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Original Article

Comparison of the Role of Problem-Solving Skills Training Following Gestalt and Bandura Theories in Problem-Solving Styles of Secondary School Students

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Abstract
Background and Objective: This study aimed to compare how well high school students were trained by problem-solving techniques following Gestalt and Bandura's theories.

Materials and Methods: All 6,000 first-year female secondary students in Hamedan, Iran, were involved in the current semi-experimental study. The purposive sampling method was used to select the sample size which included 75 individuals (3 groups of 25). The data were analyzed by MANCOVA and Scheffe's post hoc tests.

Results: Training problem-solving skills following Gestalt & Bandura theories affected five problem-solving strategies in students. Students used negative, avoidant, and impulsive orientation techniques less as a result of this training, which increased logical and positive orientation techniques.

Conclusions: The benefits of training problem-solving skills using these theories often change teenagers' problem-solving methods. When compared to training based on Gestalt theory, Bandura's theory-based problem-solving training had a greater influence on logical and avoidance methods.

Keywords: Bandura's theory, Gestalt theory, Problem-solving, Students

Background

Learning problem-solving skills is key to living in Today's world. There is an association between lack of proper problem-solving skills and several emotional and behavioral problems, including depression and anxiety since problem-solving has been defined as a complex behavioral and cognitive process that helps one adapt to personal and social challenges [1]. Problem-solving skills are cognitive-behavioral processes that offer an array of alternative responses for dealing with challenging situations and raise the chance of selecting a highly effective alternative response [2].

Problem-solving skills can be taught using various educational theories and methods and it is important for trainers to know as many different learning and educational theories as possible. This way they will learn to properly analyze each person's learning strategies and promote learning by highlighting the essential matters that need to be considered attentively, and by referring the plausible expectations. Gestalt and Bandura theories are two models of cognitive theories [3].

Gestalt psychologists believe that phenomenological experiences (e.g., apparent movement) have roots in sensory experiences; however, we cannot analyze the experience through analysis of the components of phenomenological experience. It means that the experience of phenomena cannot be understood by their constituents; in other words, phenomenological experience is different from its components [4].

Albert Bandura, a Canadian psychologist of the 20th century, is known as the leading theorist of observational learning. According to Bandura, observational learning may or may not include imitation. For example, while driving on the street, you may see that the car in front of you falls into a pothole. Based on this observation, you change the direction of your car so that it does not fall into the hole and is not damaged. In this example, you learned from this observation rather than imitating what you had observed. According to Bandura, what you have learned is the information that has been cognitively processed and acted upon for your benefit. Therefore, observational learning is much more complex than simple imitation, which is usually considered a type of copying of another person's actions [5].

This study is of great importance given the significance of problem-solving skills and the effect

of different psychological theories on students' ability to learn skills and improve behavior. We compared the efficacy of training problem-solving skills following Gestalt and Bandura's theories on problem-solving models of female teenagers.

Objectives
This study aimed to compare how well high school students were trained by problem-solving techniques following Gestalt and Bandura's theories.

Materials and Methods
This semi-experimental study was conducted on high school students in Hamadan, Iran (n=6,000). The samples were selected using a multi-stage cluster (n=75) and divided into three groups (n=25 each). The problem-solving skills following Gestalt theory were taught to the first group, the second group was taught problem-solving skills following Bandura's theory, and the third group (controls) received normal training. Our groups were assessed for problem-solving skills before the implementation of the project (pre-test). Afterward, the experimental groups underwent eight training sessions on problem-solving skills following Gestalt and Bandura's theories. Eventually, the three groups were tested once more in terms of problem-solving skills (post-test), and we compared the results.

Table 1 presents the process of training problem-solving skills following Gestalt and Bandura's theories.

