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A NEW TEST OF MISCONCEPTIONS ABOUT PSYCHOLOGY[1,2]

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Summary.—Some of the problems surrounding the use of true-false tests of psychological misconceptions are discussed. The development of a new 62-item, multiple-choice test of misconceptions designed to reduce these problems is outlined. The test was given to 79 students in introductory psychology. Reliability, validity, and normative data are provided. A comparison of the interest level of each item's topic allows psychology professors a reasonable criterion for deciding which misconceptions to discuss in class.

Tests designed to measure common misbeliefs about psychology date back at least as far as Nixon's (1925) 30-item true-false test. Garrett and Fisher (1926) used Nixon's test and added 10 items of their own, while Gilliland (1929) and Valentine (1936) each added other items. Holley and Buxton (1950) constructed a 100-item test of misconceptions, borrowing some items from Garrett and Fisher (1926) and some from Valentine (1936).

Today the most widely cited misconceptions test is that of Vaughan (1977), who borrowed some items directly and modified others from Holley and Buxton (1950). Vaughan's *Test of Common Beliefs* has been criticized on the grounds that many items are ambiguous (L. T. Brown, 1984; Gardner & Dalsing, 1986; Ruble, 1986). The correct answer on all 80 items is "false." The decision to make all of the correct answers "false" is an unfortunate one. As Vaughan (1977) herself admitted, this decision makes the test vulnerable to "response sets such as acquiescence" (p. 138). One of the disadvantages of any true-false test is the high probability of getting the correct answer by chance (F. G. Brown, 1983). A related problem with the *Test of Common Beliefs* is the fact that many of the misconceptions it purports to measure are not very widespread. For example, Vaughan (1977) found that only 21 of her 80 items (28%) were missed by more than 50% of her 119 subjects. In follow-up studies, Lamal (1979), Gardner and Dalsing (1986), and Griggs and Ransdell (1987) all reported similar findings. This low percentage has been taken to mean that beginning students really do not have very many misconceptions about psychology (L. T. Brown, 1984; Griggs & Ransdell, 1987). Another possibility is that true-false tests generally, and

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[2]A copy of MTM4, complete with correct answers and percentage correct for each answer is on file with Microfiche Publications, POB 3513, Grand Central Station, New York, NY 10163 as Document NAPS-04863. Remit $4.00 for fiche or $7.75 for photocopy.

perhaps this one in particular, are not very good at detecting misconceptions. I decided that a new test of misconceptions should depart from the tradition of the true-false format for these reasons.

A reasonable implication stemming from any effort to identify psychological misconceptions is that, once identified, they can be corrected in the classroom. But if there are a large number of them, and if the instructor is unwilling or unable to correct all of them, what then? One criterion that could be used to make a choice is students' interest. A simple measure of this was included on the new test.

METHOD

Three previous versions of the *McCutcheon Test of Misconceptions* have been given at various times to a total of 340 college students. The purposes of this were to expand the number of items and discard as "too easy" those that were answered correctly by at least 51% of the sample.

The current version (MTM4) consists of 62 items from the previous versions that passed the 51% criterion. In addition to the 20 topics listed in Table 1 and the actual items listed in Table 2, some others included on MTM4 are the effects of alcohol consumption, psychologists who torture animals, dumb athletes, geniuses who are wimps, "blue" Monday, the effectiveness of antismoking programs, and the validity of the Rorschach. About

TABLE 1
TEN MTM4 TOPICS OF MOST AND LEAST INTEREST TO STUDENTS

Most		Least	
Item No. and Topic	*M*	Item No. and Topic	*M*
17. Child-abusing parents	4.1	4. Learning principles	2.5
32. Rapists	4.0	24. Psychologist as therapist	2.9
22. Hypnosis and morality	4.0	49. Psychic predictions	2.9
28. Schizophrenics	4.0	45. Randomness	2.9
60. Guilt and insanity	4.0	27. Dry mouth and thirst	3.0
46. Suicide	4.0	43. Validity of astrology	3.1
36. Sleep and laziness	4.0	2. Full moon	3.1
48. Dyslexia	4.0	11. Freudian theory	3.2
44. Sleep and learning	3.9	1. Halloween "maniacs"	3.2
57. Changing attitudes	3.9	33. Biorhythms	3.2

Note.—Scale is from very uninteresting (1) to very interesting (5). All differences between "most" and "least" items are significant ($p < .001$).

