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ABSTRACT

The influence of student personality on the effects of the Personalized System of Instruction (PSI) was examined. Three testing systems (midterm and final exams; bimonthly tests; and PSI) were examined along with three personality dimensions (internal-external locus of control, need for achievement, and need for autonomy). There were no significant differences among test system grades; however, there were significant differences in the students' evaluation of the test systems. The PSI system was seen more favorably on all evaluative and dynamic items, and was seen as stronger. The interaction between test section and personality yielded no significant differences on grades and one significant effect on students' evaluation of how informative the test system was. Students recognized the advantages and the value of the PSI regardless of their personality styles. (Author/PJC)

TESTING SYSTEMS AND PERSONALITY IN AN INTRODUCTORY PSYCHOLOGY COURSE

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Keller's Personalized System of Instruction has been shown to produce superior test performances in comparisons to traditional instructional systems. As well, students' evaluation of PSI courses have been more positive than their evaluation of the traditional systems. These studies have demonstrated the desirability of using the PSI. However, anecdotal data from counselors, teachers and administrators have suggested that "PSI is not for everyone." Who then is it for?

Keller's PSI approach has given the student control of the pace of the test taking. Given small units of information to study, the student then has to prove mastery of this material. Multiple test trials can be taken to prove mastery. Grades are determined by the amount of information mastered. This calls for self-discipline, as students structure their test taking themselves and rely on this discipline to keep them within a reasonable framework.

Cronbach (1976) has presented arguments and findings on Aptitude-Treatment Interactions (ATI) related to teaching styles. Domino (1971)

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demonstrated the effects of matching student achievement styles (i.e. via conformity or via independence) and instructional style on student performance and evaluation. Allen, Gait and Cherney (1974) found internal locus of control students in a PSI course obtained higher final grades and performed better on a final examination than external locus of control students.

The purpose of this study was to investigate the effects of test systems and personality on students' course grade and evaluations. Three testing systems (midterm - final examinations; bi-monthly tests; and personal system of instruction) were examined along with three personality dimensions (internal-external locus of control, need for achievement, need for autonomy). It was hypothesized that:

1) the testing systems would effect student grades and evaluations;
2) the students' personality style would effect grades and evaluations; and finally,
3) the interaction of test system and personality style would effect grades and evaluations.

Methods

Subjects

Eighty-nine subjects from an Introductory Psychology course were randomly assigned to one of three testing systems.

Materials

Two personality tests were used. The Edwards Personality Preference Scale provided scores on need for achievement and need for autonomy. The Nowicki-Strickland Internal-External Locus of Control scale measured the students' internality. The student evaluation component of this study was based on an Osgood semantic differential. The testing system was rated on

four evaluative, four potency and three dynamism items. In addition, opinions on information, stimulation, meaningfulness and usefulness were obtained.

Design

A two by three ANOVA design was used to examine the effects of high and low personality dimension scorers and the three test systems.

Procedure

Following their consent to participate in this study, subjects were randomly assigned to one of three testing and grading systems on the first day of class. The three systems were first, traditional midterm and final tests (M-F) for which at least 89% accuracy on the tests was required for an A, 79% for a B, 69% for a C and 65% for a D, with less than 65% accuracy being an F; second, instructor paced tests (IP) on a bimonthly schedule, with students being allowed to retake up to two tests if they were dissatisfied with their performance: an A required 90% accuracy on the semester's cumulative score, a B = 80%, C = 70%, D = 65%, F = less than 65%; third, Personalized System of Instruction tests (PSI) on each chapter assigned. In PSI, 90% accuracy was required to pass each chapter. If a student did not pass a test, she/he continued to take tests on the chapter until she/he passed. An A required them to pass all 13 chapters. The students were required to pass 12, 11, and 10 chapters for a B, C, and D respectively. If less than ten chapters were passed, an F was given.

All students attended the same lecture which met three times a week. All students had similar opportunities to gain bonus points toward their grades by answering lecture questions and by doing laboratory write-ups.

