

Some Misconceptions about Psychology Among Chinese Health Sciences Students in Hong Kong

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Misconceptions about psychology were assessed in 161 Chinese undergraduate health sciences students using 20 common beliefs of students in introductory psychology courses in North America. The results indicated that common misconceptions among Chinese students were related to memory and motivation, and were not a result of disinterest or apathy in acquiring psychological knowledge for application to health practice. Implications for the teaching of introductory psychology to students with a view for applied use of psychology were discussed.

本文以北美洲心理學導論課程學生的二十項普通心理學信念，去探討一百六十一名中國醫護學生對心理學的誤解。研究結果顯示普通誤解多與記憶及動機有關，而並不是因為學生缺乏興趣去掌握心理學知識來應用於醫護的範圍。本文亦討論通過教授心理學導論以達成學生應用心理學的含意。

It is generally known to teachers of psychology that introductory students enter the classroom with a foundation of lay psychology that they acquire from at least 16 to 17 years of observing how humans and other animals behave. The knowledge of lay psychology is further enriched and modified by what they have read, have seen on television, and have been told by others. Very often, this foundation is helpful in providing examples of commonsense psychological phenomena. At times, however, it contains beliefs that are at variance with counterintuitive psychological phenomena based on data of systematic observation. When such conditions occur, the lay conception can become a stumbling block.

Over the past three decades, research studies in North America have indicated that college students possessed a large number of misconceptions about psychology (Brown, 1983, 1984; Gutmann, 1979; Holley & Buxton, 1950; McKeachie, 1960; Vaughan, 1977). These mistaken beliefs have been shown to be held with great conviction, and could only be slightly reduced after completing an introductory psychology course (McKeachie, 1960; Vaughan, 1977). Such resistance to change, however, should not be surprising if they are based on a folklore that embodies and summarizes the efforts of generations to explain and predict human behavior (Vaughan, 1977).

To test students' misconceptions, Vaughan (1977) developed the Test of Common Beliefs, a test

consisting of 80 false statements related to psychology. This test was said to contain many of the most frequently held misconceptions about psychology. Gardner and Hund (1983) identified a subset of 20 items that were marked "true" by more than 50% of college students, and found that academicians were not entirely immune to these misconceptions. Finding that psychologists were more accurate in recognizing the falsity of the 20 statements than nonpsychologists, Gardner and Hund (1983) concluded that it was less likely that psychology faculty members were responsible for students' misconceptions, but more likely that students and faculty members in general held beliefs which were established in a similar middle class culture.

The present study was designed to assess some of the misconceptions about psychology in a sample of Chinese health sciences students in Hong Kong. In addition, their expectation regarding the applied use of knowledge in psychology in health care was also assessed.

Method

Subjects

One hundred and seventy health sciences students who enrolled in an introductory psychology/behavioral science course provided data for the present study. One hundred and eight students were

new medical students and sixty-two were new nursing students. They reported that they had no exposure to any psychology courses, and participated voluntarily in the study. The study was conducted in the first week of class in the school year before any teaching sessions. Nine students did not provide complete data and were excluded from the study. The final sample consisted of 161 students (91 males and 70 females) aged between 18 and 24 ($M = 19.49$, $SD = .89$).

Materials and Procedure

The 20 common mistaken beliefs from the 80-item Test of Common Beliefs (Vaughan, 1977) used by Gardner and Hund (1983) were employed in the present study. The 20 statements were:

1. To change people's behavior toward members of ethnic minority groups, we must first change their attitudes.
2. Children's IQ scores have very little relationship to how well they do in school.
3. The unstructured interview is the most valid method for assessing someone's personality.
4. Personality tests reveal your basic motives, including those you may not be aware of.
5. The best way to ensure a desired behavior will persist after training is completed is to reward the behavior every single time it occurs throughout training.
6. Under hypnosis, people can perform feats of physical strength which they could never do otherwise.
7. Boys and girls exhibit no behavioral differences until environmental influences begin to produce such differences.
8. Fortunately for babies, human beings have a strong maternal instinct.
9. Memory can be likened to a storage chest in the brain into which we deposit material and from which we can withdraw it later if needed. Occasionally, something gets lost and we forget.
10. The weight of evidence suggests that the major factor in forgetting is the decay of memory traces with time.
11. Unlike man, the lower animals are motivated only by bodily needs – hunger, sex, thirst, etc.
12. By feeling people's faces, blind people can visualize how they look in their minds.
13. Blind people have unusually sensitive organs of touch.
14. Genius is closely akin to insanity.
15. The more you memorize by rote the better you will become at memorizing.
16. The basis of the baby's love for his mother is the fact that she fills his physiological need for food, etc.
17. Children memorize much more easily than adults.
18. The more highly motivated you are, the better you will do at solving a complex problem.
19. The ability of blind people to avoid obstacles is due to a special sense which develops in compensation for the absence of vision.
20. Biologists study the body; psychologists study the mind.

