ISSN 1512-1801

COMPARING THE CONCEPTUAL AND ROTE LEARNING IN STUDENTS WITH INTERNAL AND EXTERNAL PERCEIVED LOCUS OF CAUSALITY

[1]Vali Khalkhali*; [2]Fatemeh Khalkhali
[1] Ph.D, Department of Psychology, Malayer Branch, Islamic Azad University, Malayer, Iran
[2] Organization of Education, Qazvin Province, Qazvin, Iran

Abstract
The goal of the present research was to compare the academic achievement in students with internal and external perceived locus of causality in classroom. Participants were 126 students aged between 12 and 14 years from Iran. Questionnaire was used to assess perceived locus of causality. Both conceptual and rote learning were assessed in relation to academic achievement. Results shown that students who had perceived locus of causality into the internal in classroom had more conceptual learning than students who had experienced external perceived locus of causality. Such results were not found for rote learning. It appears that internal and external perceived locus of causality are equally effective in predicting a literal memorization of the learning material as internal perceived locus of causality. Since internal perceived locus of causality predict more conceptual learning variance than controlling style, autonomy-supportive motivational style should be encouraged to promote adolescents' conceptual learning in classrooms.

Key Words*: Locus of Causality; Academic Achievement; Self-Determination Theory.*

1. Introduction

Many theorists concerned with promoting students' learning being have assumed that autonomy suppressing educator's behaviors have detrimental e□ects on children's development [1]. According to self-determination theory [SDT, 2], the term need for autonomy refers to the striving to realize one's authentic self, as reflected in one's basic needs and self-chosen values, interests and goals. SDT in particular has emphasized the negative impact of controlling adult behaviors [3].

Self-determination theory is useful in understanding the motivational, cognitive and affective processes of adolescents in classroom [4, 2]. SDT [5], theorizes that a continuum of different types of motivation exists, depending on the level of self-determination that an individual possesses. In self-determination theory [5], individuals are intrinsically motivated when they engage in an activity for the inherent satisfaction that they derive from the activity. They are extrinsically motivated when they engage in an activity for rewards attained or punishments avoided through the activity. However, within extrinsic motivation there is a continuum. External regulation is when the behaviour is controlled by external conditionalities (e.g., "I participate in classroom because I am forced to"). Introjected regulation is when the external conditionalities have been internalised to some extent, (e.g., "I participate in classroom because I would feel guilty otherwise"). Identified regulation is when the outcomes of the behaviour are consciously valued by the individual (e.g., "I participate in classroom because I value the health benefits"). Integrated regulation is when the outcomes of the behaviour are fully congruent with the individuals' other values (e.g., "I participate in classroom because it is part of who I am"). External and introjected regulations are relatively controlled forms of regulation, whereas identified, integrated, and intrinsic regulation are relatively autonomous forms of regulation. Finally, amotivation refers to a lack of either intrinsic or extrinsic

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

ISSN 1512-1801

motivation to partake in an activity. An amotivated individual perceives no worth while reasons for pursuing an activity and hence is completely lacking in self-determination.

According to the SDT [6], the transformation of external regulation into self-determined forms of regulation, as well as the stability of self-determined (intrinsic) motivation depends on three aspects [7]: The satisfaction of the basic, innate psychological needs for support of autonomy, support of competence, and social support. Autonomy refers to being the source of one's own behavior and achieving congruence between the activity and one's integrated sense of self. Competence refers to the need to have an effect on the environment and to achieve desired outcomes, and relatedness is the desire to feel connected to valued others [8]. The more these needs are satisfied, the greater the level of one's self-determination.

According to Ryan & Deci [2], people are more likely to be intrinsically motivated, that is, to do an activity simply for the enjoyment they derive from it, when they have a sense of volition and a feeling that the activity is concordant with one's integrated sense of self (autonomy/choice), when they can identify a link between their behavior and desired outcomes (competence) and when their behaviors are modeled or valued by significant others to whom these individuals feel related , such as a manager, a parent, a teacher or teammates (relatedness). activities which appear at first sight uninteresting (the person is therefore not intrinsically motivated) can be internalized into the autonomous self and finally even integrated, if the support of autonomy, competence and social relatedness is successful. Yet, the significance of the three basic needs for the explanation of action and experience can vary depending on the situation and the cultural context [5]. Intrapersonal and interpersonal contexts that support the satisfaction of these needs will promote a person's enjoyment of activities and the autonomous self-regulation of behaviors. According to this theory, Social contexts differ in the way communicate with peoples. Within SDT [9], these contexts are described as being controlling versus autonomy-supportive. The degree to which needs to autonomy, competence, and relatedness are satisfied by teachers influences on students' behavioral regulations that show the perceived loci of causality of individuals' behavioral goals and reflect qualitatively different reasons for the behavior chosen. Controlling environments produce an external locus of causality, thereby frustrating people's basic need for self-determination or autonomy, that is, their tendency to engage in a willing and volitional manner in an activity [10].

