British Journal of Education, Society & Behavioural Science
19(2): 1-10, 2017; Article no.BJESBS.28972
ISSN: 2278-0998

SCIENCEDOMAIN *international*
www.sciencedomain.org

Deterministic Thinking and Mental Health: A Review Article

Erfan Soleimani Sefat[1], Mohammad Rostami[1], Seyyed Jalal Younesi[1*] and Farshad Fathi[2]

[1]Department of Counseling, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
[2]Department of Rehabilitation Management, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJESBS/2017/28972
Editor(s):
(1) Redhwan Ahmed Mohammed Al-Naggar, Population Health and Preventive Medicine, Universiti Teknologi MARA, Sungai Buloh, Selangor, Malaysia.
Reviewers:
(1) Olga Garcia Falceto, Universidade Federal do Rio Grande do Sul, Brazil.
(2) Michael Galea, University of Malta, Malta.
(3) Abdelaziz M. Thabet, Alquds University, Palestine.
Complete Peer review History: http://www.sciencedomain.org/review-history/17688

Review Article

Received 16th August 2016
Accepted 15th December 2016
Published 31st January 2017

ABSTRACT

One of the most important cognitive distortions is 'deterministic thinking'. It brings about cognitive rigidity, may be the source of all kinds of distortions, plays a destructive role in family- and society-based interactions, and leads to psychological problems. The purpose of this study was to investigate the effect of deterministic thinking, which was introduced by Younesi and Mirafzal in 2013, on mental health. We identified relevant studies through searching the computerized databases PsycINFO, ProQuest, Scopus, Iranian Scientific Information Database (SID) and Google Scholar. Additional relevant studies were identified through exploring the reference sections of studies found during the initial search. We retrieved a total of 11 studies, 5 of them indicated a positive significant correlation between deterministic thinking and immature defense mechanisms, anxiety, risky behaviors, and depression, and the remaining 6 showed a negative significant correlation between deterministic thinking and mature defense mechanisms, occupational stress,

**Corresponding author: E-mail: jyounesi@uswr.ac.ir;*

hope, mental health, creativity, emotional creativity and marital satisfaction. Although deterministic thinking plays a destructive role in individual interactions in family and society leading to psychological problems, in some situations or careers such as nursing it leads to the reduction of psychological problems.

Keywords: Cognitive Theory (CT); deterministic thinking; mental health.

1. INTRODUCTION

The basic principle of Beck's Cognitive Theory is that the way individuals perceive and process reality will influence the way they feel and behave. Also, people's feedbacks from themselves and the world play an important role in their vulnerability when encountering psychological complexities [1]. Cognitive Theory (CT) assumes that there are thoughts at the fringe of awareness that occur spontaneously and rapidly, and are an immediate interpretation of any given situation [2]. These are called automatic thoughts and are distinguished from the ordinary flow of thoughts observed in reflective thinking or free association. Most people are not immediately aware of the presence of automatic thoughts, unless they are trained at monitoring and identifying them. In the roots of distorted automatic interpretations are deeper dysfunctional thoughts called *schemas* [3]. The concept of schemas was initially proposed by Piaget & Warden in 1926 as the underlying structure for organizing perceptions of the world. The role of schemas is to process everyday stimulus situations in order to provide meaning and, depending on the content, engage other systems such as motivational, affective, and physiological systems. Negatively biased schemas, or those schemas that are theorized to have a causal role in the development of mental disorders such as depression and anxiety, develop through a complex biasing process involving the interaction of genetic factors, selective allocation of attentional resources, and storage in memory with adverse environmental life events [4]. Symptoms of psychopathology (*Emotions*, *cognitions*, and *behaviors*) result when pathological *schemas* are activated by *stressful events* [5]. Information processing depends upon two interacting subsystems, the automatic system and the reflective system. Stimulus events are initially processed by protoschemas, which provide an initial evaluation of stimuli through the automatic system. The reflective system, aided by attentional processes, refines or corrects the meaning or the product of the protoschemas [4]. Thus, the therapeutic goal of CT, since it's very origins, has been to reframe and correct cognitive distortions, and collaboratively endeavor pragmatic solutions to engender behavioral change and ameliorate emotional disorders [6].