Subjects were requested to rate the truth or falsity of the statements on a five-point scale (1, completely false; 2, mostly false; 3, uncertain; 4, mostly true; 5, completely true). They were also requested to rate the likelihood of application of knowledge of psychology in six health practice areas on a scale of 1 (least likely) to 7 (most likely). The six areas were: Understanding patients, improving practitioner-patient relationship, aiding in health promotion, direct application of psychological techniques to treatment, medical diagnosis, and psychiatric treatment.

Results

Misconceptions about Psychology

The proportions of respondents who rated each of the response options along the 5-point scale were tabulated. Since the extreme options were not commonly used, three categories of responses (1 or 2, false; 3, uncertain, and 4 or 5, true) are reported in Table 1.

Table 1 ordered the 20 statements in terms of descending proportions of respondents who responded true to the statements. It can be seen that among the 20 statements, at least 50% of the respondents endorsed 9 statements as true, 1 statement as false, and 1 statement as uncertain. For the remaining 9 statements, although a substantial proportion of students responded true to them, equally substantial were the proportions of false or uncertain responding. The goodness of fit X^2 tests also indicated that the proportions of responses for 13 statements deviated from expectation of equal distribution among the three categories. The assumption of expected equal distribution of responses was based on the findings of the general use of three central categories and the rare use of the extreme categories, suggesting that respondents might think simply in

TABLE 1
Endorsement Proportions of Common Beliefs Related to Psychology

Statement	Proportions of Respondents			
	False	Uncertain	True	Chi-square
Motivation and problem solving (18)	.04	.26	.70	109.15*
Bodily needs as animal motives (11)	.11	.22	.68	88.58*
Maternal instinct (8)	.09	.24	.67	87.41*
Memory as storage (9)	.10	.24	.66	84.00*
Attitude change precedes behavior change (1)	.13	.25	.62	63.35*
Children's memory (17)	.12	.32	.56	48.48*
Personality tests (4)	.12	.33	.55	45.65*
The blind's sensitive touch (13)	.36	.12	.52	39.88*
Biologists/psychologists and body/mind (20)	.16	.34	.50	27.21*
Rote memory (15)	.13	.41	.46	30.41*
Constant rewarding (5)	.19	.35	.46	18.34*
Hypnosis (6)	.22	.34	.44	11.41
Forgetting (10)	.23	.35	.42	8.69
The blind's sense (19)	.34	.24	.42	7.83
Unstructured interview (3)	.20	.42	.38	12.26
Baby-mother love (16)	.35	.29	.35	1.23
The blind's visualization (12)	.34	.32	.35	.23
Children's IQ (2)	.26	.41	.34	5.82
Gender behavioral differences (7)	.51	.21	.28	23.55*
Genius and insanity (14)	.20	.64	.16	68.35*

Note. Item numbers are in parentheses.

* $p < .001$

terms of false, uncertain, and true categories rather than the more refined five categories. Gender difference was found only for 1 statement relating to the special sense of blind people. More female respondents than male respondents endorsed the statement as true ($X^2 = 22.38, p < .001$).

Thus, most respondents recognized that gender differences in behavior did not arise solely from environmental influence, but were uncertain about the relationship between genius and insanity.

Misconceptions as defined by statements endorsed by more than 50% of respondents as true were mostly in the areas of motivation and memory. Human motives were thought to be directly related to problem-solving, and could be uncovered by personality tests, and differed from animals in that lower animals were only motivated by bodily needs, and human beings did have maternal instincts.

Other areas of misconceptions were in likening memory to a storage chest, that children could memorize more easily than adults, that attitude change preceded behavioral change, and that blind people had sensitive touch.

It was of interest to note that among the 20 statements, 5 statements were regarded by Brown

(1984) as not entirely false. They are related to motivation and problem-solving, the mind as the domain of psychologists, hypnosis, forgetting, and the unstructured interview. Except for the belief related to motivation and problem-solving, the 4 beliefs were endorsed by 34% to 42% of respondents as uncertain, testifying to the need for cautionary interpretation of these beliefs.

