

The Effect of Educational Intervention Based on the Theory of Planned Behavior on Degree of Optimism among Male High School Students

Alireza Jafari Baghkheirati¹,
Leila Ghahremani¹, Mohammad
Hossein Kaveh¹, Sareh
Keshavarzi²

¹Department of Health Education and Promotion, Faculty of Health, Shiraz University of Medical Sciences, Shiraz, Iran;

²Department of Epidemiology, Faculty of Health, Shiraz University of Medical Sciences, Shiraz, Iran

Correspondence:

Leila Ghahremani,
Assistant Professor in Health Education,
Department of Health Education and Promotion,
Faculty of Health,

Shiraz University of Medical Sciences,
Shiraz, Iran

Tel: +98 9177923542

Fax: +98 71 37260225

Email: ghahramanl@sums.ac.ir

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Abstract

Background: When people maintain positive attitudes during life, their beliefs orientation will be highly beneficial to their health. In other words, those who have optimistic expectations report better physical health which is the result of their better psychological compatibility. The present study aimed to investigate the effect of educational intervention based on Theory of Planned Behavior (TPB) on Shirazi male high school students' degree of optimism.

Methods: This educational randomized controlled trial was conducted on 240 male high school students in Shiraz. The research sample was selected through multi-stage random sampling. In this study, a demographic information form was used to gather the students' demographic characteristics. Besides, a positive thinking researcher-made questionnaire was designed based on TPB. Moreover, the life orientation test (optimism scale) developed by Scheier and Carver was used to evaluate the participants' degree of optimism. After all, the data were analyzed in SPSS statistical software (v. 19) using descriptive and inferential methods. Significance level was set at 0.05 in all the tests.

Results: Compared to the control group, all the constructs of TPB increased in the intervention group after the training ($P < 0.001$). Moreover, Pearson correlation indicated a significant relationship between the constructs, and the highest correlation was among attitude, perceived behavioral control, and intention.

Conclusion: According to the research findings, all the constructs of TPB played a key role in increasing the students' positive think. Thus, educational intervention based on TPB has a positive effect on increasing the students' positive think.

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Introduction

Adolescence is a period of rapid changes in temperament. During this period, adolescents' emotional states undergo dramatic changes and they gain vast positive and negative emotional experiences. Compared to

childhood and adulthood, reaction time to emotional stimuli is stronger and quicker during adolescence.¹ Besides, adolescents spend a lot of time interacting with their peers and they can be continuously affected by various stressors.²

Preparing a fertile ground for adolescents to

build their self-esteem allows them to avoid negative tendencies and also gives them freedom. This phenomenon is called the power of positive thinking.³

Human thoughts shape their feelings, performance, and identity and positive thinking creates a feeling of happiness.⁴ Compared to pessimists, most of the attitudes of a highly optimistic individual towards life events are positive and he/she expects more positive results.⁵ Also, in comparison to pessimists, optimists have high qualities of life, involve in more activities, and adopt more health-improving behaviors.⁶

According to previous studies, positive thinking is supportive. For example, in comparison to pessimists, optimists have been reported to have less pain and better physical performance.⁷ It has also been reported that highly hopeful individuals suffer from severe psychological problems.⁸ Because of having pessimistic, negative, and unreasonable thoughts, students seem to be disappointed about their future.⁹

Schools create great opportunities for health improvement. Students, teachers, and peer groups are the potential forces in the school system. Not only can school provide students with information, but it also can shape attitudes and teach them skills.¹⁰

In developing countries, the educational system is the widest and largest channel of disseminating and distributing healthy knowledge and helping societies to improve healthy attitudes and skills.¹¹ Moreover, the most important educational period of every individual is spent at school and, thus, it is the department of education that determines one's future. Nowadays, schools' educational programs are mostly focused on acquiring reading, writing, calculating, and creative thinking skills. Nevertheless, without ethics and good qualities, nothing can be performed properly.¹²

The goal of health education is to cause positive behavioral changes and help individuals adopt and maintain healthy behaviors. Training should be offered with the aim of familiarizing participants with physical, mental, and social issues in three axes of family, school, and collective training.¹¹

