Journal of Fundamentals of Mental Health

Mashhad University of Medical Sciences

Psychiatry and Behavioral Sciences Research Center

Original Article

Study of the relationship between superego and metacognition of male and female students

Koorosh Parviz[1]; Hamid-Reza Aghamohamadian-Sharbaf[2*]; Mahmoud Dehghani[3]; Bahram-Ali Ghanbari-Hashemabadi[2]

[1] *Ph.D. student of psychology, Faculty of education and psychology, Ferdowsi University of Mashhad, Mashhad, Iran*
[2] *Professor of psychology, Faculty of education and psychology, Ferdowsi University of Mashhad, Mashhad, Iran*
[3] *Assistant Professor, School of Behavioral Sciences and Mental Health, Tehran Institute of Psychiatry, Tehran, Iran*

Abstract

Introduction: Superego and metacognition consider as two important constructs within the psychodynamic and cognitive psychology domain. The aim of this research is to examine the link between superego and metacognition among students at Ferdowsi University of Mashhad.

Materials and Methods: This is a cross-sectional study with a correlational design conducted among students of Ferdowsi University of Mashhad in 1395. A sample of 206 male and female students was recruited from target population through convenience sampling and completed metacognitive inventory as well as Superego questionnaire. All statistical analyses were carried out using SPSS 23 statistical package. Descriptive statistics such as frequencies, means, & standard deviations as well as inferential statistics including Pearson correlation and independent t-test are applied on variables of current study.

Results: The results indicate that there is a negative relationship between superego and metacognition (r=0.38, $P<$ 0.001). In addition, data present a significant positive correlation between one of the superego's subscales, conscience, and metacognition (r=0.65, $P<0.0001$). With regard to the superego, the results show a significant difference between men and women (t = -2.36, $P=0.05$). This result suggests that women have more inflexible yet powerful superego than men. Also there is a significant difference between men and women's conscience (t=2.05, $P<0.05$).

Conclusion: Metacognition is weaker among those individuals holding stronger superego and therefore, they are more susceptible to neurotic disorders. With respect to the important role of metacognitive abilities on learning and education, it can be assumed that learning and education are also influenced by superego because of its impact on metacognition.

Keywords: Conscience, Gender, Metacognition, Superego

Please cite this paper as:
Parviz K, Aghamohammadian-Sharbaf HR, Dehghani M, Ghanbari Hashemabadi BA. Study of the relationship between superego and metacognition of male and female students. Journal of Fundamentals of Mental Health 2017 Mar-Apr; 19(2): 70-6.

Introduction

For the first time, superego under the name of "ideal ego" and "conscience" has entered into the psychoanalytic terminologies. Freud believed that during the psychosexual developments, primary repression occurs in order to overcome the conflict between one's sexual desires or libidinal impulses and one's cultural and ethical beliefs. He considered the internalized ego ideal as the main reason to the repression occurrence. According to Freud, this ego ideal is developed by individuals as an effort to improve their narcissistic injuries in order to return into their earlier state of narcissism. In other words, during childhood, ego ideal is generated when children experience a threat toward their narcissism or their state of ideal-self (1).

Thus, since 1923, the so-called ego ideal term was replaced by a new term, superego. As Freud noted, sublimation usually arises from a child sexual or aggressive wishes in order to satisfy one's moral sense as well as conforming to one's cultural demands. Throughout the aforementioned process, object investment changes to narcissistic investment by rejecting sexual objects and submitting them to ego through identifications and introjections. Therefore, ego ideal results from the persistent effects of these primary identifications, including the child's first and most important identifications with father (2).

***Corresponding Author:** Department of psychology, Faculty of education and psychology, Ferdowsi University of Mashhad, Mashhad, Iran
aghamohammadian@ferdowsi.um.ac.ir
Received: May. 15, 2016
Accepted: Oct. 16, 2016

Freud also examined the formation of the neurotic symptoms, resulting from the intrapsychic conflicts among ego, superego, and unconscious sense of guilt, within melancholia, obsession, and hysteria. In fact, during the therapeutic process of analysis, he encountered these patients' negative reactions or high level of resistance toward their treatment. Therefore, he recognized the unconscious feeling of guilt and its relationship with superego. With regard to the patients' lack of awareness toward their repressed emotions, Freud's interpretation of these unconscious feelings was based on their external behaviors (3). He later represented these unconscious feelings as superego resistance toward therapeutic progress, which results from the self-punishing attitude as well as the guilty feeling (4).

