

Effectiveness of Problem-Solving Therapy to Improve Quality of Life among University Students

Fiza Amjad^{1*}, Sonia Naeem²

Abstract

The present study investigated the effectiveness of problem-solving therapy in improving the quality of life among university students. From an undergraduate population, female participants (N = 30) were asked to complete the World Health Organization Quality of Life BREF (1995) and were then randomly placed in the control group or the experimental group which then received eight sessions of problem-solving therapy. Problem-Solving Therapy: A Treatment Manual published in 2012 by Nezu, Nezu, and D’Zurilla was used. Once therapy was completed following the seven steps as outlined by the author, participants from both the experimental and control groups completed the World Health Organization Quality of Life BREF scale once again. This was an experimental design with an independent group design and a repeated measures design. Results showed that quality of life increased among participants in the experimental condition after receiving PST while it reduced in the control group. Receiving group problem-solving therapy was an effective intervention in increasing coping tendencies among individuals. Problem-solving therapy is a cognitive-behavioral intervention designed to help individuals cope with stressful life circumstances. Further research of this nature should attempt to control for extraneous variables in the participants’ environment. Campus counselors and educational social workers can benefit from applying the findings of this study. School psychologists can use Problem-solving therapy to increase the quality of life of students who may have various stressors.

Keywords: Problem-solving therapy, World Health Organization Quality of Life BREF, Scale

¹ Fiza Amjad, Research Assistant, Department of Applied Psychology, Kinnaird College for Women University, Lahore, Punjab, Pakistan. **Corresponding Author:** famjad35@gmail.com

² Sonia Naeem, Assistant Professor, Department of Applied Psychology, Kinnaird College for Women University, Lahore, Punjab, Pakistan.

Introduction

Problem-solving is an essential skill in daily life. Knowing how to identify and confront problems, implement solutions, and learn from them is important for a functional and happy life. Daily stressors are present in everyone's life however, the student population is one that can be said to face more problems than nonstudents. Problem-solving therapy is designed to help individuals learn to cope with major and minor problems. Students may have family, financial, and social issues along with their demanding educational responsibilities. The more stressors in one's life, the lower the quality of life will be. Implementing problem-solving therapy in university students to increase their quality of life can make students better fulfill their responsibilities as students and as members of society in general. The World Health Organization defines the quality of life in a subjective manner based on how an individual perceives their personal position in life in their own culture and the value system of which they are a part. One's quality of life depends on their position in relation to personally set goals, standards, concerns, and expectations (World Health Organization, 2023).

A complication or difficulty is a circumstance that needs a corrective response such as regaining emotional balance when an effective response is not immediately available. Multiple factors make a situation into a problem. The factors can be moving to a new environment, ambiguity such as not knowing how a relationship is progressing, unpredictability such as feeling no control over a career path, conflicting goals such as different opinions regarding where to live or which house to buy, performance skills deficit such as being unable to communicate with coworkers, and lack of resources such as inability to pay rent or tuition. Realizing a problem is made when either immediately or after multiple failed attempts. A problem can be a single-time occurrence such as missing the bus to work or dropping one's phone in a mud puddle. A problem can also be a series of related events, contrary parental restrictions, or deviant employee behavior. A problem may be chronic and ongoing such as continuous pain, medical illness, or feelings of loneliness (Nezu, Nezu, and D'Zurilla, 2013).

Problem-solving therapy (PST) is a cognitive behavioral intervention that attempts to aid individuals in coping with the life events that cause stress through rigorous and effective problem-solving. PST's underlying assumption of is that maladaptive coping leads to psychological issues such as depression. PST is often used to help the depressed because it teaches them to learn skills for better management of daily life problems. Unlike cognitive-behavioral therapy, the focus of PST is not just on changing thoughts and feelings but also on identifying and managing problems (Nezu, Nezu, and D'Zurilla, 2013).

Problem-solving therapy presents a way for the client to solve problems robustly. Cognitive and behavioral influences are used to assist people so that they become more capable of solving problems to ensure their quality of life. Problems are unavoidable and inescapable but those who know how to effectively solve them are more adaptable and

successful than those who are rigid and unable to adapt their behaviors and cognitions so that various problems are resolved. PST strives to increase resilience and prevent emotional setbacks in the clients.

PST has been used in many contexts and on different populations to increase life quality. Group problem-solving therapy was done on depressed patients and the effectiveness of this therapy was apparent to all the group members. PST has also been effective on individuals such as cancer patients and caregivers. PST can also be used as part of a larger treatment package with multiple components: education, relaxation training, progressive muscle relaxation, etc. (Nezu, Nezu, and D'Zurilla, 2013).

2. Theoretical Framework

PST identifies two problem-solving orientations: positive and negative. However, individuals may exhibit a mix of these orientations, such as being positive in academic or career issues but negative in interpersonal ones. This aligns with Mischel and Shoda's cognitive-affective system theory, where behavior varies based on individual differences. Clients in therapy may have diverse orientations toward different problems. PST recognizes the importance of addressing negative orientation styles in specific life domains. Studies excluding orientation styles had lower PST effectiveness. Cognitive-affective theorists argue that behavior stems from self-perception in certain circumstances, not a fixed personality trait (Nezu, Nezu, & D'Zurilla, 2013). Below is the visual depiction of the theory in relation to situational features.