Theory of Planned Behavior (TPB) is one of the most known theories. It provides a framework for regular and systematic examination of decision-making about behaviors. According to this theory, intention is the main determinant of behavior, which is subject to three independent constructs of attitude, subjective norms, and perceived behavioral control.¹³

TPB is utilized to predict and perceive behaviors, and it has some variables including behavior encouragement, intention, and behavior exhibition. Moreover, its credibility has been confirmed experimentally in various studies.¹⁴

Positive thinking is defined as an individual having

high expectations that things will be alright despite having obstacles and difficulties in life. Therefore, optimistic individuals have a higher psychological well-being. On the other hand, when faced with problems, individuals experience various emotions which range from confusion and enthusiasm to anger, anxiety, and depression. Among all these emotional states, it is optimists who expect positive results, bringing them a combination of relatively positive feelings.¹⁵ According to TPB, perceived behavioral control, which refers to perceived ease or difficulty of exhibiting a behavior, is similar to the concept of confidence.

Positive thinking predicts attitudes, planned positive attitudes for improvement, gathering information, and recreating bad situations on the basis of their most positive aspects.¹⁵ Attitude towards a behavior refers to positive or negative assessments of individuals' tendency towards showing a certain behavior. The more positive one's attitude towards a behavior, the more likely he/she will conduct that behavior, and vice versa.¹⁶

Evidence has demonstrated a relationship between adolescents' feelings of tension and mental stress and their family relationships and conflicts with parents and teachers.¹⁷ Subjective norms refer to perceived pressure from important individuals in one's life for showing or avoiding a behavior.¹⁸

Positive thinking is learnable, and prediction and controllability of events are two factors which should be taught to children at schools in order for them not to perceive problems as unsolvable.¹⁹

Since TPB focuses on individual thinking, such as knowledge, it is incorporated into health education. This can lead to accreditation of educational approach to behavioral change. They also accredit subjective norms and its perception, which are in line with society-oriented public health programs and social variables, for improving the health status.²⁰

According to Armitage, TPB is the most complete and most appropriate theory of studying behavior.²¹ Educational intervention based on TPB not only leads to increase in the level of knowledge, increase in perceived behavioral control, improvement of attitude, and establishment of appropriate subjective norms, but it also shapes behavioral intention.²²

Due to the importance of learning positive thinking skills and lack of similar studies on positive thinking skills based on health education models, the present study aimed to investigate the effect of educational intervention based on TPB on Shirazi male high schools students' degree of optimism.

Materials and Methods

This randomized trial conducted in 2013 aimed to assess

the effect of educational intervention based on TPB on Shirazi male high school students' degree of optimism.

According to previous studies conducted on the issue,²³ based on the mean difference formula, and considering the mean difference of 4.6, standard deviations of 8.39 and 14.6 in the two groups, significance level of 0.95, and power of 80%, a 200-subject sample size was determined for the study (100 students in each group). Yet, considering the loss rate of 20%, the sample size was increased to 240 students (120 students in each group).

The research sample was selected through multi-stage random sampling. In doing so, two out of four educational districts in Shiraz were selected as the research setting. In this way, one out of the 1st and 2nd districts and also one out of the 3rd and 4th districts were selected because these districts were socially and economically similar. Then, four out of all the male high schools in every educational district were chosen (a total of 8 schools). In each district, two schools were considered as the control groups and the other two schools as the intervention groups. Then, in order to prevent information exchange between the intervention and control groups, one first grade class in each school was randomly enrolled in the study.

During the intervening 4 sessions, each session was held for 2 hours. Educational materials such as booklet, 2 pamphlets, and 4 sheets on daily useful exercises were presented to the students. In the interventions, methods such as interactive lectures, brainstorming, group discussion and question and answer educational videos were used. Also, in all sessions, the media such as video projectors and PowerPoint were used.

It should be noted that the participants received explanations on the research process, confidentiality of their information, and the research objectives, and participated in the study willingly. The subjects were informed about the advantages of the study and that participation in the study was voluntary. After completion of the study, educational materials (booklet, pamphlets, etc.), which had been put in the intervention group were given to students in the control group. Inclusion criteria were the first class of high school students in Shiraz and the continuous presence in educational programs. Exclusion criteria were having more than one session or more absences in classes and the students who participated in the pretest but not the post-test.

