

Evaluation of a school-based educational program to prevent adolescents' problem behaviors

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ABSTRACT

Background: Many researchers believe that adolescents' problem behaviors are indicators of a deficiency in social skills. This study was aimed to evaluate the effectiveness of a prevention program on reducing problem behaviors in male adolescents. **Materials and Methods:** In a preposttest design with randomized control group, 49 students received social skills training (SST). Follow-up assessment of outcomes took place 5 months post baseline. The SST program was administered over the course of 10 weeks (10 sessions of 1 h). The main tools were multiple problem behaviors index (MPBI) and Social Skills Rating System – student form (SSRS-S). The control group (57 students) did not receive any intervention. Intervention effects were evaluated with *t*-test, univariate ANCOVA, and repeated measures ANOVA. **Results:** Significant difference between groups founded on SSRS at posttest ($t = 2.5, P = 0.014$) by univariate ANCOVA. In addition, the findings indicated that variation trend of mean scores of SSRS in the intervention group was significant ($F = 225.3, P < 0.0001$). The intervention group reported Lower levels of MPBI at posttest and follow-up compared to the control group. Significant difference between the two groups did not achieved on MPBI scores in the posttest after adjusting for the pretest scores; however, this difference was significant at the follow up ($F = 5.3, P = 0.020$). **Conclusion:** The results suggest that SST was effective in improving social competence and preventing problem behaviors among male adolescent. Future researches must be examined the role of peer and family.

Key words: Male adolescent, multiple problem behaviors index, social skills rating system – student form, social skills training

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INTRODUCTION

Adolescence is the period between 10 and 19 years of age. It is defined as a multiple transition period (maturity, relationships, schools, and abilities) to adulthood.^[1] From the perspective of many researchers, adolescence is considered as a problematic growth period. Recent researches were more focused on increasing the competence and adolescents success factors.^[2] Many studies have examined problem behavior as a general structure.^[3] Adolescent problem behavior is considered as an inappropriate and unsatisfactory behavior and deviation from legal and social norms (which can cause to call certain

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forms of social control responses, from a simple reprimand to social ostracism and prison sentences).^[4] Studies have shown that problem behaviors tend to have common psychological and social interfaces.^[5] On the other hand, behavioral abnormalities are particular problems in schools because many of these behaviors are directly associated with the school or they have been done in school.^[6] In this study, the purpose of problem behaviors in adolescents is delinquency and drug use (hookah, cigarettes, and alcohol). Studies in the field of epidemiology of drug use in Iran suggested that problem behaviors are expanding such as drug use among adolescents. Rahimi Movaghar and colleagues (2006) in the review of research papers in the field of drug use have reported that the consumption is growing consistently.^[7] PourShabaz and colleagues (2006) showed that the studied students in Tehran had used a variety of drugs for at least once. In general, adolescents had experienced as follows: 42.3% cigarette smoking, 37.5% alcohol consumption, 4.4% hashish smoking, and 4.1% opium consumption.^[8] Hookah smoking among teens and within families is growing. Fifty-five percent of students (63% of boys and 47% of girls) used it for at least once.^[9] In the etiology of health problem behaviors, researchers do agree on a series of common and shared factors as risks.^[10,11] These factors explain easier changes of problem behaviors better than the protective factors.^[12] Important and constant predictors for problem behavior are included: Being masculine, risk factors at the individual level,^[8] low intimacy between the parents, weak support from peers, and low attachment to school (during the survey period).^[13] Eslami *et al.* studies in the study of the relationship between protective/risk factors and problem behaviors show that peer model and risk factors at the individual level were the most important factors explaining the problem behaviors.^[14,15] New models of training in the prevention of problem behaviors are given to the role of psychosocial factors as protective/risk factors associated with adolescent problem behaviors. The researchers suggest that social skills training (SST) programs to remedy the problems related to social competence and prevention of behavioral and emotional problems of the students.^[16] The effectiveness of SST on emotional and behavioral problems of high school students is not agreed by all researchers. Some of them believed that the reason is the near essential role of social factors such as peers in development of interpersonal skills in adolescents.^[17] In a meta-analytic study, the overall effect size of SST programs in prevention of behavioral and emotional problems was reported equal to 0.32.^[18] Weisz and colleagues reported an effect size equal to 0.61.^[19] In the research by Sale and colleagues in an educational program, it was identified that in follow-up assessment, the effect size of the intervention showed a decline in all social skills, although it was at higher levels than the comparison group.^[20] Many conducted studies have shown the impact of social skills training on increasing the personal and social competences. In this respect, it can be pointed out to Margalit research on the SST training effectiveness to increase the self-control skill.^[21] The study of Kimber referred to the lack of training effectiveness in improving social skills. It is delineated that training had a

