

COMPARATIVE STUDY OF COGNITIVE PERFORMANCE (EXECUTIVE FUNCTION “FOCUS AND ATTENTION, WORKING MEMORY) AND ACHIEVEMENT MOTIVATION IN ADOLESCENTS LIVING IN WELL-BEING COMMUNITY CENTERS AND THEIR NORMAL COUNTERPARTS IN TEHRAN

Behnoosh HAMEDALI

PHD of health psychology, Islamic Azad University, UAE branch.

Email: behnooshhamedali@yahoo.com

ABSTRACT

The purpose of this study was to compare the performance of cognitive performance (focus and attention, memory) and the achievement motivation in adolescents living in well-being community centers and their counterparts in Tehran. In this study, except for descriptive studies of causal type were the statistical population includes all adolescents living in well-being boarding centers aged 15 to 18 years old and their normal counterparts in Tehran. Among them, the statistical sample was selected by random sampling method with a sample size of 50 adolescents residing in well-being boarding centers and 50 of their normal counterparts and tested by means of Beck's Tools, the Revised Wechsler Intelligence Scale for Adults IWA and Hermann's achievement motivation questionnaire were evaluated. The present study was used to analyze the results of the comparison of the means for describing and independent t-test for data inference. The results of data analysis showed that adolescents living in well-being boarding centers had less significant scores compared to their normal counterparts in working memory variables, attention and response control, verbal intelligence scores and Wechsler test, as well as the test of the achievement motivation. This difference Were meaningful. It is suggested that children living in counseling and educational services welfare centers should be provided to enhance the achievement motivation and executive functions.

Keywords: Achievement Motivation, Cognitive Performance Functions (Focus and Attention, Memory), Well-Being Community Centers, Adolescents.

INTRODUCTION

Kahn and James (2010) estimated that there are about 515 million orphaned children in the world, that 9 million of them live in special institutions of orphans. Children who live in social welfare centers without the affection of parents and family members, some of these children are deprived, feel frustrated, and sometimes suffer from psychological damages. As these children grow up in institutions that are deprived of natural opportunities to express their love to others and also receiving the kindness of others, they get calm and reluctant, and do not respond any reaction to laughs and show mood swings. These children feel empty and are unhappy and upset that for realizing their rights, may behave unsociable, dangerous and deviant (Vakilian, Arabsalmani and Keramat, 2011).

Teenagers who live in the care centers of orphaned children because their families have abandoned them in accident or in divorce or because of addiction and so forth., experience more problems in the community in comparison with other teenagers without such problems; also, they may feel that they cannot live healthy and normally in the society ; on the other

hand, since the childhood period and the healthy communication of the child with parents, especially the mother, play a significant role in the socialization of the child, children of these centers are often deprived of such an experience; therefore, all these factors can lead to problems; that is to say, when a an orphan is present in the society in which others experienced his problem less, this results in problems to have healthy communication with others which can be effective in their academic performance and consequently, in the motivating of progress (Keil, 2012).

In general, the motivation for academic achievement is an internal force that encourage the learner to assess all the aspects of his performance in accordance with the highest standards, and leads to effort in order to succeed in performance, and enjoyment of pleasure that is associated with success in performance, and by influencing on the different types of educational activities refers to the individual's desire to achieve educational goals. Educational motivation is associated with specific goals, specific attitudes and beliefs, approaches to achievement, and the individual effort. Different studies emphasize the differentiation of motivational orientation of students in different situations (Shorkon et al., 2011). The motivation of educational achievement is one of the learning requirements, and promotes the orientation and intensity of behavior and helps learners to maintain it. With this motivation, individuals follow the necessary mobility to complete a duty successfully, achieve the goal, or achieve a certain degree of competence in their work, in order to finally to achieve success in learning and educational achievement (Asoudi, 2005). Levine (1985) has identified the achievement motive as the greatest learning pathway. Thus, if the person's motivation for knowing, learning and studying will be more, he will suffer more and more effort to reach the final goal. When the person has a high level of achievement motivation, he pays attention to his home works and considers them serious, and also he tries to learn more information beside the classroom lessons. Furthermore, he learns the necessary skills and strategies for learning. It is obvious that achievement in learning also increases the sense of empowerment and interest in learning (Saif, 2007). The academic achievement motivation is a comprehensive tendency to do something well in a certain area and evaluate its performance spontaneously. Therefore, most behavior that shows academic motivation are including insisting on difficult tasks, hardworking, or attempts to learn to the extent of proficiency and accomplish tasks that require effort. Therefore, academic motivation is a psychological state and its emergence depends on the required competence and self-control of an individual (Raeisi, 2001). Another factor that is not important only in academic performance, but also in mental health, performance in different areas as well as individual success is executive functions. Cognitive functions of brain include a wide range of capacities and cognitive processes such as verbal reasoning, problem solving, planning, and sequencing, and ability to keep attention, benefit from feedbacks, multitasking, cognitive flexibility, and the ability to manage new situations. Another part of these function is cognitive executive function that is within the child since his birth; as the child grows, this force also grows, and at the age of 12, the executive function of the child has a performance as an adult. Executive functions have different roles and duties that in all individuals at different age and gender, the power of functions and health of functions are effective in life. In fact, this force that is introduced as a cognitive structure has tasks such as problem solving, attention, reasoning, organizing, planning, memory, inhibitory control, impulse control, set-maintenance, change of set and inhibition of the response ;



