

Comparing the academic self-efficacy in students with entity and incremental intelligence theory

¹Vali Khalkhali* ; ²Hamid Reza Aryanpour

¹ PhD, Department of Psychology, Malayer Branch, Islamic Azad University, Malayer, Iran

² Department of Psychology, Ardakan Higher Education Complex, Ardakan, Iran

Abstract

Self-efficacy is an important influence on human achievement in a wide variety of settings, including education, health, sports, and work. Students' intelligence theories could help us to predict students' self-efficacy. The goal of the present research was to compare the self-efficacy in students with entity and incremental intelligence theory in classroom. Participants were 108 seventh male grade students from Iran. Questionnaires were used to assess intelligence theories and self-efficacy. Results shown that students with entity intellectual theory reported lower self-efficacy compared with students who had incremental theory about their intelligence. When students keep felxiable beliefs about their intelligence, in turn, influences their beliefs about what they can do in terms of a particular task or context and support students' motivation in difficult tasks relative to rigid and entity strategies. Teachers need encourgae incremental intelligence theory to promot self-efficacy and their resistance in acheivement situations.

Keywords: *Intelligence self-theories; self-efficacy; entity theory; incremental theory.*

1. Introduction

Self-efficacy refers to perceived capabilities for learning or performing actions at designated levels [1]. Students' self-efficacy, their beliefs about what they can do in term of a particular task, has likewise been shown to influence motivational and behavioral processes [2]. Self-efficacy has important influence on human achievement in a wide variety of settings, including education, health, sports, and work [1].

According to Bandura's [3, 1] social cognitive theory, individuals develop their self-efficacy by four informational sources. The first source is mastery experience, and is the strongest source [3]. If one judged the performance was good, he perceived efficacy is high. If one judged the performance was not good enough, he perceived efficacy is low. The second source is vicarious experience. Students only do not rely to mastery experience. Vicarious experiences provide students with an opportunity to witness the successes and failures of others and may thereby alter self-efficacy. The third source is social persuasions. Teachers, administrators and parents often try to convince students that can do a certain behavior. Social persuasions can enhanced persistent until a person overcame on obstacles [4]. Finally, physiological and affective states, including stress, fatigue, anxiety, and mood can also influence perceived capability [1].

Self-efficacy has been shown to be a powerful influence on individuals' motivation, achievement, and self-regulation [1, 5, and 6]. In education, it has been shown to affect students' choices of activities, effort expended, persistence, interest, and achievement [6, 7, and 8]. Compared with students who doubt their capabilities to learn or to perform well, those with high self-efficacy

* Corresponding author. Tel.: +98-912-282-7792
E-mail address: V.Khalkhali@iau-malayer.ac.ir

participate more readily, work harder, persist longer, show greater interest in learning, and achieve at higher levels [1].

Self-efficacy also helps determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations. People with a strong sense of efficacy are apt to approach difficult tasks as challenges to be mastered rather than as threats to be avoided. They set challenging goals and maintain strong commitment to them, heighten and sustain their efforts in the face of failure, and more quickly recover their sense of self-efficacy after setbacks. Conversely, people with low self-efficacy may believe that things are more difficult than they really are—a belief that can foster anxiety, stress, depression, and a narrow vision of how best to solve a problem. Self-efficacy can influence one's ultimate accomplishments and lead to a self-fulfilling prophecy in which one accomplishes what one believes one can accomplish [9].

Self-efficacy is strongly related to effort and task persistence [9, 10, and 8]. On the other hand, Considerable research also has revealed that a person's intelligence view can have a significant impact on the effort they expend on a task as well as their performance on the task [12, 13]. Students who believe that a particular ability can be improved over time come to have a higher belief in their own capabilities [14]. Dweck and Master [15] believe the beliefs that students have about intelligence and ability can affect their sense of self-efficacy and self-esteem. Dweck & Leggett [16] have long noted that individuals differ in their beliefs regarding the fixedness or malleability of intelligence. Implicit beliefs lie along a continuum, anchored at one end by entity beliefs and at the other by incremental beliefs. Individuals who hold entity beliefs perceive that key attributes are fixed, and that no amount of hard work can change a person's most basic characteristics. At the other end of the spectrum are individuals who adhere to incremental beliefs, believing that even the most basic qualities that characterize a person can be changed through effort and hard work [17, 16].

In challenging tasks, Students with an incremental theory show less and less anxiety over the task while anxiety does not change for students with an entity theory. The students who believe that they can increase their ability view the task as an opportunity to improve their skills even if they make mistakes as they learn, while the students who believe that their ability is fixed become frustrated and lose their confidence because of their mistakes. It seems students' intelligence theory could effect on their self-efficacy beliefs, in turn, are likely to decrease or increase effort in the face of difficulty and persist at a task when they have the requisite skills. In this study, based on self-theories, we expected that entity versus incremental theory would have a debilitating role on self-efficacy.