little effect on assertive and anxiety behaviors and it had a moderate effect on the aggressive, crushed, and delinquency behaviors. The overall effect of the intervention on alcohol consumption has been significant and on drug use was nearly significant.^[22] Nevertheless, in some studies, educational interventions, life and social skills, not only reduced some forms of drug use,^[23] but also, it has been effective on driving behavior and high-risk sexual behaviors in adolescents.^[24,25] Social skills are a core part in everyday life and interactions between individuals from childhood to adulthood.^[26] Based on the perspective of Gresham and colleagues, social skills according to the behavioral approach are defined as: (1) as a behavior or a class of behaviors in a particular situation, and (2) as alternative behaviors or functionally equal to the target problem behaviors. The above researchers knew social skills as learnable behaviors to be accepted socially, behaviors that allow the individual to interact with others successfully and prevent or avoid socially unacceptable behaviors.^[27] In reviewing the literature related to examine effects of social skills in the classroom environment. Researchers determined that these behaviors are related to the method to communicate with the teacher, peers, assertiveness, academic performance, appropriate classroom behavior, and humility.^[26] The lack of such skills has been identified as risk factors for health problem behaviors.^[25] In an assertiveness skill training program (refusal skills), Epstein and colleagues demonstrated that training has little effect on individual risk in adolescent alcohol consumption.^[28] However, merit increase programs or reduction of normative expectations of alcohol use in the peer group can be more effective.^[29] Survey of family effects on behaviors of juvenile delinquency by using a model of social development indicated that social skills had a moderating role. Poor social skills are in relevance with increased risk of delinquent behavior.^[25] Other studies with the aim of reducing criminal behavior have reported similar results.^[30,31] Although, the performed educational interventions are limited in Iran, but it has been shown that they could be effective on: Creating negative attitude toward drug use,^[32] increasing the understanding, and reducing the drug use.^[33] Based on historical evidences, it has been proved that the treatment of problem behaviors is very costly for the society and even the most effective and modern medical interventions are associated with a high rate of relapse and return, despite heavy materially and spiritually spending for training programs of drug use prevention. Clearly, these efforts have been successful to some extent. The basic objective of this study was assessing the learning approach of social skills on the prevention of problem behaviors of male students of Islamshahr city in 2010. In order to test this approach in prevention educational interventions, conventional research project was used as pre-test and post-test with the control group.

MATERIALS AND METHODS

Participants

Educational intervention group (prevention of problem behaviors) was consisted of adolescent's male students. They

were in the first grade of high school in Islamshahr, Tehran. This survey was done using multistage random method. At the first stage, two schools for boys were selected randomly. Then, one school was designated as intervention group and the other school was designated as the comparison group randomly. In the next stage, among the unit classes, two classrooms were selected as the intervention group and two classrooms as the control group. Consents of school officials, parents, and adolescents were taken for participation in the program. Stevens' tables were used to determine the sample size.^[34] Based on the results of meta-analysis studies,^[18,19] moderate effect size was calculated equal to 0.35 ($\alpha = 0.05$, $\beta = 0.10$ and $u = 1$). As a result, the volume of each group was determined equal to 40 students and including 15% loss, equal to 44 students. In this study, the final volumes of the test and control groups were 49 people and 57 subjects, respectively.