The patterns of faulty or negative thinking that characterize emotional disturbances have been referred to as 'cognitive distortions' [7]. The term 'cognitive distortion' was first referred to within the cognitive therapy to describe processing errors or fallacious reasoning with a major role on the development and maintenance of specific psychological disorders, such as depression [8]. Cognitive distortion refers to unusual beliefs about self, such as self-blame, self-criticism, helplessness and hopelessness [9]. Cognitive distortions and cognitive errors are often interchangeably used in the cognitive therapy literature for referring to false beliefs and thoughts, including negative appraisals and interpretations of self, others, experiences or the future leading to externalizing or internalizing problems [10,11]. The role of cognitive distortions in mood disorders is well-documented in the related literature [12-17]. These studies provide supporting evidence for cognitive distortions as a vulnerability factor in mood disorders, poor emotional self-regulation, and other psychological problems.

Various types of cognitive errors have been delineated, including selective abstraction (i.e., focusing on only the negative aspects of an event), magnification/ minimization (i.e., magnifying negative information; minimizing positive information), personalizing (i.e., attributing control over the outcome of negative events to internal causes), all-or-nothing thinking (i.e., viewing situation as having only two possible outcomes, such as "no one wants to go out with me"), catastrophizing (i.e., expecting the worst possible outcome of an event or situation), fortune-telling (i.e., predicting the future with limited evidence), labeling (i.e., putting a general label on someone or something, rather than describing the behaviors or aspects of the thing), emotional reasoning (i.e., arguing that because something feels bad, it must be bad), mind-reading (i.e., predicting or believing you know

what other people think), misattribution (i.e., making errors in the attribution of cause of various events), overgeneralizing (i.e., believing that a single negative outcome is representative of or will occur in all similar future events), disqualifying the positive (i.e., not attending to, or giving due weight to positive information. Similar to a negative "tunnel vision"), and deterministic thinking (i.e., ignoring any possibility or probability in making a conclusion about events, such as "having a beautiful face means having a successful marriage") [18,19].

One of the major cognitive distortions is deterministic thinking [20]. The interpretation of events is affected by this distortion, so the events and their consequences may be thought as: 3×3= 9. Equality may be considered in connection with mathematical science just in mind level not in reality. So it is impossible to find two things that are similar or equal absolutely. Some people use the equality in interpreting events, for example the thoughts of a student who cannot pass a university entrance exam, may be directed to the conclusion that passing the entrance exam is equal to happiness and failing equal to misery [21]. In religious perspective, which is sometimes essential to consider in cognitive therapy of some people [22], this distortion is seen as a destructive factor for ruining the balance of fear and hope, because any exception for consequences of bad or good events should be ruled out by deterministic thinking [18,23]. Therefore, being too disappointed or too hopeful about events, either positive or negative, is not accepted in this perspective as prediction of events may not be possible. Even prediction of "God's will" is not promising in Shiite perspective. This view is called "bada" in Shiite ideology which means everything can be initiated from the beginning. There is a phrase in Islamic culture which is often used by Muslims around the world when they are faced with different events and situations: "Insha Allah" which means "If God Wants". The phrase is in opposition to deterministic thinking, because any consequence of events to come is based on the will of God, and he is the only one who knows and controls everything [24]. This means that any consequence of events is due to the will of God. Studies show that deterministic thinking in close relation with other psychological variables, such as anxiety [25], mental health among substance abusers [26], communication skills [27], life expectancy [28], obsession [29], depression [24], and forgiveness [30].

2. METHODS

A systematic literature search was undertaken which included ProQuest, Scopus, Iranian Scientific Information Databases (SID), and Google Scholar. In addition, the reference lists of the articles included were scrutinized to identify relevant articles not found in the data bases. In each of the databases, searches were conducted in several categories (clinical studies, clinical trials, systematic reviews, etc.). Also the researchers used keywords for deterministic thinking. These keywords were combined with keywords for mental health, such as "mental health, cognitive therapy, cognitive distortions, deterministic thinking".

Articles included in the review had to meet the eligibility criteria. The eligibility criteria are:

> a) Studies written in Persian and English; b) studies published in 2000-2015; c) studies containing new data; d) Dependent variables were restricted to mental health topics ; e) studies investigated Women and men of all ages; and f) Articles must be original studies and not comments or editorials or review.