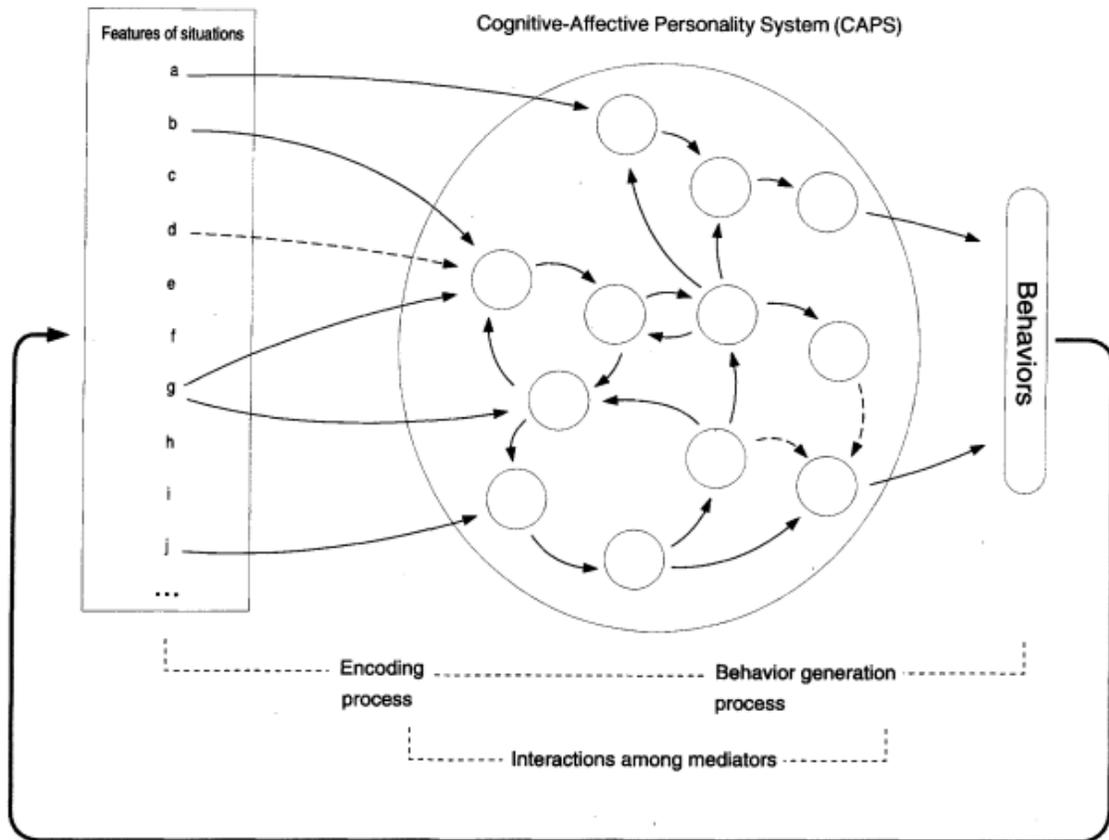


Figure 2.1: Cognitive Affective Personality System

3. Literature Review

Nguyen et al. (2018) examined PST's impact on decision-making among healthy senior citizens in primary care. Older adults, despite cognitive health, sometimes struggle with decision-making due to irregular aging of frontal lobes, affecting executive functioning. The study aimed to assess whether PST, a psychosocial intervention, could enhance decision-making abilities in emotionally and cognitively healthy individuals aged 65 and above. Twenty participants were randomly assigned to either the no-treatment control group or the PST condition. The PST group received four 45-minute sessions over two weeks. The Iowa Gambling Task (IGT) measured outcomes for both groups. A significant difference emerged, with the intervention group showing notably improved decision-making skills, advantageous choices, and better executive functioning. PST appeared effective in enhancing complex decision-making abilities in older adults.

Zhang et al. (2018) conducted a meta-analysis and systematic review to assess PST's potential in reducing anxiety and depression among primary care patients. Given the increasing demand for anxiety and depression treatment in primary care, the study searched six databases and conducted manual searches. Out of 153 initial studies, 11 studies with 2072 participants met the inclusion criteria for synthesis. The results

indicated that PST had a significant treatment effect on primary care patients with depression or anxiety. Moreover, when a physician was involved in the PST, improvements were observed among patients with depression and/or anxiety in primary care.

Chinaveh (2010) conducted a study to assess the efficacy of PST on college students. PST training has been used to make the quality of life better for the recipients. A study included 79 college students who reported low quality of life and mental health. Some were randomly placed in 6 weekly training groups for problem-solving therapy or the control condition with no training. Quality of life and mental health was assessed on the first and last days of the program along with the control group. Both qualities of life and mental health increased after the PST program but not in the control group.