Table 1. Stages of training problem-solving skills with Gestalt and Bandura's theory

Training session with Gestalt theory	Goals	Training content
1	Introducing the plan and conducting pre-test	- Introducing the whole Gestalt theory and status of a holistic viewpoint in comparison with a detailed view of obstacles - Presenting problem-solving style as well as negative and positive problem-solving orientation, indicating characteristics of negative and positive orientations, and logical, impulsive & avoidant style subscales
2	Recognizing problems and setting goals to solve the problems	- Recognizing problems and obstacles experienced by teenagers - Outlining each problem based on its connection with the related events - Adopting field theories & phenomenology to define each problem - Considering general, integrated, mental, instinctive & combined incentives
3	Training problem-solving skills (1st step)	- Teaching the stages of problem-solving following the guidelines of Gestalt theory, reviewing the characteristics of the Law of Prägnanz, or outlining the problem-solving stages (the psychological organization must be good, simple, and have symmetrical coordination). The Closure Law: to complete apartial experience and react to the surrounding world to facilitate completing the incomplete experiences in those circumstances.
4	Training problem-solving skills (2nd step)	- Explaining the steps of problem-solving by different learning guidelines of Gestalt theory (e.g., similarity and proximity, good continuation, and simplicity)
5	Explaining the significance of the problems and solutions and mixing diverse methods	- Adopting the form and context theory in recognizing the problematic situations and finding solutions, heeding the simplicity of the solution, considering effective continuation in adopting a proper solution
6	Consolidating internal motivation in adopting problem-solving styles	- Providing teenagers' internal stimulation in recognizing both the problem & solution, binding problems with creating cognitive imbalance, adopting law of the Zeigarnik effect in selecting a solution According to Zeigarnik effect, incomplete tasks can be remembered better than complete ones
7	Presenting the steps of insight gaining in problem-solving	- Introducing 3 stages of solving Gestalt problems: 1. Comprehending the problems, 2. Recasting elements of problems (e.g., attention, attitude, perception, and intelligence), and 3. Creating the basis for getting insight into resolving the issue
8	Summarizing problem-solving steps following Gestalt learning guidelines and conducting post-test	- Appraising the steps of confronting the problems and building cognitive imbalance, the brain's role in systemizing and bestowing meaning to each phenomenon, mixing the constituents of each problem, overview & integration in resolving issues - Post-test implementation
Training session with Bandura's theory	**Goals**	**Training content**
1	Introducing the plan and conducting the pre-test	- A brief introduction to Bandura's theory and the importance of observational learning, course conditions, and the necessity of cooperation and homework - Conducting the pre-test
2	Introducing problem-solving styles	- Introducing problem-solving styles and types of attitudes to problems, introduction of positive and negative attitudes to problems, description of logical, avoidant, and impulsive problem-solving styles
3	Identifying and defining the problem	- Showing movies and clips to identify the dimensions of the problem and determine the boundaries and loopholes of a problem - Using a pattern-finding method for identifying the problem and defining it
4	Training problem-solving skills following Bandura's theory	- Showing educational videos on how to identify or choose appropriate solutions based on Bandura's observational theory, explaining the importance of continuous learning
5	Continuing teaching problem-solving skills	- Presenting real or fake videos about how a person faces the problem and the results obtained, drawing students' attention to the useful and effective actions of the main character of the show, highlighting the role model's behavior of the story character, using indirect reinforcement of the behavior aligned with the role model

Table 1. Continued

6	Continuing teaching problem-solving skills	- Presenting a show or plot of a fake or real story, stopping between the stages, and asking the students to predict the results and pay attention to the stages of attention, memorization, and the ability to produce learned behaviors in real situations
7	Teaching self-discipline in resolving the problem	- Explaining the place of order in work and explaining the place of motivational beliefs, assigning tasks according to people's ability, and setting goals that are neither difficult nor easy to strengthen the motivation and ability of students
8	Summarizing and conducting the post-test	- Summarizing the matters by reviewing the stages of learning Bandura's theory, explaining the role of the environment, behavior, and person and expressing mutual determinism or determinants of behavior, teaching appropriate methods of gaining experience and intelligent observation in solving problems - Post-test implementation

Data collection method

We used the problem-solving questionnaire designed by D'Zurilla et al. to gather the required information (2000).