Assessment tools

SSRS-S questionnaire (student version): It was a self-report tool for the age group of 13 to 18 years with 39 questions including subdimensions of self-control (assessment of individual behaviors in conflicting situations such as the appropriate response to indulge, and also in situations without conflict such as observance the turn and compromising), collaboration (assessment of behaviors such as sharing devices and following the rules and norms), empathy (assessment of behaviors such as respecting the feelings and the opinions of others), and decisiveness (assessment of initial communication behaviors such as request information from others, introduce themselves, and respond to others' behavior). Each subscale had 10 statements (statement 11: "I'm abstaining to do something to cause adults suffering" is computed for two dimensions of cooperation and self-control). Students responded to questions about the frequency and the importance of describing the behavior on a scale of three choices (0 = never, 1 = sometimes, and 2 = very often). Internal consistency in the original sample for the overall scale was evaluated as 0.83 and for subdimensions as 0.67 to 0.77.^[35] In a recent study, the internal consistency of the overall scale was reported as 0.81.^[36] In the sample of 172 students, we obtained the internal consistency and reliability of the re-test of the overall scale as 0.81 (with a range of 0.71 to 0.78) and 0.77 (with a range of 0.69 to 0.80), respectively.

Questionnaire of drug use: This questionnaire is based on Multiple Problem Behavior Index (MPBI) for investigating the teen's behavior on problem behaviors area. General delinquency scale had eight questions and alpha equal to 0.84 ("for example, did you deliberately make injury or damage to public or private property?"). Drug use includes cigarette, hookah, and alcohol, with the frequency of consumption of each was measured with three questions (for example, "How many cigarettes did you smoke during the last month on average per day?"). The Alpha range was from 0.81 to 0.94. MPBI index was created based on Jessor and colleagues method by adding the frequency scores of

delinquency behaviors, smoking hookah, cigarette, and alcohol consumption.^[10] The same index was used as the base of analysis to determine the effectiveness of the intervention. Reliability and validity of the Persian version were confirmed in the study of Eslami and colleagues.^[14,15]

Intervention method

Student and parent consent was required for participation in the program. Intervention was performed under the supervision of school officials. Experimental conditions and educational contents were placed at their disposal. Both groups were evaluated by using of student-scale version of SSRS, and MPBI Index was designed and implemented for three times (first assessment, before the intervention in November 2009, the second assessment, 1 month after the intervention and the third assessment, 5 months after the second assessment). Meetings were performed as interactive discussions, review previous meetings, role playing and practice. In order to create motivation, it was tried to: (a) the content and manner of its implementation should be attractive to students and (b) incentives were considered for active participation in the process. For the present study, a 10-session program was defined with one week interval and 1 h session for each. Training program was designed with purpose of increasing competence, social awareness, and prevention of students' behavioral problems to be performed in the school environment and in the classroom. It would include the followings: Referrals issues and editing rules, empathy, cooperation, assertiveness, identifying risk factors, self-control, scrutiny, social network, confront the authorities, and avoiding problem behaviors.

Data analysis

SPSS Software version 16 was used to assess the effects of intervention. One-sample test of Kolmogorov–Smirnov was used in order to determine normative data. To evaluate differences between groups in terms of dependent variables from the pre-test to 5-month follow-up assessment, analysis of variance was used with repeated measurements. To compare the intervention group with the control group, independent *t*-test was used. For within-group comparison of assessment mean scores, before and after the intervention, paired *t*-test was used. Univariate analysis of covariance was used in order to analyze the effectiveness of training on problem behaviors.

RESULTS

The results of the analysis of determining the normative data based on the Kolmogorov–Smirnov test results showed that values of the independent variables related to social skills followed a normal distribution. Criterion variables related to problem behaviors in each step of the assessment did not follow a normal distribution. By modifying the data structure and utilizing the conversion method of the natural logarithm, the changed variables were eligible for normal distribution or close to the norm. Therefore, the relevant tests of variables of problem behaviors were conducted based on converted data.

Personal information

Test and control groups had a mean age of 15 years (SD = 0.72). The mean index of socioeconomic status in the test group was 11.8 (SD = 1.59) and it was 11.5 (SD = 1.44) in the control group. The difference was not statistically significant.