Articles excluded from the Review were because of one or more of the following reasons: a) Studies published before 2000; b) Articles published in invalid journals and congresses. c) Articles that is relevant to the validity or reliability of DT.

After a precise search of databases for journal articles, these articles were then imported to Refworks. The Primary Excel Workbook for Reviews was used to screen titles and abstracts of items found by database searching. I independently screened all titles and abstracts based on the eligibility criteria specified above. Once all titles and abstracts were screened, the full texts of articles were retrieved for those items not excluded. They were read in full to determine eligibility. Decisions and reasons for exclusion were recorded in the Primary Excel Workbook.

The studies listed in the Table 1 about deterministic thinking and other mental health variables, briefly some research methods show that these studies are correlational which examine the association of determinism with other variables. In study [26], relationship between deterministic thinking and mental health, in study [31] relationship between deterministic thinking and defense mechanisms, in study [32] relationship between deterministic

thinking and general health, in study [33] relationship between deterministic thinking on engagement in risky behaviors, in study [34] relationship between deterministic thinking and occupational stress, in study [35] relationship between deterministic thinking and creativity, and in study [36] relationship between deterministic thinking and marital satisfaction were examined.

The results of this study demonstrated that deterministic thinking has a positive significant relationship with immature defense mechanisms, anxiety and no mental health, dangerous behaviors, no creativity, and marital discords and has a negative relationship with job stress.

Also some other studies are semi-trial which in study [37] the effectiveness of cognitive behavior training on the reduction of deterministic thinking, in study [38] the effectiveness of couple therapy based on attachment in relation to decreasing deterministic thinking and increasing marital satisfaction, and in study [39] the effectiveness of coping with deterministic thinking on the improvement of marital relationship were examined.

Table 1. Studies related to deterministic thinking and other mental health variables

Searcher	Participants	Methods	Results
Younesi J & colleagues[41].	110 individuals who were addicted to drugs (stimulants and Methamphetamine).	Deterministic Thinking questionnaire (DTQ) [23] and General Health Questionnaire (GHQ)[40]	The results showed that there is a positive and significant relationship between deterministic thinking and the lack of mental health which had the closest relation to deterministic thinking among the factors of mental health, such as anxiety and depression.
Younesi J & colleagues) [31]	124 students from technical, economy and management colleges at the University of Tehran.	DTQ and Defense Style Questionnaire[42].	Significant negative correlation between absolute deterministic thinking and prediction of future, deterministic thinking with mature defense mechanisms and significant positive correlation with immature defense mechanisms were found. There are not relationship between other components of deterministic thinking and mature, neurotic and immature defense mechanisms
Younesi J & colleagues [32].	85 female and 73 male students from Kerman Bahonar University.	DTQ, GHQ and Zung Self-Rating Anxiety Scale (SAS) [43],	Significant correlation between DTQ and GHQ in anxiety subscales and also between DTQ and ZAS.
Younesi J & colleagues [33].	200 male and female students (70 students from Technical College, 70 students from the Faculty of Science and 60 students were from Management College)	DTQ and Risky Behaviors questionnaires [44].	Significant positive correlation between deterministic thinking and risky behavior. Deterministic view in interaction with others (as one of DT factors) has the highest correlation with risky behavior.