furthermore, executive functions act like a conductor in the brain, thus deficiency and disorder in this area disrupt the daily functions (Cohen, et al., 2006).

Executive functions refer to the capabilities that enable a person to create a new behavior pattern and make different ways of thinking and reviewing of thoughts. These capabilities are very necessary in unfamiliar situations, where the person does not know what to do, or situations where the previous methods of behavior are no longer useful and appropriate. Executive functions play an important role in cognitive flexibility and its control, excitement and action, and are vital to daily life (Loring, 1999). Traditionally, the ability test to initiate, stop, and change behavior in responding to stimulus changes was part of an assessment of the inadequacy of the forehead area (Marnat, 2003). All the mentioned abilities are related to the brain executive functions that refer to the necessary cognitive abilities to carry out complex behavior of purpose and adapt to a wide range of environmental changes and demands, including planning, prediction (cognitive flexibility), allocating the resources to the requirements of unusual events and also self-discovery of behavior (Anderson, 2002).

According to the aforementioned, it can be argued that the executive functions and the achievement motivation play an important role in adjustment, academic performance, and mental health of adolescents. With regard to the effects of supervision, family and interpersonal relationships in the effectiveness of executive functions and achievement motivation, the present research make a comparative study of cognitive executive functions (focus, attention and memory), and the achievement motivation in adolescents living in orphanage center (social welfare center) and their peers in Tehran. Based on this research, it can be possible to recognize the special needs of rehabilitation services or cognitive empowerment of orphans, and design the necessary protocols on this basis.



METHODS

The present research is a comparative study of descriptive research. The community research is all the adolescents living in social welfare boarding centers with the age of 15 to 18 years old and their normal peers in Tehran. The community research was selected by convenience sampling and simple random sampling method. The sample size is 50 adolescents living in social welfare boarding centers and 50 of their normal counterparts. The research was done by referring to the social welfare centers of Tehran and introducing the plan and ask them for their participations in the research and obtaining permission to enter the centers of Shemiranat, Ray, Islam Shahr and Pich Shemran, and ultimately, obtaining a permit to enter the orphanage care centers and inviting officials and volunteer adolescents of these centers to participate in this research and introduce the plan and justify them to participate in the plan. Furthermore, by referring to the Department of Education in Tehran and introducing the plan and invite them to participate in the research and obtaining a permission for regions of Tehran, the research was conducted in ordinary adolescents. The present study applied the comparison of the means for describing and independent t-test for data inference in order to analyze the obtained results.

Research Tools

In this research, n-back computerized tests was used to investigate children's cognitive executive functions and evaluate work memory and IVA computerized tests was applied to evaluate the focus, attention and control of responding. In addition, Herman's questionnaire

measure of achievement motivation (T.M.A) was used to measure the achievement motivation. Also, to measure the intelligence Wechsler Adults Intelligence Scale (WAIS-R) has been used. In following, a brief explanation of these tests is presented.

