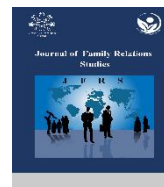




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Research Paper

The Impact of Acceptance and Commitment Training on Psychological Disturbances, Psychological Capitals and Problem-Solving Styles of Female Prisoners



Susan Esmailzadeh¹ , Ezatollah Ahmadi^{2*} & Hassan Yaghoubi³

1. MSc. student of General Psychology at Azarbaijan Shahid Madani University, Tabriz, Iran.

2. Associate Professor, Department of Psychology, Azarbaijan Shahid Madani University, Tabriz, Iran.

3. Associate Professor, Department of Psychology, Azarbaijan Shahid Madani University, Tabriz-Iran.

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ABSTRACT

Objective: The present study aimed to investigate the effect of ACT training on mental disturbances, psychological capital, and problem-solving styles in female prisoners of Urmia City in 2022.

Methods: A semi-experimental design was used for the pre-test-post-test and follow-up (two months) with a control group. 40 participants were selected by purposive sampling and divided into two groups of 20 people, experimental and control. The experimental group was trained in 10 sessions of 90 minutes. Anxiety, stress, and depression questionnaires DASS-21, Loutans et al.'s psychological capitals (PCQ-24), and Cassidy and Long's problem-solving styles (PSS-24) were filled in three time stages. The data were analyzed using the statistical method of variance analysis with repeated measures.

Results: The effectiveness of training (ACT) was stable on all three dependent variables. ($p < 0.01$) There was a significant difference between the research groups in the mean scores of psychological disturbance, psychological capital, and problem-solving styles at the stage (pre-test, post-test, and follow-up). There was a significant difference between the research groups in all three dependent variables. ($p < 0.05$).

Conclusion: Based on the findings, current research considers it possible to treat these people with ACT training in the prison environment.

1. Introduction

Considering the increase in women's delinquency and their involvement in so-called male crimes, gender is known as one of the factors influencing the recognition of delinquency in criminological theories (Zager, 2018). According to statistics, we see an increase in crime in many countries, and the number of women in prison is also increasing, which shows the apparent need for research focused on this global concern. Although the criminalization of mental illness is well-studied in

the United States, the mental health effects of criminalization are relatively underresearched (Pamplin et al., 2023). For this reason, the aim of the present research was also in this direction. Considering that Women make up half of human society and are a vulnerable group due to the sensitive role of women in the health of the family, paying attention to their mental health is of great importance (Haiderpour & Ghorbani, 2022).

*Corresponding Author:

Ezatollah Ahmadi

Address: Department of Psychology, Azarbaijan Shahid Madani University, Tabriz, Iran.

E-mail: amiraliahmadi91@yahoo.com



The Researchers suggest that participation in crime, in addition to all kinds of educational, occupational, and relational consequences, probably has harmful consequences in other areas of life, such as health, longevity, and psychological well-being. Injured women make up some of the statistics of all types of crimes (Rowshani et al., 2020). From Freud's point of view, penis envy in women causes them to rebel against men. Those women who culturally cannot adapt to the absence of a male penis and perform their dutiful and maternal sexual function try to achieve symbolic masculinity with an aggressive rebellion against their natural female roles and come up with male roles. They impersonate and commit criminal behaviors (Curran et al., 2001). Many psychological variables are damaged in delinquent women, and some of the most important variables have been considered in this research. According to research, all forms of crime most likely lead to depression and anxiety. Psychological disorders (anxiety, stress, and depression) are among the most common mental disorders that are related to each other and can probably be considered close relatives of delinquency (Jennings et al., 2018).