Searcher	Participants	Methods	Results
Ghasemian D & colleagues [34]	100 male and female nursing personnel working in Imam Khomeimi Hospital.	DTQ and Occupational Stress Inventory (OSI) [45].	Results showed a negative significant relationship between total score and subscales of deterministic thinking and score of Steinmetz Occupational Stress Inventory. The higher deterministic thinking level in nurses, the lesser stress they feel.
Younesi J & colleagues [46].	The patient was a 53 year old engineer who suffered from prostate cancer.	Interview transcriptions (ASL) and researcher observations	Challenging Deterministic Thinking lead to the reduction of depression and anxiety and the increase of hope in cancer patients.
Koohpayeiha M & colleagues [35]	170 students of the University of Tehran.	DTQ, Emotional Creativity Inventory [47] Creativity Questionnaire[48].	Negative significant relationship between creativity and emotional creativity and Deterministic Thinking.
Esbati Mehrnoush [37]	24 mothers of autistic children who were referred to Counseling centers of Tehran.		The results indicated that cognitive behavior training decreased deterministic thinking among mothers of autistic children.
Honarian M & colleagues [38]	Twenty couples who were not satisfied with their marital relationships and had family problems. control group = 10; experimental group =10	The short Persian version of Enrich Marital Satisfaction Inventory (MSI) [49] and DTQ.	The results indicated that the couple therapy based on attachment has impact on raising marital satisfaction and reducing Deterministic Thinking.
Navbi Nezhad Sh and Malek E [39]	51 women working in an engineering company processing structures. control group (n =30); experimental group (n =21)	Dyadic Adjustment Scale [50].	The results showed that training how to cope with Deterministic Thinking was effective in improving the marital relationships.
Younesi j, & Fazel Bahrami [24]	300 couples in Tehran who averaged 36 years of age and had been married for 11 years.	DTQ and the short Persian version of Marital Satisfaction Inventory.	The results revealed a negative correlation between deterministic thinking and marital satisfaction.

The result of these studies [37-39] have shown that reduction in deterministic thinking, cause to improvement of marital relationships and satisfaction, and also increase mental health in mothers of autistic children.

A case study [46] also existed among articles that tried to reduce deterministic thinking in a Patient with cancer by cognition method and as a result, the patient mental adaptation was increased.

Also, it can be noted that all statistical samples that have used in this review article consist of 5 and 6 studies that are done on clinical samples and non-clinical samples respectively. Out of 6 studies, about 4 studies were on students, 1 study was on nurses, and 1 study was done on female employees of Sazeh Pardazi Company. Clinical samples used in other studies include drug abusers, cancer patients, couples with marital discords, and mothers of children with autism.

Another important issue in these studies is differences in the role of deterministic thinking components in the incidence of mental health problems. In study [26], determinism in thinking about negative events and determinism in future prediction were as a subscale which predict the loss of mental health in people with drug abuse. In study [21], absolute view in thinking and deterministic thinking in the future prediction had the highest correlation with Defense mechanisms. In study [32], determinism in interaction with others had the highest role in anxiety. People with high determinism had the most tendencies to predict behavior and intentions of others absolutely, in social relationships. This study also had more female determinism compared to male. Also in study [33], determinism in interaction with others had the highest correlation with dangerous behaviors. In study [34], determinism in negative events had the highest correlation and determinism in future events had the lowest correlation with job stress among nurses.

3. DISCUSSION

Reviewing studies in the present research showed a positive and significant correlation between deterministic thinking and immature defense mechanisms, anxiety, risky behaviors, and depression, and also a negative significant correlation with mature defense mechanisms, occupational stress, hope, mental health, creativity, emotional creativity and marital satisfaction.

The discussion on the results of this study will be presented in two parts. The first part includes explanation and justification of direct correlation between deterministic thinking and mental problems such as anxiety, risky behaviors, and depression. The second part includes explanation and justification of inverse correlation between deterministic thinking and mental problems such as occupational stress.

First: Owing to the fact that the relations between deterministic thinking and some of the mental problems have been detected, it can be asserted that determinism plays a major role in mental problems and disorders. Explanation and justification of the role of deterministic thinking in mental problems can be done from two perspectives: 1. People who tend to see things and events in certain conditions without any degree of probability always experience more anxiety, because they sabotage the balance between hope and fear from an Islamic perspective [51,52]. This refers to the nature of the world, in which all events cannot be precisely predicted without error, because creation is not finished [53]. Thus it is not possible to exactly predict the end of an unfinished job. In other words, both individuals who have either more hope than fear in predicting with optimism, or those who have more fear than hope in foreseeing events with pessimism, can experience anxiety and depression. 2. The distortion brings about cognitive rigidity and may be the source of all distortions [19]. Cognitive rigidity is a main reason for depression, anxiety and other psychosocial maladjustments [54]. Cognitive rigidity may play a key role in psychopathology. It has been closely linked to the inability of suicidal individuals to consider alternatives that may be accessible to another person [54], as well as to rumination, a major risk factor of depression [55]. Similar forms of cognitive rigidity were also indicated in obsessions [56,57], alcohol dependence [58], eating disorders [59], and Attention Deficit Disorder [60-62].