Dimensions of Misconceptions

To explore whether certain belief statements tended to be endorsed together, a maximum likelihood factor analysis was performed on the ratings of the statements by the respondents. The test of independence, $X^2(190) = 320.98, p < .0001$, rejected the hypothesis of no common factors. Two indices of goodness of fit, the chi-square test and the Tucker-Lewis reliability coefficient, for one through three common factor solutions were completed to assist in the choice of the number of factors to describe the dimensions of misconceptions. The chi-square values were 197.66 ($df = 170, p < .10$), 167.83 ($df = 151, p > .10$), and 139.91 ($df = 133, p > .10$), for one-, two-, and three-factor solution, respectively. The

corresponding Tucker-Lewis reliability coefficients were .76, .84, and .92. The results indicated that the one-factor solution which yielded a nonsignificant chi-square with a moderately high Tucker-Lewis reliability coefficient was statistically acceptable to account for the data. Thus, there was no evidence that there were different dimensions of misconceptions. While the single dimension encompassed a heterogeneous array of belief statements, the most salient loadings were contributed by statements related to memory storage, rote memory, and forgetting.

Misconceptions and Attitude toward Application of Psychology

The respondents' rescaled ratings of the 20 statements on false, uncertain, and true categories were also aggregated to yield an accuracy score, an uncertainty score, and a misconception score for each individual. The mean scores indicated that the respondents were accurate on an average of 4.19

statements, uncertain on 6.28 statements, and misconceived on 9.53 statements. Gender differences, however, were found for the accuracy score, indicating that males were more accurate ($t(159) = 2.56$, $p < .05$), but male and female respondents were equally uncertain, and equally misconceived.

Table 2 presents the mean ratings of respondents on the likelihood of the applied use of psychology to areas of health practices. The results indicated that the respondents rated the likelihood of application very highly, with higher ratings for the general areas and lower ratings for more specific areas related to medical and psychiatric practice, the theoretical lowest and highest mean ratings being 1 and 7, respectively. Thus, respondents generally reported interest in psychology, and their misconceptions could not be a result of disinterest or apathy. The aggregated likelihood ratings for all six areas of application were also found to correlate nonsignificantly with accuracy and misconception scores.

TABLE 2
Mean Ratings of Expected Likelihood of Application of Psychology in Health Practices

	Mean	SD
1. Understanding patients	6.17	1.03
2. Improving practitioner-patient relationship	5.85	1.31
3. Aiding in health promotion	5.56	1.18
4. Direct application of psychological techniques in treatment	5.56	1.34
5. Medical diagnosis	5.50	1.43
6. Psychiatric treatment	5.18	1.56

Discussion

The present findings are consistent with past findings regarding misconceptions about psychology among university undergraduate students, and extended previous conclusions to Chinese health sciences students in Hong Kong.

While the statements were misconceptions known to be embedded in the North American middle class culture, the endorsement of these misconceptions to varying degrees among Chinese students were remarkable. It is interesting to note that statements most likely to reflect misconceptions had to do with motivation, motives, and memory mechanism and functioning. Thus, students appeared to be generally misinformed about basic psychological processes. The fact that students gave high ratings on their expectation of applying psychological knowl-

edge to different health practice areas indicated that such misconceptions could not arise from apathy or disinterest in acquiring knowledge in psychology. Rather, these statements included psychological findings which could be interpreted as counterintuitive. Since students reported interests in applying psychological knowledge to understanding practitioner-patient relationship and in treatment, including statements of misconceptions about interpersonal relationships might be less likely to be missed by students. This conjecture has to be tested in future research. Nonetheless, statements more relevant to treatment, such as behavioral and attitude change, constant reinforcement, and hypnosis, were also missed by 44% to 62% of the respondents.

It is possible that because the nature of the field of psychology is often regarded by lay people as commonsense, most people maintain certain beliefs

without having an opportunity to test them in reality. While most people will not venture to express an opinion on the merits of the theory of relativity if they do not have some background in physics, they will be quite willing to talk about attitude change and mental health even though they do not have specific knowledge and training in these areas.

The present findings help delineate certain mistaken beliefs which are likely to be held by a substantial proportion of Chinese students, including but not restricting to health sciences students. Instructors in introductory psychology course may emphasize materials related to these mistaken beliefs to reduce such misconceptions. While the present study did not aim specifically to test beliefs regarding the application of psychological knowledge to health care, the beliefs relating to hypnosis, attitude change, and reinforcement indicated that these areas are not immune to misconceptions. Similarly, misconceptions related to motivation and memory may have serious consequences for the application of psychology to teaching and learning. Uncertainty and doubts about such issues should be dispelled,

such that application can be based on sound psychological knowledge rather than ill-founded intuitive lay conception.

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