N-back Test (Executive Functioning Evaluation Task): Computerized

This test is a cognitive function assessment task related to the executive functions, which is commonly used in neural imaging studies to stimulate brain function of the subjects. This was introduced for the first time in 1958 by Kerchner. The overall process of the task is to present a sequence of stimulus (often visually) to the subject step by step, and the subject must check whether the present stimulus matches to the stimulus of n preceding step or not. This test is performed with different values of n, and by increasing the amount of n, the difficulty of task is increased (in this program, n can be 1, 2 or 3). During this task, executive functioning like controlling and allocating attention, decision making, planning of peripheral information processing, and so on, will be involved. Also, in the context of working memory, while doing this task, the largest amount of involvement occurs in the function of central processing system (Cohen et al., 2006).

Revised WAIS-R Scale

Wechsler defines intelligence as "the capacity of a person to understand and overcome his surrounding environment", and has created all his three scales based on this definition. David Wechsler is the producer of three sets of individual tests for different age groups. All three scales not only measure total IQ, but also measure VIQ (Verbal IQ) and PIQ (Practical IQ). Wechsler's scale involves a set of tests to evaluate different abilities and in their combination, provides the overall capacity and ability of IQ. Wechsler's scale consists of two parts. One part is related to questions that require language understanding or using language in different ways, such as speaking, reading and writing, which measure VIQ; another part of the test consists of a set of questions which measure more the practical aspect of intelligence (PIQ); PIQ measures practical or non-verbal intelligence. Measurement of PIQ does not depend on the use of language, and is more appropriate for cultural minorities, especially bilingual children as well as children with environmental poverty. This scale consists of 11 subsets, of which 6 are verbal scale and other 5 subsets are non-verbal or practical sale (Loring, 1999).

Computer Test: IVA

This test is used to evaluate attention and impulsivity and focuses more on people with ADHD and those with attention deficit. This test is used for individuals aged six and older. This test is a computerized test that first has a training that teaches the steps and the ways of testing and after the initial training, the test starts and takes about 20 minutes. This test is both visual and audible. The results of the studies indicate that IVA test is designed to detect attention deficit, carelessness and impulsivity; so, this test has enough sensitivity (92%) and predictive power (89%) for correct diagnosis of ADHD in children. The validity of the test in the re-test method shows that 22 IVA scales have a direct relationship with each other. In general, the findings show that this test has a good validity and reliability in evaluating the attention and accuracy of ADHD (Marnat, 2003).

Hermans Achievement Motivation Test (A.M.T)

One of the most common paper and pencil questionnaires is to measure the achievement. Hermans (1977) built this questionnaire on the basis of theoretical and empirical knowledge



about the need to achievement and also the study of the related literature about the achievement.

The first questionnaire with 29 questions was designed based on ten characteristics distinguishing those with a high degree of achievement motivation from those with low motivation. Hermans (1970) used the content validity to measure the validity, which formed on the basis of the previous research on the achievement motivation. In addition, he calculated the correlation coefficient of each question with achievement behaviors. The coefficients of the questionnaire, respectively, are in the range of 0.30 to 0.57. Furthermore, in a study, Hermans refers to correlation coefficient between this questionnaire and thematic appreciation test (TAT). Hermans in 1970 used the Cronbach's alpha test to measure the reliability of the test for academic achievement motivation. The calculated reliability coefficient for the questionnaire was 0.84. The validity, reliability and standardization of achievement motivation test have been performed on a sample of 1073 individuals (560 girls and 513 boys) from high school students of Saveh and suburbs which were selected by multistage sampling method. The research tool consists of Hermans' achievement motivation questionnaire with 29 questions along with 11 questions added by the researcher. The validity coefficient of the test after the removal of 8 questions using Cronbach's alpha was obtained 0.83. The main components of the research about the validity of the questionnaire showed that the material of the questionnaire was generally correlated with one factor (Hooman andAsgari, 2000).

FINDINGS

The mean age of orphans was 16/13 years old with a standard deviation of 1.65 year. In Table 1, the mean and standard deviation of two groups are presented based on the study variables.

Table 1. Descriptive Results of the Study Variables in Two Groups

Variable		Ordinary group		Group under the supervision (orphans)	
		Mean	Standard deviation	Mean	Standard deviation
N-back test	Working memory	84.73	13.35	73.77	20.76
Wechsler	VIQ	51.56	9.67	49.67	7.15
	PIQ	43.10	13.68	36.35	9.67
	Total score	94.66	9.57	86.02	10.57
Achievement motivation	Achievement motivation	61.56	8.56	57.80	4.45

The above table shows the mean and standard deviation of two research groups. For better understanding of the results, the chart of two research groups is also presented.