Consistent with Freud, both Alexander (1925) and Ferenczi (1927) accepted his rationalism toward the superiority of the ego over superego as well as the gradual demolition of the self-punishing and harsh superego. On the other hand, majority of psychoanalysts became confused whether to replace the superego with conscience or not? Whether the rational ego is capable of functioning as a conscience? They have feared that superego dismantling would lead to the promotion of psychopathy in our society [5]. However, Alexander (1925) and Ferenczi (1927) contradicted the aforementioned concerns and believed that ethical maturation is depended on the function of rational ego in which individuals consider the consequences of their actions for others and themselves.

In contrast to Freud, Sagan (1988) consistent with Jean-Jacques Rousseau presumed that our moral conscience is non-rational and results from our feeling and it has empathetic and altruistic characteristics as well as ethical functioning (5). In fact, they distinguished between the "conscience" resulting from identifications with the nurturer and supporter, full of attachment and love on one hand, and with the "superego" resulting from identification with the aggressor, full of hatred. They also differentiate between the ego ideal as a substitute for the lost childhood narcissism (alternative ego in order to protect the idealized self against narcissistic wound), and the self-punishing, oedipal-based superego in order to repress one's unacceptable libidinal sexual and aggressive desires (6).

Freud believed that men and women take different routes in their psychosexual developments of superego and conscience. He thought that women's weaker moral conscience refers to the absence of fear of castration as well as maintaining in a longer period of Oedipal stage (7-10).

Later on, other psychologists like Gilligan tried to explain the abovementioned difference in the super-ego of two genders from a different perspective, such that the women's moral ethics is based on respect and empathy while the men's moral ethics is based on a fair and impartial justice. Therefore, many psychologists considered Freud's perspective as more male-oriented (11).

According to Freud's theory of psychoanalysis, ego as the second component of intrapsychic apparatus, which is responsible for the perception of reality and therefore, he, thought that neurotic disorders stem from the conflicts between superego and ego (1). Previous studies, which have been focusing on the relationship between the ego and meta-cognition, provided information regarding the significant relationship between these two constructs. According to a previous investigation, metacognitive could consider as an effective component of ego functioning (12).

Metacognition as a psychological term was first identified by John Flavell and with respect to the concept of memory. Flavell described metacognition, as a knowledge about cognition, involving within the process of monitoring and regulating one's own cognitive strategies (13).

Moreover, Costa (1992) indicated those individuals who have awareness toward their inner subjective discourses as well as recognizing the process of decision-making and problem solving, have metacognitive experiences (14).

As noted by Kuhn and Dean, metacognition within cognitive psychology refers to a comprehensive controlling such as self-regulation and self-monitoring (15). Other researchers have confirmed this explanation, as well (16). Self-monitoring considers as a metacognitive component, which consists of planning, monitoring, and evaluating (17-20). Planning comprises of selecting of more appropriate strategies and allocating resources, such as goal setting, activating prior knowledge, and sequencing. Metacognitive monitoring encompasses comprehension and progress monitoring as well as self- observing. Finally, evaluation involves evaluating learning outcomes and process along with task's appraisal and modification (20).

The Self-Regulatory Executive Function model was first presented by Wells and Matthews as a metacognitive model through a combination of two approaches, the schema-focused as well as the information processing, in order to clarify the treatment of emotional disorders (21).

Therefore, Wells and Matthews expanded the role of metacognition in the development of psychological disorders through the information-processing model. Their S-REF model could predict some dysfunctional metacognitive beliefs involve in individuals' vulnerabilities to psychological disorders. In fact, the aforementioned model identify etiological in both the development and maintenance of the disorders. These maladaptive metacognitive beliefs includes of the excessive thinking about one's own thoughts and worries, ruminating, reappraising threats, activating dysfunctional beliefs, and specific style of self-regulating strategies (22).

