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The Effectiveness of Storytelling on Decision-Making of Preschool Children

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Abstract. Decision-making, as one of the cognitive processes, poses high importance in human life. This research aims to compare the effectiveness of storytelling and training on children's decision-making skills. In this study, 135 preschool girls were selected as multi-stage cluster sampling and randomly assigned into three groups: control group, training group, and storytelling. The research method was experimental, and its design was quasi-experimental, pre-test, and post-test. One-way variance and Tukey tests are utilized to analyze data, and the effect of teaching decision-making on children showed that the storytelling group's performance was higher than the training and control group. The results showed that storytelling has a significant effect on the decision-making skill of preschool students.

Keywords. Children, Decision-making; Storytelling; Preschool

1. Introduction

Decision-making is the process of making choices by identifying a decision, gathering information, and assessing alternative resolutions. A human being has to make choices in every moment of his life. Hence, some people have equated life with decision making (Demirtas---&-Sucuoglu, 2009). Children, like adults, always face conditions where they must make decisions and are forced to choose from a variety of options. The decision that children make is essential criteria for measuring their intelligent behavior. (Garon & Moore, 2004).

According to Klayman (1982), optimal decision-making involves reviewing all relevant information available before deciding. He divides decision-making strategies into high and low-level processing. In the first strategy, a decision is made after carefully examining each option's important information. Information in each option is divided into two categories: 1) essential and relevant information and 2) non-important and irrelevant information. In a high-level processing strategy, the critical and relevant information is the basis of the decision. High-processing strategies are usually compensatory, in which a positive aspect of one dimension is permitted to compensate for a negative aspect of another dimension (Klayman, 1985). In contrast, non-compensatory strategies involve low-level processing since these strategies allow the decision-maker to eliminate alternatives without an exhaustive search of all possible dimensions of alternatives (Howse *et al.*,2003).

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Cognitive psychologists have found that young children in the decision-making process pay more attention to irrelevant and unimportant information than relevant and vital information (Betch& Lang,2013). Decision-making strategies in young children are non-compensatory or low-level processing. Because as soon as they find a negative but unimportant point in an option, they eliminate that option, but older children use a compensatory strategy, which is a high-level process. Hence, they are like adults (Garon& Moore, 2004). Younger children, adolescents, and adults treat the received information differently, which leads to different decisions, such as children and adolescents making risky decisions than adults (Weller *et al.*, 2015). Using a different approach indicates the evolution of decision-making ability.

Researchers in cognitive psychology have found that younger children are more likely to pay attention to irrelevant information than are older children (Hagen & Hale, 1973). From Piaget's (1973) evolutionary perspective, decision-making strategies get more complex as the child evolves. Some studies have shown that brain development increases as a child gets older, increasing decision-making skills (Howse *et al.*, 2003). This perspective has led to the organization of research that has measured the contribution of external factors such as training and reinforcement in increasing the child's decision-making skills (Svinicki, 1998). These studies indicate training (Demirtas & Sucuoglu,2009; Howse *et al.*,2003; Dymond *et al.*, 2010) and reinforcement (Howse *et al.*,2003; Garon & Moore, 2004) can increase decision-making skills in children.

Davidson (1995) found that younger children do not recognize the relevant aspects of information, and they fail to use that in decision-making tasks. Although there is evidence that young children are paying attention to irrelevant information and ignoring relevant information, researchers using Piaget's tasks turns out that children can be trained to pay attention to relevant cues (Howse *et al.*, 2003). According to Gelman (1969), a young child's failure on conservation tests is due to the function of attention to irrelevant features such as changes in size, shape, and color. More importantly, there is evidence that young children who were taught to pay attention to relevant cues performed better in conservation activities (Gelman, 1969).

Howse *et al.* (2003) found that children can be taught to ignore salient information in favor of less salient information that is more relevant when choosing alternatives and making decisions. The findings by Candice and Asheley (2012) show that even pre-school children realize the importance of the capability to make accurate decisions. This paper investigates two methods to encourage children to tend to relevant information in a decision-making situation. One group of children was trained to pay attention to the less prominent but more relevant dimensions of the decision-making task. In addition, they were trained to eliminate alternatives once they discovered that they were unacceptable based on a relevant dimension.