The results of the study by Herrera & Stevig (2017) determined that family disturbances lead to depression in girls to a greater extent, and of course, there is a significant relationship between adolescent depression and subsequent delinquency, so reducing mental disorders can play an influential role in reducing deviations. If childhood anxiety is not treated, it can lead to functional deficits in adolescence (Swan et al., 2018). From Ellis's point of view, the anxious person feels incompetent and makes negative evaluations. As a result, he cannot face the dangers effectively and will not be able to confront and solve the problem (Nurbala & Thaghafi, 2018). Traumatic events cause chronic symptoms such as negative thoughts, anxiety, avoidance behaviors, irritability, and lack of timely treatment, which can lead to other psychological consequences (Xiao et al., 2020). Therefore, it is essential to introduce people with psychological disorders to ways of recognizing feelings, thoughts, and the ability to face negative psychological experiences instead of avoiding them (Neff et al., 2007). Moreover, there are many of these cases among prisoners. A suitable measure to prevent deviation is increasing people's psychological capital (Mirkhalili & Heydari, 2019). Psychological capital includes the understanding and understanding that a person has of himself, his purposefulness and steadfastness against life crises and the four components of self-efficacy (having self-confidence in trying and striving for complex tasks), optimism (having positive documents about achieving success in present and future), hope (staying until the goal

is reached and even changing the path if needed), resilience (tolerating hardships and problems along the way and stability when facing crises), (Lutans & Morgan, 2017). The four components of psychological capital help maintain a sense of internal control. Research in this field showed a significant correlation between the total score of psychological capital and the sub-scales of self-efficacy and resilience with perceived stress (Farhadi & Gholam Nazari, 2022). Researchers have been paying attention to the role of hope or despair in the emergence of depression and its treatment for decades (Gallagher, 2018). In the research of Yazdani et al. (2016), the negative relationship between psychological capital and the dimensions of deviant behaviors in the work environment was investigated and confirmed.

One of the essential skills for living in today's world is learning problem-solving skills, which are likely to be impaired in prisoners. According to Kalia et al. (2019), problem-solving is a metacognitive capacity that has consequences in life functions. Cassidy and Long (1996) called Nezu's first three styles (including creative problem-solving, trust, and orientation) constructive problem-solving styles. Nezu's three styles (helplessness, controllability, and avoidance) are called non-constructive problem-solving. According to Cassidy and Long's theory, a creative problem-solving style indicates planning and inventing many ideas for solving the problem. Confidence style in problem-solving shows a person's confidence in their problem-solving abilities.

Attitude style has a positive attitude towards problems and a willingness to face them. The helplessness style shows the person's helplessness under challenging situations. Inhibitor style refers to the effects of internal and external inhibitors in problematic situations. Avoidance style also indicates indifference and ignoring issues instead of facing them (Cassidy & Long, 1996). There is a positive correlation between the problem-solving styles of helplessness and avoidance with the tendency to perceive stress, and there is a significant negative correlation between the problem-solving styles of inhibition, creativity, and trust with perceived stress (Farhadi & Gholam Nazari, 2022). There was a relationship between problem-solving styles and anxiety management in the research of Strauss et al. (2019). These studies emphasize that illogical problem-solving styles, such as helplessness and avoidance, are associated with a high and continuous level of anxiety for people and even make people more prone to anxiety, and these people react to stressful situations. According to experts, the instigators will respond with confusion. Disruption in problem-solving styles predicts psychological damage in a person and, of course, deviance.

Among the third-generation psychological approaches

that have effectively reduced mental turmoil and promoted psychological capital and adaptive problem-solving styles, we can mention treatment based on acceptance and commitment. The American Psychological Association introduced ACT therapy as the intervention of the present study as a valid scientific treatment based on a strong research background and is an evidence-based intervention that combines acceptance and mindfulness strategies with commitment and behavior change strategies in different ways. It also mixes (Hayes & Lillis, 2012). ACT is part of an extensive research approach called "contextual behavioral sciences" and is philosophically rooted in functional contextualism and applied behavior analysis. It is also related to language and cognition (the theory of communication frameworks). The new thing in the act is that it combines philosophy, theory, and practice, especially. It is recommended that the best experimental and behavioral traditions (Western and Eastern applications) be followed (Twohig & Levin, 2017). In the study (Behnouieh, Hossein Khanzadeh & Shakinia, 2022), treatment based on acceptance and commitment was effective on the psychological capital of mothers of children with autism spectrum disorder.