Evidence supporting the relationship between the individuals' metacognitive knowledge such as specific beliefs toward their own cognition, and a wide range of psychological disorders such as depression (23), generalized anxiety disorder (24, 25), social anxiety (26), hypochondria (27), obsessive-compulsive disorder (28-31), post-traumatic stress disorder (32, 33), pathological worries (34) and acute stress disorder (35).

However, distinct studies show no significant differences between men and women within different aspects of metacognition such as metacognitive awareness, strategies, monitoring, and controlling (36- 39).

The results of different studies indicate that both superego and metacognition although in an opposite direction, play important roles in the development of neurotic disorders including obsessive-compulsive disorder, anxiety disorders, social phobia, and other neurotic disorders. These findings imply that metacognition is weaker among those individuals holding stronger superego and therefore they are more susceptible to neurotic disorders. With regard to the abovementioned relationship between superego and metacognition as well as a negative correlation between ego and superego in the development of neurotic disorders, along with a positive correlation between ego and metacognition, can we assume there is a negative correlation between superego and metacognition?

With regard to the inconsistent impact of superego and metacognition in made of mental disorders, it seems there is a negative significant correlation between these two variables. This research was conducted to investigate the question and above hypothesis. Given the different views that have been adapted metacognition and superego (metacognition and psychoanalysis) a positive response to this question may be a step on the nearing way of mentioned viewpoints.

Materials and Methods

This is a fundamental and cross-sectional study with a correlational design. The target population of the study is male and female students at Ferdowsi University of Mashhad who are living in the university dormitory. A sample of 206 students (69 female, 134 males, and 3 unspecified sexual identities) that have met the criteria for participating in this study was recruited from target population through convenience sampling.

This study sample size was determined based on the minimum sample required to perform both correlational and causal-comparative statistic designs. At least number of samples to test for correlational analysis is equaled to 30, 15 people that are often used in causal-comparative research (40). Given the number of samples in this study and subgroups of women and men, is beyond the expected conditions.

This study's variables are superego, metacognition, and gender.

Research instruments

- *Metacognitive Inventory:* This is a self-report questionnaire designed to assess the efficacy (or efficiency) level of metacognitive, including cognitive-emotional awareness, cognitive-emotional, unambiguity, as well as planning and strategies. The primary version of this scale was consisted of 84 questions, however, after the pilot performance and many interviews as well as considering other professionals' opinions and performance of exploratory and confirmatory factor analyses, researchers decided to reduce the questions to 27. Respondents rate the items on a 6-point Likert scale ranging from 1 (disagree strongly) to 6 (agree strongly). Regarding the reliability, researchers assessed both internal consistency and test-retest reliability. The Cronbach's alpha and the test-retest reliability (Pearson correlation) for the overall scale are reported to be 0.86, and 0.89, respectively. Moreover, 15 mental health professionals evaluated the face and the content validity and editorial changes were incorporated based on their comments.

- *Superego Questionnaire:* This is a 23- item questionnaire, consisting of three subscales, 1) conscience, and 2) guilty feelings/ self-blaming. This instrument is developed by researchers at Ferdowsi University of Mashhad in order to evaluate the superego. The primary 45-item version of this questionnaire has changed because after pilot administration, those questions that had difficulty obtaining the acceptable level of internal consistency were omitted. In addition to the

abovementioned reason, evaluation of psychometric properties, as well as considering opinions of psychodynamic professionals and performance of exploratory and confirmatory factor analyses, researchers have decided to reduce the questions to 28. Respondents rate the items on a 6-point Likert scale ranging from 1 (disagree strongly) to 6 (agree strongly). Besides, reverse scoring applies on those questions that their numerical scoring scale runs in the opposite direction. Thus, questions 3, 5, 7, 10, 11, 12, and 15 from superego measure need to be reverse scored. To obtain the total score of the test, simply subtracting the conscience subscale scores from the sum scores of other two subscales such as the obedience to parents and the guilty feelings. The Cronbach's alpha for the overall scale is reported to be 0.78. Furthermore, 15 mental health professionals evaluated the face and the content validity and editorial changes were incorporated based on their comments.