The other group of students was exposed to decision-making training using storytelling. The story has many capabilities and potentials that have attracted the attention of many child and adult psychotherapists and researchers. Today, metaphor and story are widely used both in therapy and in the field of psychological education for children and adolescents. This has happened for several reasons: First, the story provides analytical and productive tools for therapeutic communication with the child and adolescent. Since the story revolves around the child's problem, but it is outside the child's world, and it revolves around another character, the child has the opportunity to express his problems, which ultimately reduces the child's resistance (Raymond,2007). Second, it is easy to remember and highlight and evokes emotional responses, and this excitement makes the message of the story more prominent (Heffner, 2003). The second group was indirectly trained to pay attention to the less prominent but more relevant

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dimensions of the decision-making task. It is expected that storytelling would decrease the number of irrelevant information children examine and lead to better choices.

2. Material and methods

The present research was carried out using the experimental and Pre-test, Post-test, and quasi-experimental design. The statistical population of this study was all female preschool students of Urmia city in the schoolyear 2021-2022. The statistical sample of this study was selected from three public elementary schools through multi-stage cluster sampling and assigned randomly to the two experimental and one control group. According to Cohen's tables, to choose the size of the sample group for experimental designs with three groups, it is recommended that about 45 people are needed for an effect size of 0.40 and a power of about 0.78. A pre-test was performed for all three groups. The decision-making skill training program was implemented in ten sessions of one hour for the one experimental group. For the other experimental group, it was ten sessions of one-hour storytelling and did not run for the control group. One month after the training session for both groups, to compare the effect of this intervention, all three groups were post-tested, and the pre-test and post-test results were compared.

2.1.1. Training condition. Children in training conditions were shown how to eliminate inappropriate alternatives. They were explicitly told that they should eliminate an alternative as soon as they saw that the alternative was unsuitable for them on any dimension. The children were then shown on the training board that some alternatives were broken or too small and should therefore be eliminated immediately. They were told not to look at any more information about an alternative once they had eliminated it. In each session, the children were trained with different items such as shoes, bags, etc.

2.1.2. Storytelling condition. Children in the storytelling condition received training through the story, selected from 101 Healing Stories for Kids and Teens written by Burns (2001). The psychologist and literary expert were asked to express their views on the psychological content, language structure, and other elements of the story and determine its usefulness to confirm its validity. After making corrections and gaining content validity and high agreement among the experts' opinions, children were given decision-making skill training through storytelling. The instruction was narrative-based in which the problem and solution are moreover settled, but the learner is positioned within the narrator's setting and control of data (Cobley, 2001). Ten stories were told to the students during this instruction from Managing Life's Challenging Times and Building Problem-Solving Skills chapters. The stories used in this study included "Finding solutions," "Getting back on your feet," "Facing changes," "Overcoming adversity," "Create a wish," "Taking control," "Learning to share," "Acceptance," "Solving a problem," "Thinking through a problem" (Burns, 2012).

3. Decision Making Strategy Task (DMST)

To examine the decision-making skill of preschoolers, DMST is used. In this task, to choose an alternative, special conditions have been considered that the child should pay attention to and decide after examining the existing conditions. Dimensions that a child should decide on are size (i.e., too small or right size), condition (i.e., broken, not broken), and color. For example, in choosing a shirt from several shirts, all three dimensions should be considered, and then based on which of the dimensions play a more critical role in choosing the shirt, the choice is made.

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Each child was tested on three items to assess the child's decision-making, which included a shirt, pants, and socks. The decision criteria were the options' color, size, and condition. Color is an unimportant criterion, and the child should be able to ignore the color prominence of options and pay attention to the size and condition of the option, which is the most essential and basic criteria in this decision task. Based on this, the child will be able to eliminate the wrong option and prefer the correct option. The child's decision was not assessed with the same objects that the child was trained, which were familiar to the subjects of the groups.

After completing the choices, to check the child's awareness of what is happening, the child is asked: "If your friend outside this room asks you what I should choose to make the best choice, what do you tell him/her?". This was to reflect whether the child verbalized a strategy that referred to the dimensions that determined whether an alternative was unsuitable.

4. Data Analysis method

To answer the research hypotheses and compare the scores of the three groups in the post-test by considering their differences in the pre-test and due to the existence of only one dependent variable, one-way of analyzing the variance (ANOVA) was used.

5. Results

First, descriptive information about the decision-making is explained, and then one-way variance and Tukey tests analysis is expressed. It should be noted that the assumptions of one-way variance analysis, such as normal population distribution of responses for each factor level, the same variance of distributions, and independence of the data, were investigated, and analyses have continued concerning the provision of these assumptions.