Cognitive rigidity is the tendency to think in a dichotomous manner or “in polar extremes instead of shades of gray”. Indeed, cognitive rigidity occurs when individuals are unable to consider alternatives to the current situation, alternative viewpoints, or innovative solutions to a problem. Individuals with rigid thinking tend to view things in “either-or” terms (e.g., things are right or wrong, good or bad). They want concrete, black and white answers. The “gray areas” of life are very uncomfortable (e.g., they often haves an exact way of doing things with no variations) [63].

Second: One of the notable findings in this study was the inverse correlation between deterministic thinking and occupational stress. The results showed that an increased or decreased level of deterministic thinking decreases or increases the level of occupational stress among nurses. Regarding the negative nature of occupational stress, it was expected that with the increase of deterministic thinking, nurses’ occupational stress would increase too. Occupational stress has become an increasingly public concern in the past three decades due to its significant impact on health and economic loss [64]. People who experience a lot of stress, pay less attention to their work; and in general, occupational stress lowers efficiency and productivity of employees [34]. Some personal and environmental factors

including education, experience, hospital sizes, ward, working hours, support from co-workers and opportunities to consult in the workplace impact the level of understanding and experienced stress among nurses [34]. The role of deterministic thinking in reduce nurses' stress can be explained in the field of nursing education as one of the sources of occupational stress.

Deterministic thinking is a kind of certainty in related to different subjects. This view is based on scientific knowledge in nursing science, which Studies have been done in this area [65-67]. Certainty and uncertainty have been discussed from perspective of nursing in relation with clinical decision making [66]. Decision-making regarding patient treatment under ambiguity and uncertainty is one of occupational stress factors among nurses [68,69].

Each decision can be placed on a continuum from 'complete ignorance' (not even the possible outcomes are known) through 'uncertainty' or 'ambiguity' (the outcomes are known but their probabilities are not known) to 'risk' (the outcome probabilities are specified) and, finally, to 'certainty' (where only a single, deterministic outcome is known to result) [68]. Characteristics of the decision-maker often interact with characteristics of the situation in determining risk-taking. This is either because different decision-makers use different processes to different degrees or because the same processes result in different output. For instance, decision-makers familiar with a choice domain may experience positive emotions such as comfort or Confidence when contemplating risky options in that domain, whereas decision-makers unfamiliar with the domain will experience negative emotions such as anxiety [70]. hence, Nurses are expected to access, appraise, and incorporate research evidence into their professional judgment and clinical decision making[66]. Also, Many researchers reported that personality traits and Attitude to patients influence Job and academic Performance [25,71-73]. For example, Al-Naggar et al. [71] reported that Personality traits of conscientiousness and openness has a positive effect on academic performance by creating positive emotions. As a result, nurses have more information and experience in the field of nursing; deal with higher certainty and less ambiguity to care and treatment of their patients, which leads to feeling of self-esteem and less stress and anxiety among nurses.

4. CONCLUSION

Although deterministic thinking plays a destructive role in the interactions of individuals in family and society circumstances and leads to psychological problems, in some situations, such as nursing, it leads to the decrease of psychological problems. Addressing DT in cognitive therapy can help clients reduce their psychological problems.

ACKNOWLEDGEMENT

We would like to thanks research section of University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Warner R. The environment of schizophrenia: Innovations in practice, policy and communications: Routledge; 2003.
2. Beck AT. Cognitive therapy and the emotional disorders. Penguin; 1979.
3. Beck AT. The current state of cognitive therapy: A 40-year retrospective. Archives of General Psychiatry. 2005;62(9):953-9.
4. Beck AT, Haigh EA. Advances in cognitive theory and therapy: The generic cognitive model*. Annual Review of Clinical Psychology. 2014;10:1-24.
5. Fowler D, Garety P, Kuipers E. Cognitive behaviour therapy for psychosis: Theory and practice. Wiley; 1995.
6. Knapp P, Beck AT. Cognitive therapy: Foundations, conceptual models, applications and research. Revista Brasileira de Psiquiatria. 2008;30:s54-s64.
7. Weems CF, Berman SL, Silverman WK, Saavedra LM. Cognitive errors in youth with anxiety disorders: The linkages between negative cognitive errors and anxious symptoms. Cognitive Therapy and Research. 2001;25(5):559-75.
8. Sigre-Leirós V, Carvalho J, Nobre PJ. Rape-related cognitive distortions: Preliminary findings on the role of early maladaptive schemas. International Journal of Law and Psychiatry; 2015.

