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A comparison between the metacognitive beliefs of gifted and normal children

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Abstract

The purpose of the present study was to explore metacognitive beliefs in gifted and normal children. In this study 30 school boys were selected through a random sampling procedure. The hypothesis of the study was that there are significant differences between the metacognitive beliefs of gifted and normal school children. To test this hypothesis, the 30-item metacognitive beliefs questionnaire was used. Data was analyzed using the independent samples t test and the hypothesis was retained. That is, significant differences were obtained between the metacognitive beliefs of gifted and normal children. Furthermore, findings pertaining to the subscales of metacognition revealed that the exceptional children and normal children differed on factors of cognitive self-consciousness, and beliefs about the need to control thoughts, but no differences were observed on factors of cognitive competence, positive beliefs about worry and beliefs about uncontrollability and danger.

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Keywords: metacognition; exceptional children; cognitive competence.

1. Introduction

Metacognition is the perception of self's cognition or of each knowledge or cognitive process that require the assessment, supervision or control of cognition. We can consider the cognition as a general aspect of cognition that plays role in all cognitive tasks. Metacognition is a multi-aspect concept that includes knowledge (beliefs), processes, and methods that measure and control the cognition. Some special aspects of metacognition have relationship with psychologic disorder. Wels (2000) suggested the Self Regulatory Executive Function Model in this respect. In addition to theoretical explanation of emotional disorders, this model presents attractive prediction about other disorders. In fact, in Wels' theory, worrying and positive and negative beliefs about worry are as emphatic items. Point that is worthy of attention is the relationship between Metacognition and intelligence. According to Strenberg's viewpoint one of the meta-cognition's function is that it say how to perform an assignment or sets of assignments and then to assure that the assignments have been performed correctly (Veenman & Verhigj, 2005). These executive processes include planning, evaluation and regulation of problem solving activities. Strenberg (1986) stated that ability of proper application of cognitive reserve is the core aspects of intelligence(Veenman &

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Verhigj, 2005). Snow and Lohman (1984) considered the intelligence as obtained set of intellectual or cognitive skills that are available for a person within specific time span (Veenman & Verhigj, 2005). The question arises as to whether cognitive skills are essential part of intelligence or not. Stenberg (1990) considered the metacognitive skills as a main process in the intelligence (Veenman & Verhigj, 2005). Recently performed surveys on relationship between intelligence and meta-cognition as predictors of learning, have led to presentation of three models. The first one considers the metacognitive skills as manifestation of intellectual ability. Based on this model metacognitive skills independent of intelligence ability, can't have predictive role in the learning. Second model, in which, intelligence abilities and meta-cognition are as completely independent predictors of learning, are named contrasting model. Finally, on the basis of Mixed Model meta-cognitive skills depend upon intelligence skill in special areas. Many surveys have reported significant differences between metacognitive mechanisms used by gifted and normal students. On the other hand, Allon et al. (1994) obtained low level of correlation between Weksler's intelligence scores and meta-cognition scores those are obtained by asking the participants about their problem solving activities. Whereas, Sawanson (1990) confirmed the correlation between intelligence and meta-cognition by accomplishment of some Piagei assignments, other studies showed that meta-cognition is partially independent of intelligence, not completely. Stankov (2000) declared more specifically that metacognition depends partially on fluid intelligence. Mixed model is being more supported by Winman's study on discovery learning, problem solving and review of literatures in different domains. In summary, many of mentioned studies provided evidence supporting the mixed model. Regarding mentioned studies about relationship between intelligence and metacognition, and rest on Wels' theory about metacognitive beliefs, this survey aims to compare negative metacognitive beliefs about worry and anxiety between gifted and normal students.

2. Method

In this survey two groups of subjects including gifted and normal students, were selected. Gifted students were selected by simple sampling from all high school students of Gifteds Schools of Ardabil city within 2007-2008. Normal students, also, were selected by cluster sampling from all students studying at high schools of District 1 of Ardabil city. Each group contained 30 Subjects were matched for age, sex and level of education. Rivan's progressive matrixes were used for measuring students' intelligence level. Short form of Metacognition Questionnaire (Wells A, Cartwright-Hatton S. 2004), was used for assessment of metacognitive beliefs. Metacognition questionnaire measures 5 items; cognitive confidence, positive beliefs about worry, cognitive self-consciousness, and negative beliefs about uncontrollability of thoughts and riskiness of worry, and beliefs about need to control the thought. Range of Cronbach's alpha coefficient of this questionnaire and its items has been reported 0.72-0.92. there was significant relationship between Metacognition Questionnaire and State-Trait Inventory (Cartwright-Hatton & Wells, 1997). Data were gathered collectively and in the school. The first and second completed tests were Raivan's intelligence test and Metacognition questionnaire, respectively. Survey's nature was necessitating usage of causal-comparative method. Gathered data was analyzed by "t" independent test.

