

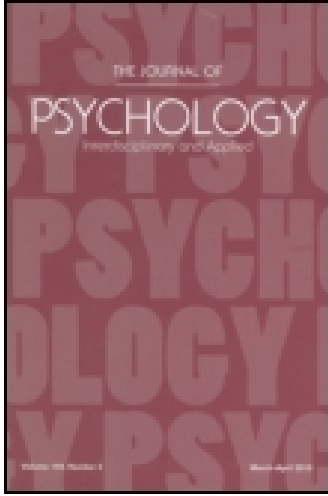
This article was downloaded by: [UQ Library]

On: 15 November 2014, At: 00:20

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954

Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



The Journal of Psychology: Interdisciplinary and Applied

Publication details, including instructions for
authors and subscription information:

<http://www.tandfonline.com/loi/vjrl20>

College Students' Beliefs in the Ten-Percent Myth

Kenneth L. Higbee^a & Samuel L. Clay^b

^a Department of Psychology , Brigham Young
University

^b Department of Psychology , Heartland Community
College

Published online: 02 Apr 2010.

To cite this article: Kenneth L. Higbee & Samuel L. Clay (1998) College Students' Beliefs in the Ten-Percent Myth, *The Journal of Psychology: Interdisciplinary and Applied*, 132:5, 469-476, DOI: [10.1080/00223989809599280](https://doi.org/10.1080/00223989809599280)

To link to this article: <http://dx.doi.org/10.1080/00223989809599280>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

College Students' Beliefs in the Ten-Percent Myth

KENNETH L. HIGBEE
Department of Psychology
Brigham Young University

SAMUEL L. CLAY
Department of Psychology
Heartland Community College

ABSTRACT. A widespread misconception that has not been studied in previous research on misconceptions is the claim that most people use only about 10% of their potential brain power. We hypothesized that psychology majors would be less likely to believe in this ten-percent myth than would control students with no training in psychology. The hypothesis was not supported, but psychology majors were more optimistic than control students in their beliefs regarding how much brain power people are capable of using. The sources of the students' beliefs in the ten-percent myth were also investigated. It is suggested that direct treatment of misconceptions might be necessary to dispel them and that future research might explore the sources of students' misconceptions.

IN MORE THAN A DOZEN STUDIES during the last 20 years, researchers have investigated college students' misconceptions about psychology (e.g., Brown, 1983; Gardner & Dalsing, 1986; Lamal, 1979, 1995; McCutcheon, Apperson, Hanson, & Wynn, 1992; Vaughan, 1977). Rather than surveying a number of different misconceptions, as was done in previous studies, in this study we focused on one misconception in some detail. The misconception, which we call the "ten-percent myth," is the claim that most people use only about 10% of their potential brain power. The ten-percent myth was not included in any of the previous studies, even though it appears to be quite widespread. In fact, in his introductory psychology textbook, Myers (1995) referred to it as "one of pop-psychology's most widespread myths" (p. 62). Data from our informal surveys of students in our memory and cognition classes are consistent with

Portions of this research were reported at the Third International Conference on Practical Aspects of Memory, College Park, MD, July 1994.

Address correspondence to Kenneth L. Higbee, Department of Psychology, Brigham Young University, Provo, UT 84602; e-mail: khigbee@byu.edu.

Myers's observation: Most of our students report that they have heard of the ten-percent claim.

For more than 10 years, we have been collecting examples of the ten-percent myth published in the popular press. The frequency of such examples also indicates that the myth is quite widespread. To illustrate the nature of the claims that have been made, we report 10 of these examples published from 1962 through 1992 (see Appendix).

Although the claims in the Appendix have some similarities, there are also some interesting differences in at least three areas. First, although the claimed percentage of potential used is most commonly about 10% (that figure appears in 6 of the 10 examples in the Appendix), the percentages have varied from as low as .01% (Example 8) to as high as 20% (Example 5)—a difference equaling a factor of 2000! The second area in which the claims show some variability is in exactly what it is that is being used (or not used): The claims involve various combinations pairing "brain" or "mental" with "power," "potential," or "capacity." The third area of variability in the claims is their sources, which are often psychologists (Examples 3, 9, 10), but other sources are as varied and vague as "experts," "Soviet physiologists," and "neurobiologists" (Examples 1, 2, 10). Often, no source is given, but the claim is merely presented as common knowledge (Examples 6, 7, 9).