Results of the overall and conflicted effects

Initially, 2 × 3 tables were used to assess the overall impact of training and the conflicted effects of group (intervention group versus the control group) with time (time: Before and after the intervention, 5-month follow-up assessment) by using the pattern of two-factor analysis of variance with repeated measurements. The overall equation of educational intervention in increasing the social skills ($P < 0.001$, $F(2, 208) = 112.1$, $Wilks'\lambda = 0.225$) and in reduction of problem behaviors ($P < 0.001$, $F(2, 208) = 28.1$, $Wilks'\lambda = 0.545$) was significant and its effect was equal to 0.52 and 0.21, respectively. Profile analysis of the interaction effect confirmed the mean scores change trend. Social skills and problems behavior were different in the assessment process between the two groups. Analysis of variance was used as the template with intergroup repeated measurements to examine the trends of intergroup.

Results of training effects based on analysis of social skills

As Table 1 shows the difference of SSRS-S mean scores and its subdimensions between the two groups before the intervention, there was no significant difference. These differences were statistically significant in the assessment after the intervention. According to independent *t*-test, the most important difference was related to assertiveness skill with an effect size of 0.53. In a follow-up assessment, the reported mean scores in the intervention group for the overall scale and all its dimensions was higher compared with the control group. However, these differences for the self-control, cooperation, and empathy dimensions were not

significant. The results of analysis of variance with repeated measurements in each group showed significant difference in the changes process. The mean scores of the SSRS-S scale ($F = 225.3$, $P < 0.001$) and its subdimensions in the three stages of the assessment in the intervention group. However, these changes were not significant in the control group. Paired *t*-test results showed that difference of the mean scores in the assessment of before and after intervention in the intervention group for the scale of SSRS-S ($t = 24.29$, $P < 0.001$) and self-control dimension ($t = 13.29$, $P < 0.001$), cooperation ($t = 13.89$, $P < 0.01$), empathy ($t = 13.78$, $P < 0.001$) and assertiveness skill ($t = 10.48$, $P < 0.01$) have been significant. However, the mentioned differences in the control group were not significant. In accordance with the Cohen criteria, the training effect size range on the scores of social skills dimension in the intervention group in three stages of assessment (range of 0.47 – 0.72) and in the post-test assessment (range of 0.40 – 0.53) were moderate and higher.^[37] The obtained results indicated that time factor had reduction role on the reported scores of social skills in the intervention group. So that, there was no significant difference between the mean scores of the skills of self-control, cooperation, and empathy in the two groups in the 5-month follow-up assessment.

Results of training effects based on the analysis of problem behaviors

Difference of the mean scores of MPBI index between the two groups in the post-intervention assessment and follow-up assessment were analyzed using univariate analysis of covariance of independent *t*-test in the post-test stage. The difference between the mean scores of the two groups was significant ($P = 0.039$). By entering the pre-test variable in the model as a covariate of the SST univariate main effect size, this difference was not significant. The results of the analysis in the follow-up assessment stage by covariate of the post-test variable showed that the mean scores difference

Table 1: Mean, SD and comparison of intergroup and between group to obtain scores of SSRS-S dimensions in the three stages of assessment

Variable (range)	Groups	Mean±SD			RM-ANOVA		
		Pre-test	Post-test	Follow up	F	P	η ² p
Self-Control (0-20)	Intervention	10.1±3.5	11.5±3.5	11.0±3.1	71.6	<0.001	0.59
	Comparison	9.9±3.6	10.1±3.5	10.1±3.2			
	<i>t</i> -test, (P value)	NS	$t=2.1, P=0.043$	NS			
Cooperation (0-18)	Intervention	9.5±2.7	10.9±2.8	10.5±2.5	82.7	<0.001	0.63
	Comparison	9.8±2.6	9.8±2.5	9.9±2.2			
	<i>t</i> -test, (P value)	NS	$t=2.0, P=0.044$	NS			
Empathy (0-16)	Intervention	9.4±3.2	10.5±3.1	10.1±3.1	85.4	<0.001	0.64
	Comparison	9.1±2.9	9.1±2.7	9.0±2.7			
	<i>t</i> -test, (P value)	NS	$t=2.5, P=0.014$	$P=0.052$ NS			
Assertion (0-10)	Intervention	5.9±1.5	6.7±1.4	6.5±1.3	41.4	<0.001	0.47
	Comparison	6.0±1.4	6.0±1.2	6.0±1.0			
	<i>t</i> -test, (P value)	NS	$t=2.7, P=0.007$	$t=2.3, P=0.026$			
Total SSRS-S	Intervention	34.8±10.1	39.5±9.9	38.1±9.2	225.3	<0.001	0.72
	Comparison	34.9±9.3	35.0±8.8	35.0±8.3			
	<i>t</i> -test, (P value)	NS	$t=2.5, P=0.014$	$P=0.069$ NS			