9. Zamani ZA, Nasir R, Desa A, Khairudin R, Yusooff F. Family functioning, cognitive distortion and resilience among clients under treatment in drug rehabilitation centres in Malaysia. Procedia-Social and Behavioral Sciences. 2014;140:150-4.
10. Covino FE. Cognitive distortions and gender as predictors of emotional intelligence. Northcentral University; 2013.
11. Spörrle M, Strobel M, Tumasjan A. On the incremental validity of irrational beliefs to predict subjective well-being while controlling for personality factors. Psicothema. 2010;22(4):543-8.
12. Adomeh IO. Fostering emotional adjustment among Nigerian adolescents with rational emotive behaviour therapy. Educational Research Quarterly. 2006; 29(3):21-9.
13. Barriga AQ, Hawkins MA, Camelia CR. Specificity of cognitive distortions to antisocial behaviours. Criminal Behaviour and Mental Health. 2008;18(2):104-16.
14. Flouri E, Panourgia C. Gender differences in the pathway from adverse life events to adolescent emotional and behavioural problems via negative cognitive errors. British Journal of Developmental Psychology. 2011;29(2):234-52.
15. Troy AS, Wilhelm FH, Shallcross AJ, Mauss IB. Seeing the silver lining: Cognitive reappraisal ability moderates the relationship between stress and depressive symptoms. Emotion. 2010; 10(6):783.
16. Siemer M, Mauss I, Gross JJ. Same situation--different emotions: How appraisals shape our emotions. Emotion. 2007;7(3):592.
17. Ingram RE, Trenary L, Odom M, Berry L, Nelson T. Cognitive, affective and social mechanisms in depression risk: Cognition, hostility and coping style. Cognition and Emotion. 2007;21(1):78-94.
18. Younesi J. The major role of cognitive misconceptions" equality in thinking" in psychological disorders. Journal of Social Sciences and Humanities, The Research Institute of Seminary & University (Hawzeh va Daneshgah). 2004;10:8-29.
19. Herbert JD, Forman EM. Acceptance and mindfulness in cognitive behavior therapy: Understanding and applying the new therapies. John Wiley & Sons; 2011.
20. Younesi J, Mirafzal AA. Development of deterministic thinking scale based on Iranian culture. Psychology. 2013;4(11): 808.
21. Younesi J, Manzari Tavakkoli V, Hashemzadeh V. Relationship between deterministic thinking and defense mechanisms among students at University of Tehran. Journal of Behavioral Sciences in Asia. 2014;2(8):19-31.
22. Flanagan J, Flanagan RS. Counseling and psychotherapy theories in context and practice. Nova Jérsia: John Wiley & Sons, Inc; 2004.
23. Younesi J, Mirafzal A, editors. Development of deterministic thinking questionnaire. European Congress of Psychology Prague Czech Republic; 2007.
24. Younesi J, Bahrami F. Prediction of rate of marital satisfaction among Tehranian couples by deterministic thinking. Journal of Iranian Psychologists. 2009;14:56-68.
25. Judge TA, Higgins CA, Thoresen CJ, Barrick MR. The big five personality traits, general mental ability and career success across the life span. Personnel Psychology. 1999;52(3):621-52.
26. Younesi SJ, Ebrahimi M, Mohammadi HG. The relation between deterministic thinking and mental health among substance abusers who involved rehabilitation program. Iranian Rehabilitation Journal. 2015;13(2):61-70.
27. Maghsoudzade M. Prediction of marital satisfaction of shahed sons and spouses by rate of deterministic thinking and communication skills [Unpuplished MSc Thesis]. Tehran: University of social Welfare and Rehabilitation Sciences; 2010.
28. Rah Anjam S. Prediction of hope rate by deterministic thinking among students of Azad Universities of Tehran. [Unpuplished M. Sc. Thesis]. Tehran: University of Azad (Central branches); 2010.
29. Mousavi Y. The relationship between deterministic thinking and obsession compulsive symptom among students university of social welfare sciences and rehabilitation. Tehran, Iran: University of Social Welfare and Rehabilitation Sciences; 2010.
30. Borooghani M. Prediction of forgiveness by deterministic thinking among couples who are volunteers for divorce [Unpuplished M. Sc. Thesis]. Tehran: University of Social Welfare and Rehabilitation Sciences; 2010.
31. Younesi J, Manzari Tavakkoli V, Hashemzadeh V. Journal of Behavioral Sciences in Asia. 2014;2(8):19-31.

