DO PSYCHOLOGY COURSES REDUCE BELIEF IN PSYCHOLOGICAL MYTHS?

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This study examined the degree to which psychology students accept popular psychology myths that are rejected by mainstream researchers (e.g., “people use only 10% of their brain’s capacity”), and the effect of psychology courses on myth acceptance. Using a twenty-item, true-false myth belief questionnaire, it examined the levels of gullibility among 94 undergraduates at different stages of their education, and related these to their educational and demographic backgrounds. High overall levels of myth acceptance (71%) were found, in line with earlier research. Myth acceptance decreased with the number of psychology courses that students had taken in university, but increased with the number that they had taken in junior college. Belief in myths was lower among students who were majoring in psychology, were older, had higher grades, and had advanced training in research methods, but it was not related to gender, geographical origin, or university year. It is concluded that university courses appear beneficial in encouraging methodological skepticism, whereas taking specialized psychology courses in junior college may hinder rather than promote critical thinking among undergraduates.

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Ideas for Questionnaire items came from various introductory psychology texts, especially those of Doug Bernstein and David Myers. A version of this paper was presented at the annual meeting of the Canadian Psychological Association, Laval University, June 2001.
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A common feature of introductory psychology courses is a classroom demonstration that is designed to show the falsity of some popular myth about behavior, for example the idea that people will recognize a totally spurious personality sketch of themselves as having been concocted by the experimenter (Forer, 1949; Standing & Keays, 1986). These everpopular demonstrations typically reveal high levels of misplaced credulity, and are assumed to have an educational impact. Furthermore, an instructor is usually at pains throughout the introductory course to demolish his students' initial belief in various erroneous psychological ideas that are widespread in the popular culture. Accordingly, one might expect that psychology students would be decidedly low in mythbelief. We may also predict specifically that students would show a decreasing level of mythbelief as the number of psychology courses they have taken increases.

However, the evidence is largely discouraging on the first point. For example, Gray (1990) found high levels of belief in scientifically unsubstantiated phenomena among psychology students, with science students being more skeptical and humanities students more accepting of these ideas. Furthermore, it is commonly found that taking the introductory course in psychology reduces mythbelief only slightly (Lamal, 1979; McKeachie, 1960; Vaughan, 1977).

The present survey also examined the impact of psychology education on unsubstantiated beliefs, but over a wider range and number of courses than just the introductory course, and over a greater period of years in students' lives. The aim of the study was to relate myth acceptance to the amount of psychological education that a student has received in junior college and university, and to personal variables.

METHOD

PARTICIPANTS

Ninety-four undergraduate students at a liberal-arts college were employed as volunteer subjects, chosen on the basis that they had taken, or were taking, at least one psychology course at either junior college or university. Sixty-six were psychology majors. The age range was 18 to 43, with a median of 20. Participants gave informed consent to participate in the study and were treated according to APA ethical guidelines.

MATERIALS

The Test Your Psychology IQ questionnaire was employed as a measure of the respondents' myth rejection (Huber, 2000, unpublished). This questionnaire is given as Appendix 1, with the scoring key added. An additional questionnaire was used to record information on the number of psychology courses participants had completed at junior college and at university, their major program at
university, whether or not they had taken an advanced research methods course, their overall average grade, their home province or state, their age, their university year, and their gender. All data were self-reported.

PROCEDURE
A research methods class randomly selected subjects among their acquaintances who were currently taking at least one psychology course and asked them to complete in writing the two questionnaires under anonymous, confidential conditions. Those tested included about half of all psychology majors on the campus.

RESULTS
The myth questionnaires were scored to yield a measure of a subject's rejection of psychology myths (maximum 20, corresponding to zero gullibility). The distribution of these scores is shown in Figure 1. Pearson correlations of all variables with the Huber scores were then computed (Table 1). Five significant predictors ($p < .01$) were found, all in the range .24 to .36. Huber scores increased with the number of university psychology courses taken, having psychology as the major program, overall grade, chronological age and taking the advanced research methods course. A composite variable (ZSUM) created by summing each subject's standard scores for these five variables was found to be the best

![Frequencies Graph](image_url)

Figure 1: Distribution of the Huber scores. (A score of 20 corresponds to zero myth acceptance).
TABLE 1
PREDICTORS OF HUBER SCORES, WITH MEANS AND STANDARD DEVIATIONS

<table>
<thead>
<tr>
<th>CRITERION VARIABLE</th>
<th>$r$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huber Questionnaire score (max 20)</td>
<td>12.91</td>
<td>2.88</td>
<td></td>
</tr>
</tbody>
</table>

**PREDICTORS**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$r$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior college psychology courses</td>
<td>-.142</td>
<td>1.89</td>
<td>1.81</td>
</tr>
<tr>
<td>University psychology courses</td>
<td>.272 **</td>
<td>9.93</td>
<td>8.24</td>
</tr>
<tr>
<td>Total psychology courses</td>
<td>.237 *</td>
<td>11.82</td>
<td>8.37</td>
</tr>
<tr>
<td>Program</td>
<td>.257 **</td>
<td>70%</td>
<td>Other majors</td>
</tr>
<tr>
<td>Overall grade</td>
<td>.305 **</td>
<td>74.20</td>
<td>8.61</td>
</tr>
<tr>
<td>Province</td>
<td>-.123</td>
<td>61% Québec</td>
<td>39% Other province</td>
</tr>
<tr>
<td>Age</td>
<td>.242 **</td>
<td>21.74</td>
<td>3.07</td>
</tr>
<tr>
<td>University year</td>
<td>.071</td>
<td>2.03</td>
<td>1.18</td>
</tr>
<tr>
<td>Gender</td>
<td>-.034</td>
<td>22% Male</td>
<td>78% Female</td>
</tr>
<tr>
<td>Advanced methods course</td>
<td>.361 **</td>
<td>18% Had taken AM course</td>
<td>82% Had not taken</td>
</tr>
</tbody>
</table>

**Note:** ZSUM represents the sum of the respondents' z-scores for the following variables: University psychology courses, Program, Grade, Age and Advanced methods variables. (All $n = 94$).

