

Can Research Activities in Psycho-behavioral Science Enhance Individual's Cognition, Motivation, and Reasoning?

Duangduen Bhanthumnavin ¹

National Research Council of Thailand

Many years ago an important person who is now in the Ministry of Education of Thailand asked me whether it is true that adults can still develop their psychological characteristics and morality, especially by university training. I answered "yes" with some confidence. This is because there are numerous research findings both in Thailand and abroad, indicating that, there are great improvement of certain psychological characteristics, after a few years of college training, and even at graduate levels.

However, for establishing better programs and interventions, we need to know in more detail about the mechanisms and the processes involved in this interesting and important phenomenon.

Four major objectives of this presentation are:

1. To identify the psychological characteristics which are essential to moral and work behaviors of individual.
2. To review research findings on university trainings and their outcomes.
3. To demonstrate that research training activities can elevate the psychological characteristics of the research trainees.
4. To offer suggestions for future research and applications.

What is a Psycho-behavioral Science?

Psycho-behavioral Science is coined in the Thai academic circle about 10 years ago, to encompass the multidisciplinary area of study, in which psychology is at the center and other disciplines are incorporated, as directed by the theme of interest (see Figure 1). This theme can belong to a research program or a curriculum of study. For example, once we had a theme for research on "the cause and effect of maternal care for her child's oral health". This theme specified at least 3 disciplines: (1) psychology, (2) child's oral health care and, (3) dentistry.

¹ Professor of Social Psychology, Ph.D.
Director, The Principal research Project on R&D of the Thai Behavioral System,
National Research Council of Thailand
Professor, Graduate School of Social Development, National Institute of Development Administration,
Bangkok Thailand

Psychology offers a conceptual framework and psychological variables for studying the causes of all human behaviors. While health science gives the detailed content for measuring such behavior, as well as, specifying the type of sample to be used. Dentistry can pinpoint the possible outcomes of such maternal behavior on the status of her child's oral health.

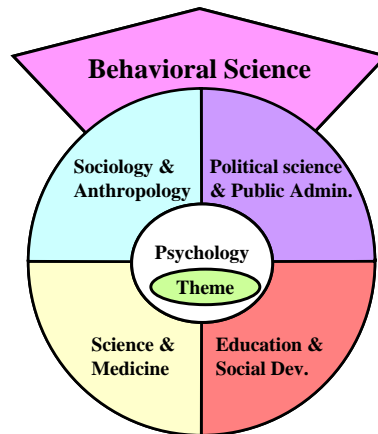


Figure 1. Psycho-behavioral science

Behavioral science is a new discipline. It needs to be differentiated from the social sciences. In order to start on firm footing this new discipline specifies 5 major qualifications of its research activities (Berelson, 1968) as follows:

Operational: the research study consists of various activities such as sampling, measuring and analyzing, in order to be differentiated from armchair philosophy.

Empirical: gathering data from real situation and/or from the targeted persons.

Systematic: the research study must employ some principles and research procedures which should be carried out step by step, by demonstrating the input, process and output of the phenomenon under study.

Scientific: Study is carried out using scientific principles and methods such as the various control techniques, large sample size, self-correction and hypothesis testing, etc.

Experimental: study which can best prove the cause-effect relationships is an experimental study where the causes are being manipulated by the experimenter, who afterwards, measures the expected outcomes, with strict control of the situation and the sample.

Psychological theory of moral and work behavior

In order to specify the important psychological factors which are responsible for moral and work behaviors of a person, this author started the endeavor in 1975.

In the tradition of the behavioral science research mentioned above, 12 to 15 correlational and experimental studies in Thailand were conducted and reviewed to offer a theory depicted as a big fruit tree (Bhanthumnavin, 1983, 1998). This theory has been used as guideline for selecting psychological variables in more than 100 studies. Furthermore, its implementation in many intervention programs are well documented.

This psychological theory of moral and work behavior shows that each human behavior is caused by several psychological characteristics of the actor, at the same time. Thus to cover most behaviors of the actor through out his life, 8 psychological traits and states are identified as necessary (see Figure 2).