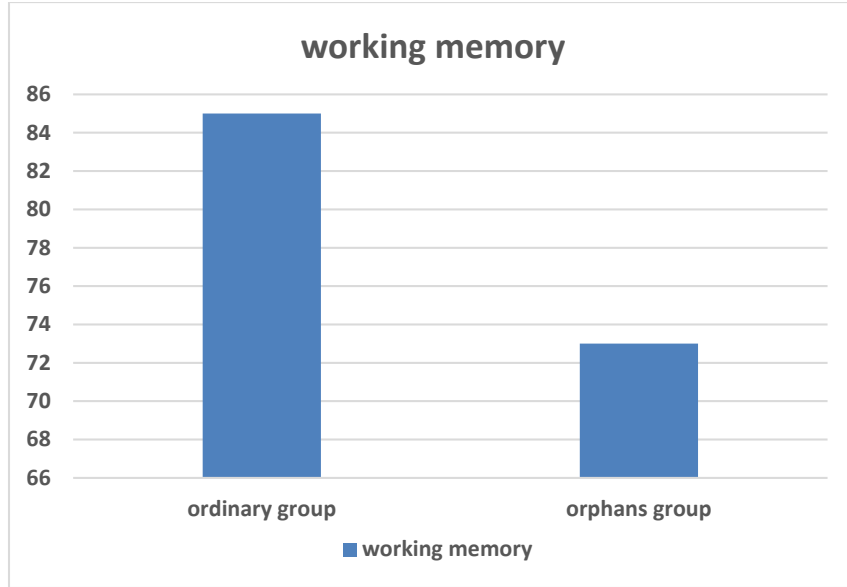


Figure 1. Descriptive Results of Two Research Groups in Working Memory

As it can be seen, the under supervision group (orphans) in compared to the ordinary group has obtained lower scores in working memory. In Figure 2, the results of the subjects in the intelligence variable are presented.

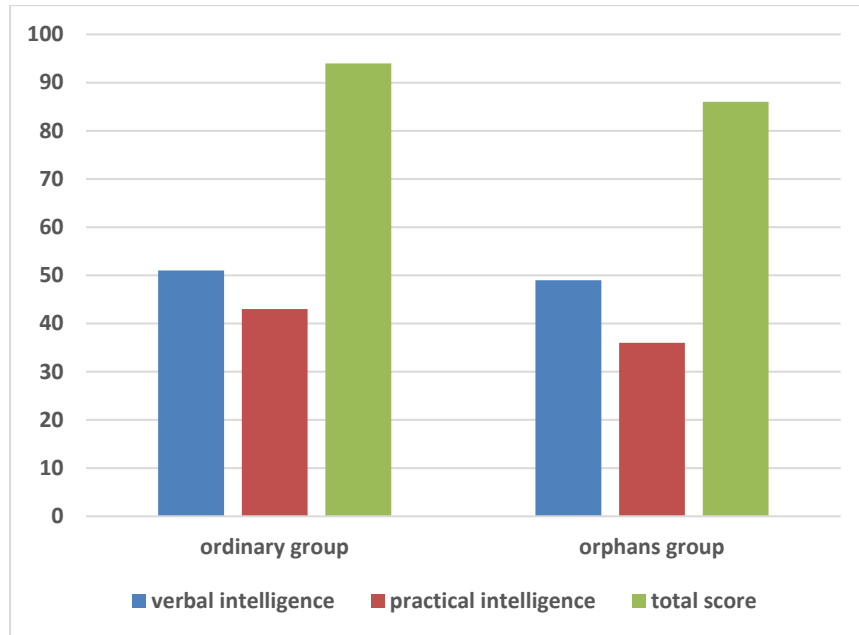


Figure 2. Descriptive Results of Two Research Groups in Intelligence

As it is obvious, the under supervision group compared to the normal groups received lower scores in verbal intelligence, practical intelligence and total score. In Figure 2, the results of the subjects are presented based on the IVA variable.

Table 2. The frequency of normal adolescent in two groups

Ordinary group			Group under the supervision (orphans)		
Frequency of Total Subjects (%)	Frequency of Girls (%)	Frequency of boys (%)	Frequency of Total Subjects (%)	Frequency of Girls (%)	Frequency Ofboys (%)
37(0.71)	19(0.73)	18(0.69)	14(0.26)	5(0.19)	9(0.35)

Regarding ordinary individuals` group, 37 individuals out of 50 were healthy in terms of focusing and attention disorders, and 13 individuals had problems in this regard. In teenagers` group being under welfare supervision, 36 individuals out of 50, had problems with focusing and attention and 14 individuals were healthy in this regard.

