



THE EFFECTIVENESS OF VERBAL SELF-INSTRUCTION ON THE THEORY OF MIND IN PRESCHOOL CHILDREN

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ABSTRACT

This research was carried out to evaluate the effect of verbal self-instruction skills on the theory of mind in preschool students in Sanandaj. This research design included one experimental group and one control group with a pre-test and post-test. For this purpose, among the population of all preschool children of Sanandaj city kindergartens, one kindergarten was selected using multistage cluster sampling method and 20 subjects were randomly selected as the sample. Finally, they were assigned into experimental and control groups (each group containing 10 subjects). Data collection tool was Wechsler sentences repetition test and the theory of mind tasks. Data were analyzed using one-way covariance analysis (ANCOVA). Results indicated that verbal self-instruction training affects the theory of mind ($p \leq 0.005$; $F = 8.78$) and cognitive function ($P \leq 0.005$; $F = 10.08$). As a result, it seems that using verbal self-instruction training improves the theory of mind and cognitive function in children.

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Introduction

Nowadays, psychologists and educational science experts believe that the main personality of human is formed in the early years of life. At this age, the child needs to be educated deeply and comprehensively to achieve complete physical and emotional development. In this regard, preschool centers can provide the needed conditions for comprehensive growth of children by providing instructional, educational, social, and welfare facilities. These centers are the first social environment and a bridge between the home and the large community, to which the child belongs. In these centers, the social knowledge of child grows and by using indirect instructional methods, he or she finds an opportunity for wider, richer, and comprehensive

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learning [1]. The importance of preschool centers in general development of children is due to the fact that many schools give more independency for children. This situation slows down the development rate of child. In order that the child to achieve comprehensive development, he or she should be systematically guided into complex realms. The presence of assistant instructors in preschool centers, helping children achieve better development and growth and more complex levels of performance, is considered as advantages of these centers [2]

The relationship between the instructional environment and the natural environment of families and the people prevents the separation of education from everyday life. Children can play an effective role in their community and social environment. In fact, there is no wall between school and community at different ages and even between education and work. Thus, the goals and plans of each school should be consistent with the needs of the child and environment and adopt their instructional materials and activities from their immediate environment [3]. One of the concepts, which have critical relationship with growth of children, is the concept of theory of mind in children. The theory of mind has been defined as people perception and understanding of mental states (thoughts, beliefs, wishes) [4]. The theory of mind provides child a powerful tool to explore, predict, and change the behavior of others. The basic assumptions of this theory state that there is a mind; it is related with the outside world; it is distinct and different from the outside world; it can visualize objects and events correctly and incorrectly and actively affect one's interpretation of the reality [5]. The theory of mind involves people perception of social interaction by documents, beliefs, intensions, and emotions to themselves and others in order to predict behavior [6]

The theory of mind is one of the basic issues of growth psychology and the philosophy of mind and it is one of the key concepts in the area of mind function and its effect on behavior. Concepts such as the recognition of oneself and others, social contracts, friendship, influence and power, emotions, commitment and morality affect the social world of people [7]. Various studies have shown the effect of mind theory on self-regulation and problem-solving skills [8] executive control processes [9], self-concept [10], distinguishing the pretension from reality [11], social adequacy and interpersonal skills, emotions, community-accepted behaviors, empathy and sympathy [12]. In addition, those who experience the defect of the theory of mind have problem in explaining the intentions of others. They do not know how their behavior affects others and they have problems in social interaction [13].

The human mind has different characteristics, but it should be noted that the most complex of these characteristics can be called "awareness". Cognition discussed in the intellectual sciences is a deeper and wider form of this characteristic and, in fact, awareness is the base of human cognition of himself and the world around him. This characteristic is the most fundamental difference between human and other creatures and human-made smart structures (computers and robots). It should be noted that "perception", "feeling" and "thinking", which are unique characteristics of the mind, are involved in expanding the awareness and they are not considered self-awareness [14].

One of the most common therapeutic methods used widely in children's behavioral disorders area is verbal self-instruction training method. This therapeutic method is called in brief as SIT and it is one of the cognitive behavioral therapies in which children are taught to change their undesired behaviors by speaking with themselves [15].

