

The Role of Cognitive Flexibility and Spiritual Intelligence in the Research Self-Efficacy of Faculty Members of Payam Noor University of Kermanshah Province

Alireza Merati

Department of Educational Sciences of Payame Noor University, PO BOX 19395-3697 Tehran, Iran

ABSTRACT — Nowadays, one of the main demands of each country, especially in scientific settings, is dynamism in research. Indeed, universities and their faculty members have indispensable role in this regard and are influenced by several factors. The aim of this study is to investigate the role of cognitive flexibility and spiritual intelligence in the self-efficacy of faculty members of Payam Noor University of Kermanshah Province that is conducted by cross-correlation technique among a total of 140 faculty members of in the academic year of 2014-2015. By the use of sampling method, a total of 100 individuals were selected as sample volume. For the purpose of collecting information, research self-efficacy, spiritual intelligence and cognitive flexibility questionnaire were utilized and results obtained were analyzed using spss (IBM) 22, independent two-sample t-test, Pierson correlation and regression. The results showed that there was a significant difference between male and female faculty members in terms of spiritual intelligence and cognitive flexibility as well as the research self-efficacy. In addition, there was a significant positive correlation between research self-efficacy and cognitive flexibility as well as spiritual intelligence variables. According to the obtained results, it is recommended that the study may be conducted in other institutions and universities as well as among the students and lecturers communities in quality or present form.

KEY WORDS: cognitive flexibility, spiritual intelligence, research self-efficacy.

Introduction

Research is one of the most important and essential skills in high levels of education for students and teachers. This feature is very important in improving individual and community scientific services. One of the main topics emphasized in this area is research beliefs and attitudes about the research especially the researcher's beliefs (Garavand, 2014). Research beliefs to avoid or conduct a research have important effects and can be an important factor to (not to) conduct a research (Kalsa, 2010). Those who do not have enough confidence in their ability to perform a task or ignore the role of effort and practice to perform tasks feel hopelessness. But those who consider these components and give importance to various mental aspects while performing their tasks will definitely feel the sense of success (Salehi et al., 2006). Self-efficacy is one's personal judgment of his ability to organize and carry out an activity (Seraj Khorami, 2003). According to Bandura, self-efficacy is the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations (Nooranipour, 2006). Self-efficacy is one's belief through which he can behave successfully to achieve a desired goal. Four main sources for self-efficacy include: previous successful experiences, verbal persuasion, alternate experiences and physiological arousal (Ahmadkhaniha, 2008). Self-efficacy is related to the individual's beliefs that he can perform under certain conditions. Different people with similar skills in different situations may demonstrate poor, moderate or good performance due to high or low self-efficacy beliefs. Skills are easily influenced by person's self-doubts; therefore, a competent person may not well use his ability due to a lack of confidence to his ability and competence. Therefore, self-efficacy will increase people's effort, perseverance and motivation and is one of the most effective determinants of individuals' performance (Habibi et al., 2012). According to Lu et al. (2010), research self-efficacy is individuals' confident about their abilities and research skills. Effective functioning requires skills and belief in the ability to perform them (Abdollahi, 2011). Salehi quoting from Philips states that research self-efficacy is significantly related to research productions (Salehi, 2011). According to Mollikine et al., research self-efficacy which shows individuals' confidence in their abilities to complete a research work leads to pursue research professionally (Mollikine, 2007). In fact, scientific productions are one of the main development indices in each government as a component of scientific communities and their output. The main factor to determine a country's capacity to compete at the international levels and global markets is its development in technical and research knowledge. Countries which fail to meet this criterion and do not attempt to achieve knowledge and teachings and do not have clear goals will be less able to even take advantage of other findings and be present in the field of international development. Therefore, identification of factors affecting research performance and strengthening them can be very helpful. Cognitive adaptability and spiritual intelligence are factors that can affect self-efficacy.

This article is extracted from a plan as *The Role of Cognitive Flexibility and Spiritual Intelligence in the Research Self-Efficacy of Faculty Members of Payam Noor University of Kermanshah Province* Which was sponsored by payame noor university.