In this study, a demographic information form was used to gather the students' demographic characteristics. Besides, a positive thinking researcher-made questionnaire was designed based on TPB. This questionnaire was answered by self-reporting through a five-point Likert scale, ranging

from completely agree to completely disagree before and one week and 2 months after the intervention. This questionnaire included the four main constructs of TPB, i.e. attitude (26 questions), subjective norms (4 questions), perceived behavioral control (7 questions), and behavioral intention (8 questions). The content validity of the questionnaire was confirmed by experts' opinions. In addition, by conducting a pilot study on 170 male students in the first grade of high school in Shiraz, the questionnaire's reliability was calculated by Cronbach's alpha. Accordingly, the reliability of the items related to attitude, subjective norms, perceived behavioral control, and behavioral intention was 0.84, 0.67, 0.6, and 0.73, respectively. Also, Cronbach's alpha for the whole questionnaire was 0.91, revealing the acceptable reliability of the scale. Moreover, the life orientation test (optimism scale) developed by Scheier and Carver was used to evaluate the participants' degree of optimism. This scale consisted of 10 questions, 4 of which were deviations (questions 2, 5, 6, and 8), so they were not scored. In this scale, questions 3, 7, and 9 were negative. Thus, scores of 4 and 0 were assigned to completely agree and completely disagree, respectively. On the other hand, questions 1, 4, and 10 were positive. Consequently, scores of 4 and 0 were assigned to completely agree and completely disagree, respectively. The total score of this questionnaire ranged from 0 to 24, with higher scores representing higher optimism level. According to Reshvanlo and colleagues, the reliability of this questionnaire was reported to be 0.78 by Scheier and Carver. Besides, in the studies by Reshvanlo and colleagues¹⁶ and Kajbaf and colleagues, Cronbach's alpha coefficient of this questionnaire was 0.61 and 0.85, respectively.²⁴

After all, the data were analyzed in the SPSS statistical software (v. 19) using descriptive (mean, standard deviation, and median) and inferential methods (Pearson correlation, two-way ANOVA, Chi-square, and T-test). Significance level was set at 0.05 in all the tests.

Results

In the present study, the students' mean age was 15.04±0.68 and 14.64±0.57 years in the control and the intervention group, respectively. The highest frequency of fathers' education level was related to associate, B.A. and B.S. degrees in both control and intervention groups (26.5% and 35.7%, respectively). Also, the highest frequency of mothers' education level was related to associate, B.A. and B.S. degrees in both control and intervention groups (29.5% and 30.6%, respectively). Besides, the highest frequency of fathers' occupation was related to self-employment in both control and intervention groups (38.1% and 40.8%, respectively). Also, most of the mothers in both control and intervention groups were

homewives (82.5% and 85.5%, respectively). The results of Chi-square test revealed no significant difference between the two groups regarding these characteristics before the intervention.

In this study, the mean score of each of the main constructs, i.e. attitude, subjective norms, perceived behavioral control, behavioral intention, and optimism, based on the demographic variables was compared before and after the intervention in the control and intervention groups. The results showed no significant relationship between the aforementioned constructs and demographic variables. (Table 1)

According to the results of repeated measures ANOVA, a significant difference was found between the two groups concerning attitude, subjective norms, perceived behavioral control, and optimism. Besides, time was a significant factor in these changes. In addition, considering both time and group factors, the change processes were significant in both groups. Also, a significant difference was observed between the two groups with regards to the mean change of behavioral intention, but time was not a significant factor in these changes. Considering both time and

group factors, the change processes were significant in both groups. (Table 2)

Based on the results, all the coefficients were significant ($P < 0.001$) and the correlation coefficients ranged from 0.414 to 0.750, showing an average, direct linear correlation. Therefore, as the mean score of every construct increased or decreased, so did the mean scores of other constructs and optimism. Furthermore, attitude, perceived behavioral control, and subjective norms were the strong predictors of behavioral intention. (Table 3)

Discussion

This study aimed to determine the effect of educational intervention based on TPB on Shirazi male high school students' optimism. The results showed the effect of education on the students' levels of optimism.

