Comparative study of effectiveness of two training methods of stress management and social problem solving on anxiety and academic procrastination of students

Habib Alah Hashemi

Clinical psychologist, M.A.

Clinic address: Islam shahr- Zarafshan St., No.31, Medical complex of Dr. Arvin

Abstract:

The main purpose of the present research is a comparative study of effectiveness of two training methods of stress management and social problem solving in anxiety and academic procrastination of students. The research method is an extended test with some group pre-test and post-test. The population consists of all high school students of Islamshahr in academic year 89-90. The population size according to census bureau educational manament was 7238 subjects. The research hypotheses are as follows:

1. Training of stress management is effective on decrease of anxiety.
2. Training of stress management is effective on decrease of students’ academic procrastination.
3. The social problem solving is effective on decrease of anxiety.
4. Training of social problem solving is effective on decrease of academic procrastination.

Therefore, 45 students of were selected from high schools of Islam Shahr as the study sample. Then, they were classified into three groups based on their age, and pre-test scores. Of these three groups, the first was social problem solving group, the second, training of stress management and the third was the control group. After holding training sessions, a post-test was conducted. To measure the students’ anxiety, the Zung self assessment anxiety scale( S.A.S) questionnaire, for test of academic procrastination, the procrastination assessment scale-student (PASS) were utilized. To compare the pre-test and post-test means in order to determine the effect of trainings, the monovariable covariance method was used. The results of data analysis indicate that there is a statistically meaningful difference between scores of anxiety after training how to manage stress and problems solving in the groups with F value 28.241

habibolahhashemi32@gmail.com
in level of significance $P < 0.01$ and the error of measurement lower than 0.001. Therefore, training of stress management and social problem solving cause to decrease of anxiety in the student. Also, the results of the statistical analysis showed that there is a statistically disparity between scores of academic procrastination after training sessions of stress management and social problem solving in the groups with $F$ value 69.745 in $P < 0.01$ and error of measurement lower than 0.001.

Consequently, cognitive-behavioral treatment leads to reduction of academic procrastination of students. The follow-up studies with the Tukey method signifies that training of stress management has more impact compared with the problem solving method and rate of anxiety and procrastination decreased more considerably. As such, it is concluded that the stress management and social problem solving bother were effective on minimization of anxiety and academic procrastination of the students. Using these methods, thus, are recommended for solving educational problems of students.

**Key words:** training of stress management, training of social problem solving, anxiety, procrastination, high school students

**Introduction:**

Anxiety as an inexorable of every day’s life is considered as one of human personality components. In this view, some of childhood and adulthood anxieties could be regarded normal and accept their positive effect on the process of development. Since individuals are provided with the opportunity to expand their tension mechanisms in dealing with stressful situations. In other words, anxiety in some conditions stimulates the individuals’ creativity, he/she can think of different situations and how to cope with them, or incline them to seriously get ready for a specific test or acceptance of a social role.

Tension is one of problem the individual will face with in critical period of adolescence and puberty. In these periods, anxiety increases and manifests itself in most of life situations. This, will cause a few problems for the teens like lack of efficiency in social relations (in school, among peers and with family), failure in assertive and negotiation of ideas in a group as well as weakness in defending personal rights. These problems, if continue can leave destructive impact on the individual’s mental health during the adulthood.

Of other problems the teen students may encounter with are procrastination and negligence especially in fields of responsibilities like schooling. These problems are among important obstacles before educational progress and reducing factors of academic inclination and success. Accordingly, in the
current research, two psychological treatments of training stress management and problem solving in decrease of rate of anxiety and procrastination were examined in order to their effective are compared.

Methods and materials:
Method:
The present research method is of an extend test with pre-test and post-test of multiple groups. The study population consists of all high school students in city Islamshahr within academic years 2010-2011. The size of study according to the census bureau of the Education Management Office in Islamshahr was 7238 subjects. Through stratified sampling method first the questionnaire was distributed among 300 subjects then three 15-subject groups were determined.

Therefore, total study sample includes 45 peoples in three groups and 15 subjects in each. To analyze the data, covariance analysis were used to compare means of two control and experimental group and the control group after the post-test. To inferentially analyze the data of hypotheses 1 to 4, the covariance and Tukey test were utilized. To inferentially analyze the research questions 1 and 2, the follow-up Tukey test were applied. SPSS16 was the instrument for doing all analyses.