All statistical analyses were carried out using the SPSS 23 statistical package. The research analysis is presented as follows: Descriptive statistics in order to present the frequencies, means, and standard deviations of all applied variables. Considering inferential statistics, Pearson's correlation and Independent samples t-test are used for data analysis.

Results

Participants were 206 undergraduate and graduate students at Ferdowsi University of Mashhad. Among this sample, 33.5% (n = 69) were women, 65% (n = 134) were men, and 1.5% (n =3) did not report their sex. Participants ranged in age from 18 to 58 years, with a mean of 25 (*SD* = 7) years of age. The mean and standard deviation scores of superego, conscience, and metacognition variables were presented [(*M* = 14, *SD* = 10; female's mean = 15, male's mean = 11.5), (*M* = 27, *SD* = 5; female's mean = 26.4, male's mean = 28), and (*M* = 88.7, *SD* = 14.5; female's mean = 88, male's mean = 89.8)], respectively.

Although negatively and conversely, the results of Pearson's correlation indicate that there is significant relationship between metacognition and superego (r=0.38, *P*<0.001). In fact, the more inflexible and the stronger the superego are, the less efficient the metacognition, and conversely will be.

Table 1. Pearson's correlation between superego and metacognition

Variable	Correlation	Significant
Superego Metacognition	0.38	0.001

The results of Pearson's correlation also demonstrate that there is significant relationship (strong positive correlation) between metacognition and conscience (r=0.65, *P*<0.0001). Thus, the stronger the metacognition is, the more powerful the conscience will be.

Table 2. Pearson's correlation between conscience and metacognition

Variable	Correlation	Significant
Conscience Metacognition	0.65	0.0001

With regard to the superego, there is no significant difference between men and women (t=0.173, *P*<0.863).

Regarding the conscience, results show a significant difference between male and female (t=2.319, *P*<0.05). This result suggests that women have more inflexible yet powerful superego than men.

Table 3. T test between men and women conscience

Groups	T	Significant
Men Women	-2.319	0.05

Also there is no significant difference between men and women score of metacognition (t=0.741, *P*=0.05). Therefore, gender does not have an importance role in participants' metacognition.

Discussion

Based on the above-mentioned results, superego and metacognition have a negative and converse relationship with each other- that is to say, participants with stronger superego are not able to efficiently benefit from their metacognitive abilities. There are no previous investigations about the relationship between the metacognition and the superego, however, findings from the previous studies on each of the two aforementioned variables indicated that among neurotic patients, superego is usually characterized as strong, critical, and inflexible (2), on the other hand, within the same sample, metacognition is usually described as weak and inefficient (23-35). Theses previous findings suggested that superego and metacognition play different and opposite roles in producing psychological problems. Consistent with these findings, the current study's result with respect to the inverse and negative relationship between metacognition and superego also extend the earlier research findings. Therefore, this study provides evidence that the information processing system of

mind may operate under the surveillance of both metacognition and superego constructs that can be uniquely accounted for by different executive functions. An earlier research study on metacognition indicated that metacognition is influenced by ego-related functions (12). Hence, similar to ego, metacognition functions with respect to the present time and place as well as the reality principles, whereas superego has retrospective, prejudicial, and judgmental characteristics (36). Consistent with this reasoning, but distinct from those previous investigations that represented the significant role of superego in one's moral system and therefore, metacognition and superego's responsibilities in the psychic system must be balanced and proportionate, during the psycho-developmental stages it is important to gradually decrease superego responsibilities in favor of improving metacognitive abilities. Even though during the earlier developmental stages superego could function more adaptively, after entering to the more abstract developmental stages, this premature ethical construct gradually becomes less functional and therefore it should be substituted with a more adaptive, autonomous, and flexible ethical construct. Although it may not occur thoroughly, this transition seems to be a natural developmental process. The problem arises when the transition is not handled properly and therefore, individuals' evaluations even after entering the adulthood stage are more superego-centered than based on metacognitive appraisals.

