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Relation of various levels on which metacognitive knowledge is utilized and personality characters with self-efficacy against problems

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ABSTRACT

The current paper was conducted with the aim of examining Relation of various levels on which metacognitive knowledge is utilized and personality characters with self-efficacy against problems. The present research falls under applied category in terms of goals and it is descriptive of correlation type based on data gathering styles. Accordingly, from among all female high school girls in the city of Kermanshah who were studying in the educational year of 2014-2015, the number of 385 people was selected as the sample via multistage sampling method, and for more assurance, the sample size was increased to 400 peoples. To investigate the variables, three questionnaires of NEO Personality Factors, Metacognition Awareness and Self-efficacy were applied. Findings revealed that there was a negative significant correlation between personality character of neuroticism with trend knowledge, planning, information management strategy, fault finding strategies, assessment of learning process and overall cognitive knowledge. A positive significant correlation was found between extrovert character with expression knowledge, planning, information management strategy and overall cognitive knowledge. A positive significant relation was also found between personality character of openness to experience with expression knowledge, trend knowledge, planning and faultfinding strategies. Meanwhile, there was a positive significant correlation between personality character of agreeableness with expression knowledge and information management strategy. Again, there was a positive significant correlation between conscientiousness with trend knowledge, situational knowledge, planning and assessment of learning process as well as overall cognitive knowledge. also suggested that there was a positive significant correlation between self-efficacy with cognitive knowledge, cognitive adjustment, metacognition, problem-oriented strategies, acquisition of support and cessation of negative thinking and meanwhile, a positive significant correlation was found

between self-efficacy with neuroticism, openness to experience, agreeableness, conscientiousness, problem –oriented strategy, support acquisition, cessation of negative thinking.

1. INTRODUCTION

One of the major advancements in the second half of the twentieth century was related to the emergence of theories which focused attention on the role of effective higher processes on containing and guiding cognitive processes. These higher processes are called metacognition which were for the first time introduced by Flavell (Zeinali, 2010). Metacognition arises from solid and persuasive theoretical and empirical foundations, some basics of which can be sought in works relating to cognitive and developmental psychology. Metacognition reefers to psychological structures, knowledge of events and processes which play roles in controlling, reforming and interpreting thinking (Cucchi et al, 2012). Metacognition knowledge is referred to as beliefs people have regarding their own emotional and cognitive states (Laneet al, 2016).

Metacognition is taken to mean individual's awareness of self and controlling and guiding it. In psychology literature, cognition is usually accompanied with thinking. Therefore, metacognition can also be defined as awareness over process of thinking and controlling and guiding it. Metacognition is a term which was introduced by Flavell for the first time in 1976 to explore individual's knowledge about cognitive processes. Although an encompassing definition of metacognition is challenging and looks tricky, all researchers agree that metacognition is referred to as understanding knowledge or knowing about knowledge. To be accurate, metacognition is the individual's knowledge about the way one learns (Slavin, 2008).

Metacognition is among the variables which are related with motivation for progress, and pertinent variables. Metacognition is positively related with learning and rea1ding comprehension, Metacognitive control and review processes are interactively related. Thus, the one's knowledge about his abilities and awareness of cognitive and metacognitive strategies improves learning and ediactional performance (August-Brady, 2005; Korial et al, 2006; Haidar and Najadi, 2008; Bradford et al, 2006; Perfect and Schwartz, 2004).

In a research aimed at describing metacognition as meaning awareness and control of one's cognition, it was found that students who make use of metacognitive strategies are more successful compared to these who do not. One of the major motivational factors affecting students' metacognition is self-efficacy. Self-efficacy refers to the individual's personality foundation in facing issues wile reaching his goals and success.

He is also influenced by personality characters such as belief in self (self-confidence), being industrious and surrender (self-excitement), examining causes of failure by the time of frustration (self-measurement), new arrangement of preliminaries and social ways of reaching goals (self-adjustments) and bringing under control of impulsive (self-leadership) more than he is affected by the impact of intelligence and power for learning. Self-efficacy, by way of an internal motivation, causes the person to impulsively strive in the setting and accomplish his own beliefs. The nature, like an invisible teacher, compels the individual to reveal various capacities of development in various stages (Sharifi Daramadi, 2001).