The procedure for determining sample size is that 15 subjects were selected in order to do the parametric tests (Delavar, 2009). To conduct the study, first students were examined on the basis of rate of anxiety and academic procrastination and then were homogenized into three groups. The first group, stress management the second social problem solving and the third was control group. Then, the independent variable, the training periods, was entered. The training period was 8 sessions for each treatment method. Eight 90 minute sessions were held. That is one session each week. After the training period, the students' anxiety and procrastination were tested for the second time and three groups were compared according to their pre-test and post test scores.

Zung self assessment Anxiety Scale (S.A.S):
This scale consists of twenty four item questions in terms of physical-emotional syndrome of anxiety were prepared. Different indexes of recognition were used that accorded with the most common
characteristics of anxiety disorders. The clinical interviews of anxious subjects were recorded in
details, and then were used in making the test. The cognitive criteria of S.A.S. have 5 emotional and 15
physical syndromes.

The advantage of this scale compared to other similar scales is that the subjects can follow more
confined procedures when responding to items. Since of 20 items a few questions (16 items)
emphasized on the positive syndromes and few others (4 items) on the negative syndromes (items
5,9,13,19). In order to prevent the respondent from reviewing the marked items, instead of Yes and No
(common in most of questionnaire), the subjects were resided in never, rarely, sometimes, most often,
always and almost always scale. The other advantage of this scale is to change rating scale to the
ordinal (by use of ranking scale that transforms qualitative features to the quantitative ones) and
makes a parametric test. Thus, in statistical tests has greater power in predicting the population via
the samples.

When using this scale, the respondent is asked to answer all of 20 items to see what is true about
him/her within last week emotional state. The S.A.S. is designed in a way that individuals with lower
anxiety will receive lower score and those with higher anxiety will take greater score. At time of
scoring, according to type of the item, and if it is positive, never is scored 1, and the other options will
given 2, 3, and 4 respectively. But, if the item was negative always or almost always are scored 1, and
never 4. The maximum score in this scale I 20 *4= 80 and score of each respondent is equal to total
obtained scores and the rate of anxiety equals the obtained score over 80 times 100.

1. Reliability of evaluators: it has no usage for S.A.S.
2. The correlation method among the test materials that is estimated via the internal consistency test.

For measurement of S.A.S. reliability, the consistency coefficient that examines rate of internal
consistency or homogeneity of items is used. The results of S.A.S. statistical analyses via consistency
coefficient indicate a coefficient that is equal to 84, which is very high reliability score (Kutash &
Schlesinger,1980). Ramirez and Lukennill (2008) investigated on psychometric properties of Zung
scale on 136 adults. The reliability coefficient obtained 0.80 and correlation coefficient with the Fear
questionnaire 0.40 with PIMRA 0.44 and with Taylor’s Manifest Anxiety Scale 0.30.

Procrastination Assessment Scale-student:
This scale first was introduced by Solomon and Rath Bloum (1986) for evaluation of academic procrastination in three fields of doing assignments, readiness for exam and preparing the half-year report with 21 items. For each items a four option scale ranked from “rarely” (1 point) to “almost always” (4 points). In addition to these 21 items, 6 items (questions 7, 8, 18, 19, 26, 27) were designed for measurement of two characteristics of “Feeling of being lax ”and“ desire to change the habit of procrastination”. It should be mentioned here, due to the designer of the scale in calculation of validity and reliability these six questions were not included.

In order to determine the reliability of 21 item scale, the Chronbach’s alpha and for measurement of validity factor analysis and correlation of the item with total score in X2 equal with 0.88 as well as the numerical value of KMO index were applied. In the primary exploration for doing factor analysis the value of Bartlet test achieved 2158.384 that was meaningful in 0.0001 level of significance. This sows efficiency of the sample and the selected variables for doing factor analysis.

The factor analysis method with the main components method shows a general factor in the procrastination questionnaire. The criterion for exploitation of factors was the Scree slope factor that according to special value of the first factor and appropriate factor load of items none of them were removed. The correlation of item with total score of the questionnaire was meaningful in a desirable level. The Chronbach’s alpha was equal to 0.91.