These examples from the popular press represent the kinds of information that students are exposed to outside their training in psychology. We examined 16 recent introductory psychology textbooks (published from 1994 through 1996) to determine whether the textbooks contain anything relevant to the ten-percent myth that might counteract the effects of the popular press. Many textbooks do attempt to dispel some popular misconceptions involving topics such as astrology, subliminal tapes, parapsychology, and right-brain dominance, but we found the ten-percent myth mentioned in only 2 of the 16 textbooks. In addition to Myers's (1995) brief mention of the myth (noted earlier), Kalat (1996) discussed the claim in a little more detail than Myers (as one of two common misunderstandings about the brain, along with right-brain dominance).

The ubiquitousness of the ten-percent myth in the popular culture, and apparently among the psychology students in our memory and cognition classes, led us to conduct this research. One purpose of the research was to gather data that are more formal and systematic than we had gathered informally in our classes regarding students' beliefs in the ten-percent myth, including data on the reasons for the students' beliefs. Previous research on misconceptions has investigated only whether students hold certain beliefs, but not the reasons for, or sources of, their beliefs.

The second purpose of this research involved the effects of psychology training on beliefs in misconceptions. As noted earlier, even though few introductory psychology textbooks specifically address the ten-percent myth, most of them do critically address some other popular myths. Most of the textbooks also attempt

to teach students critical thinking skills, and there is some evidence that such skills might be related to increased skepticism regarding the misconceptions (McCutcheon et al., 1992). Despite those textbook features, the introductory psychology course appears to do little to change students' misconceptions (e.g., Best, 1982; Gardner & Dalsing, 1986; Lamal, 1979; McCutcheon, 1991; Vaughan, 1977). However, taking additional psychology courses does appear to result in some additional changes in some misconceptions (Gardner & Dalsing, 1986; Gardner & Hund, 1983; Griggs & Ransdell, 1987; Lamal, 1979).

We expected that the kind of academic training psychology students receive, especially beyond introductory psychology, would give them a healthy skepticism that would make them more critical of pop-psychology myths than students without any background in psychology would be. Thus, the second purpose of our study was to test the hypothesis that psychology majors who had a significant amount of training in psychology would be less likely to believe the ten-percent myth than would non-majors who had no training in psychology. Previous research on misconceptions has focused on the prevalence of the beliefs among psychology students, but has provided little comparison with the beliefs of other students.

Method

We constructed a short cognition survey. It took 10 to 15 min to complete and consisted of the following five questions:

Question 1. "About what percentage of their potential brain power do you think most people use?" Students circled their answers from 21 choices ranging from 0% to 100%, in increments of 5 (0%, 5%, 10% . . . 95%, 100%).

Question 2. "What is the basis of, or reason for, your answer to Question 1? (Why did you choose the answer you did?)" The response format was open-ended, and students wrote out their answers.

Question 3. "Have you ever heard or read any research or any evidence that would support your answer to Question 1?" Students circled either *yes* or *no*. They were then asked, "If yes, please briefly describe the research or evidence." The response format was the same open-ended format used in Question 2.

Question 4. "About what percentage of their potential brain power do you think most people are *capable* of using?" The response format was the same as for Question 1.

Question 5 asked for demographic data, including year in school, major, and number of psychology courses taken.

Fifty-three students enrolled in an upper division cognitive psychology course and 52 students enrolled in an introductory psychology course completed

the cognition survey during the first week of the semester. The answers to Question 5 were used to select the students to participate in the study.

All of the students in the cognitive psychology course who had taken at least six other psychology courses constituted the experimental group (18 men and 20 women). These students were all psychology majors who were juniors and seniors. The control group consisted of all the junior and senior students in the introductory psychology course who had not taken any other psychology courses (14 men and 25 women). The reason we included only juniors and seniors in the control group was so that group would be comparable with the experimental group in maturity and general education level.