Verbal self-instruction is a form of cognitive therapy, which based on it, behavior of children with lack of appropriate cognitive processes, such as attention and inhibition, is modified. In this approach, the ways to develop verbal abilities, to use these abilities in verbal interactions with others, ways to control verbal communication, ways to use speech properly, and finally, the ways to increase the speed of language learning are taught to children [16]

This therapeutic method is rooted in the scientific works of Russian psychologists, Vygostky and Luria. It emphasizes on correcting or strengthening the cognitive processes of the mind, since, based on theoretical approach, inappropriate behaviors and emotions are the result of lack or deficiency of some of the cognitive processes. Accordingly, the task of therapist is training the cognitive processes [2].

Applied steps of verbal self-instruction training include: task selection, cognitive modeling, overt external guidance, overt self-guidance, faded modeling of overt self-guidance, child practice of faded overt self-guidance, modeling of covert self-instruction, child practice of covert self-instruction [17]

In therapy or practice based on verbal self-instruction, the child is taught to understand the problem and find the appropriate verbal mediator to solve it in order to achieve self-control using the inner word by using direct instruction and observing the model. As the verbal self-instruction focuses on the cognitive processes of the mind, the process of therapy is based on the assumption that the problem of most of children is not in cognitive content. In other words, these children have difficulty in attention and inhibition as two main cognitive processes, and they cannot regulate their behavior properly [18] Given the importance of cognitive development and the theory of mind and the need to pay more attention to them in children, the current research was conducted to evaluate the effectiveness of verbal self-instruction training on the theory of mind and cognitive function of preschool children. In this regard, the following hypothesis was tested:

Verbal self-instruction training affects the theory of mind tasks in preschool children

Methodology

This research was implemented as quasi-experimental design. This design included one experimental group and one control group with a pre-test and post-test. The research population included all 3-6 year-old preschool children of Sanandaj in 2015-2016. Among the research population, 20 children were selected through multistage cluster sampling. Accordingly, Sanandaj

city was first divided into four districts. Then, one district was randomly selected and one kindergarten was randomly selected among the kindergartens of this district. Then, they were randomly assigned into experimental and control groups. The inclusion criterion included children aged 3 to 6 years registered in Sanandaj Omid Kindergarten in the academic year 2016. The exclusion criteria included participation in the sessions of the similar same intervention program. After obtaining license from kindergarten director and completing the informed consent form for participation in the research from the parents of the children and ensuring them that their information would remain confidential, theory of mind and cognitive function of children in both experimental and control groups were assessed. Then, verbal self-instruction training protocol was implemented for the experimental group during 5 sessions, control group did not receive any intervention during this period. After implementation protocol, the theory of mind and cognitive function of children were measured in both groups once again as post-test. Data of pre-test and post-test were analyzed using SPSS-20 software and independent t-tests (to examine the match of groups) and Chi-square (for comparison of ratios). At the beginning of the study, the following tools were provided to children:

Research tool

Theory of Mind Test: In the current research, 38-questions form of theory of mind test was used. The main form of the test was developed by Steememan in 1994 to measure the theory of mind in normal children and children with pervasive developmental disorders, aged 5 to 12 years. This test was developed based on developmental and multidimensional view of the theory of mind.

With regard to the validity and reliability of this test, Morris conducted research on 78 normal children. Pearson correlation coefficient between this test and other tests (including dollhouse tasks, Smartiz box test, testing emotional perception from facial expressions, role adoption test) was high and significant, indicating the concurrent validity of the test.

The internal consistency of this test for the whole test was obtained 0.92 [19]. In a research conducted by [20], a group of normal and mentally-retarded 7 years of old children in Shiraz, it was shown that this test has good psychometric properties. This test is implemented in an interview and includes the images and stories. After giving them by tester to subjects, he asks questions from them and answer of the subjects to each question is in the form of 1 (true answer) and zero (false answer). Thus, in 38-question form, the subject takes the score between 0 and 38. The psychometric indices of this test were evaluated as concurrent validity. The total alpha coefficient of scale was calculated 0.79 [20]. In our research, Cronbach's alpha coefficient was obtained 0.77.