Comparison of the changes in the mean scores of attitude based on repeated measures ANOVA showed a significant difference between the intervention and control groups in such a way that the attitude score increased in the intervention group, but it decreased

Table 1: Comparison of the mean scores of different aspects of positive thinking questionnaire in the control and intervention groups before the intervention

Group	Variable	Experimental group Mean±SD	Control group Mean±SD	T	P value
	Attitude	13.3±93.19	14.19±92.97	-0.109	0.913
	Subjective norms	3.17±15.56	3.95±15.84	0.562	0.575
	Perceive behavioral control	5.01±23.94	5.16±24.14	0.265	0.791
	Behavioral intention	5.87±25.96	5.65±26.93	1.180	0.239
	Positive think	3.26±13.64	3.57±13.87	0.484	0.629

Table 2: Comparison of the mean scores of changes in attitude, subjective norms, perceived behavioral control, behavioral intention, and optimism in the control and intervention groups during pre-test, first pre-test, and second pre-test

Variable	Group	Pre-program	1 week after program	2 month after program	Time	Group	Time/group
		Mean±SD	Mean±SD	Mean±SD			
Attitude	Experimental group	93.19±13.3	101.6±16.26	16.61±102.2	0.015*	<0.001*	<0.001*
	Control group	92.97±14.19	22.72±76.85	25.15±76.63			
Subjective norms	Experimental group	15.56±3.17	3.16±11.78	3.28±15.95	<0.001*	<0.001*	<0.001*
	Control group	15.79±3.97	3.17±9.22	5.17±11.4			
Perceive behavioral control	Experimental group	23.94±5.01	26.65±5.96	26.56±5.67	0.029*	<0.001*	<0.001*
	Control group	24.14±5.16	6.97±20.11	7.67±18.8			
Behavioral intention	Experimental group	25.96±5.87	6.88±29.38	7.18±30.1	0.066	<0.001*	<0.001*
	Control group	26.93±5.65	7.39±21.88	8.32±20.23			
Positive think	Experimental group	13.64±3.26	5.92±16.13	4.34±15.05	0.013*	<0.001*	<0.001*
	Control group	13.87±3.57	4.5±12.19	4.83±11.01			

Table 3: The linear correlation between the intervention group's mean changes in TPB constructs and optimism mean scores before and one week after the intervention

	Attitude	Subjective norms	Perceive behavioral control	Behavioral intention	Positive think
Attitude	1				
Subjective norms	0.503*	1			
Perceive behavioral control	0.75*	0.414*	1		
Behavioral intention	0.74*	0.453*	0.587*	1	
Positive think	0.635*	0.438*	0.618*	0.526*	1

in the control group one week and 2 months after the intervention. The results indicated a considerable change in the intervention group participants' attitude after the intervention; their attitude modified in a positive direction. In TPB, attitude refers to overall assessment of the advantages and disadvantages of one's behavior. Hence, if one's attitude is towards more positive behaviors, the likelihood of performing that certain behavior will increase.¹⁶

Similar to the present study results, the studies conducted by Alizadeh,²⁵ Karimi,²⁶ Pakpour,²⁷ Solhi,²⁸ and Shakerinejad²⁹ showed a significant increase in the intervention group's attitude after the training, while no significant change was observed in the control group. In the study conducted by Tabatabaie,³⁰ however, no statistically significant change was reported in the intervention and control groups' mean scores of attitude after the training.

In the present study, the results of repeated measures ANOVA demonstrated a significant difference between the two groups regarding the changes in the mean score of subjective norms. After the training, the mean score of subjective norms increased in the intervention group, but it followed a downward trend in the control group. In the intervention group, the mean score of subjective norms decreased one week after the training but it increased again after 2 months.

Subjective norms refers to an individual's perception about a particular behavior which is influenced by the judgment of others, including parents, siblings, friends, and teachers.¹⁸ The reason for the decrease in the score of subjective norms one week after the training could be the fact that the effect of others on one's behavior lasts for a certain period of time and it may not affect a person immediately. In this study, the score of subjective norms increased 2 months after the training.