32. Younesi SJ, Ravari MT, Esbati M. Relationship between deterministic thinking and general health. Applied Psychology. 2014;2(6):38-47.
33. Younesi J. Important factors in engaging in risky behavior among students: Deterministic thinking. Advances in Environmental Biology. 2014;8(21):234-9.
34. ghasemian D, mohamadi S, ebrahimi S. The relationship between deterministic thinking and occupational stress amoung nurses. Journal of Social Issues & Humanities. 2013;1(7).
35. Koohpayeiha M, Hossaeni A, Razavi N V. Investigate the relationship between deterministic thinking with creativity and emotional creativity. Journal of Innovation and Creativity in Human Science. 2012; 3(1).
36. Younesi SJ, Bahrami F. Prediction of marital satisfaction and deterministic thinking in couples. Journal of Iranian Psychologists. 2009;5(19):241-50.
37. Esbati M. The state of deterministic thinking among mothers of autistic children. Iranian Rehabilitation Journal. 2011;9(14):10-3.
38. Honarian M, Younesi J, Shafiabadi A, Nafissi G. The impact of couple therapy based on attachment" in deterministic thinking and marital satisfaction among couples. Int J Psychol Counselling. 2010; 2:91-9.
39. Navbi nezhad Sh, Malek A. The effectiveness of coping with deterministic thinking on improving marital relationships. Thought and Behavior in Clinical Psychology. 2010;4(16).
40. Goldberg DP, Hillier VF. A scaled version of the general health questionnaire. Psychological Medicine. 1979;9(01):139-45.
41. Younesi SJ, Ebrahimi M, Gholam Mohammadi H. The relation between deterministic thinking and mental health among substance abusers involved in a rehabilitation program. Iranian Rehabilitation Journal. 2015;13(2):38-44.
42. Andrews G, Singh M, Bond M. The defense style questionnaire. The Journal of Nervous and Mental Disease. 1993;181(4): 246-56.
43. Zung WW. A rating instrument for anxiety disorders. Psychosomatics. 1971;12(6): 371-9.
44. Association ACH. American college health association national college health assessment spring 2006 reference group data report (abridged). Journal of American College Health. 2007;55(4):195.
45. Steinmetz J. The stress reduction program at University Hospital. San Diego: University of California Medical Center; 1977.
46. Younesi SJ, Mirafzal A, Tooyserkani M. Reduction of deterministic thinking among cancer patients as a new method to increase psychosocial adjustments. Iranian Journal of Cancer Prevention. 2012;5(2): 81.
47. Averill JR. Creativity in the domain of emotion. Handbook of Cognition and Emotion. 1999:765-82.
48. Auzmendi E, Villa A, Abedi J. Reliability and validity of a newly constructed multiple-choice creativity instrument. Creativity Research Journal. 1996;9(1):89-95.
49. Asgari A, Bahmani B, editors. Standardize enriched marital satisfaction inventory in Tehran. The Second Congress of Family Pathology in Iran, Beheshti University; 2006.
50. Spanier GB. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. Journal of Marriage and the Family. 1976:15-28.
51. Faizol Al Islam A. Translation and explanation of Nahjo Al balagheh. Tehran: Islamieh Press; 1973.
52. SA-I K. Osool Al Kaffi. Tehran: Mostafavi Press; 1980.
53. Quran Al Karim. 216; 16, 8; 55, 29. Islamieh Press. Tehran; 1978.
54. Weishaar ME, Beck AT. Hopelessness and suicide. International Review of Psychiatry. 1992;4(2):177-84.
55. Whitmer AJ, Banich MT. Inhibition versus switching deficits in different forms of rumination. Psychological Science. 2007; 18(6):546-53.
56. Zohar AH, LaBuda M, Moschel-Ravid O. Obsessive-compulsive behaviors and cognitive functioning: A study of compulsivity, frame shifting and type A activity patterns in a normal population. Cognitive and Behavioral Neurology. 1995;8(3):163-7.
57. Gross-Isseroff R, Sasson Y, Voet H, Hendler T, Luca-Haimovici K, Kandel-Sussman H, et al. Alternation learning in obsessive-compulsive disorder. Biological Psychiatry. 1996;39(8):733-8.