20% of the MTM4 items were derived with permission from *Test of Common Beliefs* items. Others came from a variety of textbooks and research articles. About 25% of the MTM4 items touch on abnormal behavior or its treatment. Items dealing with social psychology and personality are more common than those relating to perception and physiological psychology.

TABLE 2

SAMPLE ITEMS FROM CURRENT AND EARLIER VERSIONS OF THE McCUTCHEON TEST OF MISCONCEPTIONS

Item	% Who Endorsed Each Response
R4.	Consider the old saying "Spare the rod and spoil the child." Generally speaking, parents who put this saying into practice by administering a great deal of physical punishment to their children tend to produce children who become ___ as adults.
	A. Very well adjusted (2%)
	B. Average in their adjustment (9%)
	C. More aggressive (72%)
	D. Less aggressive (17%)
6.	Generally speaking the saying "Opposites attract" is ___ description of how people come to like one another.
	A. Almost always a true (9%)
	B. A very accurate (11%)
	C. A somewhat accurate (57%)
	D. Usually an inaccurate (23%)
2.	Most of the research supports the conclusion that ___ are more likely to occur when the moon is full.
	A. Traffic accidents (2%)
	B. Homicides (38%)
	C. Both A and B (31%)
	D. Neither A nor B (29%)
35.	The "only" child usually turns out to be:
	A. "Spoiled" (47%)
	B. About average in psychological adjustment (23%)
	C. Less intelligent than children who have 3 or more siblings (3%)
	D. Lonely (27%)
17.	The percentage of child-abusing parents who are not psychotic, mentally retarded, or brain-damaged is approximately:
	A. 90% (15%) C. 40% (21%)
	B. 65% (31%) D. 15% (33%)

The title "Testing Your Psychological Knowhow" appears at the top. Nothing is mentioned in the written directions about the difficulty of the test. Subjects are asked for demographic information and informed that the test is untimed. Immediately following each item appears the question "How interesting to you is the topic of this item?" The choices range from very uninteresting (1) to very interesting (5).

The MTM4 was given to 46 female and 33 male Northern Virginia Community College (NVCC) students enrolled in introductory psychology classes in the first week of the summer 1990 semester. Their mean age was

23.1 yr. ($SD = 6.0$), and the mean number of prior psychology courses taken in college was .54. Sixteen of the students reported having taken psychology in high school. The test was presented in paper-and-pencil format, and subjects were told to do the best they could on it. Sixty-eight of them also took a short version of the *Test of Common Beliefs* (39 items) from which the controversial items had been removed. Six weeks later those students who were still attending the larger section ($n = 45$) were retested.

Results

The mean number correct for the 79 students who took the MTM4 was 17.05 (28%), $SD = 5.18$; range = 5 to 35. These results are similar to those obtained using MTM2 with 91 day-class students at NVCC, who obtained a success rate of 35%. The mean score for men (17.53, $SD = 4.82$) was not significantly higher than the mean (16.68, $SD = 5.44$) for women ($t_{77} = .71$).

The corrected split-half reliability for the MTM4 was .62 using the Spearman-Brown correction formula. Test-retest reliability was .67 for those students who were retested 6 weeks later.