Studies among children have indicated that pressuring communication styles undermine persistence [11]. Such controlling environments produce an external locus of causality [12], thereby frustrating people's basic need for self-determination or autonomy, that is, their tendency to engage in a willing and volitional manner in an activity. A teacher's motivating style toward students can be conceptualized along a continuum that ranges from highly controlling to highly autonomy-supportive [13]. In general, autonomy-supportive teachers facilitate, whereas controlling teachers interfere with the congruence between students' self-determined inner motives and their classroom activity. Autonomy-supportive teachers facilitate this congruence by identifying and nurturing students' needs, interests, and preferences and by creating classroom opportunities for students to have these internal motives guide their learning and activity. In contrast, relatively controlling teachers interfere with students' inner motives because they tend to make salient a teacher-constructed instructional agenda that defines what students should think, feel, and do. To shape students' adherence toward that agenda, controlling teachers offer extrinsic incentives and pressuring language that essentially bypass students' inner motives.

When students have autonomy supportive teachers [13, 14] or when students perceive their teachers to be relatively autonomy supportive [15, 16], they will have the motivational foundation they need to become highly engaged in school [17].

In this study, we assessed two different aspects of performance: conceptual and rote learning. In rote learning; literal memorization of factual information is sufficient. In contrast, Conceptual

ISSN 1512-1801

learning requires deep and thoughtful processing of information and requires a more creative and integrative solution [18]. On the basis of SDT, we expected that controlling versus autonomy-supportive context would have a debilitating impact on conceptual learning because it produces an external perceived locus of causality [12]. We did not anticipate such differences for rote learning. Controlling environments can have a motivational effect so that people might display some behavioral engagement in the learning. However, the learning behavior is likely to be less committed and more superficial because it is primarily undertaken to overcome or suppress the pressuring forces that prompted the learning.

2. Method

2.1. Participants

The study sample contained 126 eighth and ninth grad male students (age: M = 13.141, SD = 0.73).

2.2. Measures

Perceived Locus of Causality scale. Firstly, scale was translated into Persian and Cronbach's alpha coefficients were calculated to assess their internal reliability. Students' Perceived Locus of Causality was assessed using Goudas, and his colleagues' Perceived Locus of Causality scale [PLOC; 19]. The students in the present study responded to 14 items (four items for external regulation and introjected regulation and three items for identified regulation, intrinsic motivation) measured on scales ranging from 1 (strongly disagree) to 7 (strongly agree). The number of subscales in the particular scale can be combined to form a Relative Autonomy Index (RAI). To form the RAI, the external subscale is weighted -2, the introjected subscale is weighted -1, the identified subscale is weighted +1, and the intrinsic subscale is weighted +2. RAI = 2 X Intrinsic + Identified - Introjected - 2 X External. If RAI<0, perceived locus of causality will be extrinsic, and If RAI>0, perceived locus of causality will be intrinsic. The PLOC scale has been used in various studies and has been shown to have clear factor structure and high internal reliabilities with the exception of introjected regulation whose Cronbach's alpha coefficient is usually slightly below .70 [20, 21]. The reliability of this instrument (Cronbach's alpha) in this survey was .78.

Academic acheivment. Participants took a test (20 questions) directly following the reading of the text material. Half the questions of each test assessed rote learning, and the other half assessed conceptual learning; these different types of questions were presented in random order. As for the conceptual learning, participants were given a set of questions that addressed the core ideas that were discussed in the text. As for the rote learning, participants were asked to insert a single word that was missing from a sentence that was literally taken from the reading material. The test questions had been constructed by the teachers. Two independent and trained raters who were blind to the nature of the study evaluated the answers by indicating whether the answer was correct (1) or incorrect (0). Interrater reliability as assessed by Pearson correlation was .98.