The basis of psychopathology from the perspective of ACT is the lack of psychological flexibility in that a person excessively turns to experiential avoidance to control negative internal experiences and loses the opportunity to renew rational behavior (Hayes et al., 1999). Therefore, the main goal is to create psychological flexibility in the individual. Psychological flexibility is the ability to stay in touch with inner experiences through the six primary processes of acceptance, disengagement, contact with the moment of life, self as context or perspective, identification of values, and committed action (Twohig & Levin, 2017). In general, in those therapeutic interventions that increase the awareness of the individual's values, the probability of fulfilling the obligations also increases (Scent & Boes, 2014). Flexibility is related to improving problem-solving styles, reducing psychological disturbances, and adapting one's thoughts and actions to environmental conditions (Almarzooqi et al., 2017; Denckla et al., 2018).

For example, ACT treatment was effective in reducing depression and stressful feelings in the research (Feng & Ding, 2020; Ayn Beygi et al., 2020), increasing psychological capital, and in the study of Yarvisi et al. (2021), improving problem-solving styles. In the research of Vaezi et al. (2021), the effectiveness of the act therapy group on students' emotional regulation and psychological capital was investigated, and its positive role was confirmed. In Feng & Ding's (2020) research, ACT intervention significantly increased psychological

capital scores and its subscales in adolescents after pre-test scores were adjusted, and this treatment was able to improve adolescents' psychological Capital and school participation. ACT training can increase the ability to solve problems and repair psychological disturbances in a person by increasing their psychological flexibility (Lieraa et al., 2020). In the research of Bahatab & Al-Hadi (2021) in Saudi Arabia, called "Acceptance and Commitment Therapy Group among Saudi Muslim Women with Mental Health Disorders," the effect of ACT on the health of women with mental disorders (depression and anxiety) was investigated. Moreover, the results showed that ACT can be an effective and well-received treatment. Reviewing the background of the research shows that the data supporting the correlation between psychological inflexibility criteria and psychological disorders (anxiety, stress, or depression), psychological capital, and problem-solving styles are strong, and there are comprehensive discussions of acceptance and commitment to these variables. Previous studies have shown that imprisonment, as one of the main methods of punishment, interferes with creating a healthy society (Kajipta et al., 2020). In the study by Basereh et al. (2024), the effect of ACT therapy on the quality of life of divorcing women was successful

By confirming mental injuries caused by crime, the causes of these injuries can be identified, reduced or eliminated, which produces science and creates high awareness and knowledge (Roushanpour et al., 2019). The existence of a gap between the prisoner's current situation and his ideal situation in essential areas of life is a critical issue that leads to deviation from life according to values and causes much psychological suffering in people (Hayes & Smith, 2005/ 2021). Due to the psychological effects of crime and its related injuries, the presence of strong emotional reactions in women, the issue of re-adjustment to treatment, and a healthy life again, it seems very important for injured women to have emotional and psychological support. How to receive this type of support will determine the following path of these people's lives. If these people are left alone in a critical situation or with unhealthy behaviors, they become more frustrated or isolated; it is hazardous and can cause more delinquency or worsening of their mental condition and even suicide. Third-wave therapeutic interventions have been reported to reduce the intensity of negative emotions in non-clinical populations (Brown & Ryan, 2003). One of the types of third-generation therapy is the therapy based on acceptance and commitment, which has attracted the attention of psychologists in recent years. (Hayes & Lillis, 2012). This therapy shows that many problem-solving methods lead people into traps that cause them resentment. Moreover, these traps are made

by the human mind to dominate the person and their surroundings. Therefore, this method tries to increase the cognitive connection of the person with his thoughts and feelings (Hayes & Smith, 2005/ 2021).

It seems that ACT training has been used very little in prison society, and there is a need to investigate this research. According to the mentioned discussions, this research has tried to identify theoretical and practical problems related to the research topic and provide solutions to these problems. Therefore, the primary purpose of this research is to investigate the effect of "ACT" on mental disturbances, psychological capital, and problem-solving styles in female prisoners in Urmia City and in this regard, the question is investigated whether education based on acceptance and commitment to Are psychological disturbances, psychological capitals and problem-solving styles of female prisoners effective?