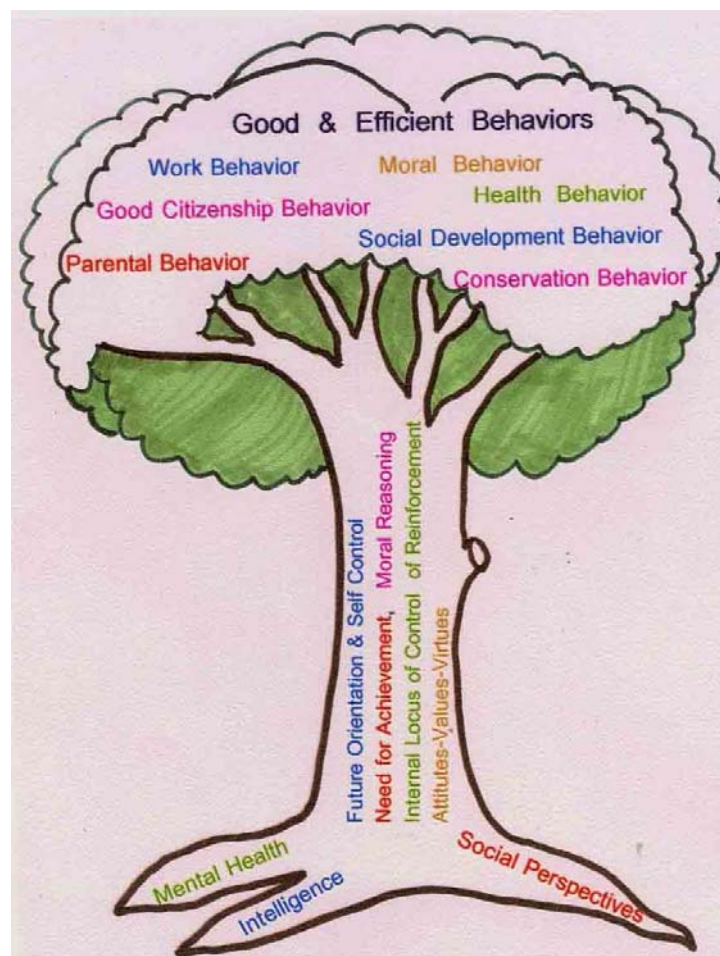


Figure 2. Psychological theory of moral and work behaviors
Source: Bhanthumnavin, 1983, 1998, and 2005.

Out of the 8 traits, 4 traits are responsible for most types of moral and work behaviors of individuals. These are: Future orientation and self-control, Need for achievement, Moral reasoning ability and Belief in internal locus of control of reinforcement.

These 4 traits are mainly cognition with the combinations of motivation and reasoning. Fortunately, these 4 psychological traits can be enhanced during the process of conducting a good research study, as will be discussed later.

Review of research findings

Studies of the relationships between formal education and the psychological characteristics of the students in Thailand and abroad are classified into 3 groups:

1. The effects of the amount and the recency effects in receiving education on the students' moral reasoning ability. An interesting Thai study compared adults who received normal education with adults who recently obtained diploma from adult education program. It was found that the adults who received higher level of education and graduated more recently were the ones with higher scores on moral reasoning ability test than their opposites (Yamnin, 1987).

2. The effects of taking courses in human and society on the change and development of many psychological traits. Among 273 junior and senior university students, the ones who took more courses in the social sciences and education were higher on moral reasoning ability and ego identity achievement, than the ones who took less of such courses (Choodej, 1981).

Four other new Thai studies found that the college students who took more courses in social-behavioral sciences were higher than their counterparts in showing more favorable attitudes: (a) towards political voting (Piyasirinon, 1998), (b) towards taking roles in social development among student-monks (Nontapet, 1997), and (c) towards doing volunteer work in 360 junior students (Watcharatanin, 2003), as well as towards taking care of their future family in vocational male students (Yodrabum, 2005).

Similar results were found elsewhere concerning ego identity achievement which may possibly reflected the effects of self-recruitment and departmental influence after 2 or more years of college study (Adams & Fitch, 1983).

3. The effects of graduate trainings in certain academic disciplines. A well controlled study employing both cross-sectional and longitudinal research designs, found that even at graduate level, many types of reasoning could be heightened by some academic disciplines better than others. Lehman, et al. (1988) revealed that medical students and psychology graduates benefited more in their

trainings, than the law and chemistry graduates. In more detail, at the first year of their graduate school, the students in these 4 disciplines were not significantly different on the 3 types of reasoning ability. While at the 4th year of graduate studies, medical students and psychology students gained the most on methodological and statistical reasoning, in comparison with the law and chemistry students (see Table 1). These results were interpreted that, the graduate students in medicine and psychology may have received direct teaching of the two types of reasoning, and also had a chance to be familiar with these reasoning in real - life academic problems, while law and chemistry students lacked one or both of these experiences in their course of study.