In connection to the relationship between self-efficacy and metacognition, researches have demonstrated that people with low self-efficacy get disturbed in the face of assessments. These people cast doubt over their own skills and abilities, and prior to do something to resolve problems, they forecast failure.

These negative beliefs increase stress level and reduce effective use of metacognitive strategies, finally ensuing no result but failure (Coutinho and Neuman, 2008). Bandura (1986) names four information sources for self-efficacy expectations which include performance success (successful experiences), alternative experience (social modeling), verbal persuasion (social encouragement), and somatic and emotional impulsiveness (mental reactions). It should be borne in mind that self-efficacy is, to some extent, different from actual abilities of an individual, and an individual, despite possessing the ability to do some work, may not be able to correctly fulfill that job due to low self-efficacy.

For Bandura (2005), self-efficacy beliefs mean belief in one's capabilities in organizing, controlling and handling life affairs and situations. To see people having a successful performance results in strengthening of effectiveness feeling. Effective patterns have major impacts on the feeling of sufficiency and merit. In verbal persuasion, people are reminded they possess the ability to do any thin they desire; this act promotes feeling of effectiveness (Caprara et al, 2011). A review of literature illustrates that self-efficacy is strongly related with personality factors. By personality, it is meant certain patterns of behavior and thinking manners which determine the way man adjusts with the environment (Atkinson, 2008).

Five categorys of Personality are: Neuroticism, Openness to experiences, Extroversion, Agreeableness, and Conscientiousness. According to the Lawrence Berry's definition (2005) neuroticism is a category of personality, where higher affective stability and low anxiety stand on one end of the continuum, while affective instability and higher anxiety stand on the other end. People with higher scores in neuroticism possess more irrational affection and inability in containing impulsiveness behaviors as well as weakness in getting along with problems; meantime, those who have low scores in this component are thought of calm and mild people, enjoying usually affective stability and are able to cope with stressful situations, without disturbance and anxiety. Of other characters of people with higher scores in this category, one can refer to anxiety, anger and hostility, depression shyness and vulnerability.

Sociability is a character of extrovert people and they are distinguished based on interest in people. Large groups' preferences, dare, activity, talkativeness, cheerfulness, optimism, certainty and emotion seeking. Openness is less known than extroversion, People with higher scores are both curious about the internal world and an external world and their lives are rich in experience.

They are diversity seekers, have mental curiosity and are independent in judgments. Of other secondary characters in this category, one can refer to fancy and aesthetics. Like extroversion, agreeableness a dimension of individual tendencies.

An adjusted man is altruist, sympathizes with others and tends to offer them help; he also believes others are mutually collaborative. Such factors as trust, frankness, altruism, compliance and humbleness are among other characters of the people situated in this category. The last category, from among the fivefold personality category is conscientiousness.

This category is best described by the concept of will. People with higher scores in this category are conscious, purposeful, determined and decisive. Higher scores in conscientiousness are followed by professional and academic success.

Such factors as accuracy, good promises, reliability, conscientiousness, strife for success and being self-discipline are among other characters of this category. Judge and Eales (2002) demonstrated that self-efficacy s negatively related with the factor of neuroticism and positively related with such factors as extroversion, openness and conscientiousness. In their study in 2011, Ebstrupa and colleagues indicated that, in addition to the four factors referred to by Judge and Eales, the factor of agreeableness is significantly correlated with self-efficacy. They demonstrated that the factor of agreeableness, like the factor of neuroticism, anticipates general self-efficacy negatively. In their study, Strobel et al. (2011), while confirming findings by Judge and Eales, showed that self-efficacy beliefs shows the relationship between four factors of neuroticism, extroversion, openness and conscientiousness in a significant manner.

Today, it is believed that to be successful in changing behavior and promoting their own health, people need to see themselves effective in overcoming over obstacles that may have existed for change of behavior.