Additionally, different studies indicate that this test possesses a high rate of reliability (Solomon & Rothbloum, 1984). Howell and Watson (2007), identified the Chronbach’s alpha value 0.75 between prevalence and rate of recognized problems by PASS. They found correlation coefficient -0.24 between PASS scores and behavioral measure of procrastination, either.

Training package of immunization against stress:
For designed experimental interferences of stress management training, the independent variable, a training program consisting of immunization methods against stress was prepared on the basis of Maykenbam theory (cited by Mobini, 1997) and was administrated in 8 sessions.

Training package of social problem solving:
This program included training of 9 social skills of problem solving, apologizing, negotiation, restraint, individual rights, how to react in the face of ridicule, not to engage in fights, the ability to
cope with peer pressure and say no, which was performed in 8 group sessions (Nouri, Ghasem Abadi, Tahmasbian, 2010).

Findings:

Table 1: mean, standard deviation, minimum and maximum age of students

<table>
<thead>
<tr>
<th>Group</th>
<th>mean</th>
<th>Sd.</th>
<th>maximum</th>
<th>minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group (training of risk management)</td>
<td>16.14</td>
<td>0.91</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>Experimental group (training of social problem solving)</td>
<td>16</td>
<td>0.75</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>Control group</td>
<td>16.06</td>
<td>0.79</td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>

Numbers are in terms of year

Table 2: mean, standard deviation, minimum and maximum education of students

<table>
<thead>
<tr>
<th>Group</th>
<th>mean</th>
<th>Sd.</th>
<th>maximum</th>
<th>minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group (training of risk management)</td>
<td>10.23</td>
<td>0.53</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Experimental group (training of social problem solving)</td>
<td>10</td>
<td>0.45</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Control group</td>
<td>10.57</td>
<td>0.58</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

Numbers are in terms of year
Table 4: mean scores of variables in pre-test and post-test

<table>
<thead>
<tr>
<th>Experimental variables</th>
<th>Pre-test mean</th>
<th>Post-test mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>anxiety</td>
<td>46.80</td>
<td>35.06</td>
</tr>
<tr>
<td>training of risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>training of social</td>
<td>48.40</td>
<td>40.53</td>
</tr>
<tr>
<td>problem solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>45.60</td>
<td>45.2</td>
</tr>
</tbody>
</table>

Table 5: results of Levin test for scores of anxiety pre-test

<table>
<thead>
<tr>
<th>variable</th>
<th>F</th>
<th>df 1</th>
<th>df 2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>anxiety</td>
<td>4.49</td>
<td>2</td>
<td>42</td>
<td>0.17</td>
</tr>
</tbody>
</table>
The obtained results of the Levin test indicate that F value is not meaningful in none of variables and variance is consistent. According to the results of co-variance analysis, the multivariate co-variance analysis was utilized for measurement of anxiety question scores. Table 6 shows the findings.

Table 6: multivariate co-variance analysis for evaluation of changes in anxiety

<table>
<thead>
<tr>
<th>Source of change</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean of squares</th>
<th>F</th>
<th>Sig.</th>
<th>Eta square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety pre-test</td>
<td>3598.522</td>
<td>1</td>
<td>3598.522</td>
<td>221.350</td>
<td>0.001</td>
<td>0.844</td>
</tr>
<tr>
<td>group</td>
<td>918.247</td>
<td>2</td>
<td>459.124</td>
<td>28.241</td>
<td>0.001</td>
<td>0.579</td>
</tr>
<tr>
<td>error</td>
<td>666.544</td>
<td>41</td>
<td></td>
<td>16.257</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (corrected)</td>
<td>5036.800</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H1: considering the obtained result of monovariate co-variance analysis, F value for the variable group is 28.241 which is meaningful in df=2 and level of confidence over 99% (P <0.01) and error of measurement lower than 0.001 ( P <0.001). Therefore, a meaningful difference is observed between scores of anxiety among both experimental and control groups.