2. Materials and Methods

The current research is practical in terms of its purpose and in terms of data collection; it is experimental and semi-experimental with a post-test and pre-test design with a control group. The statistical population of the present study included all female prisoners serving their sentence in Urmia city prison in 1401 (N=113). The permission to implement the project was obtained from the prison organization of West Azerbaijan province. First, with the purposeful sampling method for the entire statistical population, the DASS-21 questionnaire was implemented to screen people with psychological disorders (scores higher than 13, 9, and 19 in the subscales of stress, anxiety, and depression).

After identifying the target persons, their files are studied and taking into account the entry criteria: not having completed the term of imprisonment by the end of the current research project, not having a severe mental or physical illness and drug addiction, not participating in another psychotherapy training course at the same time With this period, having minimum secondary education and their age range (20-55), a statistical sample of 60 people was chosen. In the second step, the participants were informed about the current research and its goals, and they were asked to participate in this research plan with full knowledge and consent. 20 people refused to participate in the plan, and 40 people agreed to receive a signed informed consent form. Then, they were replaced by simple random sampling in two experimental groups (20 people) and control groups (20 people). The study started on 2022/3/30, and data collection ended on 2023/1/30.

In the stage before the training, all three questionnaires were given to the participants in one form simultaneously. After the necessary explanations were

given, the questionnaires were filled out in groups. Moreover, after a week, intervention sessions began. The research was conducted according to the ethical code of Helsinki (Ministerial Working Group of Ethics in Research, 2022).

The criteria for leaving the project were the absence of two consecutive meetings, unwillingness to participate, self-centeredness, or lack of active participation in the group. Due to the application of strict rules and many restrictions, it was impossible to hold face-to-face and online sessions, and only permission was given to perform offline, so the researcher was not allowed to attend the women's ward. Therefore, the design of the training sessions was recorded in an utterly descriptive manner, offline, by the researcher. The supervisor and broadcaster of the offline sessions was a prison psychologist familiar with the act therapy and received the necessary explanations from the researcher. The appropriate time for holding the meetings was determined from 9/30 to 11/30 in the morning according to the prison regulations, the conditions of the participants, and the existing restrictions, and with the agreement of the counseling center of that institution. The experimental group received ACT intervention in 10 sessions of 120 minutes (on Saturdays and Wednesdays every week), with a 20-minute break. The duration of the sessions was recorded in minutes.

The control group received no intervention training and was on the waiting list. One week after the completion of the training sessions, the second stage and, after two months, the follow-up stage of evaluation were implemented. The descriptive statistics section used Mean and standard deviation to analyze the data. In the inferential statistics section, a one-way analysis of variance with repeated measurements (first measuring the relevant assumptions) and SPSS 25 software was used. The error rate was considered in rejecting the null hypothesis with a significance level of 0.05. In the present study, because the intervention and follow-up stage did not last more than three months and ten days, to control the internal validity, factors such as history factor, maturity factor, time, measurement tools, and differential selection were controlled as much as possible. However, considering the factors of research bias, compensatory competition, statistical return, inclinations, and biases, it was impossible to select the control.

Research Instrument:

Depression, Anxiety, and Stress Questionnaire DASS-21: The DASS-21 depression, anxiety, and stress questionnaire was created by Lavibond and Lavibond (1995). It consists of 21 items and 3 subscales of depression, stress, and anxiety, each with 7 questions, which assess the severity of symptoms of depression,

anxiety, and stress experienced during the past week rather than simply diagnosing specific disorders in formal classes. It is graded based on the four-choice Likert scale. The reason for choosing this questionnaire is that it fulfils the essential issues that are explained: 1- For the success of developmental studies and research in the adult population, the availability of assessment tools that analyze the full spectrum of the main symptoms of anxiety and depression. It is necessary to accurately distinguish between these two emotional states (Kendall et al., 1987). 2- To provide adequate medical care, it is necessary to first widely identify the problem and use different scales as screening tools to evaluate mental health issues. It is necessary to ensure that the existing dimensions are sufficient to provide psychological support (Ahmed et al., 2022). In the research of Sahibi et al. (2006), the correlation coefficients for the dimensions of depression and anxiety were 0.61, anxiety and stress 0.67, and depression and anxiety 0.64. Also, the internal consistency of this questionnaire was obtained using Cronbach's alpha for the dimensions of depression 0.77, anxiety 0.79, and stress 0.78, which are acceptable. It should be mentioned that the reliability of this tool in the present study was obtained based on Cronbach's alpha of 0.91.