Table 1. Mean and Standard deviation of post-test and pre-test of the two experimental groups and the control group in the decision component

	Groups	N	MD	Sig
Pre-test	Control	45	3.40	.809
	Training	45	3.40	1.031
	Storytelling	45	3.27	.986
Post-test	Control	45	3.42	.753
	training	45	5.20	1.036
	Storytelling	45	5.96	1.224

Table 1 shows the descriptive findings of the two experimental and one control group in the pre-test and post-test stages for decision-making for a sample of 45 individuals in each group. As we can see, in the experimental groups, the mean decision-making scores are increased compared to the control group after implementing the training programs. The results in Table 1 show that there is a higher increase in the scores of decision-making in both experimental groups than in the control group.

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Table 2. Results of analysis of one-way variance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	152.237	2	76.119	72.762	.000
Within Groups	138.089	132	1.046		
Total	290.326	134			

The results of the implementation of one-way variance analysis and its assumptions in the scores of the decision-making skill scale are presented in Table 3. Based on this table, a comparison between groups in the pre-test stage showed that the decision scores of the control group, storytelling group, and training group were not significantly different [F (2,134) = 0.297, P=0.74].

In the post-test, one-way variance analysis showed a significant difference in decision values between the three groups of control and training test and storytelling test [F (2,134) = 72.76, P=0.000]. This means that the first hypothesis of the research is confirmed. In other words, training in decision-making learning strategies has increased students' decision-making scores.

The results in Table 1 indicate that there is a significant difference between the three groups in the decision variable (P <0.05). Tukey post hoc test was used for a more detailed study and comparison between the two groups.

Table 3. Results of the Tukey Test

Variable	Group1	Group2	MD	Sig
Decision-making	Storytelling	training	0.75	0.002
	training	Control	1.77	0.436
	Storytelling	Control	2.53	0.004

According to Table 4, the results showed that at the level of P <0.05, the decision-making scores of the control group were significantly different from the training group and significantly different from the storytelling group.

However, the decision-making scores of the experimental storytelling group are significantly different from the experimental training group (P <0.05). Also, the results of Table 4 show that teaching decision-making skills through storytelling are more effective than the training method.

6. Discussion and Conclusion

Examining the effect of the instruction method variable on preschool children's decision-making skills showed that training and storytelling effectively promoted this skill. According to Klayman (1982), unimportant information for children is more prominent than important ones, which leads to poor decision-making. In the present study, training improved decision-making skills in preschool children from non-compensatory strategy and low-level processing to compensatory strategy and high-level processing. These findings were in line with the results of research that showed that training could significantly affect decision-making

performance in decision-making situations (Demirtas & Sucuoglu,2009; Howse et al.,2003; Dymond et al., 2010).

This study also showed that stories perform better in teaching decision-making skills than training. Therefore, according to Brenner (1960), we can teach them any subject by adapting teaching methods to the level of children's cognitive function. Stories can be used to increase children's decision-making skills because stories have different therapeutic capabilities. The story shows children that they are not the only ones who face these situations and also helps children perform a series of practical actions to make decisions. Moreover, it develops the concept of "self" people, relieves mental or emotional stress, develops honest "self-assessment" in people, and a way to find interest outside of oneself; this ultimately cultivates human behaviors and motivations (Aiex,1993). Teaching through storytelling makes the child imitates the protagonist (Cook et al.,2004). The child indirectly acquires the attitudes and thoughts of the story's main character (Pardeck & Pardwck,1987).

The stories engage the child's imagination due to the compelling content, naturally increasing the motivation for treatment and leading the child to play a more active role in the treatment (Zimmerman,2017). As children often show interest in guessing the end of the story, asking questions about the story, and retelling the story to their parents, all of this indicates that the child's mind remains aware and involved in the story even after the story is over (cook et al.,2004). This can indicate the profound and rapid effects of the story on the child's maladaptive behavior. Mixing stories with emotions also makes them more prominent in the child's mind; as a result, they can be easily retrieved and recalled from memory for a long time (Heffner,2003). This is why the child turns the story messages into skills and uses them in practice after completing the training. Research background on verbal information retrieval shows that they are better remembered when words are put together excitingly and words with emotional charge are used. As a result, stories get more memorable and easier to retrieve because they have all the features mentioned (Otto, 2000).

Finally, it can be understood that a story is an essential tool for teaching decision-making skills. The findings of this study emphasize the effectiveness of using stories in teaching decision-making skills to children. Based on the findings, it can be acknowledged that storytelling is the best way of teaching decision-making skills to preschoolers. Therefore, educators need to pay attention to this issue and get acquainted with the correct scientific principles for educating children. It is suggested that in-service teacher training introduces preschool teachers to storytelling technics. Moreover, providing the field for teaching skills like decision-making in schools.

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