Adaptability has been defined from different points of view, for example, Lothar (2000) defines adaptability to cope with stressful situations in two emotional and behavioral dimensions. Connor and Davidson (2003) also consider cognitive adaptability as individual's capability to establish biological-psychological balance in dangerous conditions. More precisely, according to Garnezy and Masten (2003) and Waller (2010), adaptability is a process, ability or outcome of a successful adaptation with threatening situations (Quoted from Samani et al., 2007) which can create positive compliance, despite traumatic experiences in the individual. Therefore, adaptability is the ability to gain strength after exposure to adverse conditions and overcome difficult situations and return to the initial balance or achieve a higher level of balance leading to successful adaptation in life. Despite these various definitions, a common point in all of these definitions is to achieve positive adaptation in traumatic and risky situations. The difference in definitions is due to different approaches about adaptability. In fact, there are two approaches about adaptability. Variable-oriented approach that explores adaptability features and variables, such as the adaptability itself, and individual-oriented approach based on which the ability of adaptable people can be distinguished from others (Vide et al., 2006). Psychologists are divided into two groups in their attitude toward the concept of intelligence, the first group believes that intelligence is consisted of total and single talent. However, the second group believes that there are different types of intelligence. As intelligence is an abstract concept it is difficult to define it and in fact it does not have any tangible, objective and physical base. Intelligence is a general label for a group of processes that can be inferred from individuals' responses and behaviors (Ganji, 2007). In terms of physiology, intelligence is a phenomenon which becomes evident due to cerebral cortex activity and mentally is responsible for adaptation of the organism with environmental and biological conditions (Azimi, 1987). According to Carter (2001), intelligence is a set of capabilities that can be used to solve problems and create products and is considered valuable in the society and culture. According to Gage and Berliner (1992), there are three categories for intelligence: (1) the ability to deal with abstractions, meaning that intelligent people deal with more abstractions (ideas, symbols, relationships, concepts, principles) than concreteness (mechanical devices), (2) the ability to solve problems, meaning the ability to deal with new situations, not only a learned response to a situation, and (3) the ability of learning, especially learning from abstractions, including abstractions in words and other symbols and the ability to use them. Wechsler defines intelligence as "individual's total talent" to understand his world and satisfy his expectations. In his view, intelligence involves individual's abilities to think logically, act purposefully and deal effectively with the environment (Sharifi, 2008). Intelligence is divided into physical, cognitive, emotional and spiritual quotient. Physical quotient is indicated with PQ and logical or cognitive quotient with IQ, which currently is considered more than other kinds of intelligence in the education system. There is another level after IQ, i.e. EQ which contributes to success in the labor market and helps us to communicate with others and in this regard is more important and somewhat has the capability to predict. The last layer of intelligence is spiritual quotient (SQ) including inner guidance and wisdom, maintaining equanimity, maintaining inner and outer peace and function with insight and kindness. Spiritual quotient only belongs to human. Individual's willingness and ability can be developed by spiritual quotient to achieve the objectives and values (Abdollahzadeh et al., 2009). The concept of spiritual quotient in psychology academic literature was introduced by Stevens for the first time (1996) and later by Emones (1999). Parallel to this process, Gardner (1999) reviewed the concept of spiritual quotient in different dimensions and challenged the acceptance of the combining concept of spirituality and intelligence (Sohrabi, 2008). According to Zohar and Marshall (2000), spiritual intelligence is an ultimate intelligence which shows and solves semantic and normative issues for us. According to Vogan (2003), spiritual intelligence clears the mind and relates the spirit to the infrastructure of existence to help the individual to distinguish the fact from imagination (sensory error). The concept in different cultures is considered as love, wisdom and service. Amram (2005) believes that spiritual intelligence includes having a sense of meaning and mission in life. "The sense of sacredness in life" is the balanced understanding of value of substance that improves the world. Mac Hawk (2002) says about spiritual quotient: SQ has always existed in human history in the form of organized belief. Compassion, self-esteem, love for others, adaptability and self-knowledge are praiseworthy goals of spiritual intelligence. According to Wigglesworth (2004), quoted by Shorabi (2006), spiritual intelligence is the ability to behave with compassion and wisdom while maintaining inner and outer tranquility regardless of situations. Clark (2009) in a study to investigate the factors affecting self-efficacy in music students concluded that students' self-efficacy is positively related to their success in music (Zhong, 2010). Mara and Bokou conducted a research on female engineering students and found that a strong sense of self-efficacy can lead to practical applications (Burton, 2010). Arshadi in a research states that self-efficacy is effective on people's motivation (Hägglund, 2007). Gomez et al. (2010) also reached the similar results in their research on the role of self-efficacy in mountaineering and climbing (Philips, 2011). They found that people's lack of confidence in their abilities affects their efforts to conquer the summit. Despite the research areas on self-efficacy, unfortunately, little studies have been conducted on research self-efficacy, while it is the foundation of all activities in scientific groups and organizations for academics and students. In fact, research self-efficacy of teachers can have significant effects on students, and more importantly, build a powerful framework for scientific structure of the society. Therefore, it is very necessary to research in this field and to identify important factors affecting it.