**$^*$ $p < .05$**

**$^** p < .01**

![HUBER SCORES](image1)

**COLLEGE COURSES TAKEN**

Figure 2: Huber scores as a function of the number of psychology courses taken by the subject in junior college, with trend line.
Figure 3: Huber scores as a function of the number of psychology courses taken by the subject in university, with trend line.

 predictor of Huber scores, $r (92) = .45$, $p < .01$. A multiple regression, using all predictors, led to the same conclusions ($R = .51$).

 The subjects' mean Huber scores were calculated as a function of their mean number of psychology courses taken in junior college, and in university. Both curves were well fitted by quadratic functions, as shown in Figures 2 and 3 respectively. Huber scores declined with the number of college courses taken, $R^2 = .91$, $F (4) = 19.25$, $p = .009$. However, they increased with the number of university courses taken, $R^2 = .56$, $F (9) = 5.83$, $p = .02$.

**DISCUSSION**

The average Huber score here was 12.9 out of 20 ($SD = 2.9$). On the basis of pure guessing a score of 10 would be expected, and according to a simple guessing correction the obtained mean corresponds to a "true" mean of only 29% correct, or a myth acceptance rate of 71%. While not directly comparable, this figure is even higher than the myth acceptance rates found in some other studies (see Furnham, 1989). Even allowing for some possible argument as to the correct response for one or two items, this result shows poor critical thinking regarding psychological speculations: gullibility is high. By contrast, psychology professors score at least 18/20 on this questionnaire, according to an informal test of the author's colleagues. A striking trend is that myth rejection *increased* slowly with the number of psychology courses that a student had taken in university. But
it actually decreased considerably with the number taken in junior college. As ever, correlation does not prove causation, but the likelihood that some simple confounding variable (e.g., age) could account for these results is reduced by the striking reversal of the trend between the junior college and university levels.

The most hopeful finding for educators is that university courses in psychology appear slowly to reduce myth acceptance and to improve critical thinking, a finding which differs from the results of Mill, Gray and Mandel (1994), but concurs with those of Gardner and Dalsing (1986). The maximum number of courses shown here corresponds roughly to the curriculum for a three-year Bachelor of Arts with major or honors in psychology, and even towards the end of this period, scores had flattened off at a level that is far from perfect. It must be noted that the simple number of years spent at university showed no correlation with mythbeliefs.

The generally higher qualifications of university level instructors compared with college teachers have been found to reduce their belief in myths (Gardner & Hund, 1983). Our subjects sometimes remarked that their introductory psychology course at junior college emphasized scientific thinking, but additional more specialized psychology classes often involved more speculative material presented by instructors who were teaching in their hobby areas. Such courses typically focus on issues of content and application rather than on methodology or questions of validity. "When methodological skepticism is ignored, pseudoscience arises" (Alcock, 1991). Although university level courses also become more specialized in the senior program years, universities require more research activity of instructors and students than do junior colleges, which probably promotes the scientific attitude and dampens uncritical enthusiasm for exciting but ill-supported ideas.

As has been suggested by Standing and Keays (1987), people in general probably have quite a high gullibility factor: statements tend to be accepted unless there is some very specific reason to reject them. This effect seems logically related to the positivity bias that is shown as framing effects in decision making (Tversky & Kahneman, 1981) and to the problem of cognitive overconfidence (Kahneman & Tversky, 1979).

REFERENCES


BELIEF IN PSYCHOLOGICAL MYTHS


APPENDIX 1

Test Your Psychology IQ
Herm Huber, PhD

*Please answer TRUE or FALSE to each one of these statements.
Do not omit any! Do not sign your name.*

1) Jet lag is worse going from Hawaii to NY than from NY to Hawaii. [T]
2) Hypnosis is valuable in helping witnesses recall details of a crime. [F]
3) The world's most popular drug is alcohol. [F]
4) People use only about 10% of their brain's capacity. [F]
5) It is not possible to make a gay person heterosexual through psychotherapy. [T]
6) During a full moon, people commit more crimes and behave more abnormally. [F]
7) A few people can use their minds to influence, for example, the way that dice will fall. [F]
8) If 2 things correlate highly, this does not prove that one causes the other. [T]
9) Hypnosis can reduce the pain of surgery or childbirth. [T]
10) Inside our brains are memories for everything we have ever experienced. [F]
11) The average IQ in the USA is only about 100. [T]
12) The moon looks much bigger on the horizon than overhead because the atmosphere acts like a magnifying glass. [F]
13) Schizophrenia means split personality. [F]
14) Mentally ill or retarded persons are no more likely to be violent than normal people. [T
15) Research shows that no significant learning occurs when information is given repeatedly during sleep. [T
16) As people age, they sleep less. [T
17) Through hypnosis, some people can remember things from the first 6 months of life. [F
18) Most German Nazis showed no evidence of serious psychiatric disorders. [T
19) Among the range of animals, the larger the brain, generally the greater the intelligence. [T
20) Clear evidence exists to show that a very small percent of people can receive the thoughts of others and predict the future. [F

Scoring: add one point for each item answered correctly to yield a total out of 20.