Results and Discussion

Question 1 in the cognition survey is the question that is most directly relevant to our hypothesis that students trained in psychology would be more critical of the ten-percent myth than would other students. We phrased the question indirectly in order to minimize socially desirable responses; we reasoned that some students might not be willing to admit that they believed in the ten-percent claim if they were asked directly (e.g., "Do you believe the claim that most people use only about ten percent of their potential brain power?").

The responses to Question 1 did not support the hypothesis. For both groups of students, the modal answer, of the 21 choices presented, was 10% (chosen by 12 of the 38 majors and 10 of the 39 controls). An alpha level of .05 was used for all statistical tests. The two groups did not differ significantly in either the number of students who chose an answer of 10% or less (majors $n = 20$, controls $n = 17$), $\chi^2(1, N = 77) < 1$, *ns*, or in the means of their answers (majors $M = 23.6$, $SD = 21.7$; controls $M = 21.0$, $SD = 15.8$), $t(75) < 1$, *ns*. As the standard deviations indicate, there was a large amount of variability in answers (majors' answers ranged from 5% to 90%, and controls' answers ranged from 5% to 60%).

The answers to Question 1 suggest that students trained in psychology may not be more critical of the ten-percent claim than are other students. As reported earlier, additional training in psychology beyond the introductory course has been found to produce some additional changes in some misconceptions. However, the results of this study suggest that for this particular misconception, additional psychology courses taken by psychology majors may not have much effect.

Perhaps the ten-percent myth is too ingrained in our society and too widespread (see Appendix) to be affected indirectly by training in psychology. Whatever training psychology students receive in the scientific method and critical thinking, and whatever exposure they receive to some other misconceptions may not be sufficient to have an indirect effect on the ten-percent myth. Regarding the weak effect of the introductory psychology course on misconceptions, Vaughan (1977) observed that some misconceptions could be dispelled if they refer to top-

ics explicitly discussed in the reading materials, but that there is “little evidence for a generally heightened skepticism, which might lead students to question statements about which they have received no additional information” (p. 140). It appears that Vaughan’s observation may also be relevant to additional training in psychology beyond the introductory course.

We agree with other authors (cf. Lamal, 1979, 1995; McCutcheon, 1991; Vaughan, 1977) who have suggested that dispelling students’ misconceptions about psychology is a reasonable goal for psychology teachers to include among their teaching objectives. The findings of this study suggest that if psychology teachers and textbook authors want to dispel pop-psychology myths such as the ten-percent myth, direct treatment of the misconceptions is needed.

Question 4 was designed to go beyond Question 1, to determine how optimistic the students were in their beliefs regarding how much mental potential people can use. The means of the answers to Question 4 were significantly higher than those of Question 1 (reported previously) for both the majors ($M = 61.5$), $t(36) = 8.46$, $p < .01$, and the controls ($M = 53.0$), $t(38) = 7.43$, $p < .01$. (The *dfs* reflect the fact that one major did not answer Question 4.) The variability in the answers to Question 4 (majors $SD = 31.6$, controls $SD = 30.5$) was even larger than for Question 1, with answers in both groups ranging from 10% to 100%.

Thus, both groups of students believed that people can use significantly more brain power than they do use. This finding suggests that college students are fairly optimistic in their beliefs about the potential use of human brain power. In fact, there were only two students in each group who did not choose a larger answer for Question 4 than for Question 1.

The majors’ mean score for answers to Question 4 was significantly larger than the controls’ mean, $t(74) = 4.00$, $p < .01$. This difference suggests that students with training in psychology may be more optimistic about human potential than are students without training in psychology. One possible reason is that psychology training may increase students’ understanding of human potential. However, it is also possible that there is a causal relationship in the other direction—students who choose psychology as a major may be more optimistic to begin with, and that could be one reason for their interest in psychology.