Chinaveh (2013) researched the impact of PST on adjustment and coping skills in college students. The study explored how PST could enhance psychological adjustment and coping skills among Iranian college students. Eighty students with low coping responses were randomly assigned to the PST training group or the no-treatment control group. The PST group received 8 weeks of therapy. Coping skills, including avoidance and approach responses, were evaluated at the program's start and 30 days later, along with the control group. The training group showed increased mental adjustment and coping responses. The way individuals perceive and cope with everyday life issues is linked to their appraisal of problem-solving ability.

Gellis et al. (2008) conducted a randomized control trial was done to see the effectiveness of PST on older adults with minor depression who were living in-home care. This study placed 30 older patients in the PST group and 32 were placed in the treatment-as-usual group which was the control condition. Results showed that those in the PST as compared to the control group had significant improvement in depression symptoms and problem-solving abilities.

4. Rationale

Problem-solving therapy (PST) has shown promise in improving the quality of life across diverse cultures and countries. However, there remains a gap in research concerning its effectiveness on university students, particularly in Pakistan. This study aims to address this gap by assessing the effectiveness of PST developed by an American professor in the Pakistani population. If successful, this therapy may benefit other Pakistani groups, such as parents of mentally or physically challenged kids, newlywed couples, cancer patients, teenage mothers, and caretakers. Previous studies assessing PST's effectiveness have used various designs in different countries, but an experimental design has not been applied in Pakistan. This study seeks to fill this gap, focusing on high-stakes exam situations faced by school and university students, where PST could be utilized by campus counselors to alleviate stress and improve their quality of life. The

results may have broader implications for the well-being of various populations in Pakistan.

5. Objectives

The goals of the study are

1. To compare whether there is a significant difference in the QOL of university students in the experimental and control groups at the pre-intervention level.
2. To evaluate whether the treatment group of university students will have a higher QOL as compared to the control group at the post-intervention level.
3. To assess the impact of the intervention on the QOL among university students in the treatment group by comparing their pre- and post-intervention scores.
4. To determine if there is a significant change in the QOL of the control group from pre- to post-intervention levels among university students.

6. Hypotheses

1. There is likely to be a significant difference in pre and post-intervention scores in terms of QOL in the treatment group.
2. There would likely be no significant difference in the QOL of the control group at the pre-post level.
3. There is likely to be a significant difference in both groups (experimental and control) at the pre-intervention level in terms of QOL.
4. The treatment group is likely to have a significantly higher level of QOL as compared to the control group at the post-intervention level.

7. Research Design

An experimental design aims to carry out research in an objective and controlled way to establish a cause-and-effect relationship between the independent variable and the dependent variable by relying on random assignment. This research is an experimental design with an independent group design and a repeated measures design. An independent group experimental design is one in which different people are placed in different experimental conditions. A repeated measures design is when multiple measurements are taken of the same variable from the same participants twice or more. These methods are mostly used in research involving the investigation of the effects of an intervention in two groups (Creswell, 2013).

Through the World Health Organization Quality of Life BREF (WHOQOL-BREF) questionnaire, measurements were taken before and after the therapy intervention to see changes in scores. Initial screening was done on 50 individuals from which 15 were put in the experimental condition and 15 were put in the control group. A between-subjects design was used in which there were two groups of participants under different conditions. The two groups were the experimental group which got the psychological intervention of Problem-Solving Therapy and the control group. A within-subjects/

repeated measures design was employed pre and post-intervention to assess the experimental group.

8. Sample and Sampling Strategy

The sample size was N=30, aged 17 to 21 years, initially selected from 50 participants. Domain scores were calculated for all students, and 15 with low quality of life were randomly assigned to each group: experimental and control. The sample included undergraduate female students proficient in English from Kinnaird College for Women, chosen through convenient sampling. Each of the 30 participants with low quality of life scores was randomly assigned to one of the two groups, ensuring unbiased placement and equal opportunities (Bhandari, 2021).

9. Inclusion criteria

Participants in this study met specific criteria. All were single females aged 17-21, fluent in English, willing to receive therapy, and currently enrolled in the Applied Psychology undergraduate program at Kinnaird College.

10. Exclusion criteria

This study excluded students with any mental disorder or physical illness. Also, students unwilling to attend intervention and those with a high quality of life were excluded as well.

Table 1: Sociodemographic Characteristics of Participants

Sample Characteristics Sample	Experimental Group		Control Group		Full	
	n	%	n	%	n	%
Gender						
Female	30	100	15	50	15	50
Marital Status						
Single			15	50	15	50
Education						
Undergraduate	30	100	15	50	15	50
Employment Status						

Unemployed	12	80	13	86.66	25
83.33					
Employed	1	6.66	1	6.66	2
					6.66
Self-employed	2	13.33		1	6.66
3	10				

Note. $N = 30$ ($n = 15$ for each condition). Participants were on average 18.87 years old ($SD = 0.94$), and participant age did not differ by condition.

Table 2.1 shows the demographic characteristics of participants. The study consisted of 30 participants whose ages ranged from 17 to 21 years with 18.87 years being the mean age. Every participant was single was fluent in English (100%), and was an undergraduate student majoring in psychology (100%). Most of the participants were unemployed (83.33%). However, a few girls were employed and working alongside their studies (6.66%). A few participants were self-employed (6.66%).