Wechsler repetition test: This scale was developed by Wechsler to assess the intelligence of children in 1945 and revised in 1974. It consists of two verbal and practical intelligence scales, in which each scale has 6 sub-tests (a total of 12 sub-tests). Five of these sub-tests are main sub-tests and one sub-test is used as a complementary or substitution sub-test. The main sub-tests of the verbal scale include general information, similarities, calculation, vocabulary, and comprehension. In the practical scale, the main WISC-R sub-tests included completion of the images, the arrangement of images, the design of cubes, the insertion of parts and encoding, or the numerical symbol.

Digits span from verbal scale and the mazes from practical scale are considered as complementary sub-test [21]. This scale was standardized by [22] on a sample of 1400 children aged 6 to 13 years in Shiraz, and its test retest reliability was reported 0.44-0.94 and its split-half reliability was reported 0.42 to 0.98. The concurrent validity of this scale was reported 0.74 using the correlation of scores with scores of the practical part of Wechsler scale for preschool children. Correlation coefficients of verbal, practical, and total intelligence were reported 0.84, 0.76 and 0.80, respectively.

Research implementation method

Verbal self-instructional training protocol

Practical protocol for verbal self-instruction training in this research includes a five-step protocol, taught to children of experimental group in five sessions. This protocol was developed based on the works of [23] The objective of this method is to internalize this skill in children, so that they can use it in various settings.

As social speaking aloud is not considered as socially acceptable behavior, the instructor instructs the children to use verbal self-instruction in covert and inner manner. Verbal self-instruction protocol is performed from the overt state to whispering and finally inner speaking [24]

The first step; Cognitive modeling: it involves describing or modeling a task, while the related steps are expressed aloud. In this regard, children should be taught to speak loud at first. The instructor or psychologist expresses models appropriate to the behavior loudly, while the child observes and the instructor performs the same models simultaneously with aloud speech.

The second step: overt or external guidance: At this step, while instructor provides the self-instructions with aloud speech, the child perform the behavior appropriate to aloud speech of instructor. Instructor in general guides the child behavior verbally.

The third step: overt self-guidance: During performing their tasks, children repeat the self-instructions, which they have learned them in the first and second steps in four forms, that is, at this stage; the child performs the behavior appropriate to the speech while speaking loudly. It does. In other words, the child models the previous statements of the instructor and performs appropriate behavior at the same time.

The fourth step: faded overt self-guidance: At first, the instructor performs the appropriate behavior and whispers the statements related to the verbal self-instruction. Then, the same action is performed by the child.

The fifth step: the covert verbal self-instruction (inner speech): The instructor performs self-ordering covertly along with symptoms of behavior and stops of thinking, such as raising eyes and touching the chin. Then, the child uses the inner language while performing the tasks (inner speech).

Najatian and Mohammadi (2012) reported the validity and reliability of this protocol 0.88 and 0.82, respectively. Yazdani and Yasayei (2015) reported the reliability and validity of this protocol in self-instruction training 0.68 and 0.86, respectively. Blanchard (2012) reported Cronbach's alpha of this protocol 0.76.

Results

Based on research results, the normal distribution of the scores was examined using the Kolmogorov-Smirnov test, which was significant at level of 0.05 in both groups. To measure the variance equality, the Levene test was used. The value of F statistic after the verbal self-instruction intervention was 12.08 in the children's cognitive function and 12.34 in the theory of mind (12.34), and as it is higher than 0.05 in all dimensions, all dimensions had homogeneity of variance. The results of homogeneity of pre-test and post-test regression slope in the studied variables showed that significant level in the studied groups is greater than 0.05. The comparison of the scores of the cognitive function variables and the concepts of theory of mind between the scores of the pre-test and the post-test in the control group did not show a significant difference. However, in the experimental group, a significant difference was found between the cognitive scores and the scores of concepts of the theory of mind in the pre-test and post-test (after the verbal self-instruction training) and the results are presented in Table 1.