This is when students with higher self-efficacy seek acquisition of dominance and merit and applies extension and organizing strategies so complicatedly and deeply in learning lessons material (Greene et al, 2004). Accordingly, some scholars have stated that successful learning, in addition to cognitive and metacognitive factors, involves non-cognitive constructs as well.

Given the significance of awareness levels and use of metacognition, an accurate study of constructs we are concerned with will both help understand the nature of metacognition levels and in case of obtaining a strong relation, it could help anticipate levels in which metacognition is used, given variables raised. As stated, the two major variables that appear to be having an effective relationship with levels of using metacognition are personality characters and self-efficacy.

2. METHODOLOGY

The present research falls under applied category in terms of goals and it is descriptive of correlation type based on data gathering styles. Accordingly, from among all female high school girls in the city of Kermanshah who were studying in the educational year of 2014-2011. Using the Morgan Table, The number of 385 people was selected as the sample via multistage sampling method, and for more assurance, the sample size was increased to 400 peoples. To investigate the variables, three questionnaires of NEO Personality Factors, Metacognition Awareness and Self-efficacy were applied. To analyze data, SPSS software, 21st version was used ad Pearson Correlation Test was estimated and reported.

NEO Personality Factors Questionnaires: This instrument was for the first time developed by McCrae and Costa in 1985 and includes 181 items for exploring five big personality factors. After various developments in 1982, a revised version of NEO personality questionnaire was prepared and published which was comprised of 240 statements. The newly made version offered an overall measurement of the five major factors, where each factor consists of 6 dimensions. Given complexity and length of NEO-PI-R and availability of detailed and various dimensions in each of the traits relating to the big five factors as well as

the lack of subjects' tendency in answering a long instrument in clinical and research situations, a shorter form of NEO-PI-R was designed as the Five Factor Questionnaire (NEO-FFI). This questionnaire consisted of 60 items which were obtained based on a factorial analysis of NEP-PI scores, administered in 1986. In this questionnaire, there are 12 items for each factor, where these items were selected, given possessing the highest factorial load in relation with the traits intended. Responding to these items is made possible on a five value Likert scale (totally disagree, disagree, indifference, agree, and totally agree). In this questionnaire, five major factors can be considered as: Neuroticism (N), Extroversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C).

Costa and McCrae reported an alpha coefficient of 68% for agreeableness and 86% for neuroticism. Also, Helden reported alpha coefficient of these five factors, ranging from 68% for agreeableness to 87% for neuroticism. Helden and Faken's study suggests that Cronbach's alpha of these five factors ranges from 73% for openness to 87% for neuroticism. Another research indicates an internal constancy (over 70%) for these five factors. Results by Mooradian and Nazalkiz' study suggest that Cronbach's alpha for neuroticism, extroversion, openness, agreeableness and conscientiousness was 84%, 75%, 74%, 75% and 83% respectively. Internal constancy coefficients for Iranian students in categories of was 86%, 73%, 56%, 68%, and 87% respectively and their internal correlation coefficients ranged between 56% to 87%.

Metacognition awareness Questionnaire: The Metacognition Awareness Scale was developed by Schraw and Denission in 1994 in order to investigate adolescent and adult learners' metacognition. This scale consists of 52 items which involve distinct factors of knowledge of cognition and cognition adjustment. Knowledge of cognition is measured by 17 items and comprises of three secondary processes of expression knowledge, methodic knowledge and situational knowledge. Cognition adjustment is measured by 35 items and comprises five secondary processes of planning, information management strategies, perception exploration, fault finding strategies and assessment of learning process. Responses are scored based on five value Likert scale. The minimum score in this scale is 52 while the maximum score is 260. Reliability and validity of this instrument has been reported to be good by various researchers such as Coutinho and Neuman (2006).