SSRS-S=Social Skills Rating System-student form, RM=Repeated measure, η²p=Partial Eta Squared

between the two groups in the follow-up assessment for MPBI index was significant. However, with the low effect size ($F(1, 102) = 5.1, P = 0.026, ES = 0.05$) in the survey of paired comparisons, significant differences were observed in the mean scores in the three stages of assessment in intervention group by using of Sidak model ($P < 0.001$). Model of intercase analysis of variance with repeated measures was used in order to check out the changes trend in each group.

Analysis results in the intervention group using the correct criteria of Greenhouse-Geisser showed significant difference in the trend of changes. The mean scores of MPBI index ($F(2, 96) = 20.1, P < 0.001, ES = 0.30$). Changes in the MPBI index in the control group was significant ($F(2, 96) = 51.0, P < 0.001, ES = 0.47$). But, observing the mean scores in the process of assessment represented different trends in the two groups. Table 2 shows an increasing trend in the mean scores of MPBI index in the control group in the three stages of assessment.

DISCUSSION

The main objective of this study was to determine the effectiveness of educational intervention of social competence of prevention of problem behaviors in male adolescents. Evaluation of the intervention was performed in three stages. Results of Kolmogorov–Smirnov test showed that the variables related to problem behaviors do not follow a normal distribution. These results were expected for assessment structures of problem behaviors. Research of Reitz and colleagues (2005) about surveying the structure of adolescent problem behaviors indicated that the data did not follow normal distribution.^[38] Norm-building measurements by using of the conversion method of natural logarithms could make the data to meet the normal distribution or close to it. “Ranking system of social skills” was used to assess the skills. Intervention expected that by the rise of social skills, drug use behaviors would be reduced. Many studies have emphasized on prevention of behavioral and emotional problems of the students using SST training programs.^[16,23] Analysis of profile

data in this study indicated that the trend of the mean score changes of social skills and drug use behaviors were not matched in the two groups. Overall findings stated that the classroom units, which had received the SST program showed better improvement in the scores of self-control, cooperation, empathy, and assertiveness compared with the comparison group. The overall effect of intervention on increasing the social skills' scores was 0.57. Many conducted studies have shown that the impact of social skills training on increasing the personal and social competencies such as the research of Margalit about the effectiveness of SST training on the increase of self-control skill.^[21] In contrast, the research of Kimber and colleagues has emphasized on the lack of effectiveness of SST training.^[22] Many reasons can be formed by these conflicting results. The most important possible factors can be the methods of intervention and the studied position, which have a decisive impact on the psychosocial variables. In this study, the effect of training on increasing self-control skills in the test group was 0.59. Many studies have emphasized on the role of self-control of the prevention of problem behaviors.^[10,21] Therefore, improving this skill in the present study was an important finding. Comparison of the groups showed a reduction effect of the program between the post test steps and follow-up tests. Hence, between the two groups, there was no significant difference between the scores of social skills (other than decisiveness skill) in the follow-up stage. However, this reduction effect was reported in the research by Sale and colleagues and the greatest reduction was related to self-control skill.^[20] Reduction effect in the follow-up assessment is probably due to the psychological reasons. Conceptual analysis of self-control skill shows its flexibility from the social environment of the individual. The basic differentiation of decisiveness skill with other skills is that it is affected less from the social environment and it is more related to interpersonal relationships. Therefore, decisiveness skills are more influenced by internal strengths. Presumably, students in the intervention group did not have opportunity to reiterate these skills in real environment and they were not strengthened. Thus, over the time, confusion was created in cognitive and behavioral fundamentals. These skills in this study revealed a modest effectiveness in

Table 2: Mean, SD and comparison of intergroup and between group to obtain scores of MPBI in the three stages of assessment