Psychological Capital Questionnaire (PCQ-24): The psychological capital questionnaire developed by Luthans et al. (2007) was used. This questionnaire has 24 questions and 4 components of hope, resilience, optimism, and self-efficacy, and the scoring is based on a six-point Likert scale (totally disagree = 1, disagree = 2, somewhat disagree = 3, somewhat agree = 4, agree = 5, Totally agree = 6). In this questionnaire, the lowest acquired score is 24, and the highest is 144. The reason for choosing this questionnaire is because of the primary evidence-based structure and the positive approach of the researchers who created it, the emphasis on the criteria of being positive, theory-oriented and research-oriented, measurable, developed with valid results obtained, and qualified as a valuable source of capital. It was for individuals, teams, and organizations. Lutz et al. (2007) reported Cronbach's alpha coefficients ranging from 0.66 to 0.89 for this scale and a significant relationship between the subscales of this tool. In Sheikh Zainadini et al.'s (2019) research, Cronbach's alpha coefficients for small scales of self-efficacy, hope, resilience, and optimism were obtained as 0.86, 0.84, 0.85, and 0.81, respectively. It should be mentioned that the reliability of this tool in the present study was obtained based on Cronbach's alpha of 0.88.

Questionnaire of Cassidy and Long problem-solving styles (PSS-24): Cassidy and Long's (1996) problem-solving styles questionnaire was used, which Cassidy and

Long developed in two stages. It has 24 items in six subscales, and 4 questions define each subscale. The scoring of the problem-solving styles questionnaire is done in the form of a three-point scale: yes (score one), no (score zero), and I don't know (score half), and the sum of these scores shows the overall score of each of the 6 factors. It is common. Any subscale with the highest score shows that the person uses that method when facing problems. In this case, the maximum score for solving the problem will be 24, the minimum score will be 0, and the average score will be 12.

The components of the questionnaire include the helplessness factor in problem-solving: questions 1 to 4, the inhibition factor in problem-solving: 5 to 8, the creativity style factor: 9 to 12, the trust factor in problem-solving: 13 to 16, the avoidance style: 17 to 20 and the orientation style: It is measured by questions 21 to 24. The reason for choosing this questionnaire was because of its reliable and valid criterion in line with the third objective of the present research, and also because it can reasonably determine a person's vulnerability to stress and separate healthy and unhealthy people. Cassidy and Long (1996) Cronbach's alpha of this questionnaire for styles of helplessness, inhibition, creativity, trust, avoidance, and tendency are 66%, 66%, 57%, 71%, 52%, 65%, and In Cassidy and Burnside's (1996) study, the Cronbach's alpha coefficients of this questionnaire were 86%, 66%, 71%, 66%, 52%, and 65% for the mentioned dimensions, respectively. It should be mentioned that the reliability of this tool in the present study was obtained based on Cronbach's alpha of 0.62.

Group therapy intervention based on acceptance and commitment: In order to set up a protocol and implement training based on acceptance and commitment in female prisoners, in the form a combination of the books "Get Out of Your Mind and Live" by Hayes and Smith (2005), translated by Sahibi and Eskandari, "The Slap of Reality" by Harris (2012), translated by Sahibi and Eskandari, which Hayes approves, and the book "Acceptance and Commitment Therapy: An Experimental Approach to Behavior Change" by Hayes et al. (1999), which contains an excellent intervention program, were used. This protocol's formal and content validity has been confirmed by its creators (Hayes et al., 2021). In the study of Okati et al. (2021), the Lavache method and validity index of Waltz and Basel were used with 10 experts, and the CVR value obtained after reviewing all the questions was higher than the average, more than 0.87, which is acceptable. It should be noted that acceptable CVR and CVI are 0.62 and 0.79, respectively. Clark et al. (2014) reported 68.2% and an internal validity (kappa coefficient) of 0.62%.