More recently, there has been a strong emphasized in enhancing morality of students in many areas of study, such as, business (Bigel, 2002), nursing (Sellman, 1996; Holt & Long, 1999), and especially in teacher education (Hansen, 2001; Willemse, Lunenberg, & Korthagen, 2005).

Table 1
Increase of Reasoning Abilities in Graduate Students (Lehman, et al.,1988)

Disciplines Master's Level	Reasoning		
	Statistical	Methodological : Confounded Vars.	Logical : Conditional
Law	x	x	✓
Medicine	✓✓	✓✓	✓
Psychology	✓✓	✓✓	✓
Chemistry	x	x	x

Even though, it is believed that the socialization of psychological characteristics of individuals should be induced gradually starting from childhood. However, it is now certain that psychological interventions with theoretical –based approach and concentrated programs can produce significant change in both traits and behaviors of individuals, both in children and adult (Nation et al., 2003; Weissberg et al., 2003; and Hage et al., 2007). Similarly, special academic trainings and scientific experiences can be expected to heighten and strengthen some important cognitions, motivations and reasoning of the receivers, as shown in the above research review.

Research activities and psychological development

Now we come to examine the various steps of research activities which may be used to enhance the researchers' psychological characteristics.

Research activities in psychology and other behavioral sciences can be considered as training of different psychological functions, not only reasoning, but cognition and motivation, as well (see Table 2).

There are at least 7 research instances which can offer opportunity for professor or research trainer to induce some important psychological development to the research trainee. These are: (1) forming research objectives can help one planning and thinking about the goal and subgoals of the research study which is the process of future orientation. (2) carrying out the literature review of relevant theories and research findings calls for the exercise of self-control and high need for achievement as well as inducing the belief that greater effort in this activity will lead to greater success, which is typical of the believer of internal control. (3) self-correction in every important research steps, and adhering to scientific principles as well as, being honest in reporting research results, can heighten other important psychological traits of the researchers.

Table 2
Psychological Characteristics which are Expected to be Heightened by Research Experiences

Res.exp. Psy.Charac. as outcomes	R. Objectives	Literature review	Self correlation	Sci. principles	Honesty in R. Method.	Truth in R. results	Self R. criticism
Future orientation	✓	✓	✓	✓	✓	✓	
Self-control	✓	✓	✓	✓		✓	✓
nAch	✓	✓	✓	✓		✓	
I Con	✓	✓	✓	✓		✓	✓
MR ability		✓	✓	✓	✓	✓	✓

According to the Psychological theory of moral and work behavior mentioned above, the 4 important psychological traits, which are shown in Table 2, can be itemized to elaborate the relevant role of research mentor's in stimulating and elevating them.

Induction of future orientation and self-control

Future orientation is defined as a way of thinking which composed of 3 important components, namely: expectation of future events, awareness of the importance of time and deadline, and valuing future reward as high as the present benefits. Self control is defined as skills necessary to achieve the final and future goal, which consists of 5 to 7 steps, starting from planning and forming subgoals, manipulating the environment and creating situations necessary for the performances, until the first subgoal is achieved. Repeating the few steps above to obtain other later subgoals until the final goal is realized. The final step in self-control technique is self reward for the successful performance (Mahoney & Thoresen, 1974). This trait and skill are necessary for most types of behavior as found in many research studies in Thailand (Bhanthumnavin, 2007).

In order to be able to induce future orientation and self-control in the advisee, the research advisor should do the followings: (1) specifying different steps necessary for the completion of the research study, (2) planning to make literature review useful for forming operational definitions of the variables,

and important research hypotheses, (3) training or modeling the use of self control techniques in following the research rules and scientific principles, (4) Making preparations to continue research activities until completion, and (5) planning to prevent getting non-significant results which are mostly due to measurement and/or sampling errors.