The revised Social Problem-Solving questionnaire was designed D'Zurilla et al. in 2000 for measuring social problem-solving styles. This 25-item tool is scored on a 5-point Likert scale from 1 to 5. There are 2 subscales for determining problem-solving orientation, including positive problem-solving (items 5, 7, and 14) and negative problem-solving orientations (items 2, 4, 9, 13, and 22), and its 3 subscales assess the social problem-solving style, including the logical problem-solving style (items 3, 8, 16, 20, 21, 24, and 25), avoidant style (1, 10, 12, 17, and 18), and impulsive problem-solving style (6, 11, 15, 19, and 23). The efficient subscales of problem-solving included positive orientation and logical style of problem-solving, while the ineffective subscales included negative orientation to problem-solving, and avoidant and impulsive styles. The exploratory factor analysis and correlation with other problem-solving scales and overlapping psychological constructs were adopted to determine the construct validity. The retest reliability and alpha coefficient of the questionnaire were between 0.68-0.91 and 0.69-0.95, respectively (D'Zurilla et al., 2000; Mokhbari et al., 2013).

Statistical analysis

The data analysis was conducted through descriptive (e.g., frequency, percentage, mean graph, standard deviation) as well as inferential statistics using Kolmogorov-Smirnov test (to determine data normality), MANCOVA, and Scheffe's follow-up test (to analyze study hypotheses).

Results

In this study, 47% and 53% of the subjects were in the 10th and 11th grades, respectively. Regarding the field of study, 32% 34% and 34% of the cases were studying mathematics, science, and humanities. It was reported that 54%, 23%, 7%, 5%, and 11% of the fathers had an undergraduate education, a diploma, an associate, a bachelor's, and a postgraduate degrees, respectively. Moreover, 59%, 24%, 2%, 14%, and 1% of the mothers had an undergraduate education, a diploma degree, a bachelor's degree, a postgraduate degree, and a PhD degree, respectively. Considering the parents' occupations, 54%, 31%, and 15% of the fathers were self-employed, employees, and farmers, respectively. As for mothers' occupations, 80%, 13%, and 7% of them were housewives, employees, and self-employed, respectively.

Based on Table 2, no significant difference can be seen between the mean scores of the experimental and control groups in the pre-test in terms of problem-solving style, positive and negative

Table 2. Pre-test status of the compared groups

Groups	Problem-solving method	Numbers	Mean	Standard deviation
Gestalt	Positive orientation	25	12.16	1.72
	Negative orientation	25	15.64	3.63
	Logical method	25	27.92	3.12
	Avoidant method	25	11.8	3.6
	Impulsive method	25	14.84	4.52
Bandura	Positive orientation	25	13.12	1.64
	Negative orientation	25	15.28	4.47
	Logical method	25	28.92	2.87
	Avoidant method	25	10.76	3.12
	Impulsive method	25	13.2	3.68
Control	Positive orientation	25	12	2.17
	Negative orientation	25	14.52	3.17
	Logical method	25	29.28	2.22
	Avoidant method	25	10.92	3.53
	Impulsive method	25	13.92	3.65

Table 3. Post-test status of the compared groups

Groups	Problem-solving method	Numbers	Mean	Standard deviation
Gestalt	Positive orientation	25	13.68	1.06
	Negative orientation	25	11.44	3.08
	Logical method	25	31.28	2.55
	Avoidant method	25	8.28	2.86
	Impulsive method	25	10.24	3.39
Bandura	Positive orientation	25	14.4	0.81
	Negative orientation	25	10.08	3.71
	Logical method	25	32.96	1.96
	Avoidant method	25	6	2.04
	Impulsive method	25	9.72	2.73
Control	Positive orientation	25	12.24	1.96
	Negative orientation	25	14.2	2.95
	Logical method	25	29.56	2.16
	Avoidant method	25	10.72	3.39
	Impulsive method	25	13.64	3.52

orientation, and logical, avoidance, and impulsive styles.

Based on Table 3, we can see a difference in the mean scores of the experimental and control groups in the post-test. The results of the covariance analysis test are needed to ascertain the significance of the differences. We investigated the differences between the application of Gestalt and Bandura's theories on teenager's problem-solving styles using the covariance test.

As indicated in Table 4, the Wilks' Lambda value was f=9.36 (P=0.0001), indicating the group's impact on dependent variables. The results show that assigning students into two groups of experimental Gestalt and Bandura theories and one control group could significantly affect students' problem-solving styles.

The impact of the experimental groups on five problem-solving styles (positive and negative orientation, and logical, avoidant, and impulsive style) was determined using the covariance analysis data (Table 5).