Materials and methods

This was a descriptive correlational study conducted on Payame Noor University, Kermanshah Province in 2014-15 among 140 faculty members from whom 100 teachers were selected by convenience sampling who responded to questions. In this study, the measuring tool was a 42-item-standard questionnaire designed by Ali Badie et al. to measure spiritual intelligence on a five-point Likert scale and content validity and Cronbach's alpha coefficient were used to determine its validity and reliability. The coefficient alpha achieved was 86% which is an acceptable level (Merati, 2014); the value obtained by Ali Badie et al. (2014) was 85%. Cognitive adaptability questionnaire designed by Dennis and Van Der Wal was also used which is a short 20-item self-

report questionnaire to measure a kind of cognitive adaptability which is necessary to successfully challenge and replace inefficient thoughts with more efficient ones. The method of scoring is based on a seven-point Likert scale. Dennis and Vander Wal (2010) in a research showed that this questionnaire has good factor structure, convergent and concurrent validity. Concurrent validity of the questionnaire with Beck Depression Inventory (BDI-II) is -0.39 and its convergent validity with Martin and Rubin's Cognitive Flexibility Scale was 0.75. The researchers obtained the reliability 0.91 using Cronbach's alpha and 0.81 using test-retest method. In Iran, Shareh et al. (2011) reported the test-retest reliability coefficient 0.71 and Cronbach's alpha coefficient for the test 0.90. Also CFI has good factorial, convergent and concurrent validity in Iran (Shareh, 2011). The researcher-made research self-efficacy questionnaire designed by Salehi et al. was another questionnaire in which seven-step model of Lawrence Newman and other dimensions were used. A five-point Likert scale was used in which minimum and maximum scores are 55 and 275, respectively, and its subcomponents are: statistical and analytical self-efficacy 13 items (minimum 13 and maximum 65 scores), self-efficacy in conceptualization 12 items (minimum 12 and maximum 60 scores), efficacy in method 11 items (minimum 11 and maximum 55 scores), self-efficacy in qualitative research 5 items (minimum 5 and maximum 25 scores), self-efficacy in reporting 6 items (minimum 6 and maximum 30 scores), self-efficacy in skills for searching and translating English texts 5 items (minimum 5 and maximum 25 scores), ethics 3 items (minimum 3 and maximum 15 scores) with factor loading of 30% which explains 62% of the variance. Salehi et al. used Cronbach's alpha coefficient to test the reliability of their questionnaire and obtained 0.97 for the total questionnaire, 0.92 for statistical and analytical self-efficacy, 0.91 for self-efficacy in conceptualization, 0.91 for self-efficacy in method, 0.92 for self-efficacy in qualitative research, 0.88 for self-efficacy in reporting, 0.76 for skills and 0.83 for ethics. All coefficients showed acceptable reliability for the questionnaire. In this study, Cronbach's alpha was also used to determine the reliability that the results show 0.94 for the total questionnaire, 0.93 for statistical and analytical self-efficacy, 0.90 for self-efficacy in conceptualization, 0.92 for self-efficacy in method, 0.88 for self-efficacy in qualitative research, 0.85 for self-efficacy in reporting, 0.77 for skills and 0.84 for ethics. The results were analyzed by SPSS IBM 22 and descriptive and inferential statistics, Pearson correlation coefficient, independent t-test and regression analysis.