2. Method

2.1. Participants

The study sample contained 108 seventh grad male students (age: $M = 11.6$, $SD = 0.51$).

2.2. Measures

Self-Efficacy: The Academic Self-efficacy Measure consists of ten items [18]. Students responded items measured on scale ranging from 1 (strongly disagree) to 7 (strongly agree). Academic self-efficacy represents differences in beliefs/expectancies related to students' confidence in their own abilities, determination to succeed, and perseverance in the face of obstacles. The reliability of this instrument (Cronbach's alpha) in this survey was .81.

Theory of intelligence. The scale consists of six items: three entity theory statements (e.g., "you have a certain amount of intelligence, and you really cannot do much to change it"); and

three incremental theory statements (e.g., “you can always greatly change how intelligent you are”; [13]. The incremental theory items were reverse scored and a mean theory of intelligence score was calculated for the six items, with the low end (1) representing a pure entity theory, and the high end (6) agreement with an incremental theory. Blackwell, Trzesniewski and Dweck [19] reported .77 by test – retest reliability method for this measure.

2.3. Procedure

Teachers obtained permission for the study. First author attended in participants’ regular classes and used standardized instructions. Subjects were assured about the confidentiality of their answers. The questionnaire was administrated with the absence of teachers. After answering students’ questions, the administrators asked the students to complete the questionnaire. Finally, students were thanked for their participation.

3. Results

Firstly, the data collected were analyzed in descriptive statistics. In addition, descriptive statistics were followed by t test for independent groups. Table 1 presents the means and standard deviations of subjects in self-efficacy.

Table 1. The means and standard deviations of academic self-efficacy

	Entity Theory (n: 54)		Incremental Theory (n: 54)	
	M	S	M	S
Self-Efficacy	4.13	1.65	5.26	1.18

As shown in table 1, students with an incremental theory reported more self-efficacy in academic sittings. In continue, T test for independent groups indicated that participants’ degree of academic self-efficacy significantly differed across their intelligence theory (Table 2).

Table 2. T test results for academic self-efficacy means

	M	S	t (observed)	t (critical)	df	α
Incremental theory of intelligence	5.26	1.65	4.18	3.37	106	0.001
Entity theory of intelligence	4.13	1.18				

T test (see table 2) indicated that participants’ academic self-efficacy significantly differed across their intelligence beliefs.

4. Discussion

Based on Dweck’s self-theories, we reasoned that conditions designed to foster an incremental vs. entity theory of intelligence would result in greater academic self-efficacy, because when faced with new and difficult material that could lead to failure, individuals with a fixed view of intelligence are typically less persistent and exert less effort. They view additional effort as a signal to others and themselves that they do not have the ability to solve a challenging problem [20, 21]. Alternatively, individuals with a malleable view of intelligence tend to enjoy challenging environments and problems. When confronted with a challenge, their goal is not to prove their intelligence to themselves or to others, but rather to improve their intelligence through a more effortful process [21]. They view effort as a learning tool, suggesting that as more effort is expended, their intelligence will continue to expand [20]. These perspectives influence self-efficacy and ultimately learning and achievement. The hypothesis, which was studied in this research, was students with an incremental theory of intelligence feel more academic self-efficacy in classroom. Results supported the hypothesis. Data analyzes indicated that students with fixable beliefs about

their intelligence shown more academic self-efficacy. These findings are consistent with [14, 16, 22, and 23].

Self-efficacy refers to a person's belief that he or she has the resources to meet the demands of the situation [24]. Students who believe that a particular ability can be improved over time come to have a higher belief in their own capabilities [14]. When students' hold incremental beliefs the challenging tasks are likely to be experienced as opportunity to improve their intelligence through a more effortful process and view effort as a learning tool. They believe their resources are enough or can get them by effort to meet the demands of the situation. In contrast, students with an entity beliefs views challenging material as a signal to others and themselves that they do not have the ability to solve a challenging problem. They believe their resources are not enough to meet the demands of the situation, and cannot get them by effort, in turn, decrease their self-efficacy.

5. Conclusion

On this present research, it seems students' intelligence beliefs are playing role in their self-efficacy. The findings suggest students' flexible self-theory rather than fixed mindset yields important benefits: It promotes a more self-efficacy in academic sittings. In camper with Entity students, students who have incremental beliefs keep more resources to learning; they believe can promote their ability or intelligence by effort, self-efficacy is not fixed and could expand as more effort is expended. Effort can help them improve, regardless of their current level of ability. In contrast, when students believe that ability is unchangeable, then effort is not seen as a tool or resource for problem solving, in turn, decreases self-efficacy.