11. Data collection instruments

11.1 Problem-Solving Therapy Treatment Manual. The manual used is titled Problem Solving Therapy: A Treatment Manual (2012) written by Nezu, Nezu, and D'zurilla. This treatment manual is written in easy English. The manual is a laudable and distinctive resource that is open to use for a wide variety of individuals with mental and or physical problems. It has been tested for efficacy multiple times but has yet to be added to the student population. Maladaptive coping is what causes individuals to become distressed during stressful events and one can use the manual to help themselves feel better or the manual can be administered.

11.2 World Health Organization Quality of Life- BREF (WHOQOL-BREF). The WHOQOL-BREF Scale is a 26-item scale that measures one's quality of life. Each item is rated on a Likert-type scale ranging from 1 to 5. Each ordinal item is asked in regard to the past two weeks and the subject is asked to keep in mind their standards, hopes, pleasures, and concerns. Items 3, 4, and 26 are reverse-coded. There are two items measuring general health which are analyzed separately and four domains across which the other 24 items are spread: physical health, psychological health, social relationships, and environment. Items in each domain are totaled to get domain total scores (Vahedi, 2010).

12. Procedure

Pilot Study. A pilot study was done before the main study to check the feasibility, duration, and comprehension of the therapy intervention. After taking consent from a sample of 4 participants before administering the scale for screening, PST was implemented in a group setting. Relevant changes were made including printing all the

worksheets for the sessions and increasing the session duration from 30 minutes to 50 minutes.

Main Study. Initially, consent was taken from the institute where research was conducted. Those participants who consented to complete the WHOQOL-BREF questionnaire were selected through convenience sampling.

The main study included 8 sessions for the treatment group and each session was 50 minutes in duration. First, an electronic survey of the WHOQOL-BREF was created so that participants could conveniently fill out the scale. Then 15 participants with a low quality of life were randomly placed in the treatment group and 15 were put in the control group. The World Health Organization Quality of Life- BREF survey was administered pre and post-intervention which assessed the self-reported quality of life through the following four domains: physical health, psychological health, social relationships, and environment. Two initial items assessed general life quality and overall health.

Table 2: 1st Session Plan for the Experimental Group

Assessment	Domain	Rationale
Introduction to PST and Problem Identification	Overview (10 minutes)	All participants were warmly welcomed by the researcher and were given an introduction to PST.
	Icebreaker Activity (10 minutes)	Group members introduced themselves and share a fun fact about themselves to promote rapport.
	Overview of PST	Group members were explained the concept and benefits of Problem-Solving Therapy.
	Identify problems Worksheet	Participants were instructed to identify one specific problem they wanted to work on during the therapy. Participants were given Problem Identification worksheet in which Students wrote down the problem they want to address and describe how it impacted their life.

Table 3: 2nd Session Plan for the Experimental Group

Assessment	Domain	Rationale
	Goal setting was done by teach students how to set	Students were explained goal setting and the concept of SMART goals

Goal setting and generating solutions	achievable goals (10 minutes) Generating Solutions (15 minutes) Worksheet: Goal Setting and Solution Options (25 minutes)	Participants were explained the importance of identifying problems and then coming up with solutions Students wrote down their specific goals and brainstormed potential solutions for the identified problem through group discussion.
---------------------------------------	---	--

Table 4: 3rd Session Plan for the Experimental Group

Assessment	Domain	Rationale
Evaluating and Choosing Solutions	Evaluating and choosing solutions (50 minutes)	Students were asked to evaluate each written solution to their problem. This was done through a worksheet and group discussion in which participants have one another options and opinions about how problems could be addressed. Participants then evaluated potential solutions and choose the most feasible one for their problem by the end of the session.

Table 5: 4th Session Plan for the Experimental Group

Assessment	Domain	Rationale
Implementing the chosen solution	Creating an Action Plan (20 minutes) Discussion (15 minutes) Worksheet: Action Plan (15 minutes)	All participants were assisted in creating an action plan to implement the chosen solution. All participates engaged in sharing their actions plan with peers and offered suggestion to one another. Students outline the steps they will take to implement the chosen solution and identify potential obstacles.

Table 6: 5th Session Plan for the Experimental Group

Assessment	Domain	Rationale
Review and Troubleshooting	<p>Progress Review (15 minutes)</p> <p>Challenges were tried to be identified and understood which the participants felt (15 minutes)</p> <p>Worksheet: Progress Review and troubleshooting (20 minutes)</p>	<p>All participants were asked to review the progress they had made.</p> <p>Participants shared their challenges and everyone engaged in discussion.</p> <p>Participants reflected on their progress and noted any challenges they encountered since the last session.</p>

Table 7: 6th Session Plan for the Experimental Group

Assessment	Domain	Rationale
Discussion making skills	<p>Teach effective decision making and the decision making process (25 minutes)</p> <p>Worksheet: Decision-Making Process (15 minutes)</p> <p>Discussion (10 minutes)</p>	<p>Through engaging in decision making process participants were asked to make skills to handle future problems.</p> <p>Participants applied the decision-making process to a hypothetical problem and wrote down the steps they would take to make a decision.</p> <p>Participants discussed what they wrote and gave suggestions to one another.</p>

Table 8: 7th Session Plan for the Experimental Group

Assessment	Domain	Rationale
Interpersonal Problem-Solving	Interpersonal Skills (25 minutes)	Focus on problem-solving in interpersonal relationships.