Findings

Table 1. Descriptive statistics

Variable	No	sex	mean	Standard deviation	Min	max	midian
Research Self-Efficacy	50	male	28/09	6/97	22	63	27/50
	50	female	27/11	6/33	14	54	27
Spiritual Intelligence	50	male	80/11	4/66	68	193	108
	50	female	71/01	5/09	49	174	99
Cognitive Flexibility	50	male	49/54	7/01	38	137	68
	50	female	43/33	6/11	36	124	63

Table 2 .T-test for independent groups to study the differences between subjects

Variable	sex	mean	Standard deviation	df	sig
Research Self-Efficacy	male	28/09	6/97	63	0/001
	female	27/11	6/33	54	
Spiritual Intelligence	male	80/11	4/66	71	0/003
	female	71/01	5/09	67	
Cognitive Flexibility	male	49/54	7/01	48	0/001
	female	43/33	6/11	32	

Table 3 .The data analysis, research self-efficacy scale and its subscales between the spiritual intelligence and cognitive flexibility

Variable	Cognitive Flexibility		Spiritual Intelligence	
	sig	correlation	sig	correlation
General Self-Efficacy Scale	0/01	0/68	0/03	0/54
Statistical and analytical efficacy	0/01	0/49	0/05	0/33
Efficacy in the conceptualization	0/02	0/60	0/03	0/56
Efficacy in Patients and Methods	0/01	0/53	0/01	0/31
Self-reporting	0/01	0/48	0/01	0/28
Search and efficacy in translation	0/01	0/45	0/04	0/11
Morality	0/01	0/50	0/03	0/25
General Self-Efficacy Scale	0/01	0/48	0/001	0/48

The results of Pearson correlation between total research self-efficacy scale and its subscales and spiritual intelligence and cognitive adaptability. Simple and multiple regression coefficients were used to evaluate whether or not research self-efficacy components can be predicted through spiritual intelligence and cognitive adaptability. The results showed that both variables can predict research self-efficacy and its components ($p=0.01$ and $p=0.03$). This prediction power can be observed in the table for both self-efficacy components; however, the correlation of spiritual intelligence is far weaker than cognitive adaptability.

Table 4. Standardized regression coefficients of predictor variables in predicting research self-efficacy

Predictor variables	Regression	Error standard deviation	Standardized regression coefficients	T	sig
Spiritual Intelligence	0/002	0/03	0/02	13/44	0/003
Cognitive Flexibility	0/01	0/03	0/07	3/79	0/01

T-test of independent groups was used to evaluate whether or not there is a significant difference between mean scores of male and female teachers in terms of research variables. For this purpose, using Levene's test for equality of variances it was indicated that the variance of both groups is equal in terms of research self-efficacy as p-value obtained was greater than 0.05, therefore the null hypothesis that indicated equal variances was confirmed. The results of t-test of independent groups showed that there is a significant difference between male and female teachers in terms of research self-efficacy, spiritual intelligence and cognitive adaptability ($t=2.76$ and $p=0.007$).

Discussion

This study evaluated the role of cognitive adaptability and spiritual intelligence in research self-efficacy of male and female teachers. In this regard, the results of the Pearson correlation coefficient showed that there is a significant positive correlation between spiritual intelligence and cognitive adaptability and research self-efficacy and the results of multiple regression analysis showed that our predictor scales can predict research self-efficacy and its subscales. This finding is consistent with the findings of Philips (Salehi, 2006), Schwartz and Luszczynski (2007), Ogunyemi and Mabekoje (2009), Sioka Cheng and Stephen (2000), Clark (2010), and Gomes et al. (2010). Philips (2011) in his study concluded that research self-efficacy is significantly related to research productions. To explain this finding it can be said that self-efficacy beliefs i.e. people's judgments about their abilities to perform tasks are an important performance determinant (Garavand et al. quoted from Keramati, 2011). The results also showed that there is a difference between male and female teachers in terms of research self-efficacy. Thus, difference between male and female teachers in terms of research self-efficacy can be explained in the way that in our living and working environments a traditional view from the society and also from the individual is imposed on people and in fact society's expectations from men and women are different and this can be observed in research performance of male and female teachers. Saeedzadeh quoting from Bets and Hacker states that differences in gender socialization which led to different perception of self-efficacy information resources between boys and girls is the reason for different performance of these two groups. Therefore, the more gender stereotypes perceptions are perceived in completing a task, the more there is a possibility of performance differences between men and women (Saeedzadeh, 2007). It seems that in this study there is the same view about male and female teachers.