Table 1. Mean and standard deviation of the theory of mind and verbal self-instruction training in experimental and control groups

Test time	variables	Experimental group (n=10)				control group (n=10)			
		mean	SD	min	max	mean	SD	min	max
Pre-test	Theory of mind	0.50	4.68	0	1	0.50	2.09	0	1
Post-test	Theory of mind	0.70	2.11	0	1	.50	2.88	0	1

In order to investigate the effect of verbal self-instruction training on improving the theory of minds of preschool children, results are presented in Table 2:

The covariate effect with $F = 9.29$ is statistically significant, so it is related to dependent variable. The F ratio for inter-group effect also shows that there is a significant difference between the two groups of control and experimental in scores of the theory of mind after the experimental intervention (verbal self-instruction) ($P = 0.05$, $F = 8.78$). Given the significant difference between the means, it is stated with 95% confidence that the verbal self-instruction improves the theory of the mind of preschool children, so the first hypothesis of the research is confirmed.

Table 2. The results of covariance analysis of the theory of mind of preschool children after intervention (verbal self-instruction)

statistic Source of variations	Sum of squares	df	Mean of squares	F	p-value	Effect size
Covariate	465.12	2	232.56	9.21	0.01	0.39
Pre-test of children theory of mind score	254.76	1	254.76	11.84	0.02	0.32
Inter-groups	199.50	1	199.50	8.78	0.05	0.23
Intra-groups	597.38	16	37.33			
Total	796.88	20				

Discussion

This research was conducted to evaluate the effectiveness of verbal self-instruction on the theory of mind of preschool children. The results of this research revealed that verbal self-instruction training improves the theory of mind in preschool children, which is consistent with the results of the research conducted by Carmir (2007), [25, 26].

In explaining the results of this hypothesis on improving the concepts of the theory of mind, we can refer to gradual evolution of subjectivism in children, since these children first perform the cases such as characterization of attitudes, the process of speech in problem solving, attitudinal change, the transfer of mental information to surrounding physical environment, process of mental problem solving and control of behaviors of other people in dealing with tasks of theory of mind. Then, they internalize these cases and processes and act based on inner speech. In other words, these children internalize the world of learned verbal self-instruction processes and perform mental tasks and manipulate the objects. Thus, it can be expected that as verbal self-instruction depends on the inner and subjective speech of people, it strengthens the mental processes involved in the inner speech and control of problem-solving behaviors and finally improves the concepts of the theory of mind and solving the tasks related to theory of mind.

The process of shifting the attention to tasks and determined stories for evaluation of the theory of mind is another case, which shifts the type of control and the type of children dealing with issues and tasks of evaluator from external speech to inner and subjective speech, and these effects and changes in speech are cases, emphasized in the verbal self-instruction training. Thus, the process of shifting to inner and subjective speech finally leads to improved mind function and successfully dealing of children with issues, tasks, and stories determined for mind evaluation, resulting from self-instruction training. In self-instruction, pre-school children learn to control their behaviors through internalizing instructor's guidelines.

In other words, control of behavior is regulated by covert speech or inner speech. In this control, both overt and external behaviors and covert and inner behaviors are controlled, so the behaviors, which their source is mind, are shifted toward goal and behavioral improvement. Finally, the mind and the mental concepts become more effective, which is result of verbal self-instruction training. The manner of speaking can directly or indirectly affect the feeling of people. Human behavior is goal-oriented, controlled by a set of goals or sub-goals.

These goals are formulated, stored, and reviewed in mind so that the person responds to environmental demands and internal needs appropriately. One of the main functions of goals is structuring the behavior by controlling external activities. Therefore, in verbal self-instruction, people will affect the feelings and emotions, target-oriented behaviors, and behavioral and functional goals, stored and retrieved in mind, through style and type of speech. It would gradually leads to focus on mental efficiency and improved mental concepts, resulting from verbal self-instruction. Based on Russell Barclay neural-cognitive theory (2003), the application of self-regulatory and verbal self-instruction trainings activates the executive functions of the behavioral inhibition system and the motor system of children with ADHD. With the activation of executive functions system, the activity of self-regulation systems of working memory, speech therapy, self-regulation of motivation and excitement and reconstruction of thoughts increase in such a way that activate the behavioral inhibition system. With the activation of the behavioral inhibition system and the disease symptoms, this disorder (hyperactivity, impulsivity) is reduced, and with reduction of these symptoms, the conditions for improvement of symptoms of attention deficit are provided and finally lead to improvement in motor activity in these children. The authors of this research appreciate all the people who participated in this research.