Heightening the need for achievement

Need of achievement is among the 3 important types of human motivation. Besides need for affiliation and need for power, individual values and seeks to master the environment and to solve problem successfully. In order to achieve in any task, a person will need to think and plan to avoid the possible obstructions and to create the facilitators. When thinking about the possible failure, ones should experience some sadness but not give up, on the contrary, when thinking of future success, ones should feel happy (McClelland & Winter, 1971). This psychological trait is found to be the important predictor of school and work achievement of individuals (Bhanthumnavin, 2005).

Research training techniques which can be used to heighten the need for achievement of the new researcher are the followings: (1) try to plan to do a moderately high standard research study even when it is the first attempt in doing research, (2) putting great efforts in doing literature review, (3) planning to prevent making mistakes in measurement, (4) plan to use appropriately large sample for sub-group analysis, (5) aim at adhering strictly to scientific control techniques to prevent errors, (6) depending on oneself for doing the major part of one' study, and (7) when thinking of success one should feel happy.

Increasing the belief in internal locus of control

Belief in internal locus of control has two important components, namely, belief in predictability and belief in controllability. Predictability is the belief that one can do the task and get the desirable consequent, or can alleviate the undesirable future events by putting great effort. On the other hand, controllability is the belief that by putting more effort, not by chance or good luck, that one can get the desirable outcome. Belief in a just world and optimism are also involved in this trait (Rotter, 1969).

Research mentors can elevate the belief in internal locus of control of their mentees by the followings: (1) giving examples of researchers who had put great effort and got great success, (2) trying hard to adhere to scientific principles for the hope of getting more reliable results, (3) giving warnings of the undesirable outcomes from relaxing standards or undedicated actions, and (4) modeling a belief in justice and fair professional judgment of one's research output.

Elevation of the level of moral reasoning ability

Moral reasoning ability is used in making decision. It is defined as a cognitive ability to judge the benefits and harms resulting from one's future action. Furthermore, one can think of these benefits and harms that can occur to oneself, to one's significant others, to one's community, to society or to mankind which constitute the 6 stages (Kohlberg, 1969, 1976). Researchers in any discipline should have high level of moral reasoning ability, which are stages 4, 5 or 6 by showing the preference for rules and principles, rather than for one's own benefits, as well as conducting research study to yield reliable results for the benefit to mankind.

Moral reasoning ability is involved in many steps of research activity. In order to be able to heighten this benevolent trait in young researchers, the experienced and senior researchers should do the followings: (1) showing that one should do the research for the advancement of knowledge and benefit to mankind more than for money or for social reward per se., (2) making the advisee belief in adhering to the scientific principles more than simply obeying the advisor with no reason, (3) modeling the belief that only good and reliable research results are important to mankind and to the advancement of the academic discipline, (4) never prepare to lower one's research standards for selfish reasons or political pressure, and (5) research conclusions and suggestions must be based on one's strong research findings, not on one's predetermined outcomes or wishes.

In conclusion, all academic disciplines consist of content and tools for building the body of knowledge. The content in teaching psychology and other social sciences were found to increase some important psychological characteristics of the learners as mentioned above. But more importantly, this article is indicating that research training, not only give the opportunity for "learning by doing", but can have more additional benefits which few studies have proved before.

Suggestions of future research and applications

First, many experimental studies should be conducted to put the implicit hypotheses in this article to a test.

Secondly, combining course content and research practice to prove the best results on psychological development of the learners.

Thirdly, if the hypotheses offered in this article were supported by future research results, the mentioned research activities should be widely used as interventions for psychological enhancement as well as for academic interest in as young as high school adolescents.

Last but not least, many researcher trainers and professors should be aware of the possible harm ones can give to ones' students, if ones behave in contrary to the suggested actions mentioned above.