Table 7: disparity of mean scores of anxiety in pre-test and post-test

<table>
<thead>
<tr>
<th>Experimental variables</th>
<th>groups</th>
<th>Mean disparity</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety pre-test</td>
<td>Training of risk management</td>
<td>Training of problem solving</td>
<td>4.319</td>
</tr>
<tr>
<td></td>
<td>Training of risk management</td>
<td>control</td>
<td>-10.994</td>
</tr>
<tr>
<td></td>
<td>Training of problem solving</td>
<td>control</td>
<td>-6.676</td>
</tr>
</tbody>
</table>

The Tukey follow-up test results showed that mean score of anxiety (-10.994) meaningfully interfered between experimental group of risk management and control group ( P<0.001). Thus, the H0 is rejected and the research hypothesis is confirmed. That is, training of risk management affects decrease of anxiety.
Table 8: results of Levin test for score of procrastination pre-test

<table>
<thead>
<tr>
<th>variable</th>
<th>$F$</th>
<th>df 1</th>
<th>df 2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>procrastination</td>
<td>2.039</td>
<td>2</td>
<td>42</td>
<td>0.14</td>
</tr>
</tbody>
</table>

H2: the obtained results of the Levin test shows that $F$ value is not meaningful and the assumption of variance consistency is approved.

Table 9: monovariate covariance analysis for measurement of procrastination changes

<table>
<thead>
<tr>
<th>Source of change</th>
<th>Sum of squares</th>
<th>df</th>
<th>Mean of squares</th>
<th>$F$</th>
<th>Sig.</th>
<th>Eta square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procrastination pre-test</td>
<td>1631.001</td>
<td>1</td>
<td>1631.001</td>
<td>284.236</td>
<td>0.001</td>
<td>0.874</td>
</tr>
<tr>
<td>group</td>
<td>800.419</td>
<td>2</td>
<td>400.209</td>
<td>69.745</td>
<td>0.001</td>
<td>0.773</td>
</tr>
<tr>
<td>error</td>
<td>235.266</td>
<td>41</td>
<td>5.738</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (corrected)</td>
<td>2515.200</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the results of monovariate co-variance analysis, $F$ value for the variable group in procrastination difference is equal to 69.745 which is meaningful in df=2 and level of confidence over 99% ($P < 0.01$) and error of measurement lower than 0.001 ($P < 0.001$). Therefore, a meaningful difference is observed between improved scores of anxiety among both experimental and control groups.

In order to examine more what this meaningful difference means, the follow-up Tukey test was used for controlling error of measurement number 1.

Table 10: difference of mean scores of procrastination in pre-test and post-test

<table>
<thead>
<tr>
<th>Experimental variables</th>
<th>groups</th>
<th>Mean disparity</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>procrastination pre-test</td>
<td>Training of risk management</td>
<td>4.508</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Training of problem solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>-10.335</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Training of problem solving</td>
<td>-5.828</td>
<td>0.001</td>
</tr>
</tbody>
</table>
The Tukey follow-up test results showed that mean score of procrastination (-10.335) meaningfully interfered between experimental group of risk management and control group (P<0.001). Thus, the H0 is rejected and the research hypothesis is confirmed. That is, training of risk management affects decrease of procrastination.

H3: with regard to the results of monovariate co-variance analysis, F value for the variable group in anxiety difference is equal to 28.241 which is meaningful in df= 2 and level of confidence over 99% (P <0.01) and error of measurement lower than 0.001 (P <0.001). Therefore, a meaningful difference is observed between improved scores of anxiety among both experimental and control groups.

The Tukey follow-up test results showed that mean score of anxiety (-6.676) meaningfully interfered between experimental group of problem solving and control group (P<0.001). Thus, the H0 is rejected and the research hypothesis is confirmed. That is, training of social problem solving affects decrease of anxiety.

H4: considering the results of monovariate co-variance analysis, F value for the variable group in procrastination difference is equal to 69.745 which is meaningful in df= 2 and level of confidence over 99% (P <0.01) and error of measurement lower than 0.001 (P <0.001). Therefore, a meaningful difference is observed between improved scores of anxiety among both experimental and control groups.