Table 1. Summary of the protocol of training sessions based on acceptance and commitment

Sessions	Contents
First	Introduction, talking about the possible situation of people in terms of research variables, reality, and the gap resulting from it, stating group rules, explaining the program developed for the group, preliminary explanation about the importance of ACT training, and introducing the ACT training program, preparing a list of goals and prioritization they.
Second	why does language cause human suffering? Explanations about human suffering and its constant and universal presence in life, offering the task of writing a list of sufferings and practicing assuming that the pains have disappeared, what should I do now? The voice of the mind or inner master, the nature of human language and its capabilities, and the suppression of thoughts.
Third	the tension of avoidance and resilience. Reviewing the contents of the previous sessions, teaching the pull of avoidance and its causes, why do we fall into the trap of avoidance? The allegory of the hungry tiger and the allegory of the train of the mind, responsibility and the ability to respond, the Chinese finger trap, the practice of playing the game of fate, the practice of judging experiences, and the discussion of resilience.
Fourth	acceptance and desire. Reviewing the contents of previous meetings, teaching the importance of acceptance, its meaning, and the opportunity to experience it. Why do you want to practice? Practicing the tendency not to breathe. Question: Do you want to change? Goal and Desire Scale, Desire Scale Worksheet Exercises, Forming the Desired Goal, Tin Monster and Acceptance in Real Time.
Fifth	troublesome thoughts and self-compassion. Reviewing the contents of the previous sessions, teaching the topics of troublesome thoughts, thought production, the parable of the swimming fish, avoidance, and cognitive fusion. Thinking leads to pain. What do we think about the exercises now? Moreover, practicing the daily pain recording sheet, looking at thoughts, not looking from the perspective of thoughts, and practicing observing the train of the mind, the topic of self-compassion and its two components.
Sixth	separation and separation of thoughts and 3 concepts. Reviewing the contents of the previous sessions with emphasis on all the processes taught, teaching topics: having a thought versus believing a thought, separation of thoughts, conditional nature of thoughts, avoidance exercises: leaving leaves floating in water, determining the nature of thoughts and feelings and related exercises, contact with the present moment and the explanation of the topics of three concepts (conceptualized selves, self as a stable self-awareness process and self-context), the allegory of chess.
Seventh	continuing the topic of accepting and learning it and the topic of mindfulness. Reviewing the contents of the previous sessions with emphasis on all the processes taught, what is the desire and what is not? Practice what is accepted. The goal of desire, the important question of life, the scale of desire and the exercise of the desire scale, the exercise of the tin monster, the training of mindfulness and its 3 components, and related exercises—explanations about privilege, superiority, and appreciation of gifts.
Eighth	clarification of values and their selection. Reviewing the contents of the previous sessions with emphasis on all the processes taught, teaching what the values are? And what is not? Path and choice, 10 values, allegory of bus passengers, our masters. Practice holding your own funeral, and start the topic of committed action.
Ninth	Reviewing previous sessions, learning to take committed action and bold steps, Chinese goals and practice achieving goals through practical actions, identifying obstacles and related exercises, different plans for different journeys, breaking patterns of inflexibility, and being aware of values.
Tenth	summary and review: Preparing people to finish the educational intervention, reviewing the previous meetings and general summary, reviewing the changes achieved, checking the values of each person's life and their committed actions, and the members' speech in this regard, which was recorded by the prison psychologist and reached the researcher's opinion. Solving the problems and ambiguities of the participants in this regard.

Source: Hayes & Smith (2005), Harris (2012), and Hayes et al. (1999)

3. Results

The results of demographic information showed that the highest frequency is related to the age of 31 to 40 years (equivalent to 42.5%). The lowest is related to the age of 41 to 50 years (equivalent to 25%), The highest frequency is related to divorced people (equivalent to 45 %), and the lowest is related to widows (equivalent to 2.5 %); the highest frequency is related to having no children and one child each (equivalent to 27.5 %) and the lowest is related to having four children (equivalent to 5 %), The highest frequency was related to diplomas (equivalent to 62.5 %) and the lowest was related to master's degrees and above (equivalent to 10 %). Descriptive indices of research variables according to group membership and assessment stages are shown in Table 2.