Gutman (1979) observed that it is important to determine the ontogeny of students’ beliefs in misconceptions, and some researchers have speculated about possible sources of students’ misconceptions, including the mass media, parents, and peers (Brown, 1983; Gardner & Dalsing, 1986; Gutman, 1979; Lamal, 1979). However, as noted earlier, no previous research has actually addressed such sources. We included Questions 2 and 3 in the cognition survey to obtain some information regarding the sources underlying the students’ beliefs in the ten-percent myth.

Question 2 was designed to determine how many students would spontaneously mention any kind of research or evidence to support their beliefs. We expected (consistent with our hypothesis that psychology majors would be more

skeptical of the ten-percent claim) that fewer psychology majors would report actual supporting evidence. However, there was actually a slight tendency for more psychology majors ($n = 30$) than control students ($n = 24$) to report that their answers to Question 1 were based on something they had heard or read somewhere, $\chi^2(1, N = 77) = 2.78, p < .10$. If future research supports this trend, one explanation might be that because of their interests, psychology students are likely to have read more widely than other students about topics related to the ten-percent claim and thus would be more likely to have come across information such as that in the Appendix.

We designed Question 3 to determine how many students could cite research or evidence to support their beliefs if they were asked for the evidence directly. Significantly fewer psychology majors ($n = 17$) than control students ($n = 26$) answered yes to this question, $\chi^2(1, N = 77) = 3.86, p < .05$. This finding was somewhat surprising because it seems inconsistent with the students' responses to Questions 1 and 2 (showing no significant difference in belief, and a slight tendency for more majors to report evidence). We suspect that the specific use of the phrase "research or evidence" in Question 3 prompted the students to think along a different line from that used in Question 2; psychology majors might have been less likely to consider the basis or reason for their belief in Question 2 to be legitimate, scientific research.

The sources of research or evidence reported by the students who answered yes in Question 3 are as follows, accompanied by the percentages of students reporting each source: no source (students reported hearing or reading the claim "somewhere")—majors = 41%, controls = 46%; general source (students referred in a general way to such sources as "school classes," "research studies," "publications," or "TV programs")—majors = 47%, controls = 35%; specific source (students referred to a specific class, publication, or program, such as "a biology class" or "a PBS TV program on the brain")—majors = 12%, controls = 19%.

Nearly half of the students in each group who answered yes to Question 3 did not actually provide any real evidence (no source). Of the remaining students in the other two categories (the students who did refer to a source), 70% of the majors (7 of 10) and 79% of the control students (11 of 14) qualified their answers by noting that they could be wrong or that their recall was vague. Not one student in either group cited a source that was specific enough or complete enough to locate.

Psychologists would not be surprised that no student could cite a source specific enough or complete enough to locate, because there probably is no actual research evidence that is relevant to the ten-percent claim (at least, we have not been able to find any). Such lack of evidence appears to be one difference between the ten-percent myth and the misconceptions that have been investigated in previous research—the other misconceptions involve beliefs that are contrary to existing research evidence, whereas the ten-percent claim is a belief for which no research evidence exists. In fact, the ten-percent myth might not even

be testable, which may be one reason why one of our colleagues referred to the ten-percent myth as a “nonissue.” His statement is consistent with our view and probably with that of most psychologists. However, the important point is not whether the ten-percent myth is an issue to psychologists, but whether it is an issue to students. The results of this study suggest that it is, and the considerable research cited earlier has also shown the existence of other misconceptions among psychology students. Now that the existence of students’ beliefs in such misconceptions is well documented, the next step for future research might be to explore the origins and reasons for such beliefs.

