology and political science in their work and how interdisciplinary research can enhance the understanding of political behavior. In response, students write brief reaction papers in which they discuss what they learned about politics and how political psychology can explain some of the experiences or issues that the speaker discussed.
Analyzing a political campaign	When teaching this class during presidential election years, students follow the presidential campaign and apply psychological theories to explain current events. Students attend to political events by watching the national evening news and reading a daily national newspaper. Students watch at least one presidential debate and write a critical commentary on it. In writing their commentaries, students discuss the ways in which psychological theories can account for the candidates' behaviors during the debate as well as viewers' reactions to the debate. Students also watch the Election Day returns on election night. When teaching this class in years in which there is no presidential election, students analyze and discuss the previous presidential campaign. In addition, students follow and analyze local and state primaries and campaigns that may be taking place.
Videos	Students watch numerous videos and video segments designed to illustrate concepts in political psychology. In addition, I tape political advertisements and media coverage of conventions, debates, and campaigns as they take place, and I show them to the students during nonelection years.
Thought papers	Students complete two thought papers. These papers require students to (a) make connections between different areas of research in psychology, political science, and communications; (b) relate topics discussed in class and in the assigned readings to current and recent political events; and (c) critically evaluate current and recent political events and research and theory in political psychology.
Research proposal	Students write a research proposal on a political psychology topic that they find to be particularly interesting. In the middle of the course, students select a topic and begin to conduct research. Students write a literature review, develop a hypothesis, and design a study to test their hypothesis.
Quizzes	Students complete six quizzes during the semester. These quizzes include both multiple-choice and short essay questions and assess students' understanding of assigned readings and class material, including guest speakers' presentations and videos.

Table 3. Percentage of Students Reporting Political Behaviors and Intentions in September and December

	September 2000	December 2000
1. Are you registered to vote?	70.6	88.2
2. Did you vote in the last election?	35.3	82.4
3. Do you intend to vote in the next presidential election?	64.7	94.1
4. Have you ever worn a button or put a bumper sticker on your car in support of a political candidate?	17.6	17.6
5. Have you ever worked in a local organization to try to solve some community problems?	29.4	58.8
6. Have you ever signed a petition dealing with a political issue?	64.7	70.6
7. Have you ever tried to convince someone to vote for a particular political candidate?	41.2	76.5

Table 4. Students' Mean Level of Political Interest in September and December

	September 2000		December 2000	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
How much attention do you pay to political news when you _____?				
Watch the evening news	6.71	2.66	8.82	1.19*
Read the newspaper	6.81	2.81	8.88	1.45*
Overall, how much do you follow _____?				
National politics	6.24	3.11	8.12	2.18*
Local politics	3.59	2.32	4.94	1.68*

Note. Students made ratings on a scale ranging from 0 (*not at all*) to 10 (*extremely*).

* $p < .01$.

dents' mean rating of how much they enjoyed the course was 9.89 ($SD = .46$). Students also indicated how important a learning experience they found the course to be using a scale from 0 (*not at all important*) to 10 (*very important*). Students' mean rating for this question was 9.84 ($SD = .50$). In addition, all of the students reported that they would definitely

choose to take the course again, and all indicated that they would definitely recommend it to other students.

This course included a large number of assignments and activities. Despite the large number of requirements, 58% of the students thought that the workload was "moderate-just about right," whereas the remaining students described the

Table 5. Student Evaluations of Specific Course Assignments and Activities

Evaluation Question	M	SD
A. How useful were each of the course assignments/activities in helping you to better understand political psychology theory and/or research, and/or the presidential campaign/election?		
Thought papers	8.11	1.29
Speaker reaction papers	7.68	2.11
Class discussions	9.58	0.84
Quizzes	8.37	1.21
Assigned readings	8.84	0.96
Final class paper	7.79	2.32
Videos	8.68	1.92
B. To what extent did you enjoy		
Thinking about and writing your thought papers	7.58	1.74
Thinking about and writing your speaker reaction papers	8.42	1.54
Our class discussions	9.58	0.84
Thinking about and reading the assigned readings	7.21	1.93
Thinking about and writing the final class paper	6.37	3.00
Watching and discussing the videos shown in class	9.11	1.05

Note. Students made ratings on a scale ranging from 0 (*not at all*) to 10 (*extremely*).

course workload as “moderate to heavy.” As shown in Part A of Table 5, students generally found all of the course activities to be useful in understanding political psychology and the presidential campaigns and election. In addition, the data reported in Part B of Table 5 demonstrate that students enjoyed the course assignments and activities.

Conclusions

Taken together, the course evaluation data and the political knowledge, behavior, and interest data suggest that students enjoyed the course, learned a great deal in it, became more interested in politics, and became more politically active. These data are encouraging and demonstrate that the goals of the course were achieved. As a result of taking this class, students should be more likely to evaluate politics critically using theory and research in numerous social sciences. In addition, they should also be more likely to participate in politics in the future.

The varied format in which I taught this class kept students engaged and interested in the material. The students were particularly excited to have the opportunity to interact with politicians and they thoroughly enjoyed analyzing a presidential campaign. By requiring students to use theory and research in psychology, political science, and communications to explain events that were currently taking place, students had to think critically, flexibly, and creatively and were motivated to become involved in current events.

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Notes

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