Another result is the correlation between cognitive adaptability and research self-efficacy. This finding is consistent with the findings of Michael Grift (2000), Zimmer et al. (2007), Heibati (2003), Hesting et al. (2005), and Victor et al. (2009). The findings indicate a high adaptability can lead to a high efficiency. However, this finding can vary in different cultures. For example, it has had positive consequences in collectivist cultures such as China and Japan, unlike Western individualistic societies (Geroske, 2001). From the perspective of Elson (1999), adaptability refers to the variability of roles, rules, control and discipline of the family. In this aspect the stability against changes is emphasized and in the case of adaptability, managements and operational decisions, especially in relation to collective activities such as research, are in the form of democratic activities and are less authoritarian, which in turn increases self-efficacy. Elson also believes that successful people have moderate self-efficacy. Strict and systemic and very adaptive people may have much lower self-efficacy than others. To explain this result it can be said that adaptability has a double function; according to Erich Fromm (1990), increased adaptability and freedom can pave the way for individuals' development, but at the same time they can cause severe dependency and attachment. Summing up the comments of Fromm and Elson, it can be said that moderate adaptability is necessary.

The most important limitation of this study was the lack of adequate resources in the field of self-efficacy and it is recommended that qualitative research be conducted with similar issues. This variable can also be used for other universities, teachers or students.