As shown in Table 5, the statistical values indicating the impact of the group on positive orientation (f=20.21, P=0.0001), negative orientation (f=23.28, P=0.0001), logical style (f=18.16, P=0.0001), avoidant style (f=22.66, P=0.0001), and impulsive style (f=20.78, P=0.0001) revealed the significant effect of the group on dependent variables. Therefore, the execution of the experimental design (i.e., Gestalt and Bandura theories) affected the students' problem-solving styles.

The comparison of the post-test of positive orientation, negative orientation, logical, avoidant, and impulsive styles between experimental and control groups was conducted using Scheffe's test following Gestalt & Bandura's theory. The post-test

mean scores of the trained groups following Gestalt and Bandura theories in the positive orientation of teenagers were respectively 1.44 and 2.16 points more than the control group. Accordingly, problem-solving skills training following Gestalt & Bandura theories affected positive orientation of teenagers and increased the positive orientation style of students in problem-solving (i-j=1.44, P=0.001; i-j=2.16, P=0.0001, respectively). The mean scores of the students who were taught problem-solving skills following Gestalt theory and the students trained in problem-solving skills following Bandura's theory were different in the positive orientation of students (i-j=0.72, P=0.23), which indicated the lack of a significant difference between the impact of teaching problem-solving skills following Gestalt & Bandura theories on students' positive orientation.

At the post-test stage, the mean scores of students' negative orientation in the groups under training based on Gestalt and Bandura theories were 2.76 points and -4.12 points less than that in the control group. Consequently, problem-solving skills training following Gestalt & Bandura theories affected the negative orientation of students and decreased the negative orientation style of students (i-j=-2.76, P=0.02; i-j=-4.12, P=0.0001, respectively). There was a difference between the mean scores of the students' negative orientation in the Gestalt theory and Bandura's theory groups (i-j=1.36, P=0.48), which indicated no significant difference between the impact of training problem-solving skills following Gestalt & Bandura theories on negative orientation of teenagers.

The post-test mean scores of the students' logical style in the groups under training based on Gestalt and Bandura theories were 1.72 and 3.4 points more

Table 4. Covariance test

Impact		Value	F-value	Freedom degree of hypothesis	Freedom degree of error	Sig	Ita- squared
Group	Wilks' Lambda	0.29	9.36	15	254.37	0.0001	0.33

Table 5. Summarized analysis of covariance for intergroup effect

Source of changes	Dependent variable	Sum of squares	Degree of freedom	Mean of squares	F ratio	Sig	Impact amount
Impact of group	Positive orientation	89.31	3	29.77	20.21	0.0001	0.39
	Negative orientation	642.8	3	214.267	23.28	0.0001	0.42
	Logical method	236.36	3	78.787	18.16	0.0001	0.36
	Avoidant method	497.04	3	165.168	22.66	0.0001	0.42
	Impulsive method	576.56	3	192.187	20.78	0.0001	0.39
Error	Positive orientation	141.44	96	1.473			
	Negative orientation	883.36	96	9.202			
	Logical method	416.4	96	4.337			
	Avoidant method	701.92	96	7.312			
	Impulsive method	888	96	9.25			
Total	Positive orientation	19137	100				
	Negative orientation	13018	100				
	Logical method	101904	100				
	Avoidant method	67974	100				
	Impulsive method	11706	100				
Corrected total	Positive orientation	230.75	99				
	Negative orientation	1526.16	99				
	Logical method	652.76	99				
	Avoidant method	1198.96	99				
	Impulsive method	1464.56	99				

than that in the controls, respectively; regarding this, teaching problem-solving skills following Gestalt and Bandura theories affected and improved the students' logical style (i-j=1.72, P=0.042; i-j=3.4, P=0.0001, respectively). The post-test mean score of the students' logical style was 1.68 lower in the group under the training in problem-solving skills following Gestalt theory than in the group trained in problem-solving skills following Bandura's theory; accordingly, there was a significant difference between training problem-solving skills following Gestalt & Bandura theories regarding teenagers' logical style. Additionally, the impact of training problem-solving skills following Gestalt theory on teenagers' logical style was lower (i-j=1.68, P=0.049) compared to Bandura's theory.