Self-efficacy scale against problems: Self-efficacy scale against problems was designed by Chasani et al in 2006 in order to assess self-efficacy relating to the individual's coping styles against problems. This scale is a 26 statement test in which the subject is required to specify, on a 11 value Likert scale, some items such as (0=I never can cope with that, to 10=I'm sure, I can afford it), so that it is determined to what extent he can fulfill the affairs stated. The self-efficacy coping scale has three subscales: using problem-oriented coping guidelines, ceasing negative thoughts and emotions and acquiring support from the behalf of friends and family. Chasani et al reduced the 26 statement scale to a 13 statement form among with 3 factors: problem-oriented coping guidelines (6 statement), ceasing negative thoughts (4 statements) and emotions and acquiring support (3 statements). In this research, the 13 statement form was applied. In two main researches (with a sample of 348 people), the test overall Cronbach's alpha was equal to 0/95 and this same rate was estimated to be in a range of 0/79 to 0/92. In then 13 item questionnaire, Cronbach's alpha coefficient for each subscale of problem-oriented coping guidelines, ceasing negative thoughts and emotions and acquiring support was estimated to be 0/91, 0/91 and 0/80.

3. FINDINGS

Table 1. Correlation coefficient matrix of relationship between various levels of utilizing metacognitive knowledge and personality characters in students

	1	2	3	4	4	5	6	7	8	9	10	11	12	13
Expression knowledge	1													
Trend knowledge	**0/89	1												
Situational knowledge	**0/78	**0/69	1											
planning	**0/53	*0/33	**0/41	1										
IT management	**0/43	*0/38	*0/35	**0/80	1									
Perception exploration.	*0/34	*0/29	*0/27	**0/69	**0/74	1								
Fault finding strategies	*0/35	*0/25	*0/32	**0/71	**0/61	**0/87	1							
Learning assessment	*0/31	*0/28	*0/34	**0/83	**0/59	**0/67	**0/78	1						
Cognitive knowledge	**0/85	**0/69	**0/84	**0/76	**0/79	**0/88	**0/91	**0/81	1					
neuroticism	-0/15	*-0/24	-0/11	*-0/34	*-0/23	-0/6	*-0/31	*-0/24	**-0/44	1				
extroversion	*0/26	0/12	0/08	*0/16	*0/25	0/11	0/9	0/13	*0/37	-0/10	1			

Openness to experience	*0/22	*0/25	0/7	*0/17	0/8	0/9	*0/20	0/10	*0/29	-0/9	0/13	1		
agreeableness	*0/19	0/8	0/5	0/6	*0/21	0/4	0/5	0/7	*0/33	-0/14	0/12	0/14	1	
conscientiousness	0/11	*0/26	*0/18	**0/32	0/13	0/12	0/14	*0/17	*0/39	-0/05	0/8	0/9	0/13	1

<0/001 ** P <0/05 *P

Findings revealed that there was a negative significant correlation between personality character of neuroticism with trend knowledge, planning, information management strategy, fault finding strategies, assessment of learning process and overall cognitive knowledge. A positive significant correlation was found between extrovert character with expression knowledge, planning, information management strategy and overall cognitive knowledge. A positive significant relation was also found between personality character of openness to experience with expression knowledge, trend knowledge, planning and faultfinding strategies. Meanwhile, there was a positive significant correlation between personality character of agreeableness with expression knowledge and information management strategy. Again, there was a positive significant correlation between conscientiousness with trend knowledge, situational knowledge, planning and assessment of learning process as well as overall cognitive knowledge.

Table 2. Correlation coefficient matrix of relationship between various levels of utilizing metacognitive knowledge and self-efficacy in students.

	Cognitive knowledge	Cognitive adjustment	Metacognition (overall)	Problem-oriented strategies	support	Ceasing negative thoughts	Overall self-efficacy score
Cognitive knowledge	1						
Cognitive adjustment	**0/38	1					
Metacognition (overall)	**0/78	**0/89	1				
Problem-oriented strategies	**0/19	**0/20	**0/28	1			

support	0/08	0/10	0/11	**0/38	1		
Ceasing negative thoughts	*0/17	*0/23	**0/29	*0/23	*0/19	1	
Overall self-efficacy score	**0/25	**0/28	**0/38	**0/69	**0/71	**0/82	1