Consequently, the role of superego is strengthened by delayed transition, indicating that individuals constantly criticizing others including themselves in accordance with premature ethical evaluations. Thus, the individual may encounter more conflicts that could lead to psychological disorders. In contrast, when superego gradually is replaced by metacognitive appraisal during an appropriate transition, individuals' behaviors become more reality based and therefore more adaptive. This finding is in line with those psychodynamic perspectives that assume mature ethical functions result from logical ego than superego (5).

The results further demonstrated a positive correlation between conscience and metacognition. A strong relationship between conscience and metacognition suggests that these two variables have a significant overlap with each other and practically consider as two term for a single concept. Thus, we presume that conscience functions in accordance with metacognitive evaluation based on the possible explanations discussed for the relationship between superego and metacognition. This finding inconsistent with Freud's theory of psychoanalysis is in line with the psychodynamic perspectives, which distinguish between the two concept of superego and conscience (5). This result indicated that after psychological maturation, conscience in accordance with metacognitive regulations is responsible for ethical behaviors. That is, ethical principles among the individuals with stronger moral conscience regarding efficient metacognitive abilities are described as more adaptive, mature, and flexible. In addition, well as unlimited empathetic capacities. In other words, the abovementioned ethical principles aim to help others as well as to avoid committing crimes with respect to mutual understanding, perspective taking, and empathetic capacities.

The results from t-test demonstrated no significant differences regarding superego scores between men and women. On the other hand, with regard to conscience variable, women received higher scores than their counterparts. Such a negative correlation could be explained based on psychodynamic approaches such as Klein and Sagan approaches have been focusing on differentiating between the constructs of superego and conscience. In fact, they presume this distinguishing consideration results from pre-oedipal identification as well as internalizing supportive, caring, and loving nurturer object (5).

Moreover, men's lower conscience scores could also result from different cultural expectations between men and women. For instance, within most cultures women are generally considered as more kind hearted and sensitive than men. Thus, women's stronger moral conscience may also relate to female's stronger identification with the parental object.

This finding is also compatible to Glycan's belief that women's moral conscience functions in accordance with empathy and consideration toward others (11).

While the present findings lend support the importance of addressing the relationship between metacognition and psychodynamic concept of superego, it will have some limitations involving the nature of the sample and the methods of measurement. The data to be obtained is based on self-reports collected through convenience sampling among prisoners. Therefore, there is a possibility of response set bias.

In addition, the cross-sectional nature of this study as well as the correlational design would prevent finding casual inferences.

This study has some important implications, particularly as it aims to obtain a comprehensive pattern between metacognition and psychodynamic concepts. In addition, while a great deal of research has separately performed on both subjects of metacognition and superego, the purpose of investigating the relationship between these two important factors, will be the first to study within the current study sample. Moreover, the result of current study may have important implications on designing efficient preventive strategies as well as applying specific clinical interventions.

Because the relationship between superego and metacognition- that each belong to a different perspective -has been investigated for the first time in this study, this research can be a step on the way to approach the cognitive and psychoanalytic perspectives that Piaget hoped for it. The results showed that one of the main causes of the ineffectiveness of metacognition is severity of superego; a factor always has been neglected in the cognitive and metacognitive studies. This neglect creates a vicious circle in explaining mental disorders. This study shows unbiased perspective beyond a particular theory (eg. metacognition, or psychoanalysis) is necessary to explain mental disorders.

Because of a direct relationship between conscience and metacognition it can be said that the stronger metacognition is stronger conscience and at the same time the superego is weaker. Thus the results of this study show that metacognition and consciousness can be strengthened by reducing the severity of the superego to improve mental health.

Conclusion

This study showed that there is an inverse relationship between superego and metacognition. The ineffectiveness of metacognition in neurotic disorders like depression and obsessive-compulsive and the reason of this inefficiency always have been of interest to cognitive researchers in explaining mental disorders.