Similar to our study, the research conducted by Alizadeh revealed a significant difference in the mean score of subjective norms before and after the intervention, but no such difference was observed in the control group.²⁵ In the study carried out by Shakerinejad, subjective norms' score followed an upward trend in the intervention group, but a downward trend in the control group.²⁹ In the same

line, studies conducted by Jadgal,³¹ Pakpour,²⁷ Karimi,²⁶ and Solhi²⁵ showed significant changes in the scores of subjective norms in the intervention group compared to the control group. However, Tabatabaie's study indicated no significant difference in the mean difference of subjective norms scores before and after the training.³⁰

In the present study, the results of repeated measures ANOVA showed a significant difference between the two groups regarding the mean score of perceived behavioral control. The scores of perceived behavioral control had an upward trend in the intervention group, but a downward trend in the control group. Perceived behavioral control refers to an individual's perceived ease or difficulty of performing a particular behavior, including internal and external factors. These factors can prevent or facilitate certain behaviors.¹³ These findings showed that the intervention group subjects who had undergone training were able to have a positive attitude towards their life and surrounding events even in the presence of problems and obstacles.

Consistent with the results of this research, the studies performed by Shakerinejad,²⁹ Pakpour,²⁷ Karimi,²⁶ and Solhi²⁸ demonstrated that in comparison to the control group, the mean score of perceived behavioral control increased significantly in the intervention group after the training. In contrast, Tabatabaie's study³⁰ revealed no significant difference between the two groups concerning the mean scores of perceived behavioral control before and after the intervention.

The results of repeated measures ANOVA in the current study showed an increase in the intervention group's mean score of behavioral intention, but a decrease in that of the control group. In general, behavior occurs after an intention; thus, without intention, no behavior is exhibited.³² The higher one's intention score, the more likely one will be to exhibit a certain behavior and show a higher tendency to conduct that behavior.

In the studies conducted by Shakerinejad,²⁹ Jadgal,³¹ Pakpour,²⁷ and Solhi,²⁸ in comparison to the control group, the mean score of behavioral intention significantly increased in the intervention group after the training. In Tabatabaie's study also the mean score of behavioral intention significantly increased in the

intervention group, but the increase in the control group's mean score of behavioral intention was not statistically significant.³⁰

The findings of the present study showed no significant difference between the two groups with respect to the mean score of optimism before the intervention, indicating the participants' similar optimism levels before the training. The results of the study by Sohrabi²³ also demonstrated no significant difference between the two groups regarding the mean score of positive thinking in the pre-test. Nevertheless, the results of repeated measures ANOVA showed a significant difference between the two groups regarding the change in the mean score of optimism. Moreover, the optimism score followed an ascending trend in the intervention group, but a descending trend in the control group. Similar to our study, the research conducted by Barkhori³³ indicated a significant difference between the two groups with regards to the students' happiness. In other words, training on the positive thinking skills increased the students' feelings of happiness.

In the studies conducted by Soori,³⁴ Orejudo,³⁵ Wright,³⁶ Khullar,³⁷ Bagana,¹⁹ Segerstrom,³⁸ and Hystad,³⁹ the mean scores of optimism were 18.07 ± 3.19 , 12.39 ± 3.94 , 19.94 ± 4.46 , 19.01 ± 3.87 , 3.74 ± 0.079 , 3.54 ± 0.77 , and 3.54 ± 0.62 , respectively. In Sohrabi's study,²³ after the training, positive thinking mean scores showed an upward trend in the intervention group and a downward one in the control group, which is in agreement with the findings of the present study.

In a study entitled "the effect of optimism training through storytelling on reduction of children's depression", Nikmanesh showed a significant difference in the mean change of depression scores in both intervention and control groups, and the mean score of depression decreased more significantly in the intervention group compared to the control group.⁴⁰ In addition, evidence has indicated that optimism training was effective in improvement of female students' life quality.⁴¹

Another study also showed that optimism training through storytelling turned the elementary school students' pessimistic style to optimistic, and that the mean scores of optimistic style significantly increased in the intervention group compared to the control group.¹²