Table 3. Correlation coefficient matrix of relationship between personality characters and self-efficacy in students

	1	2	3	4	5	6	7	8	9
neuroticism	1								
extroversion	-0/11	1							
Openness to experience	-0/09	0/07	1						
agreeableness	-0/11	0/06	0/04	1					
conscientiousness	-0/8	0/12	0/3	0/6	1				
Problem-oriented strategies	**-0/21	0/11	*0/17	0/14	0/13	1			
support	*-0/18	**0/29	*0/22	**0/31	*0/16	**0/30	1		
Ceasing negative thoughts	*-0/28	0/11	0/15	*0/19	0/08	**0/35	**0/37	1	
Overall self-efficacy	**0/33	**0/30	**0/27	**0/36	*0/18	**0/67	**0/76	**0/69	1

4. CONCLUSIONS

Findings revealed that there was a negative significant correlation between personality character of neuroticism with trend knowledge, planning, information management strategy, fault finding strategies, assessment of learning process and overall cognitive knowledge. A positive significant correlation was found between extrovert character with expression

knowledge, planning, information management strategy and overall cognitive knowledge. A positive significant relation was also found between personality character of openness to experience with expression knowledge, trend knowledge, planning and faultfinding strategies. Meanwhile, there was a positive significant correlation between personality character of agreeableness with expression knowledge and information management strategy. Again, there was a positive significant correlation between conscientiousness with trend knowledge, situational knowledge, planning and assessment of learning process as well as overall cognitive knowledge.

To explain the significant relationship of metacognitive awareness and personality characters, Eysnk's personality theory is considered. He maintains since level of activity of cluster-network ring is fewer in introverts compared to extroverts and low rate of impulsivity is pleasant subjectively, extroversion is positively related with positive emotions. Extroverts have a positive attitude to their own abilities, are actively seeking social interactions and get themselves engaged in acquiring new experiences. Unsafe thinking style, negative interperration of events, tension weak coping style against stress and consequently, affection with psychological disturbances are among the characters of neurotic people. These people are abusive, aggressive, worry, tense and catastrophic and are constantly experiencing events as threats. It appears that effective metacognition, due to involving knowledge, beliefs, and positive processes, affect attention system in the direction of goals and this system hinders other attention systems to divert to other special stimuli.

Thus, under anxious situations, via diverting attention from sources of threats, anxiety will not only decline, but also the information processing process will be guided on a path far from reciprocity. Reduced anxiety and guiding information processing will not increase cognitive fluctuations, rather it may reduce it. Thus, positive metacognitive beliefs in conscious, extrovert, experiential and agreeable people are positively correlated with neuroticism. The results also suggested that there is a positive and significant correlation between self-efficacy with cognitive knowledge, metacognition, problem-oriented strategies, and acquisition of support cessation of negative thoughts. To account for this finding, one has to focus attention to the role of motivational factors in using metacognitive strategies. One of the major motivational factors affecting students is self-efficacy. These people cast doubt over their own skills and abilities, and prior to do something to resolve problems, they forecast failure. These negative beliefs increase stress level and reduce effective use of metacognitive strategies, finally ensuing no result but failure (Coutinho and Neuman, 2008). This is when students with higher self-efficacy seek acquisition of dominance and merit and applies extension and organizing strategies so complicatedly and deeply in learning lessons material (Greene et al, 2004).

Other findings suggested that there is a positive and significant correlation between self-efficacy with neuroticism, openness to experiences, agreeableness, conscientiousness, problem oriented strategy, support acquisition and cessation of negative thinking. Extrovert people tend to express their own ideas and feelings. They initiate before starting work and focus attention on positive experiences. Since self-efficacy is a behavioral pattern, consisting of being active, selection of opportunities ad their management, thus the relationship between extroversion and self-efficacy against problems is so explained. It is possible to explain significant and negative relationship between neuroticism with self-efficacy against problems through neurotic people's characters and its contradiction with self-efficacy. Neurotic people, due to anxiety and worry, are not able to optimally fulfill their assignments and are more

prone to depression. Neurotic character is angry, anxious, with negative moods and proneness to depression, Neurotic character avoids challenging and new situations and often prefers familiar situations. Neuroticism is associated with lack of ability understanding and establishing links between issues and information organization.