References

1. Irvani, M, Baqarian, F (1393). *Social Cognition: Social Psychology*. Tehran: Savalan Publications.
2. Spencer, L.A. (2007). Review of Self- Instruction role in cognitive development of preschool children. *Children development*, 76 (41), 14-26.
3. Sahraei, B, (2012). Evaluation of the effectiveness of program-based and goal-oriented instruction in developing the adequacy of female preschool children's learning, *Psychological Studies*, Issue 21, 45-38.
4. Ferguson, f. J., & Austin, A. J. (2010). Associations of trait and ability emotional intelligence with performance on Theory of Mind tasks in an adult sample. *Personality and Individual Differences*, 49,411-418.
5. Flavell, J.H., Miller. P.H., & Miller, S.A. (1998). *Cognitive development*. Englewood Cliffs, NJ: Prentice Hall.
6. Astington, J. W. (2013). The Cognitive Revolution in Children's Understanding of Mind. *Human Development*, 38(4-5), 179- 189.
7. Astington, J.W., Pelletier, J., & Homer, B. (2002). Theory of Min and Epistemological Development: The Relation between Children's Secondorder False- Belief Understanding and Their Ability to Reason about Evidence, *New Ideas in Psychology*, 20(2-3), 131- 144.
8. Sperlling, K., Walles, S., & Hill, J.E. (2009). Cognitive-behavior intervention with aggressive boys: three- Year follow-up and Preventive effects. *Journal of consulting and clinical Psychology*; (60):426-432.
9. Koull, D., & Mitchell, J. (2008). Training theory of mind and executive control: A tool for improving school achievement? *journal compilation,international mind , brain and education*, 2(3) , 122-127.
10. Bouskey, M. (2013). The role of pre-school institutions in the cognitive development and cognitive communication. *Biol Psychol*, 43 (5), 56-63.
11. Lillard, A.S. (2001). Pretend Play as Twin Earth: A social development Analysis, *Developmental Review*, 21: 495-531.
12. Karpenter, E., Penington, S., & Rogers, A.M. (2010). Pretence and Representation: The Origins of Theory of Mind, *Psychological Review*, 94(4), 412-426.

13. Sherman, A.M. (2015). Theory of mind in children using augmentative and alternative communication. *Communication disorders quarterly*, 24,2,165-179.
14. Jenkins, J.M.,(2010). Theory of mind and social-behavior: Causal models tested in a longitudinal study. *Merrill - Palmer Quarterly*,46, 203 – 220 .
15. Frick, B., Cornell, W., Bodin, S., Dane, M., & Barry, G. (2013). The role of Self- Instruction in reducing behavioral disorders and verbal ability improvement students.
16. Karmikhail, H. (2006). Evolution of self- instructional education processes based on theories of language. *Children development*, 11 (65), 45-63.
17. Kaierby, B., & Grimmley, P. (1986). Overview of the evolution of self- instructional education processes based on theories of language. *Children development*, 11 (65), 45-63.
18. Ighbali, A. (2007). The effect of verbal self-instruction on improving the disease symptoms and social adaptability of children with conduct disorder, Master thesis, University of Tabriz.
19. Shepairov, S., & Coul, E. (2010). Self-talk: Development and preliminary validation of the functions of self-talk questionnaire. measurement in physical. *Edu Exe Sci*;12:10–30.
20. Qomrani, A; Alborzi, Sh, Khayer, M (2006), examining the reliability and validity of the "theory of mind" test in a group of mentally retarded and normal students, *Journal of Psychology*, 188,199,1.
21. Pasha Sharifi, H (2012). Theory and application of intelligence and personality tests, Eighth Edition. Tehran: Sokhan Publications
22. Shahim, S (2006) Revised form of Wechsler IQ scale for children, agenda and norms, fourth edition. Shiraz: Shiraz University Publications
23. Meichenbaum, D. (1986). Cognitive Perspective on teaching self-instruction. *American Journal of Mental Retardation*;(94) :367-9.
24. Shapiro, E.S. & Cole, C.L. (1994).Behavior chang in the classroom:self-management interventions. New York: Guilford Press.
25. Noklier, H.(2009) Sibling Conflict and Theory of Mind, *British Journal of Developmental Psychology*, 21(1), 45-58.
26. Kinzman, P. Natural(2009). Theories of Mind, Oxford, UK: Basil Blackwell, 283-304.