Acknowledgment

I would like to express my deepest gratitude to all the students at Ferdowsi University of Mashhad who have participated in this study. I would also like to thank all the colleagues who have supported me during this research study. I would like to sincerely thank Ms. Aghileh Sadat Mousavi, PhD candidate of psychology at Ferdowsi University of Mashhad, for sharing your knowledge, and providing me with valuable information regarding the theoretical concept of superego.

This paper are from the thesis of first author is approved by the Department of Psychology of Ferdowsi University of Mashhad. All participants will be required to sign a written consent in order to participate in the study. Among other topics, the consent will inform participants of sponsors, participation requirements, logistics, ability to withdraw without penalty, risks, benefits, compensation, confidentiality, contact for questions, and legal rights.

The author declared no potential conflicts of interest with respect to the research.

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. Freud S. On narcissism: an introduction. Standard edition. London: Hogarth; 1914: 67-104.
2. Freud S. The Ego and the Id. Standard edition. London: Hogarth; 1923: 3-67.
3. Freud S. The economic problem of masochism. Standard edition. London: Hogarth; 1924: 157-72.
4. Freud S. Inhibitions, symptoms and anxiety. Standard edition. London: Hogarth; 1926: 77-178.
5. Carveth DL. On the psychoanalytic sociology of Eli Sagan. Clio's Psyche 2011; 18(3): 357-61.
6. Carveth DL. Superego, conscience, and the nature and types of guilt. Modern Psychoanal 2010; 35(1): 106-30.
7. Freud S. The dissolution of the oedipus complex. Standard edition. London: Hogarth; 1924: 173-82.
8. Freud S. Some psychical consequences of the anatomical distinction between the sexes. Standard edition. London: Hogarth; 1925: 243-60.
9. Freud S. Female sexuality. Standard edition. London: Hogarth; 1931: 223-64.
10. Freud S. New introductory lectures on psycho-analysis (Lecture XXXIII Femininity: 112-135). Standard edition. London: Hogarth; 1933: 3-184.
11. Gilligan C. In a different voice. Cambridge, MA: Harvard University Press; 1982: 24-39.
12. Parviz K, Aghamouhamadian-Sharbaf HR, Ghanbari-Hashemabadi B, Dehghani M. [The relationship between ego strength and metacognition among male and female students]. Educational strategy medical sciences 2016; 9(2): 118-26. (Persian)
13. Flavell JH. Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. Am Psychol 1979; 34(5): 906-11.