References

1. Habibi R. kareshki H. dashtgard A. heydari A. talae A (2013). Validating and determine drug efficacy Bramson reliability. Research Journal hakim. Spring 2013 the period 15 . No 1 pp 53-60
2. Geranad H. kareshki h. ahanchian m. 2015. The relationship between self-management with performance management in Mashhad University of Medical Sciences. Iranian Journal of Medical Education. Spring 2015. No 14 pp 41-51
3. Merati A. The effect of spiritual intelligence on employee empowerment PNU Kermanshah. Print article at hand. Journal of Social Health
4. Heybati kh. Check parenting practices and its relationship with cognitive flexibility. Journal of Psychology 20, pp. 315-303
5. Abdollahi B. [The role of self-efficacy in empowerment employees].Tehran:Tadbir; 2006:35-165.[Persian]
6. Ahmadvani HR, Gharraeipour M, Panaghii L. The Efficacy Developing Management and Cognitive Behavioral Therapy in Developing to Narcotic Substance. Journal Psychiatry and Clinical Psychology of Iran 2008; 4(3): 281-288. (in Persian)
7. Burton NW, Pakenham KI, Brown WJ. Feasibility and effectiveness of psychosocial resilience training: A pilot study of the READY program. Psychol Health Med 2010;15(3):266-77.
8. Carter. M. (2001), Strategic planning (in nonprofit or for profit organizations), <http://www.Strategicplanning.com>.
9. Dennis JP, Vander Wal JS. The cognitive flexibility inventory: Instrument development and estimates of reliability and validity. Cogn Ther Res 2010;34(3):241-53.
10. Grusec, J.R. (2001). Correlates of authoritarian parenting in individualist and collectivist cultures and implications for understanding the transmission of values. *Journal of cross-cultural Psychology*, 32, 202-212.
11. Haglund ME M, Nestadt PS, Cooper NS, Southwick SM, Charney DS. Psychobiological mechanisms of resilience: relevance to prevention and treatment of stress-related psychopathology. Dev Psychopathol 2007;19(3):889-920.
12. Jerusalem, M., & Mittag, W. (1995). Self-efficacy in stressful life transition. In Bandura self-efficacy in changing societies. New York Cambridge: University Press.
13. Keramati H, Shahraray M. [investigating the role of perceptive self-efficacy on math performance]. Quarterly Journal of Educational Innovations. 2011; 3(10): 103-115. [Persian]
14. Lev EL, Kolassa J, Bakken LL. Faculty mentors' and students' perceptions of students' research self-efficacy. Nurse Educ Today. 2010; 30(2): 169-74.
15. Lev EL, Kolassa J, Bakken LL. Faculty mentors' and students' perceptions of students' research self-efficacy. Nurse Educ Today. 2010; 30(2): 169-74.
16. Masten, A., & Powell, J. (2003). A resiliency framework for research, policy and practice. In Luthar, S., Resiliency and vulnerability adaptation in the context of childhood adversity. Cambridge university press, Cambridge, pp. 1-29
17. Mullikin EA, Bakken LL, Betz NE. Assessing research self-efficacy in physician-scientists: the clinical research appraisal inventory. Journal Of Career Assessment. 2007; 15(3):367-387
18. Nooranipour R. The Effect of addiction causes to Psychoactive Substances and Consulting Addiction Efficient Methods. Journal of Addiction Research 2006; 2(6): 34-46. (in Persian)
19. Olson, D. H. (1999). Circumplex Model of Marital and Family Systems. *Journal of Family Therapy*, 22, 144-167.
20. Ogunyemi, A. O., & Mabekoje, S. O. (2007). Self-efficacy, risk-taking behavior and mental health as predictors of personal growth initiative among university undergraduates. *Journal of Research in Educational Psychology*, 12, 349-362.
21. Phillips EL. Resilience, mental flexibility and cortisol response to the Montreal Imaging Stress Task in unemployed men (Dissertation). Michigan: The University of Michigan; 2011.
22. Saeedzade H. [The relation between the sources of math self-efficacy with the level of self-efficient math beliefs and math performance of the students of secondary and high school] [dissertation]. Tehran: Tehran university; 2007. [Persian]
23. Salehi M, kareshki H, Ahanchian M, karimi Mouneghi H. [Validation of Research Self-Efficacy Scale for Postgraduate Students of Ferdowsi University and Mashhad University of Medical Sciences]. Iranian Journal of Medical Education, 2011; 12(6): 396-409. [Persian]
24. Salehi M. [measure and the effective factors on the self-efficacy and research motivation of students according to social-cognitive theory of Bandura] [dissertation]. Mashhad: Ferdowsi university of Mashhad; 2011.
25. Seraj Khorrami N, Seyf AA. The Comparison of Cognitive-Behavioral Therapy and group therapy in Addiction Therapy to Narcotic Substance. Journal Knowledge Science and Research in Psychology 2003; 2(7): 21-40. (in Persian)
26. Shareh H, Farmani A, Soltani E. Reliability and validity of the Cognitive Flexibility Inventory in Iranian university students. (Unpublished observations)
27. Siu-kau, C., & Stephen, Y. K. (2000). Effects of self-efficacy and social support on the mental health conditions of mutual-aid organization members. *Social Behavior and Personality*, 413-422 .
28. Schwarzer, R., & Luszczynska, A. (2007). Health behavior constructs: Theory, measurement, and research. National Cancer Institute Website. Retrieved from <http://dceps.cancer.gov/brp/constructs/selfefficacy/index.html>.
29. Weed, K., Keogh, D., & Borkowski, J. (2006). Stability of resilience in children of adolescent mothers. *Applied developmental psychology*, 27(1), 60-70
30. Zong JG, Cao XY, Cao Y, Shi YF, Wang YN, Yan C, et al. Coping flexibility in college students with depressive symptoms. *Health Qual Life Outcomes* 2010;8:66.
31. Zimmer, Gembeck, M. J., Lockes, E. M., (2007). The socialization of Adolescent coping Behaviours: Relationship with families and Teachers. *Journal of Adolescence*, Vol.