References

- Adams, G.R., & Fitch, S.A. (1983). Psychological environments of university departments: Effects on college students' identity status and ego stage development. *Journal of Personality and Social Psychology*, 44(6), 1266-1275.
- Berelson, B. (1968). Behavioral sciences. In D.L. Sills (Ed.), *International encyclopedia of the social science* (pp. 41-45). The Macmillan Company & the Free Press
- Bigel, K. S. (2002). The impact of a business ethics course on the moral development of undergraduate business students. *Delta Pi Epsilon Journal*, 44(2), 125-138.
- Bhanthumnavin, Duangduen.(1983). *Handbook on teacher's techniques for moralization of students*. Monograph no. 4 Behavioral Science Research Institute, Srinakharinwirot University.
- Bhanthumnavin Duangduen. (1998) *A new model of socialization for improving work performance and quality of life in Thailand*. Invited paper presented at the 24th International Congress of Applied Psychology, IAAP, San Francisco, CA, USA
- Bhanthumnavin, Duangduen.(2005). *Psychological theory of moral and work behavior: Past, present and future*. In the Book of articles for Seminar and Workshop on "The use and production of research reports on psycho-behavioral science for the applications in the Thai society". Hosted by the Principal project of the R & D of the Thai Behavioral System, NRCT, article no. 2.3-4.
- Bhanthumnavin, Duchduen. (2007). Synthesis of research results on virtues and morality in Thailand and abroad: A literature review. *Research report*. Sponsored by the Center of virtue promotion, Bangkok, Thailand.
- Choodej, S. (1991). *Relationships between university experience and important psychological characteristics of students*. Master's Thesis, Social psychology, Srinakharinwirot University.
- Hage, S.M., Romana, J.L., Conyne, R.K., Kenny, M., Mallhews, C., Schwartz, J.P., & Waldo, M. (2007). Best practice guidelines on prevention practice, research training, and social advocacy for psychologists. *The Counseling Psychologist*, 35, 493-566.
- Hansen, D. T. (2001). Teaching as a moral activity. In V. Richardson (Ed.), *Handbook of research on teaching*, 4th ed. (pp. 826-857). Washington, DC: American Educational Research Association.
- Holt, J., & Long, A.J. (1999). Moral guidance, moral philosophy, and moral issues in practice. *Nurse Education Today*, 19, 246-249.

- Kohlberg, L. (1969). Stage and sequence : the cognitive-developmental approach to socialization. In Goslin (ed.), *Handbook of Socialization Theory and Research* (pp.347-480). Chicago: Rand McNally and Company.
- Kohlberg, L. (1976). Moral stages and moralization: the cognitive developmental approach. In Lickona (ed.), *Moral development and Behavior: Theory Research and Social Issues* (pp. 31-53). New York : Holt Rinehart & Winston.
- Lehman, D. R., Lempert, R. O., & Nisbett, R. E. (1988). The effects of graduate training on reasoning: Formal discipline and thinking about everyday-life events. *American Psychologist*, 43, 431-442.
- Mahoney, M.J., & Thorensen, C.E. (1974). *Self-control : power to the person*. Monterey California : Brooks/Cole Publishing Company.
- McClelland, D.C., & Winter, D.G. (1971). *Motivating economic development through psychological training*. New York: The Free Press.
- Piyasirinon, N. (1998). *Psych-social correlates of voting behavior of students in Rajchapat University*. Master's Thesis, Graduate School of Social Development, National Institute of Developmental Administration, Thailand.
- Nation, M., Crusto, C., Wandersman, A., Kumpfer, K., Seybolt, D., & Morrissey-Kane, E. (2003). What works in prevention. principles and effective programs. *American Psychologist*, 58, 449-456.
- Nuntapet, K. (2000). Attitudes of Buddhist monks towards their role in social development. Master's Thesis, Graduate School of Social Development, National Institute of Developmental Administration, Thailand.
- Rotter, J.B. (1966). Generalized expectancies for internal versus external locus of control of reinforcement. *Psychological Monographs*, 80 (1), whole issue.
- Sellman, D. (1996). Why teach ethics to nurses? *Nurse Education today*, 16(1), 44-48.
- Watcharatanin, K. (2003). *Antecedent and consequent factors relating to volunteering behavior of university students*. Master's Thesis, Graduate School of Social Development, National Institute of Developmental Administration, Thailand.
- Weissberg, R.P., Kumpfer, K.L., & Seligman, M.E.P. (2003). Prevention that work for children and youth: An introduction. *American Psychologist*, 58, 425-432.

Willemse, T.M., Lunenberg, M.L. & Korthagen, F. (2005). Value education: a challenge for teacher educators. *Teaching and Teacher Education*, 21 (2), 205-217.

Yodrabum, S. (2005). *Integration of family, educational institute, and psychological characteristics as correlates of intention to take responsibility for future family in undergraduate male students*. Master's Thesis, Graduate School of Social and Environmental Development, National Institute of Developmental Administration, Thailand.