Psychology course grades (A = 5, B = 4, etc.) and age correlated .07 and .03, respectively, with scores on MTM4. For the 68 students who took both the *Test of Common Beliefs* and the MTM4 the correlation was .39 ($p < .01$). The 10 subjects who had previously taken at least one college psychology course scored slightly higher (MTM4 $M = 18.4$, $SD = 5.87$) than those with no previous college psychology courses (MTM4 $M = 16.81$, $SD = 5.16$), but the t value was not significant. Those students who had previously taken a high school psychology course ($n = 16$, $M = 15.44$, $SD = 4.32$) scored slightly but not significantly lower on MTM4 than those ($n = 63$, $M = 17.40$, $SD = 5.38$) who had not ($t_{76} = 1.56$).

In response to the question "How interesting to you is the topic of this item?" some clear preferences emerged. Table 1 lists the means and topics of the 10 most and least interesting items.

Discussion

I believe that the reason for the low reliability coefficients is the fact that the test is designed to be difficult. Difficult items restrict the range of possible scores which, in turn, lowers the reliability coefficients (F. G. Brown, 1983). In general, the pattern of relations between MTM scores and other academic variables suggests that the MTM is a valid measure of misconceptions. The finding that previous experience with college psychology courses led to only tiny improvements on the MTM is consistent with the results of previous studies (Best, 1982; Gardner & Dalsing, 1986; Gutman, 1979; McKeachie, 1960; Vaughan, 1977). Lamal (1979) found larger improvements, but only with senior psychology majors, who had presumably taken a large number of psychology courses. The even weaker connection be-

tween this test and high school psychology is consistent with the notion that high school and college psychology courses represent two different worlds (Griggs, Jackson, & Meyer, 1989) and "that the absence of a high school course would be preferable to the coverage of psychology as presented by many . . . high school teachers" (Benjamin, Fawl, & Klein, 1977, p. 1097).

I believe this test of misconceptions has several advantages over other similar tests. The response-set problem has been minimized by balancing the number of correct answers for each alternative. The A and B answers were correct 14 times, and C and D were each correct 17 times. A four-choice format substantially reduces the probability of obtaining the correct answer by chance.

Another advantage is the use of a success criterion of 51% to determine objectively which items to eliminate. Though some might believe that a 51% success rate is too lenient, it did result in the elimination of several items on previous versions that at face value appeared to reflect widespread misconceptions. For example, the since-rejected Item R4 in Table 2 presents a belief (sparing the rod spoils the child) that is presumed to be widespread in our society. Perhaps it was at one time, but 72% of my subjects marked C, the correct answer.

Still another advantage is that some items permit an estimate of misconception. For example, on Item 6, most subjects seem susceptible to the "opposites attract" myth, but only 9% of them accept the idea that it almost always holds true. Some items permit the examination of misconceptions that have more than one component. Item 2 probes the full-moon myth. My students were much more likely to endorse "homicides" (38%) than "traffic accidents" (2%), but a substantial percentage (31%) believed that the presence of a full moon is linked to both. A similar item is number 35, which explores two parts of the "only child" myth. Are "onlies" more inclined to be viewed as "spoiled" or are they more likely to be seen as lonely? Apparently the "spoiled" component (47%) is more closely linked to being an "only" child than the "lonely" (27%) component.

Another strength of the present version is that ambiguity and debatable items have been kept to a minimum by making use of critical commentary (L. T. Brown, 1984; Ruble, 1986). One final strength is that it introduces some misconceptions of relatively recent origin. Item 17 deals with child abuse and its relationship to maladjustment. Only 15% of my subjects correctly guessed that the majority of child abusers are not psychotic, mentally retarded, or brain-damaged. Although child abuse is not of recent origin, publicity about it is.

It has been argued that misconceptions tests are of little value (Griggs & Ransdell, 1987) because introductory psychology courses do little to dispel them (Lamal, 1979). It may be time to stop blaming the tests for this and

start teaching students about their misconceptions. I agree with Vaughan (1977) that one of the purposes of the introductory psychology course is to dispel misconceptions. I would go even further and argue that it makes more sense to teach beginning students what they *do not* know rather than what they do. For those professors who wish to discuss myths in class but perceive the need to be selective, one reasonable criterion for making these choices is students' interest.