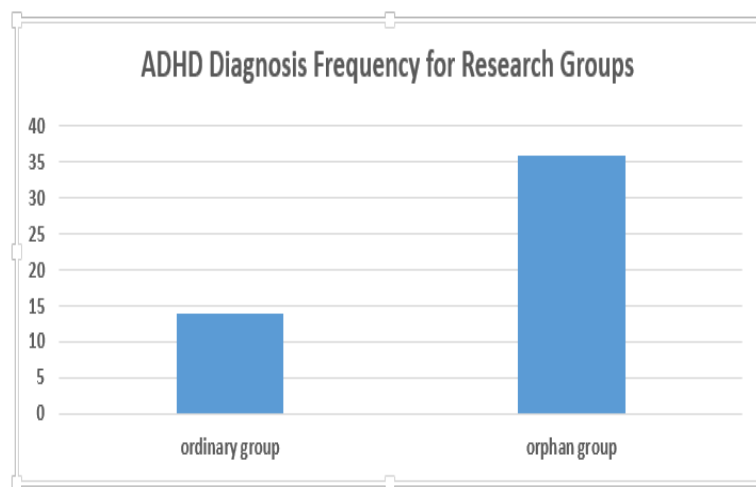


Figure 3. Descriptive Results of Two Groups of Research in Two Variables of Attention and Response Control

As it can be observed, the under supervision group has achieved lower grades in attention and response control in comparison with the ordinary group. The results of test about the achievement motivation are depicted in Diagram 2.

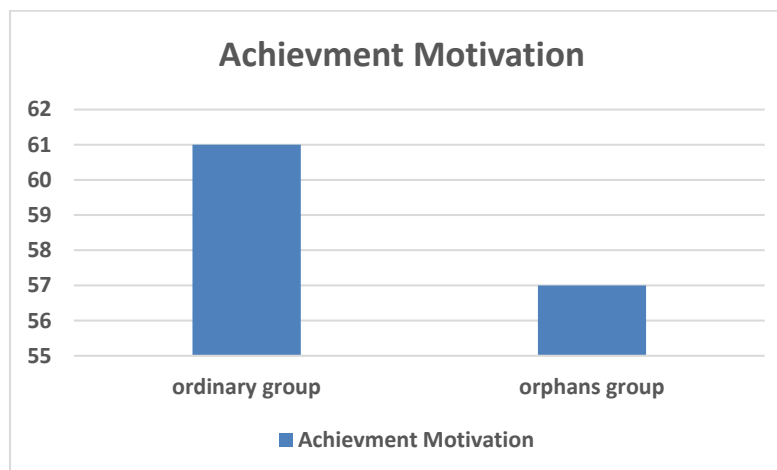


Figure 4. Descriptive Results of Two Groups of Research in Two Variables of Achievement Motivation

As it can be seen, the under supervision group (orphans group) has lower grades than the other group in achievement motivation variable. In Table 2, the results of T-2 independent test have been evaluated in order to investigate the differences between two study groups.

Table 3: The Results of The Study Variable and T-2 Independent Test in Two Groups

Variable		Ordinary group		Under supervision group		Degree of freedom	T	Significance level
		Mean	Standard deviation	Mean	Standard deviation			
N-back test	Working memory	84.73	13.35	73.77	20.76	106	3.28	0.001
Wechsler	VIQ	51.56	9.67	49.67	7.15	106	3.45	0.001
	PIQ	43.10	13.68	36.35	9.76	106	2.97	0.001
	Total score	94.66	9.57	86.02	10.57	106	4.46	0.001
Achievement motivation	Achievement motivation	61.56	8.56	57.80	4.45	106	2.56	0.008

As it can be seen, the adolescents living in social welfare boarding centers and their ordinary counterparts are significantly different in the research tests. These adolescents have less significant scores compared to their ordinary counterparts in the variables of working memory, VIQ and PIQ scores of Wechsler test, and the difference in achievement motivation was significant and also they have high significant scores compared to their ordinary counterparts in the ADHD disorder.