2.3. Procedure

Permission for the study was obtained by teachers. First author attended in participants' regular classes and used standardized instructions. Subjects were assured about the confidentially 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. Then, participants were asked to read during 25 min a sport text about track and field. The text was two pages. Finally, students took an achievement test about sport text, and thanked them for their participation.

3. Results

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

Table 1 presents the means and standard deviations of the four experimental conditions.

ISSN 1512-1801

Table 1. The means and standard deviations of the four experimental conditions

	External locus of causality (n : 71)	Internal locus of causality (n : 55)
Rote learning	*M:* 7.67 *S:* 3.14	*M:* 7.31 *S:* 3.08
Conceptual learning	*M:* 3.12 *S:* 1.12	*M:* 5.27 *S:* 1.24

T test for independent groups indicated that participants' degree of subjective vitality significantly differed across their perceived locus of causality (Table 2).

Table 2. T test results for rote learning means

	M	S	t (observed)	t (critical)	df	α
External locus of causality	7.67	3.14	1.16	1.67	124	0.010
Internal locus of causality	7.31	3.08				

T test (see table 2) indicated that there is no difference between rote learning means in tow groups.

Table 3. T test results for conceptual learning means

	M	S	t (observed)	t (critical)	df	α
External locus of causality	3.12	3.11	6.84	1.67	124	0.000
Internal locus of causality	5.27	3.24				

T test (see table 3) indicated that participants' conceptual learning significantly differed across their perceived locus of causality.

4. Discussion

On the basis of SDT, we reasoned that conditions designed to foster an internal vs. external perceived locus of causality would result in greater conceptual learning, because it elicits self-determined regulation for performing an activity. Such effects were not expected for rote learning. Results supported the hypothesis. Results indicated that those with internally locus of causality shown more conceptual learning. Conceptual learning requires deep and thoughtful processing of information and requires a more creative and integrative solution, when students' perceived locus of control is extrinsic the learning is unlikely to be experienced as volitional but is rather undertaken in an attempt to suppress the internal or external pressures that caused the learning, participants are more likely to display a narrowly focused and more superficial engagement in the learning. However, there is no difference in rote learning, as controlling environments, can have a motivational effect so that people might display some behavioral engagement in the learning. These findings are consistent with Deci, Driver, Hotchkiss, Robbins, & Wilson [22], Grolnick & Ryan [15], and Vansteenkiste, M., and et al, [23].

On the basis of SDT, we reasoned that external perceived locus of causality would undermine conceptual learning by frustrating students' basic need for self-determination or autonomy, that is, their tendency to engage in a willing and volitional manner in an activity. Internal perceived locus of causality was found to promote students' conceptual learning because students regulate their participation in a more autonomous manner. Results indicate that instructors can considerably affect early adolescents' learning orientation, self-determined learning, and achievement. At the same time, the present results suggest that the environment can also block this learning process.

5. Conclusion

The present research shows how students perceive locus of causality to regulate their activity participation. The findings suggest that linking early adolescents' learning to an intrinsic rather than

ISSN 1512-1801

an extrinsic locus of causality yields important benefits: It promotes a more integrative and conceptual processing of the learning material. Such results were not found for rote learning, however. It appears that, on average, extrinsic perceived locus of causality is equally effective in promoting a literal memorization of the learning material as intrinsic perceived locus of causality

From a practical point of view, if teachers are concern with students' conceptual learning, since perceived locus of causality could influences on learning quality, autonomy-supportive motivational style should be encouraged in classroom. Autonomy-supportive motivational style may be developed by providing appropriate expression of choice and support, promote class structures that are autonomy-supportive and curriculum that are interesting and relevant to the students.

Limitations and Future Research

The current study is not without its limitations. First, it was not an experimental research; we could not manipulate variables. Second, we used a single measure of conceptual learning. Third, the role of perceived autonomy support from teachers tells only part of the picture in terms of the influences of innate psychological needs on pupils' motivation in learning. Hence, future research might make an experimental research. Moreover, Future studies can look at the influence of all the three innate psychological needs and/or perceived autonomy support from parents and/or peers as well.