The Tukey follow-up test results showed that mean score of procrastination (-5.828) meaningfully interfered between experimental group of problem solving and control group (P<0.001). Thus, the H0 is rejected and the research hypothesis is confirmed. That is, training of social problem solving affects decrease of procrastination.

Table 11: fitted means of anxiety in post–test of experimental groups

<table>
<thead>
<tr>
<th>Experimental variables</th>
<th>Type of treatment</th>
<th>Aligned mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>anxiety pre-test</td>
<td>Training of risk management</td>
<td>35.162</td>
</tr>
</tbody>
</table>
According to the Tukey test results, disparity of mean scores in pre-test and post-test of both experimental group is 4.319 that is statically meaningful (0.001). Therefore, it can be concluded that training of stress management is more effective in decrease of anxiety than training of social problem solving.

<table>
<thead>
<tr>
<th>Experimental variables</th>
<th>Type of treatment</th>
<th>Aligned mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procrastination post-test</td>
<td>Training of risk management</td>
<td>29.919</td>
</tr>
<tr>
<td></td>
<td>Training of risk management</td>
<td>34.427</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>40.254</td>
</tr>
</tbody>
</table>

According to the Tukey test results, disparity of mean scores in pre-test and post-test of both experimental group is 4.508 that is statically meaningful (0.001). Therefore, it can be concluded that training of stress management is more effective in decrease of procrastination than training of social problem solving.

Discussion and conclusion:

With regard to the achieved results, it was determined that according to H1, training of stress management is effective on decrease of anxiety. Difference in post–test and level of significance both are high (F = 28.241) (sig. = 0.001). This result is in accordance with findings of Hagh Shenas, Bahreh Dar, and Setayesh (2009), Kavyani, Pour Naser, Sayad and Mohamadi (2007), and Kang et al (2009). It seems that the reason to accordance of the present research findings with previous results is impact of cognitive-behavioral treatment of stress management on decrease of anxiety.
According to the results, the H2 is meaningful and F value is high. Difference in both group pre-test is relatively high (69.745). These results, therefore accord with Shahni, Mehrabi Zadeh, Haghighi, and Salamati (2006), Soltani, Amin Alroaya and Attari (2008), Shir Afkan, Nourani pour, Karimi, Esmaeili (2008), and McCraty et al (1992). Generally speaking, the mentioned researches showed a considerable effectiveness on cognitive-behavioral treatment of stress management on reduction of procrastination. Therefore, positive effect of cognitive-behavioral treatment of stress management on procrastination and consistency of these findings with previous studies is obvious.

Considering the results of H3, training of social problem solving affects reduction of anxiety. The groups post-test disparity and level of significance is relative high (F= 28.241) (sig. =0.001). this finding accords with results of Hagh Shenas, Bahreh Dar, and Setayesh (2009), Kavyani, Pour Naser, Sayad and Mohamadi (2007), Kang et al (2009). It seems that the reason for this accordance is the impact of cognitive-behavioral treatment of problem solving on decrease of anxiety.

Considering the results, the H4 is meaningful and training of social problem solving is effective on reduction of procrastination. Also, difference in both group post-test and level of significance are relatively high (F= 28.241) (sig. 0.001). these results, therefore accord with Shahni, Mehrabi Zadeh, Haghighi, and Salamati (2006), Soltani, Amin Alroaya and Attari (2008), Shir Afkan, Nourani pour, Karimi, Esmaeili (2008), and McCraty et al (1992). Generally speaking, the mentioned researches showed a considerable effectiveness of problem solving on decrease of procrastination. Therefore, positive effect of cognitive-behavioral treatment of problem solving on procrastination and consistency of these findings with previous studies is obvious.

With regard to the obtained results the question “which of two training stress management and social problem solving methods are effective on decrease of academic procrastination?” should be answered by this way that training of stress management is more effective than training of social problem solving method. The explanation for this is that training of stress management was more comprehensive and includes physiological problems related to anxiety, which is more effective than problem solving consequently.

Regarding the obtained results the question “which of two training stress management and social problem solving methods are effective on decrease of academic procrastination?”
should be answered by this way that training of stress management is more effective than training of social problem solving method. The explanation for this is that training of stress management was more comprehensive and includes much broader problems, which is more effective than problem solving consequently.

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