Besides, Ganji in a study showed that optimism training led to an increase in the elementary school students' educational improvement, and that the mean score of educational improvement in the post-test was significantly higher in the intervention group in comparison to the control group.⁴² Moreover, one other research revealed that optimism had a direct effect on

mental health and an indirect effect on quality of life. Optimism also resulted in positive attitude and life satisfaction by affecting emotions and feelings.⁴³

The findings of a previous study showed a significant positive relationship between optimism and marriage satisfaction.⁴⁴ In the study by Raghibi also, pre-test and post-test mean difference of emotional intelligence was higher in the intervention group, where subjects received optimism skills, compared to the control group.⁴⁵ In addition, Shiri reported that training of positive thinking had an impact on physical performance, fatigue, emotional health, social performance, and quality of life. Also, the intervention group's mean scores were significantly higher compared to those of the control group.⁴⁶

When undergoing training on optimism, individuals can be taught to discuss with each other and challenge themselves. This helps them avoid the thought that everything is bad, disappointing, and unchangeable and, consequently, they can step forward to find solutions for changing these thoughts.⁴²

In the present study, Pearson correlation coefficient showed a linear correlation between the constructs of TPB and optimism mean scores before and one week after the intervention, indicating a significant strong, direct relationship between attitude and perceived behavioral control and behavioral intention. Moreover, a significant weak, direct relationship was observed between optimism and attitude, subjective norms, perceived behavioral control, and behavioral intention as well as between subjective norms and perceived behavioral control and behavioral intention. Furthermore, as the mean scores of each variable increased or decreased, so did the mean score of optimism.

Biker reported a significant mild, direct relationship between attitude and subjective norms as well as between perceived behavioral control and behavioral intention. On the other hand, a significant weak, direct relationship was found between attitude and perceived behavioral control.⁴⁷ In the study conducted by Malan, a strong direct relationship was observed between behavioral intention and perceived behavioral control.⁴⁸ Yet, the results of another study showed a mild, direct relationship between behavioral intention and attitude, subjective norms, and perceived behavioral control as well as between attitude and subjective norms.⁴⁹

In the study conducted by Mohammadi Zeidi, the highest correlation was observed between attitude and perceived behavioral control, while the lowest correlation was found between attitude and subjective norms and behavioral intention.⁵⁰ Yarmohammadi's study also demonstrated a significant mild, direct relationship between attitude and subjective norms.⁵¹

In addition, in the study by Alizadeh, attitude and behavioral intention showed a significant and direct relationship with HIV-preventing behaviors.²⁵

According to Ghahremani's research, a significant weak, direct relationship was found between behavioral intention and subjective norms and perceived behavioral control.²⁰

The current study results showed that attitude is a strong predictor of behavioral intention; this is consistent with the findings of Yarmohammadi's study.⁵¹ Nevertheless, Mohammadi Zeidi's study disclosed perceived behavioral control as a strong predictor of behavioral intention; this is not in agreement with the results of our research.⁵⁰ Moreover, a study conducted by Kivimaki and colleagues revealed a weak, direct relationship between optimism and pessimism as well as a mild, direct relationship between training and optimism. Also, a significant weak, indirect correlation was observed between training and pessimism.⁵

Conclusion

According to the findings of this research, educational intervention based on TPB had a positive effect on enhancing the first grade high school students' positive thinking. Additionally, all the TPB constructs played a key role in increasing the students' positive thinking. Therefore, considering the diverse problems adolescents are faced with and also the effect of training positive thinking skills based on TPB model on students' degree of positive thinking, other programs based on other health education models are recommended to be designed and implemented.

Limitations of the Research

First of all, this study was only conducted on male students in governmental schools. Besides, the participants were selected from the 2nd and 3rd educational districts. Thus, the results may not be generalizable to other geographical areas because of cultural, social, and economic differences.

Suggestions

Considering the limitations of this study, the followings are recommended for further studies:

- 1- Studies should be performed on larger sample sizes and on both sexes.
- 2- The participants' age groups, educational degrees, culture, social background, and economic status should be taken into account.
- 3- Studies should also be carried out based on other models of health training in order to find the most

effective model for conducting studies in this area.

Application of Results

The results of this study can be used by schools, adolescents' health units, Department of Education, and teenagers' consultation centers.

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