	Worksheet: Interpersonal Problem-Solving (15 minutes)	Students practice interpersonal problem-solving through role-playing scenarios.
	Discussion (10 minutes)	Session ended with participants discussing importance of interpersonal skills.

Table 9: 8th Session Plan for the Experimental Group

Assessment	Domain	Rationale
Future Application and Closure	Review Learned Skills (15 minutes)	Review learned skills, discuss future application, and were provided closure.
	Future Application (15 minutes)	Students were recommended to use, practice, and implement what was learned during therapy in real life as well.
	Worksheet: Future Application (10 minutes)	Students reflected on how they plan to apply PST techniques in their future lives.
	Closure (10 minutes)	All students were thanked and were given a token of appreciation.

Session 1: Introduction to PST and Problem Identification In this session, we begin by introducing Problem-Solving Therapy (PST) to the group. We explain that PST is a structured approach to resolving life challenges and improving coping skills. To foster a comfortable environment, we start with an icebreaker activity, where each member introduces themselves and shares a fun fact. Afterward, we provide an overview of PST, highlighting its benefits for enhancing problem-solving abilities. We then move on to the main activity, which involves identifying individual problems. Each student is asked to think about one specific problem they are currently facing and its impact on their daily life. We provide a worksheet to help them describe their problem in more detail.

Session 2: Goal Setting and Generating Solutions During this session, we delve into the process of setting achievable goals and generating potential solutions for the identified problems. We explain the concept of SMART goals (Specific, Measurable, Achievable, Relevant, and Time-bound) to ensure students set clear and realistic objectives. Next, we encourage brainstorming and group discussions to generate various solutions for each problem. The focus is on quantity, not quality, during this stage. Each student is provided with a worksheet to record their specific goals and list potential solutions related to their identified problem.

Session 3: Evaluating and Choosing Solutions In this session, participants were guided through the process of evaluating and selecting the most suitable solution among the options generated in the previous session. We discuss the importance of considering the pros and cons of each solution and assessing its feasibility. Group members share their thoughts and offer feedback to support one another. With the help of a worksheet, students evaluate the potential solutions they listed and make a decision on which one they believe will work best for their particular problem.

Session 4: Implementing the Chosen Solution This session focuses on turning the chosen solution into a practical action plan. Students learn how to break down the selected solution into actionable steps and create a timeline for implementation. We discuss potential obstacles that might arise during the process and explore strategies to overcome them. Participants are encouraged to share their action plans with the group and provide feedback and suggestions. The worksheet provided helps students outline their action plans and anticipate any challenges they may face.

Session 5: Review and Troubleshooting In this session, we review students' progress in implementing their chosen solutions since the last session. Each participant shares their experiences, successes, and any obstacles they encountered. The group offers support, encouragement, and constructive feedback. We focus on troubleshooting the challenges faced and explore alternative approaches to address the problems. The worksheet helps students reflect on their progress and document any challenges or setbacks they experienced, enabling them to gain insights into their problem-solving journey.

Session 6: Decision-Making Skills During this session, we shift the focus to decision-making skills, an essential aspect of effective problem-solving. We discuss the decision-making process, emphasizing the importance of gathering relevant information, considering alternatives, and weighing the potential outcomes. Role-playing exercises and hypothetical scenarios are used to practice decision-making skills. The worksheet provided guides students through applying the decision-making process to a specific problem they might encounter in real life. Then participants engaged in discussion.

Session 7: Interpersonal Problem-Solving In this session, we explore problem-solving in the context of interpersonal relationships. We discuss effective communication, active listening, and conflict resolution skills. Participants engage in role-playing activities to practice interpersonal problem-solving within the group setting. The worksheet helps students reflect on their interpersonal problem-solving experiences during the role-plays.

Session 8: Future Application and Closure In the final session, we review the problem-solving skills and techniques learned throughout the therapy. We encourage participants to share their insights, growth, and personal victories during the process. As a group, we discuss how they plan to apply PST techniques in their future lives to address new challenges. The session concludes with closure, allowing each participant to express their final thoughts and feelings about the therapy experience. The worksheet provided guides students through reflecting on their future application of PST techniques and reinforces

their commitment to using problem-solving skills in their daily lives. The group therapy concludes with a positive and supportive atmosphere, fostering a sense of accomplishment and empowerment among the participants.

13. Ethical Considerations

Consent to collect data from participants was obtained from institute department officials. The WHOQOL-BREF, available in multiple languages and in the public domain, was used for this research. All participants willingly gave verbal and written informed consent before the study, with the option to withdraw at any point. Confidentiality and anonymity were upheld. Participants were encouraged to ask questions, and their concerns were addressed throughout the study. Interested participants received the results and further debriefing if needed. The control group was ethically provided with a brochure detailing PST steps and intervention techniques after the study. Data were analyzed using SPSS with integrity.