3. Results

Table1. Means and standard deviations of two groups in the metacognition and its components

	Gifted		Normal				
	Mean	SD	Mean	SD	t	P	
Metacognitive beliefs	73.5	11.1	68	9.38	2.07	0.04	
And its components							
Cognitive confidence	10.53	3.43	11.76	3.05	1.46	0.14	
Positive beliefs about	14.6	4.13	12.9	3.74	1.67	0.10	
Worry							
Uncontrollability of							
Thoughts	14	2.63	13.06	2.44	1.04	0.31	
Cognitive self-							
Cognition	18.5	2.63	16.43	2.44	3.14	0.03	

Beliefs about need for Thought control	15.86	4.09	13.83	2.65	2.28	0.02
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Independent test for general metacognition variable is significantly indicative of the metacognitive beliefs difference between two groups ($P,0.043$, $t=2.07$). It means that gifted students have higher scores in the meta-cognition than other group. Besides general variable of meta-cognition, two groups of subjects have been assessed in the sub-factors of meta-cognition questionnaire like cognitive confidence, positive beliefs about worry, and negative beliefs about uncontrollability of thoughts and riskiness of worry, cognitive self-consciousness and beliefs about need for thoughts control. The results of this assessment are being presented in the table-1. Results of t test for comparison of two groups of gifted and normal students in the sub-factors of meta-cognition questionnaire shows that ratio of t obtained by performing two sub-tests (cognitive self-consciousness and beliefs about need for thoughts control) is significant (cognitive self-consciousness; $t=3.14$ and $P<0.003$, beliefs about need for thoughts control; $t=2.28$ and $P<0.026$). It means that scores' mean of gifted students is higher than normal students in following two factors; cognitive self-consciousness and beliefs about need for thoughts control. However, there isn't significant difference between them in the following factors; cognitive confidence ($t=-1.46$), positive beliefs about worry ($t=1.67$), and negative beliefs about uncontrollability of thoughts and riskiness of worry ($t=1.04$).

4. Discussion

The objective of this survey was the study of two groups of brilliant and normal students in the meta-cognitive beliefs to respond this question that if there is significant difference between these two groups. And also, can intelligence be a factor causing different meta-cognitive beliefs? The results of this survey showed that brilliant students differ significantly from normal students in the meta-cognitive beliefs. This findings accords with results of studies performed by Veenman, Wilhelm & Beishuizen (2004). All these investigators reported significant difference between brilliant and normal students in the meta-cognitive mechanisms applied by them. No study, however, have been performed for comparison of meta-cognitive beliefs between brilliant and normal students and for assessment of intelligence's effect on these beliefs. Fundamental importance of this survey is that Wels' theory about meta-cognitive beliefs about worry can be extended to intelligence and brilliant students. Then it can be concluded that intelligence can influence these beliefs and intervene in them. Furthermore, comparison of two groups of students in the meta-cognitive sub-factors revealed that there is significant difference between brilliant and normal students in the cognitive self-consciousness. Regarding this fact can say that brilliant students because of higher level of intelligence try to pay more and more accurate attention to their mental function and consequently they have higher cognitive self-consciousness than normal students.

Also, there is significant difference between these two groups in the beliefs about need for thoughts control as brilliant students try to control thoughts more than normal students. They interpret the lack of control on thoughts as a negative factor. This state can leads to rumination, although two groups differed significantly from each other in the other meta-cognitive items; cognitive confidence, positive and negative belief about worry. In this regard Wels says that some special aspects of meta-cognition have relationship with psychological disorder. In fact, worry and positive and negative beliefs about it are of emphatic items. Then, it can be concluded that intelligence can't so much affect the positive and negative beliefs and cognitive confidence. These factors that are related with special psychological problem like generalized anxiety disorder and even are as its main manifestations, are independent of intelligence's impact.

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