One bonus point lecture question was given every week to PSI students and could be applied toward passing their chapter tests. Two bonus point

lecture questions were given every other week to the bimonthly test students who could use them toward their cumulative grade. A collection of bonus lecture questions were given on the midterm and final tests for the M-F group.

Students were required to perform and write up three introductory laboratories for which they received grades from -2 to pass to +2. Any positive points from the laboratories accumulated could be used as bonus points toward the test grades.

EPPS and I-E tests were administered half way through the semester. At the end of the semester, students filled out evaluation forms on the course. A comprehensive final exam was given to all students which could be used in place of their system grade from the semester's work. This gave two measures of course performance, a final exam grade and a grade using the testing system assigned to them for the semester.

Results

Unlike previous research findings, there were no significant differences among test systems on the students' system grade (F_{IE}= 2.001, $F_{N/Ach}$= 2.141, $F_{N/Auto}$= 1.607). However, students did evaluate the test systems differently. (See table 1)

PSI and Bimonthly testing were seen more favorably on all evaluative items in comparison to M-F. PSI and Bimonthly systems were reported to be nicer, better, more helpful and more needed. On the power dimension, the PSI and Bimonthly systems were more powerful and stronger but not necessarily heavier and deeper than the Mid-term-Final. The dynamism dimension again showed the PSI and Bimonthly systems perceived as more alive and smarter than M-F. Notably the PSI was reported as faster than either the Bimonthly or the M-F systems. Beyond the Osgood dimensions, PSI and Bimonthly system

students believed their system more informative, more stimulating, more meaningful and more useful. However, the PSI system seemed especially favored for information, stimulation and meaningfulness.

The examination of the effects of personality on grades and student evaluations yielded only one significant finding. Students with greater feelings of external locus of control had superior performances on the final examination ($F = 4.127$, $p. < .05$), regardless of the testing system from which they come.

The interaction effect between test system and personality dimensions also showed but one significant result. Students with lower N/Ach in the PSI system felt the system to be more informative, ($F = 3.087$, $p < .05$). Three trends suggested that these same students felt the system to be better ($F = 2.359$, $p < .10$), more stimulating ($F = 2.914$, $p < .10$) and more helpful ($F = 2.312$, $p < .10$).

Discussion

The lack of testing systems' effects on student grades or final examinations did not agree with previous studies. Nonetheless, it served as a control for grade influences on student evaluations. The effects of testing systems on student evaluations seemed clearly supported. Students favored the PSI and Bimonthly systems to the Mid-term Final system. While both PSI and Bimonthly systems were favored, the notable emphasis on the PSI system on the fast-slow dimension and information, stimulation and meaningfulness items gave the PSI system a decided edge in student evaluations.

The lack of significant differences on the heaviness and deepness items may be seen as not critical to our considerations. Students did not feel

the systems any different in heaviness or deepness which may in fact be desirable.

The PSI seemed to better address what was felt by the authors to be the reasons for testing. It was assumed that all systems sought to be informative, stimulating, meaningful and useful. In all but the last, the PSI seemed superior. Given previous research, these findings were not surprising.

The sparcity of significant personality effects did not support our second hypothesis. The only significant finding, that the external locus of control students had a better final exam test score, could have been the result of perceived external pressure to do well. The source of this pressure may have been familial, curricular or programmatic. Many of these students and their families have high expectations for grades, given the students' high school experiences. Many students sought entry into competitive, intra-university programs, such as nursing, business and education as well as competitive graduate programs.

The third hypothesis on interaction affects lacked strong support with but one significant finding. The low need achiever believed PSI more informative. These students appeared to appreciate the increased feedback.

While many have seemed reluctant to favor the PSI system due to anecdotally reported individual differences in reaction to the system, these reports may be the exception rather than the rule. For those personality dimensions examined I-E, N/Ach, N/Auto, only one difference was found for low or high dimension scorers. Nor were there many personality by test systems effects.