14. Statistical Analyzes

Data were analyzed using the Statistical Package for the Social Sciences version 29. Inferential and descriptive statistics were used which include Descriptive Statistics: mean (M) and standard deviation (SD). Wilcoxon Signed-Rank test was used to check for the mean rank differences within groups at pre and post-intervention levels. To examine the effectiveness of PST, the differences between the experimental group receiving therapy and the control group were seen through the Mann-Whitney U test. This is the nonparametric test that was used to decide whether the pretest means scores are lower than the post-test mean scores of WHOQOL-BREF.

15. Results

In this study, female university undergraduate students (N=15) received PST to assess its impact on subjective life quality, evaluated using the WHOQOL-BREF. Measures used in the study underwent a reliability analysis, and psychometric properties were presented in Table 3.1. Descriptive statistics in Table 3.2 calculated means and standard deviations for demographic data. Analysis of the data in two domains was used to determine the effectiveness of the WHOQOL-BREF. First, to evaluate the impact of the intervention, the experimental group's pre and post-scores were compared using the Wilcoxon Signed Rank Test for within-group differences. The findings are shown in Tables 3.3 and 3.4. Secondly, pre and post-intervention scores on the WHOQOL-BREF were then compared between groups to evaluate group differences. Non-parametric tests were applied during analyses due to the small sample size (N = 30). The results of both treatment and control group were analyzed using the Mann-Whitney U Test, which is the non-parametric version of the Independent Sample T-Test. Table 3.5 shows the results prior to the intervention while Table 3.6 compares

the post-intervention results between the experimental and control group.

16. Reliability Analysis

Table 10: Psychometric Properties of WHOQOL- BREF Scale

Measure	Pre-test	Post-test	Pre-test	Post-test	Cronbach's <i>a</i>
	Post-test	M	SD	Range	
WHOQOL-BREF 130	.79	86.47	10.57	12.14	26- .89

Note. M = Mean, SD = Standard Deviation, *a* = Cronbach's alpha.

A reliability analysis of the scale used in the current study was done to find the internal consistency of the scale. With a Cronbach's alpha of .79 at the pre-test level, the World Health Organization Quality of Life- BREF showed acceptable internal consistency. The post-intervention Cronbach's alpha was .89 demonstrating good reliability.

17. Descriptive Statistics

Table 11: Means and Standard Deviations of Domain Scores

Domains	N	Pre-test	Post-test	Pre-test	Post-
		M	SD	SD	test
Physical Health	30	3.18	3.44		.46
Psychological Health	30	3.17	3.20	.54	
Social Relationships	30	3.44	3.67	.67	.54
Environment	30	3.46	3.65	.56	.63
Overall	30	3.54	3.88		.57

Note. N = No. of participants. M = mean, SD = Standard Deviation

The table shows the domains of the WHOQOL-BREF. The results show that the physical health subjective rating increased from 3.18 to 3.44. The scores in the psychological health domain also increased slightly going from 3.17 to 3.20. The social relationships scores also increased going from 3.44 to 3.67. Scores in the environment

domain also increased from 3.46 to 3.65. And lastly, scores from the two items measuring overall quality of life and satisfaction with health also increased going from 3.54 to 3.88.

Table 12: Wilcoxon Sign-Rank Test Showing PST Intervention Effect on Quality of Life at Pre (n = 15) and Post (n = 15) Levels of Intervention within Treatment Group

Variable	MR	Z	p
Quality of Life AI - BI .01**	4.13	-2.47	
	9.41		

Note. MR = Mean Rank, BI = before intervention, AI = after intervention, * $p < .05$, ** $p < .01$, *** $p < .001$.

The Wilcoxon Signed-Rank test showed that there is a significant within-group mean rank difference in pre and post-intervention assessment on the quality of life scores. The students in the treatment group scored significantly higher in WHOQOL-BREF ($Z = -2.47$, $p = .01$) at post-intervention assessment as compared to pre-intervention assessment. Participants' quality of life increased after receiving group problem-solving therapy. These findings are consistent with the first null hypothesis since a significant difference is present between pre and post-intervention scores in the treatment group.

Table 13: Wilcoxon Sign-Rank Test Showing PST Intervention Effect on Quality of Life at Pre (n = 15) and Post (n = 15) Levels of Intervention within Control Group

Variable	MR	Z	p
Quality of Life AI - BI .48	6.00	-.70	
	6.86		

Note. MR = Mean Rank, BI = before intervention, AI = after intervention, * $p < .05$, ** $p < .01$, *** $p < .001$.

The Wilcoxon Signed-Rank test demonstrated that the control group had insignificant within-group mean rank differences in pre and post-intervention assessment on the quality of life scores. The students in the control group did not elicit a significantly different score in WHOQOL-BREF ($Z = -.70$, $p = .48$) at the post-intervention assessment. Participants' quality of life did not improve when they had not received group problem-solving therapy. These findings are consistent with the second null hypothesis since there is no difference in the QOL of the control group at the pre-post level.