As noted earlier, some researchers have concluded that beginning students really do not have many misconceptions about psychology. Those conclusions were based on the inability of the *Test of Common Beliefs* to find many widespread misconceptions. I believe there are at least two reasons why so few have been noted. The more important one is that no effort was made to remove from the scale those items that turned out to be less difficult than originally anticipated. Furthermore, no new items were introduced later to increase the difficulty of the test. The other reason is that the test tapped some misconceptions that were very old, including some that may have been out-of-date. Some misconceptions have a very long history, yet they seem to thrive. Others die a quicker death, because for one reason or another the truth is eventually discovered and publicized. The data reported here indicate that there really *are* a substantial number of misconceptions. This is probably due to the removal of items from previous versions that failed the 51% criterion and the addition of new items that passed.

As a society, we gradually bury old myths, only to be confronted by new ones. Someone's highly visible psychological "breakthrough" basks in the immediate sunshine of TV talk shows and paperback book sales, but it takes years of painstaking research that gets buried in journals the public does not read to discover that the claims do not hold up. This means that misconceptions tests should be revised periodically. A fifth version of the scale is already being planned.[3]

REFERENCES

BENJAMIN, L. T., JR., FAWL, C. L., & KLEIN, M. (1977) The fair-experimental psychology for high school students. *American Psychologist*, 32, 1097-1098.

BEST, J. B. (1982) Misconceptions about psychology among students who perform highly. *Psychological Reports*, 51, 239-244.

BROWN, F. G. (1983) *Principles of educational and psychological testing.* (3rd ed.) New York: Holt, Rinehart & Winston.

BROWN, L. T. (1984) Misconceptions about psychology aren't always what they seem. *Teaching of Psychology*, 11, 75-78.

GARDNER, R. M., & DALSING, S. (1986) Misconceptions about psychology among college students. *Teaching of Psychology*, 13, 32-34.

[3]If readers have ideas for some new items, relevant research findings that are not presented here, testable hypotheses, or criticisms, please write.

GARRETT, H. E., & FISHER, T. R. (1926) The prevalence of certain popular misconceptions. *Journal of Applied Psychology*, 10, 411-420.

GILLILAND, A. R. (1929) A study of the superstition of college students. *Journal of Abnormal and Social Psychology*, 24, 472-479.

GRIGGS, R. A., JACKSON, S. L., & MEYER, M. E. (1989) High school and college psychology: two different worlds. *Teaching of Psychology*, 16, 118-120.

GRIGGS, R. A., & RANSDELL, S. E. (1987) Misconceptions tests or misconceived tests? *Teaching of Psychology*, 14, 210-214.

GUTMAN, A. (1979) Misconceptions of psychology and performance in the introductory course. *Teaching of Psychology*, 6, 159-161.

HOLLEY, J., & BUXTON, C. (1950) A factorial study of beliefs. *Educational and Psychological Measurement*, 10, 400-410.

LAMAL, P. A. (1979) College students' common beliefs about psychology. *Teaching of Psychology*, 6, 155-158.

MCKEACHIE, W. J. (1960) Changes in scores on the Northwestern Misconceptions Test in six elementary psychology courses. *Journal of Educational Psychology*, 51, 240-244.

MCKEACHIE, W. J. (1986) *Teaching tips: a guidebook for the beginning college teacher.* (8th ed.) Lexington, MA: Heath.

NIXON, H. K. (1925) Popular answers to some psychological questions. *American Journal of Psychology*, 36, 418-423.

RUBLE, R. (1986) Ambiguous psychological misconceptions. *Teaching of Psychology*, 13, 34-36.

VALENTINE, W. L. (1936) Common misconceptions of college students. *Journal of Applied Psychology*, 20, 633-658.

VAUGHAN, E. D. (1977) Misconceptions about psychology among introductory psychology students. *Teaching of Psychology*, 4, 138-141.

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