References

1. Maehr, M. L., & Midgley, C. (1996). *Transforming school cultures*. Boulder, CO: Westview.
2. Ryan, R. M., & Deci, E. L. (2000). *Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being*. American Psychologist, 55, 54–56.
3. Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). *Internalization within the family: the self-determination theory perspective*. In J. E. Grusec, & L. Kuczynski (Eds.), Parenting and children's internalization of values (pp. 18. de Charms, R. (1968). *Personal Causation: The Internal Affective Determinants of Behavior*. New York, NY: Academic Press.
4. Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior* (2nd ed.). New York: Plenum Press.
5. Deci, E. L., & Ryan, R. M. (2000). *The ''what'' and ''why'' of goal pursuits: human needs and the self- determination of behavior.* Psychological Inquiry, 11, 227–268.
6. Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. In E. L. Deci, & R. M. Ryan (Eds.), *Overview of self-determination theory: An organismic dialectical perspective* (pp. 3–33). Rochester, NY: The University of Rochester Press.
7. Black, A. E., & Deci, E. L. (2000). The *effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective.* Science Education, 84, 740 – 756.
8. Ryan, R. M., & Deci, E. L. (2001). To be happy or to be self-fulfilled: A review of research on hedonic and eudemonic weel-being. In S. Fiske (ED.), Annual Review of psychological (vole.52, PP.141-166). Palo Annual Reviews, Ice.
9. Ryan, R. M., & Deci, E. L. (2000b). *Self-determination theory and the facilitation of intrinsic motivation, social development and well-being.* American Psychologist, 55, 68–78.
10. Chatzisarantis, N. L. D., Hagger, M. S., Biddle, S. J. H., Smith, B., & Wang, J. C. K. (2003). *A meta-analysis of perceived locus of causality in exercise, sport, and physical education contexts.* Journal of Sport and Exercise Psychology, 25, 284–306.
11. Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). *Motivation in education: The self-determination perspective*. Educational Psychologist, 26,325– 346.

ISSN 1512-1801

12. Goudas, M., Biddle, S. J. H., & Fox, K. R. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. British Journal of Educational Psychology, 64, 453–463.135 e 161). New York: Wiley.
13. Deci, E. L., Schwartz, A. J., Sheinman, L., & Ryan, R. M. (1981). *An instrument to assess adults' orientations toward control versus autonomy with children*: Reflections on intrinsic motivation and perceived competence. Journal of Educational Psychology, 73, 642–650.
14. Deci, E. L., Spiegel, N. H., Ryan, R. M., Koestner, R., & Kauffman, M. (1982). Effects *of performance standards on teaching styles: Behavior of controlling teachers.* Journal of Educational Psychology, 74, 852– 859.
15. Grolnick, W. S., & Ryan, R. M. (1987). *Autonomy in early adolescents' learning: An experimental and individual difference investigation*. Journal of Personality and Social Psychology, 52, 890 – 898.
16. Rigby, C. S., Deci, E. L., Patrick, B. P., & Ryan, R. M. (1992). *Beyond the intrinsic–extrinsic dichotomy: Self-determination in motivation and learning*. Motivation and Emotion, 16, 165–185.
17. Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). *Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout.* Journal of Personality and Social Psychology, 72, 1161–1176.
18. Entwistle, N., & Entwistle, A. (1991). Contrasting forms of understanding for degree examinations: The student perspective and its implications. Higher Education, 22, 205 – 277.
19. Goudas, M., Biddle, S. J. H., & Fox, K. R. (1994). *Perceived locus of causality, goal orientations, and perceived competence in school physical education classes*. British Journal of Educational Psychology, 64, 453–463.
20. Ntoumanis, N. (2001). *A self-determination approach to the understanding of motivation in physical education.* British Journal of Educational Psychology, 71, 225–242.
21. Ntoumanis, N. (2005). *A prospective study of participation in optional school physical education using a self-determination theory framework.* Journal of Educational Psychology, 97, 444–453.
22. Deci, E. L., Driver, R. E., Hotchkiss, L., Robbins, R. J., & Wilson, I. M. (1993). The *relation of mothers' controlling vocalizations to early adolescents' intrinsic motivation*.Journal of Experimental Child Psychology, 55, 151 – 162.
23. Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). *Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style up on early adolescents academic achievement.* Child Development, 76, 483-501.

Article received: 2011-11-15