Table 14: Mann-Whitney U Test showing Pre-intervention Quality of Life scores between Treatment group (n = 15) and Control group (n = 15)

Variables <i>p</i>	Group	MR	<i>U</i>	<i>Z</i>
WHOQOL-BREF	Treatment	12.23	63.50	-2.03
	Control	18.77		

Note. MR = Mean Rank, * $p < .05$, ** $p < .01$, *** $p < .001$.

The Mann-Whitney U Test results showed that the treatment group receiving the intervention had a significantly lower quality of life (MR = 12.23, $p = .04$) as compared to the control group at pre-intervention. These findings are parallel to the third hypothesis since there is a significant difference in the experimental and control groups at the pre-intervention level in terms of QOL.

Table 15: Mann-Whitney U Test showing Post-intervention Quality of Life scores between Treatment group (n = 15) and Control group (n = 15)

Variables <i>p</i>	Group	MR	<i>U</i>	<i>Z</i>
WHOQOL-BREF	Treatment	14.70	100.50	-.49
	Control	16.30		

Note. MR = Mean Rank, * $p < .05$, ** $p < .01$, *** $p < .001$.

The results of the Mann-Whitney U test show that the experimental group does not have a significant mean rank difference in the quality of life as compared to the control group at the post-intervention level. These findings provide evidence against the fourth null hypothesis since the hypothesis was inclined towards a significantly higher level of QOL in the treatment group as compared to the control group at the post-intervention level but, this was not apparent.

18. Discussion

The outcomes of this research provide insight into the effectiveness of PST which is a cognitive behavioral intervention to help reduce the overwhelming stressors of life among undergraduate university students. The purpose of this study was to see whether a difference in the quality of life scores would emerge between the experimental group and the control group. The WHOQOL-BREF was administered pre and post-intervention to assess for differences in the scores. Scores in the experimental condition improved while scores in the control condition decreased most likely due to environmental factors. While the homogeneity of this sample is useful for assessing the experimental effects of PST on quality of life, it reduces the external validity of the findings

The results of this study support three of the four hypotheses since there was a significant difference in pre and post-intervention scores of QOL in the treatment group. Also, there was no significant difference in the QOL of the control group at the pre-post level. There was a significant difference in the QOL between the experimental and control group at pre-intervention. Evidence against the fourth hypothesis was found.

Keeping in mind the first hypothesis, the Wilcoxon Signed-Rank test showed that there is a significant within-group mean rank difference in pre and post-intervention within the treatment group based on the assessment of the quality of life scores. The students in the treatment group had higher quality of life scores at post-intervention assessment as compared to pre-intervention assessment. The results of this study are consistent with previously conducted randomized control trials assessing the efficacy of PST.

The Wilcoxon signed-Rank test showed that the control group had insignificant within-group mean rank differences in pre and post-intervention assessment on the quality of life scores. Since the control group was not given any therapy, their quality of life was expected to not change.

The third hypothesis predicted a difference in QOL scores in the experimental and control group before intervention. The present findings can be seen from the statistical analysis of the Mann-Whitney U Test measuring pre-intervention scores. The participants in the experimental group had lower baseline scores with a mean rank of 12.23 than the participants in the control group which had higher baseline scores with a mean rank of 18.77. After conducting the Mann-Whitney U test for the post-intervention scores, the mean rank of the experimental group was 14.70 while for the control group, it was 16.30. As can be seen, the scores for the experimental condition increased while the control group scores' mean dropped.

Evidence was apparent against the fourth null hypothesis which predicted a significant increase in the QOL scores post-intervention as compared to the control group. Results of the Mann-Whitney U test show that the experimental group does not have a significant mean rank difference in the quality of life as compared to the control group at the post-intervention level. There may have been multiple reasons for the change in the scores of the control condition which has led to the insignificant mean rank differences between the two groups. Since this was an experimental research, threats to internal validity are present. However, it should be noted that threats to internal validity are inevitable when using this type of experimental design. Whereas past researchers have found differences between the experimental and control group (Gellis et al., 2008) the present study has shown that the experimental group does not have a significant mean rank difference in the quality of life as compared to the control group at the post-intervention level.

Multiple alternate explanations for the cause of changes in the scores of the control group can be understood and explained. Since the scores of the control can be seen to have decreased over time without any intervention, the quality of life scores of the control group participants was impacted by external environmental causes. There may be multiple reasons for this including selection bias, selection-maturation interaction, history, testing, and social interaction as described by Donald T. Campbell (Flannelly et al., 2018).

Selection bias is a potential bias in the participants who were placed in the experimental and control groups. Participants in both conditions could have differed in some important ways leading to the present results. Since the participants in the control

and experimental condition were undergraduate psychology major students, they could have interacted with one another leading to selection-maturation interaction (Flannelly et al., 2018).