According to Bandura's social cognitive theory [2, 1], mastery experience is the strongest source for self-efficacy development. Since entity students do not believe to change their ability, their self-efficacy is at risk. They don't choose achievement situations to avoid failure to occur, in turn, inhibitors their personal development. When it comes to choosing a strategy for the future, they choose negative strategies, such as self-handicapping, and exhibit a maladaptive motivational pattern, negative cognitions, negative affect, reducing effort and aspiration, demonstrating lower levels of persistence and giving up the task easily [25, 26], choosing downward comparison [27]. Therefore, it is necessary incremental beliefs about intelligence should be encouraged. Incremental beliefs would promote more adaptive patterns, positive thoughts, positive affect, and effective problem-solving strategies. By providing increased opportunities for student input, helping them to work to their full potential and show their competence, guidance in the form of clear expectations and useful feedback, providing the opportunities to experience self-esteem, teachers can influence students' self-theories.

This study is not without limitations, our research is not experimental, and then we can't get casual explanations. It is limited because of male subjects and its cross-sectional nature. We did not control other variables, such as teachers' beliefs and motivational style, which seem to effect on independent variable. Hence, future research might plan experimental design to examining self-theories effect on self-efficacy, examine whether the present this findings could be generalized across female students and other cultural, and investigate other variable effect or role in self-efficacy.

References

1. Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
2. Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, 68, 202-248.
3. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
4. Goddard, R. D. (2001). An exploration of the relationship between collective efficacy and teacher efficacy. *Paper presented at the annual meeting of the American Educational Research Association Seattle*.

5. Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38, 30–38.
6. Pajares, F. (1997). Current directions in self-efficacy research. In M. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 10, pp. 1–49). Greenwich, CT: JAI Press
7. Pajares, F. (1996). Self-efficacy beliefs in achievement settings. *Review of Educational Research*, 66, 543–578.
8. Schunk, D.H. (1995). *Self-efficacy and education and instruction*. In Maddux, J.E. (Ed.). *Self-efficacy, adaptation, and adjustment: theory, research and application*. 281-303. New York, NY: Plenum.
9. Schunk & Pajares (2009). *Self-Efficacy Theory*. In Wentzel, Kathryn, R. & Wigfield, Allan (Eds.), *Handbook of Motivation at School* (pp. 33-53). New York & London: Taylor and Francis.
10. Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology*, 45, 1017–1028.
11. Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. *Organizational Behavior and Human Decision Processes*, 38, 92–113.
12. Dweck, C.S., and Elliot, E.S. (1983). Achievement motivation. In Mussen, P., and Hetherington, E.M. (Eds.), *Handbook of child psychology*, 643-691. New York, NY: Wiley.
13. Dweck, C. S. (1999). *Self Theories: Their role in motivation, personality, and development*. Philadelphia, PA: Psychology Press Taylor and Francis.
14. Wood, R., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision-making. *Journal of Personality and Social Psychology*, 56, 407–415.
15. Dweck, C. S., Master, A. (2009). *Self-Theories and Motivation: Students' Beliefs about Intelligence*. In Wentzel, Kathryn, R. & Wigfield, Allan (Eds.), *Handbook of Motivation at School* (pp. 123-141). New York & London: Taylor and Francis.
16. Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
17. Chiu, C., Dweck, C. S., Tong, J. Y., & Fu, J. H. (1997a). Implicit theories and conceptions of morality. *Journal of Personality and Social Psychology*, 73, 923–940.
18. McIlroy, D., & Bunting, B. (2002). Personality, behavior, and academic achievement: principles for educators to inculcate and students to model. *Contemporary Educational Psychology*, 27, 326-337.
19. Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent tradition: A longitudinal study and an intervention. *Child Development*, 78, 246–263.
20. Elliot, E.S., and Dweck, C.S. (1988). Goals: an approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54, 5-12.
21. Dweck, C.S., and Sorich, L.A. (1999). Mastery-oriented thinking. In Snyder, C.R. (Ed.), *Coping*, 232-251. New York, NY: Oxford University Press.
22. Jagacinski, C. M., & Nicholls, J. G. (1984). Conceptions of ability and related affects in task involvement and ego involvement. *Journal of Educational Psychology*, 76, 909–919.
23. Nicholls, J. G. (1983). Conceptions of ability and achievement motivation: A theory and its implications for education. In S. G. Paris, G. M. Olson, & H. W. Stevenson (Eds.), *Learning and motivation in the classroom* (pp. 211–237). Hillsdale, NJ: Erlbaum.
24. Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37, 122-147.
25. Heyman, G. D., & Dweck, C. S. (1998). Children's thinking about traits: Implications for judgments of the self and others. *Child Development*, 69, 392-403.
26. Kamins, M. L., & Dweck, C. S. (1999). Person vs. process praise and criticism: Implications for contingent self-worth and coping. *Developmental Psychology*, 35, 835-847.
27. Nussbaum, A. D., & Dweck, C. S. (2008). Defensiveness versus modes of self-esteem maintenance. *Personality and Social Psychology Bulletin*, 34, 599–612.