The advantages of PSI from students' subjective viewpoints seemed demonstrated. Yet, the similar evaluative, potency and dynamism dimension scores for PSI and Bimonthly testing systems leave some questions as to the source

of some of the students' opinions. Tests on smaller units of information may be a significant factor contributing to the favorable evaluations. Future studies may explore this question.

COMPARISONS OF STUDENT GRADES AND EVALUATIONS FOR DIFFERENT TEST SYSTEMS

VARIABLE	TEST SECTIONS				
	Midterm-Final (M-F)	Bi-Monthly (BI)	PSI (P)		
	$\bar{X}$	$\bar{X}$	$\bar{X}$	F	Duncan
System grade (0=F, 4=A)	2.806	2.821	3.0	NS	
Nice-awful (0-6)	3.9	2.357	1.6	***	P&BI < MF**
Good-bad	3.677	2.429	1.933	**	P&BI < MF*
Helpful-unhelpful	3.613	2.357	1.9	***	P&BI < MF**
Needed-unneeded	3.516	2.036	2.1	**	BI&P < MF**
Powerful-powerless	3.323	2.143	1.833	**	P&BI < MF**
Strong-weak	3.419	2.321	1.967	**	P&BI < MF*
Heavy-light	2.161	2.071	1.9	NS	NS
Deep-shallow	2.355	2.286	2.067	NS	NS
Fast-slow	2.645	2.571	1.733	*	P < BI&MF*
Alive-dead	3.097	2.179	1.733	**	P&BI < MF*
Smart-dumb	3.484	2.179	1.9	***	P&BI < MF**
Informative-uninformative	3.129	2.321	1.633	**	P&BI < MF, P < BI&MF**
Stimulating-unstimulating	3.290	2.571	1.667	**	P&BI < MF, P < BI&MF**
Meaningful-meaningless	3.161	2.25	1.867	*	P&BI < MF, P < BI&MF**
Useful-useless	3.258	2.179	1.567	**	P&BI < MF*

*** p .001
** p .01
** p .05

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Test Systems and Personality in an Introductory Psychology Course

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Studies on the Personalized System of Instruction (PSI) have centered on its overall superiority to more traditional testing systems. Few have examined the influence of students' personalities on the effects of the PSI. Considering the arguments for examining the Aptitude-Treatment Interactions in teaching, it is surprising to note the lack of personality by test system interaction studies which have included the PSI system. The purpose of this study was to investigate the effects of test systems and personality on students' course grade and class evaluations.

Three testing systems (midterm-final exams; bimonthly tests; and PSI) were examined along with three personality dimensions (internal-external locus of control, need for achievement, and need for autonomy). It was hypothesized that the PSI system would produce better student grades and evaluations in comparison with the more traditional testing methods, the test performance and evaluations would be affected by the students; personality and the test performance and evaluations would be affected by the interaction of test systems and personality.

Eighty-nine subjects from an Introductory Psychology class were randomly assigned to one of the three testing systems. EPPS and I-E tests were administered and students divided into top and bottom half personality dimension scorers. All students attended the same lecture meeting three times a week. All students had similar opportunities to gain bonus points toward their grades.

At the end of the semester, student grades were calculated and students filled out evaluation forms on the course. The testing systems were rated using the Osgood Semantic Differential scales.

There were no significant differences among test system grades. However, there were significant differences in the students' evaluations of the test systems. The PSI system was seen more favorably on all evaluative and dynamic items. On the power dimension, the PSI was seen as more powerful and stronger. There were no significant differences on grades or test system evaluations between the top and bottom half personality dimension scorers. The interaction between test section and personality yielded no significant differences on grades and one significant effect on students' evaluation of how informative the test system was.

The advantages of the PSI system from students' viewpoints seemed clearly demonstrated. Our students seemed to recognize the advantages and the value of the PSI regardless of their personality styles.