14. Costa A, O'Leary P. Co-cognition: The co-operative development of the intellect. In: Davidson N, Worsham T. Enhancing thinking through co-operative learning. New York: Teachers College; 1992.
15. Kuhn D, Dean D. A bridge between cognitive psychology and educational practice. Theor Pract 2004; 43(4): 268-73.
16. Higgins ET. Self-discrepancy: A theory relating self and affect. Psychol Rev 1987; 9(4): 319-40.
17. McLeod L. Young children and metacognition: Do we know what they know they know? And if so, what do we do about it? Aust J Earl Child 1997; 22(2): 6-11.
18. Cross DR, Paris SG. Developmental and Instructional analyses of children's metacognition and reading comprehension. J Educ Psychol 1988; 80(2): 131-42.
19. Schraw G, Moshman D. Metacognitive theories. Educ Psychol Rev 1995; 7(4): 351-71.
20. Schraw G, Crippen KJ, Hartley K. Promoting self-regulation in science education: Metacognition as part of a broader perspective on learning. Res Sci Educ 2006; 36(1): 111-39.
21. Kadivar P. Metacognitive processes and its application in teaching and learning research on education issues. Journal of psychology 2002; 5(4):87-10. (Persian)
22. Wells A, Matthews G. Modeling cognitive in emotional: The S-REF. Behav Res Ther 1996; 34(11-12): 881-8.
23. Wells A. The attention training technique: Theory, effects, and a metacognitive hypothesis on auditory Hallucinations. Cogn Behav Pract 2007; 14(13): 4-8.
24. Papageorgiou C, Wells A. An empirical test of a clinical metacognitive model of rumination and depression. Cogn Ther Res 2003; 27(2): 61-73.
25. Cartwright-Hatton S. Wells A. Beliefs about worry and intrusions: The meta-cognitions questionnaire and its correlates. J Anxiety Disord 1997; 11(2): 79-96.
26. Parviz K, Salehi Fadardi J. [Comparing the metacognitive process of students with- and without social phobia]. Educational strategies in medical Sciences 2015; 7(6): 405-10. (Persian)
27. Wells A, Carter K. Further tests of a cognitive model of generalized anxiety disorder: Metacognitions and worry in GAD, panic disorder, social phobia, depression and non-patients. Behav Ther 2001; 32(15): 85-102.
28. Bouman TK, Meijer KJ. A preliminary study of worry and meta-cognitions in hypochondriasis. Clin Psychol Psychother 1999; 6(6): 96-102.
29. Wells A, Papageorgiou C. Relationships between worry, obsessive-compulsive symptoms and metacognitive beliefs. Behav Res Ther 1998; 39(89): 9-13.
30. Hermans D, Engelen U, Grouwels L. Cognitive confidence in obsessive–compulsive disorder. Distrusting perception, attention and memory. Behav Res Ther 2008; 46(20): 98-113.
31. Moritz S, Peters M, Lari F, Lincoln T. Metacognitive beliefs in obsessive-compulsive patients: a comparison with healthy and schizophrenia a participants. Cogn Psychiatr 2010; 15(12): 531-48.
32. Bahramizadeh H. [Subscribe problematic factors in the comorbidity of anxiety and depression: the mediating role of metacognitive beliefs, anxiety sensitivity and unbearably]. MS. Dissertation. Tehran University, 2012. (Persian)
33. Holeva Tarrier N, Wells A. Prevalence and predictors of acute PTSD following road traffic accident: Thought control strategies and social support. Behav Ther 2001; 32(17): 65-83.
34. Roussis P, Wells A. Post-traumatic stress symptoms: tests of relationships with thought control strategies and beliefs as predicted by the metacognitive model. Pers Individ Diff 2006; 40(1): 11-22.
35. Spada MM, Nikcevic AV, Moneta GB, Wells A. Metacognition, perceived stress, and negative emotion. Pers Individ Diff 2008; 44(11): 72-81.
36. Samarin-Nouri Sh, Buromand-Nasab M, Falatony F, Seraj-Khorami N. Comparison of motivational beliefs and self-regulated learning strategies in gifted and normal students. New findings in psychology 2009; 4(11): 47-59.
37. Javadi M, Keyvanara M, Yaghoubi M, Hassanzadeh A, Ebadi Z. The relationship between metacognitive awareness of reading strategies and academic achievement in students of Medical Sciences University of Isfahan. Iran J Med Educ 2010.10(3)246-54
38. Ababaf Z. Compare cognitive and metacognitive strategies of high school students. Journal of educational innovations 2008; 7(25): 119-50.
39. Aboulghasemi A, Kyamrsy A. The relationship between metacognition and cognitive disorders in the elderly. Advances in cognitive sciences 2009; 11(1): 8-15.
40. Delavar A. [The research method in psychology and educational sciences]. Tehran: Virayesh; 2001. (Persian)
41. Parviz K. An analyzing of cognitive and metacognitive strategies in learners: Interactive effect of learning environments as physical environment and location as social environment. Intern J Learn 2013; 18: 49-63.
42. Venman MVJ, Spaans MA. Relation between intellectual and metacognitive skills: Age and task differences. Learn Individ Diff 2005; 15(2): 159-76.
43. Williams WM, Blythe T, White N, Gandner H, Sternberg RJ. Practical intelligence for school: Developing meta-cognitive sources of achievement in adolescence. Dev Rev 2002; 22(2): 162-210.
44. Parviz K, Sharifi M. [Relationship between cognitive and metacognitive strategies and educational success in urban and rural high school students]. Iranian journal of educational strategy 2011; 4(1): 1-6. (Persian)