MPBI (range: 23-128)	Mean±SD		Univariate ANCOVA		
	Intervention group (N=49)	Comparison group (N=57)	F	P	η ² p
Pre-test	3.64±0.32 (40.1±15.3)	3.65±0.29 (41.2±12.9)			
Post-test	3.56±0.30 (37.7±13.2)	3.67±0.28 (41.9±12.7)	3.20	0.07	0.03
Follow up (5 months)	3.60±0.29 (38.7±13.0)	3.74±0.29 (44.6±13.2)	5.30	0.02	0.05
RM-ANOVA					
F (2, 96)	51.00				
P value	>0.001	>0.001			
η ² p	0.47	0.30			

MPBI=Multiple problem behaviors index, RM=Repeated measure, η²p=Partial Eta Squared. Analysis was performed on data transformed with the natural logarithm. Original scores were reported in parentheses

reducing problem behaviors. Overall findings stated that classroom units, which have received social skills training, showed a greater reduction in problem behaviors' scores. The overall effect size of educational intervention in reducing problem behaviors was 0.21. In general, the effectiveness of teaching social competence on behavioral and emotional problems of high-school students has been contradictory in some studies. Some researchers, including Dishion and colleagues have pointed to the role of peers.^[17] Based on the perspective of Bandura, teens get their own attitudes and beliefs about criminal behaviors including drug use from models and especially their friends.^[39] Teens spend most of their time with their friends and classmates and have affected and influenced by them. Botvin and Griffin emphasized that drug use in adolescents has been due to social impact, convincing induction of peers and the mass media.^[24] Checking out the results of comparisons between the two groups clearly revealed that the main effect of training in post test stage on MPBI index was equal to 0.03, which was not statistically significant. In the follow-up assessment, there was a low relatively main effect (0.05), which was statistically significant ($P = 0.020$). In intergroup analysis, intervention effect on the prevention of problem behaviors in intervention group was significant with effect size of 0.30 for MPBI index. However, the present educational intervention had a little effect on the MPBI index. But, in interventions related to prevention of problem behaviors, these amounts are considered good.^[18,19] Several studies have shown the reduction of problem behaviors by using educational interventions.^[23-25] Mean score changes trend of MPBI index was significant in three stages of assessment also for the control group. Investigating the comparison of changes trend of the mean scores for problem behaviors between the two groups has had emphasized on the effectiveness of training than the prevention. Intervention group in the post-test stage experienced a different changing curve in obtaining problem behavior scores. In the follow-up assessment stage, the increase in the slope of the curve was slower than the control group. This finding based on the important relationship between social skills and problem behaviors has been reported in many studies. In research of Tavousi and colleagues, it was reported that educational intervention was effective on the levels of perception of self-efficacy and the decisions of the students. This intervention could reduce the drug use.^[33] The research of Botvin and Griffin insisted upon the effective role of SST along with training of resistance skills in reduction of smoking cigarettes, alcohol consumption, and other drugs.^[24] Kimber and colleagues study insisted upon the relative effectiveness of SST on alcohol consumption.^[22] Some other researches stressed upon the moderating role of social skills in prevention of aggression and delinquency behaviors.^[29-31] Problem behaviors are multidimensional and complex phenomenon and the behavior change process is dependent on many factors. Thus, in educational interventions with the aim of reducing drug use behavior should pay more attention to other levels such as peer groups and in curriculum development, long-term assessments must be tested.

CONCLUSIONS

This study was able to consider the problem behavior syndrome (a combination of delinquency behaviors, smoking cigarettes and hookah, and alcohol consumption) as the outcome variable in a single educational intervention and partly to help the reduction of conflicts in the effectiveness of the study. Training program of the present study could be able to demonstrate its capabilities in increasing of social skills. However, training did not have an acceptable effect on reducing problem behaviors, but it can be effective on the prevention of it. However, in the evaluation of interventions, the effect size is important, but the main focus must be on skill evaluation methods. Assessment of behavioral skills with more objective methods has more credibility. The results of the educational intervention were related only to adolescent boys and many factors can have impact on the results. Factors that were not in control of the investigation or rather, the research team was not aware of them. Therefore, there is always the possibility that the results can be different.

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