Conscious people are motivated for progress and are curious; higher self-efficacy encourages these people to focus attention on several goals and they have much insistence for accomplishing goals. A conscious character is effective, orderly and responsible, has order and discipline in doing jobs and spares no efforts for the assignments he is assigned to. Conscientiousness and self-discipline will fundamentally increase planning for educational goals and insistence for seeking goals and on the other hand, it results in Eduactional advancement.Given the findings other research, it is recommended that Eduactional and academic officials, particularly counseling centers, hold Eduactional classes in regard to teaching optimal manners relating to metacognitive strategies and in this connection, they need to focus attention to Eduactional and individual needs of the target community and hold appropriate courses corresponding to their needs. Also, it is advised to use psychologically combinational interventions in increasing self-efficacy against problems and resulting disorders.

References

[1]   Atkinson, R. H. (2008). Psychology background, (M. Taghi Baraheni, Trans.). Tehran: Terme Publication.

[2]   Zeinali, Z. (2010). Relation of metacognitive strategies and creativity with self-esteem and Eduactional performance of students in the city of Sade, M.A. thesis, Marvdasht Islamic Azad University.

[3]   Sharifi Daramadi, P. (2001). Developmental psychology. Tehran: Khoshnavaz Publication.

[4]   August- Brady, M. M. (2005). The effect of a metacognitive intervention on approachto and self – regulation of learning in Baccalaureate Nursing students. Journal of Nursing Education. 44(7): 297-304.

[5]   Bradford, S., Bell. S., & Steve, W. J. (2008). Active learning: Effects of core training design elements on self – regulatory processes, learning and adaptability. Journal of Applied psychology, 93(2): 296-316.

[6]   Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliff, Prentice Hal.

[7]   Bandura, A. (2005). Adolescent development from an agentic perspective. Perspectives on Psychological Science. 3: 110-121.

[8]   Coutinho, S. A., & Neuman, G. (2008). A model of metacognition, achievement goal orientation, learning style and selfWefficacy. Learning Environment Research. 11: 131-151.

[9]   Caprara, G. V., Vecchione., M., Alessandri., G., Gerbino., M., & Barbaranelli., C. (2011). The contribution of personality traits and self-efficacy beliefs to academic achievement: A longitudinal study. British Journal of Educational Psychology. 81: 78-96.

[10] Cucchi, M., Bottelli, V., Cavadini, D., Ricci, L., Conca, V., & Ronchi, P. (2012). An explorative study on metacognition in obsessive-compulsive disorder and panic disorder. Compr Psychiatry, 53(5): 546-553.

[11] Greene, B. A., Miller, R. B., Croson, H. M., Duke, B. L., & Akey, K. L. (2004). Predicting high school student's cognitive engagement andachievement: Contribution of classroom perception and motivation. Contemporary Educational Psychology, 29: 462-482.

[12] Haidar, A. H., & Najabi, A. (2008). Emirati high school students understandings on their understanding. Research in science & technological Education. 26(2): 215-226.

[13] Korial, A., Maayan, H., & Nussinson, R. (2006). The intricate relationships between monitoring and control in metacognition: lessons for the cause and Effect relation between. Journal of experimental psychology. 135(1): 36-69.

[14] Lane, C., Milne, E., & Freeth, M. (2016). Cognition and behaviour in sotos syndrome: A systematic review. Plos One. 11:149-153.

[15] Perfect, J. T., & Schwartz, B. L. (2004). Applied metacognition. Cambridge University.

[16] Slavin, R. E. (2008). Educational psychology: Theory and practice. 9th ed. Boston: Allyn and Bacon.

[17] Strobel, M., Tumasjan, A., & Sporrle, M. (2011). Be yourself, believe in yourself, and be happy: Self-efficacy as a mediator between personality and well-being. Scandinavian Journal of psychology, 52(1): 43-48.