58. Sullivan EV, Mathalon DH, Zipursky RB, Kersteen-Tucker Z, Knight RT, Pfefferbaum A. Factors of the wisconsin card sorting test as measures of frontal-lobe function in schizophrenia and in chronic alcoholism. Psychiatry Research. 1993;46(2):175-99.
59. Shearin EN, Russ MJ, Hull JW, Clarkin JF, Smith GP. Construct validity of the three-factor eating questionnaire: Flexible and rigid control subscales. International Journal of Eating Disorders. 1994; 16(2):187-98.
60. Cepeda NJ, Cepeda ML, Kramer AF. Task switching and attention deficit hyperactivity disorder. Journal of Abnormal Child Psychology. 2000;28(3):213-26.
61. Seidman LJ, Biederman J, Faraone SV, Weber W, Ouellette C. Toward defining a neuropsychology of attention deficit-hyperactivity disorder: Performance of children and adolescents from a large clinically referred sample. Journal of Consulting and Clinical Psychology. 1997; 65(1):150.
62. Everett J, Thomas J, Cote F, Levesque J, Michaud D. Cognitive effects of psychostimulant medication in hyperactive children. Child Psychiatry and Human Development. 1991;22(2):79-87.
63. Eliason RV. The roles of cognitive rigidity and impulsivity in adolescent suicide attempts. West Virginia University Libraries; 2000.
64. Wu H, Zhao Y, Wang J-N, Wang L. Factors associated with occupational stress among Chinese doctors: A cross-sectional survey. International Archives of Occupational and Environmental Health. 2010;83(2):155-64.
65. Coombs M, Fulbrook P, Donovan S, Tester R. Certainty and uncertainty about end of life care nursing practices in New Zealand intensive care units: A mixed methods study. Australian Critical Care. 2015;28(2): 82-6.
66. Thompson C, Cullum N, McCaughan D, Sheldon T, Raynor P. Nurses, information use and clinical decision making—the real world potential for evidence-based decisions in nursing. Evidence Based Nursing. 2004;7(3):68-72.
67. Milton CL. Advance directives: Living With certainty-uncertainty—a nursing perspective. Nursing science quarterly. 2001;14(3):195-8.
68. Starcke K, Brand M. Decision making under stress: A selective review. Neuroscience & Biobehavioral Reviews. 2012;36(4):1228-48.
69. Dagget T, Molla A, Belachew T. Job related stress among nurses working in Jimma Zone Public Hospitals, South West Ethiopia: A cross sectional study. BMC Nursing. 2016;15(1):39.
70. Weber EU, Johnson EJ. Decisions under uncertainty: Psychological, economic and neuroeconomic explanations of risk preference. Neuroeconomics: Decision Making and the Brain. 2008;127-44.
71. Al-Naggar RA, Osman MT, Ismail Z, Bobryshev YV, Ali MS, Menendez-Gonzalez M. Relation between type of personality and academic performance among Malaysian Health Sciences Students. International Archives of Medicine. 2015;8.
72. Al-Naggar RA. Attitudes towards persons with mental illness among university students. Shanti Patel Letter To The Editor. 2012:15.
73. Chamorro-Premuzic T, Furnham A. Personality traits and academic examination performance. European Journal of Personality. 2003;17(3):237-50.

Peer-review history:
The peer review history for this paper can be accessed here:
http://sciencedomain.org/review-history/17688