DISCUSSION AND CONCLUSION

The results showed that adolescents living in the social welfare centers in comparison with their ordinary counterparts in the research tests have a significantly lower performance. These findings are in consistent with the previous studies (Hesarsorkhi, et al, 2016; Montazaegheib and Kikhanejad, 2011; Sayyadpour, 1994; Marais et al., 2013; Bettmann, Mortensen and Akuoko, 2015; Zapata, et al., 2013; Kaub, 2016; Wille, et al, 2015; Lim, et al, 2010). In addition to the hard life of the past, the orphanage conditions also cause behavioral, physical, mental, and weakness of verbal and social skills problems, and make problems for orphans to establish relationships with peers and educators in orphanage (Bettmann, Mortensen and Akuoko, 2015). Furthermore, these students who were transferred to the orphanage because of the reluctance of their parents and relatives to take care of them are more concerned about their loneliness. Since younger children are more popular in the family and the orphans of the study at lower ages were still in the family, so a replication with younger children, they challenge their past. But ordinary students want to achieve an independent status of older children in the family. There is no significant difference in the components of identification (replication) with parents, competition with siblings, and awareness of parental sexual relations in the present research, because most orphaned students like ordinary students (living in the family), despite living without their parents and knowing parents as strict and discipline, within the current age range (7 to 10 years), want to imitate their parents (mostly mother) and do useful things to attract their parents' attention. Humiliating and teasing

children by parents in the mentioned ages lead to a sense of inferiority complex and abnormal behavior in children (Ganji, 2009).

Statistics show that over the past thirty years, about 60000 orphans and badly supervised children have been transferred to the social welfare center. Comparing the past years statistics shows an increase in the number of children entering these care centers. Orphaned children and badly supervised children are deprived from educational, psychological, effective support of parents and the benefits of living in the family. Care, empathetic understanding and cooperation, and problem-solving are the necessary functions of family. However, orphaned and badly supervised children are deprived from these benefits and grow up in pseudo-family centers, although the main function of these pseudo-family centers is to provide the main functions of family for orphaned and badly supervised children, transferring these children from the family environment to an environment with less damages and harms does not appear to be sufficient. Sadness of being without family brings some psychological disorders for these children such as: depression, anxiety, physical complaint, aggression, violation behaviors, oppositional behavior, hostility, hyperactivity disorder and impulsivity, disturbing behaviors including deviations of social norms, property destruction and hurt others and these components will have sustained effects in the life of children (Lim, et al., 2010).

It is important to maintain the relationship between children and parents, especially in the early years of life, and children in orphanage centers are exposed to mental and behavioral disorders. Orphaned and badly supervised children in compared to ordinary children are suffering from disappointment and failure. In addition, the lack of facilities and other things will result in aggression and incompatibility of the child in the orphanage centers. In general, it can be concluded that the most important factor in the severity of behavioral disorders and incompatibility is the family, which plays a fundamental role in making possibilities for independency of children and move the incompatibility and behavioral disorders. Orphaned children in the care centers are at the risk of incompatibility consequences due to misbehavior, poverty, addiction to alcohol and drugs by their families (Kaub, et al, 2016).

The results of this research can be evaluated from two perspectives. First the benefits of living within the family such as identifying issues, replication with the same gender of parent, formation of a desirable self-esteem forming during the effective communication with parents. The second perspective is related to the damages of children in the orphanage centers. Imposed conditions such as the lack of intimate relationships, the lack of attention to mental needs and negligence of mental health issues deserve the urgent attention of the authorities of these centers. Therefore, by creating preventive measures such as cognitive skills trainings and living and creating a happy space for these children, psychological disorders can be prevented. Furthermore, it is suggested that mental health research focuses on other characteristics and cognitive functions of children and adolescents. It should be noted that using a self-report questionnaire is one of the limitations of this research. The presence of parents, the economic, social and cultural status of the family is very effective in the development of the child. In this research, as with other studies on subjects, we encountered the problem of the lack of cooperation in the work process, and on the other hand, the small number of orphanage subjects in the study age range could reduce the generalizability of the findings. It is suggested the future research be conducted at different ages; if the number of subjects is not limited, the results will be generalizable.