REFERENCES

- Adetumbi, M. (1992). *You're a better student than you think*. Huntsville, AL: Adex Book Co.
- Belliston, L., & Mayfield, C. (1983). *Speed learning—super recall*. Woodland Hills, UT: SB Publishers.
- Best, J. B. (1982). Misconceptions about psychology among students who perform highly. *Psychological Reports*, 51, 239–244.
- Brown, L. T. (1983). Some more misconceptions about psychology among introductory psychology students. *Teaching of Psychology*, 10, 207–210.
- Buzan, T. (1984). *Making the most of your mind*. New York: Simon & Schuster.
- Gardner, R. M., & Dalsing, S. (1986). Misconceptions about psychology among college students. *Teaching of Psychology*, 13, 32–34.
- Gardner, R. M., & Hund, R. M. (1983). Misconceptions of psychology among academicians. *Teaching of Psychology*, 10, 20–22.
- 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.
- Kalat, J. W. (1996). *Introduction to psychology* (4th ed.). Pacific Grove, CA: Brooks/Cole.
- Lamal, P. A. (1979). College students’ common beliefs about psychology. *Teaching of Psychology*, 6, 155–158.
- Lamal, P. A. (1995). College students’ misconceptions about behavior analysis. *Teaching of Psychology*, 22, 177–180.
- Lewis, D. (1962). *How to master your memory*. Houston, TX: Gulf Publishers.
- McCutcheon, L. E. (1991). A new test of misconceptions about psychology. *Psychological Reports*, 68, 647–653.
- McCutcheon, L. E., Apperson, J. M., Hanson, E., & Wynn, V. (1992). Relationships among critical thinking skills, academic achievement, and misconceptions about psychology. *Psychological Reports*, 71, 635–639.
- Montgomery, R. L. (1981). *Memory made easy*. New York: AMOCOM.
- Myers, D. G. (1995). *Psychology* (4th ed.). New York: Worth.
- Ostrander, S., & Schroeder, L. (1979). *Superlearning*. New York: Bell.
- Rose, C. (1987). *Accelerated learning*. New York: Dell.
- Russell, P. (1984). *The brain book*. New York: E. P. Dutton.
- Vaughan, E. D. (1977). Misconceptions about psychology among introductory psychology students. *Teaching of Psychology*, 4, 138–141.
- Winter, A., & Winter, R. (1986). *Build your brain power*. New York: St. Martins Press.
- Witt, S. (1983). *How to be twice as smart*. West Nyack, NY: Parker.

APPENDIX Ten Ten-Percent Claims

1. "Experts agree that you're using only a fraction of your mental powers. No less a pundit than Harvard's great psychologist, William James, claims the average person habitually uses only 10 to 15 percent of his brainpower." (Lewis, 1962, p. 4)

2. "In these accounts, writers invariably mentioned a basic contention of Soviet physiologists: We use barely ten percent of our brain capacity, yet we can learn to plug in to the other ninety percent; we can, as they put it, learn to tap the reserves of the mind." (Ostrander & Schroeder, 1979, p. 15)

3. "Most of us, psychologists say, don't use more than 10 percent of our native ability to remember." (Montgomery, 1981, p. 11)

4. "If you're like most people, you're using only about 10 percent of your brainpower." (Witt, 1983, p. 4)

5. "You've probably heard that we use only 10 or 20 percent of our mental powers. How can that be? Is there some secret to unlocking the other 80 or 90 percent?" (Belliston & Mayfield, 1983, p. 10)

6. "The commonly heard statement that on the average we use only 1 percent of our brain may well be wrong, because it now seems that we use even less than 1%." (Buzan, 1984, p. 13)

7. "It is frequently stated that we use only 10 percent of our full mental potential. This, it now appears, is rather an overestimate. We probably do not use even 1 percent—more likely 0.1 percent or less." (Russell, 1984, p. 7)

8. "You use only a fraction of your brain's capacity—an estimated .01 percent to 10 percent." (Winter & Winter, 1986, p. 1)

9. "It used to be an often quoted statistic that we only use 10% of our potential brain power. The more psychologists have learned in the past ten years however, the less likely they are to dare to attempt to quantify our brain potential. The only consistent conclusion is that the proportion of our potential brain power that we use is probably nearer 4% than 10%." (Rose, 1987, p. 4)

10. It has been estimated that an average person uses only a fraction (less than 5%) of his or her brain potential. Psychologists and neurobiologists alike agree that the human brain has almost unlimited capacity to learn." (Adetumbi, 1992, p. 11)

Received May 21, 1997