The post-test mean scores of students' avoidance style were -2.44 and 4.72 lower in the groups under training based on the Gestalt and Bandura theories than in the controls, respectively. The post-test mean score of the students' avoidance style was 2.28 scores higher in the group trained on problem-solving skills following Gestalt theory than in the group under Bandura's theory; as a result, it can be said that the difference was significant between the impact of Gestalt's and Bandura's theory-based problem-solving skills training on teenagers' avoidance style. Furthermore, the impact of training problem-solving skills following Gestalt theory on teenagers' avoidance style was less (i-j=2.28, P=0.036) compared to Bandura's theory.

The post-test mean scores of the teenagers' impulsive style were 3.4 points and 3.92 points lower in the groups under training based on Gestalt and Bandura theories than in the control group, respectively; in this regard, problem-solving skills training following Gestalt & Bandura theories

affected the impulsive style of teenagers and caused a decrease (i-j=-3.4, P=0.002; i-j=3.92, P=0.0001, respectively). We observed a difference between the mean scores of the teenagers' impulsive style in groups trained in problem-solving skills following Gestalt and Bandura theories (i-j=0.52, P=0.95); however, it was not significant.

Discussion
Based on the obtained results and in line with the results of previous studies a difference was observed between the effectiveness of training problem-solving skills following Gestalt & Bandura theories on secondary school students' positive and negative orientation styles, logical, avoidant, and impulsive problem-solving styles. The findings of previous studies have revealed an association between different aspects of learning strategies and problem-solving styles. Additionally, cognitive styles and their aspects played an intervening role in the association of learning strategies with styles of problem-solving [6]. The learning of social-cognitive problem-solving skills led to a reduction in physical and emotion-focused strategies, a rise in cognitive strategies and the awareness of social support and problem-solving, as well as a reduction in the internal and external failure of female teenagers with risky behavior. The training of social-cognitive problem-solving skills increased the chance of using positive coping strategies and decreased the negative strategies [7]. It has been found that training cognitive and metacognitive strategies can lead to an increase in students' self-esteem and problem-solving skills [8]. Student's behavior is a reliable predictor of their cognitive engagement state. High-performance people have shown a higher level of cognitive participation when

showing deep learning behavior than low-performance people [9]. The teenagers who had awareness of their thinking process when confronted with obstacles and assignments could rely on their skill to resolve issues, reviewed and corrected their behavior when handling learning topics, used the avoidance style less, had better mental health, and were more adaptable in dealing with their assignments [10]. Learning problem-solving skills in schools helps students upgrade and increase communication skills [11]. Problem-solving training advances students' problem-solving skills and self-reliance [12]. Training effective communication and problem-solving skills improve teenagers' ability to deal with problems and use social support effectively [13].

Based on the findings of this study, training problem-solving skills following Gestalt theory affected students' problem-solving styles, including positive and negative orientation, and logical, avoidance, and impulsive styles. This educational method decreased negative, avoidant, and impulsive orientation styles and increased positive and rational orientation styles. The results of other studies showed that Gestalt psychology means the whole and all the elements and their combinations are considered together in Gestalt. On the other hand, Behaviorism stresses stimulus-response. Gestalt's stress on positiveness in a relationship highlights the characteristic of its elements concerning time and space, the role and interplay of parts altogether [14]. Based on the findings, a difference was observed between the impact of training problem-solving skills following Gestalt & Bandura's theories on teenagers' logical and avoidant styles. The impact of teaching problem-solving skills following Bandura's theory was higher than that of Gestalt's theory. Students trained based on Bandura's theory used logical style more and avoidance style less than those trained based on the Gestalt theory. These findings confirmed the results of studies reported in the literature [15, 16].

Conclusion

Learning problem-solving skills following two theories of Gestalt and Bandura affected the five problem-solving styles of students. This training increased the adoption of positive and/or rational orientation style by teenagers and lowered impulsive, negative, and avoidant orientation styles. A difference was often found between the impacts of training problem-solving skills following these theories on the problem-solving styles of teenagers. Moreover, training problem-solving skills following Bandura's theory had more impact on logical and avoidance styles than training based on Gestalt

theory. Given the positive effects of the Gestalt and Bandura learning theories on training problem-solving skills, further research is suggested on the design of an educational model of life skills combined with the two mentioned theories.

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