References

- Anderson P. (2002). Assessment and development of executive function (EF) during childhood. *Child Neuropsychol*; 8(2): 71-82.
- Asoudi, M. (2005). The Effectiveness of Beck Cognitive Therapy in a Collective Method on Increasing the Achievement Motivation of Dargaz High School Girl Students. Master Thesis in Consultation. Allameh Tabatabaei University (not published).
- Bettmann, J. E., Mortensen, J. M., & Akuoko, K. O. (2015). Orphanage caregivers' perceptions of children's emotional needs. *Children and Youth Services Review*, 49, 71-79. doi:<https://doi.org/10.1016/j.chilyouth.2015.01.003>.
- Cohen, A.S., Leung, W.W., Saperstein, A.M., Blanchard, J.J., 2006. Neuropsychological functioning and social anhedonia: results from a community high-risk study. *Schizophr. Res.* 85, 132–141.
- Ganji, H. (2009). *Mental Health*, 12th print, Tehran: Arasbaran, Tehran, Tus
- Hesarsorkhi, R., Asgharinekah, M., Lalzadeh Kaldkali, E., Parveneh, E. (2016). Comparison of Aggression and Emotional Knowledge of Orphaned Boy Children or Badly Supervised Boy Children with Ordinary Children. *Quarterly Journal of Children Mental Health*. 3(2): 77-85.
- Hooman, H.A., Asgari, A. (2000). Preparation and Standardization of the Achievement Motivation Test. *Quarterly Psychological Research*, 11: 9-32.
- Kaub, K., Karbach, J., Spinath, F. M., Brünken, R. (2016). Person-job fit in the field of teacher education—An analysis of vocational interests and requirements among novice and professional science and language teachers. *Teaching and Teacher Education*, 55: 217–227.
- Keil. M. (2012). A Prospective Study of Growth and Development of Children Recently Adopted From Orphanage Care. *Pediatric Endocrinology Nursing society*.
- Lim, J. Y., Kim, M. A., Kim, S. Y., Kim, E. J., Lee, J. E. (2010). The effects of a cognitive – behavioral therapy on career attitude maturity, decision making style, and self – esteem of nursing students in Korea. *Nurse Education Today*, 30(8): 731-736.
- Loring. D.W. (1999). *dictionary of Neuropsychology (2rded)*. NY: Oxford University Press.
- Marais, L., Sharp, C., Pappin, M., Lenka, M., Cloete, J., Skinner, D., & Serekoane, J. (2013). Housing conditions and mental health of orphans in South Africa. *Health & Place*, 24, 23-29. doi: <https://doi.org/10.1016/j.healthplace.2013.08.004>
- Marnat.G.G. (2003). *neuropsychological assessment in clinical practice (PP.300-305)* New York: John Willy & Sons Inc.
- Montazaegheib, T. and Kikhanejad, M. (2011). The Relationship between Components of Job Burnout and Personality Styles of John Holland among Primary School Teachers and



- Principals. *Quarterly Journal of Occupational and Organizational Counseling*. 4(10): 92-104.
- Raeisi, Z. (2001). *Educational Psychology*. Isfahan: Mani.
- Saif, A.A. (2007). *Educational Psychology*. Tehran: Aghah.
- Sayyadpour, Z. (1994). A Survey on the Evolution of the Concept of Family in the Orphans and Normal Children. *Psychology and Educational Sciences*. 1: 216-220.
- Shorkon, H., Borumandnasab, M., Najarian, B., Shahniyeylagh, M. (2011). Investigating the Simple and Multiple Relationships between Creativity, Achievement Motivation and Self-esteem with Entrepreneurship in Shahid Chamran University Students in Ahwaz. *Educational sciences and psychology*, 3(3-4): 1-24.
- Vakilian, K; Arabsalmani, M and Keramat, A. (2011). Investigating the Prevalence of Anemia in Orphans and Its Relationship with Their Demographic Variables. *Nursing Research*, 6(34): 45-51.
- Wille, B., De Fruyt, F., Dingemans, S. A., Vergauwe, J. (2015). A closer look at the psychological diversity within Holland interest types: Construct validation of the Career Insight Questionnaire. *Practice and Research*, 67(3): 234-257.
- Zapata, L. B., Kissin, D. M., Bogoliubova, O., Yorick, R. V., Kraft, J. M., Jamieson, D. J., Hillis, S. D. (2013). Orphaned and abused youth are vulnerable to pregnancy and suicide risk. *Child Abuse and Negl*, 37(5), 310-319.
doi:<https://doi.org/10.1016/j.chiabu.2012.10.005>.