History is a relevant potential threat because this study lasted several weeks. History consists of what the participants might have experienced during the course of the experiment other than the therapy intervention itself. In the present study, the ending sessions were done with participants in the experimental group close to the semester midterm exams. After the last sessions, the WHOQOL-BREF was administered in both groups. This was a time of high stress involving multiple assignment submissions, tests, and exams. This may have been a reason why the control group's scores of quality of life were reduced (Flannelly et al., 2018).

Testing could be a potential threat because the same questionnaire was used twice on all participants. The initial completion of the questionnaires could have made participants more receptive and aware of their environment and current quality of life. So when the participants initially completed the form, they may have reconsidered their subjective feelings about their quality of life which could lead to changes in responses at the re-test stage (Flannelly et al., 2018).

19. Strengths and Limitations

This study had several strengths since this research design was a replication of numerous research already conducted and therefore this study can be replicated as well. This study consisted of therapy sessions conducted practically which can be implemented for others outside the study as well. Practical applications of cognitive behavioral therapy have had high success rates and the present experimental group results are consistent with previous research.

There are some limitations to this study that are obstacles to the generalization of the results to other settings. The sample size is smaller when compared to the samples used by other studies assessing PST effectiveness. Using a larger sample could give more accurate results.

20. Implications, Suggestions, Conclusion

The implications of this study are of particular interest to educational social workers and campus counselors since poor problem-solving coping and negative problem orientation can reduce the effectiveness of educational institutes in imparting knowledge to students. This study suggests that implementing PST among undergraduate students will lead to effective problem-solving abilities. Despite the limitations mentioned, these results suggest several theoretical and practical implications.

Further research should attempt to implement better sample recruitment strategies so that the sample is greater in size and with more variability. Further research should attempt to control confounding variables in the environments of the participants so that threats to internal validity can be reduced.

The study results show that participants' quality of life increased after receiving group problem-solving therapy. PST is an effective talk therapy intervention to use among groups of students to increase. Students showed a better quality of life after therapy meaning that the psychological and behavioral skills taught throughout the session were

beneficial in increasing psychological, physical, social, environmental, and overall satisfaction with life. The findings of this study add to the expeditious research about talk therapies improving the quality of life of various populations. We hope that the current research will stimulate further investigation of this important area.

21. References

- Bhandari, P. (2021, February 13). *Random assignment in Experiments: Introduction & examples*. Scribbr. Retrieved May 4, 2023, from <https://www.scribbr.com/methodology/random-assignment/#:~:text=What%20is%20random%20assignment%3F,group%20or%20an%20experimental%20group>.
- Chinaveh, M. (2010). Training problem-solving to enhance quality of life: Implication towards diverse learners. *Procedia - Social and Behavioral Sciences*, 7, 302-310. <https://doi.org/10.1016/j.sbspro.2010.10.042>
- Creswell, J. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage Publications.
- Flannelly, K. J., Flannelly, L. T., & Jankowski, K. R. (2018). Threats to the internal validity of experimental and quasi-experimental research in Healthcare. *Journal of Health Care Chaplaincy*, 24(3), 107-130. <https://doi.org/10.1080/08854726.2017.1421019>
- Gellis, Z. D., McGinty, J., Tierney, L., Jordan, C., Burton, J., & Misener, E. (2008). Randomized controlled trial of problem-solving therapy for minor depression in home care. *Research on Social Work Practice*, 18(6), 596-606. <https://doi.org/10.1177/1049731507309821>
- Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, 102(2), 246-268. <https://doi.org/10.1037/0033-295x.102.2.246>
- Nezu, A., 1986. Efficacy of a social problem-solving therapy approach for unipolar depression. *Journal of Consulting and Clinical Psychology*, [online] 54(2), pp.196-202. Available at: <http://file:///C:/Users/16176/Downloads/literature%20unipolar%20depression.pdf>.
- Nezu, A., Nezu, C. and D’Zurilla, T., 2013. *Problem-Solving Therapy A Treatment Manual*.

- [online] Springerpub.com. Available at:
<<https://www.springerpub.com/media/springer-downloads/Problem-Solving-Therapy-Supplement.pdf>> [Accessed 18 September 2022].
- Nguyen, C. M., Chen, K., & Denburg, N. L. (2018). The use of problem-solving therapy for primary care to enhance complex decision-making in healthy community-dwelling older adults. *Frontiers in Psychology*, 9(870). <https://doi.org/10.3389/fpsyg.2018.00870>
- Vahedi, S. (2010). World Health Organization Quality-of-Life Scale (WHOQOL-BREF): Analyses of Their Item Response Theory Properties Based on the Graded Responses Model. *Iranian Journal of Psychiatry*, 5(4), 140–153.
- World Health Organization. (2023). *WHOQOL - Measuring quality of Life | The World Health Organization*. World Health Organization (WHO). <https://www.who.int/tools/whoqol>
- Zhang, A., Park, S., Sullivan, J., & Jing, S. (2018). The Effectiveness of Problem-Solving Therapy for Primary Care Patients' Depressive and/or Anxiety Disorders: A Systematic Review and Meta-Analysis. *The Journal Of The American Board Of Family Medicine*, 31(1), 139-150. <https://doi.org/10.3122/jabfm.2018.01.170270>