According to Table 2, the average variables of the

experimental group in the pre-test, post-test, and follow-up phases in the Psychological disturbances variables, respectively (31.85; 14.20; 14.15), In variables of psychological capital (88.10; 120.45; 110.30) and variables of problem-solving styles (11.02; 19.30; 19.30). In the experimental group, the standard deviation of Psychological disturbances variables are respectively (13.42; 8.81; 8.93), psychological capital (20.47; 11.95; 12.39), and problem-solving styles (2.85; 2.89; 2.89). The average scores of the experimental group in the post-test of psychological disturbance compared to the average scores in the pre-test showed a noticeable decrease in the sub-scales of psychological disturbance, a noticeable increase in the sub-scales of psychological capital, a decrease in the sub-scales of incompatible problem-solving style, and a noticeable increase in the sub-scales

of compatible problem-solving style. Moreover, they have remained stable in the follow-up phase.

In the control group, the mean of Psychological disturbances variables in the pre-test, post-test, and follow-up stages, respectively (43.2; 42.35; 42.35), psychological capital (71; 71.85; 71.85), and problem-solving styles (10.42; 11.00; 10.00) and the standard deviation of Psychological disturbances variables in the control group, respectively (6.87; 6.79; 6.79), Psychological capital (8.22; 9.17; 9.17), problem-solving styles (2.77; 2.80; 2.75). There has not been much change in any of the sub-scales or in any of the time series. The research hypothesis was analyzed using one-way analysis of variance with repeated measurements.

To use this analysis, its essential assumptions, such as the normality of the data distribution, were checked and confirmed with the Kolmogorov-Smirnov test ($p > 0.05$). The presumption of homogeneity of variances (values of significance levels obtained in Levin's test were evaluated in all three stages and were greater than $p > 0.05$). The assumption of homogeneity of covariance was also checked and confirmed. The values obtained in the covariance matrix homogeneity test for psychological disturbances included ($P=0.302 > 0.05$, $F= 6.150$ and

$Box's M= 40.439$), for psychological capital ($P= 0.320 > 0.05$) and $F= 5.185$ and $Box's M= 36.489$) and for problem-solving styles ($P= 0.390 > 0.05$, $F= 4.845$ and $Box's M= 15.875$).

Likewise, the results of the significance test (*Wilks Lambda*) showed that f values for psychological disturbances are equal to 5.64, and for psychological capital, it is equal to 4.39. For problem-solving styles, it is equal to (11.87). Also, the main effect of ACT training for psychological disorders (with a *coefficient Eta* of 0.23%, $P < 0.01$) and the interaction effect between time and group effect (with a *coefficient Eta* of 0.32%, $P < 0.01$) for the capital variable.

Mentality, the main effect of ACT training (with a *coefficient Eta* of 0.21%, $P < 0.01$) and the interaction effect between time and group effect (with a *coefficient Eta* of 0.56%, $P < 0.01$) and for the variable of problem-solving, the effect The main effect of ACT training (with a *coefficient Eta* of 0.38% and $P < 0.01$) and the interaction effect between time and group effect was also significant (with a *coefficient Eta* of 0.39% and $P < 0.01$). The results of the variance analysis with repeated measures to determine which variable has a difference between the two groups are reported in Tables 3 and 4.

Table 2. Descriptive Statistics of the studied variables by groups and stages

Variable	Location	Examination Group		Control Group	
		Mean	Standard Deviation	Mean	Standard Deviation
Psychological disturbances	Pre-test	31.85	13.42	43.20	6.87
	Post-test	14.20	8.81	42.35	6.79
	Follow up	14.15	8.93	42.35	6.79
Psychocapital	Pre-test	88.10	20.47	71.00	8.22
	Post-test	120.45	11.95	71.85	9.17
	Follow up	110.30	12.39	71.85	9.17
Problem solving	Pre-test	11.02	2.85	10.42	2.77
	Post-test	19.30	2.89	11.00	2.80
	Follow up	19.30	2.89	10.00	2.75

Table 3. Analysis of variance with repeated measurements on variables

Variable	Location	Source	Total Squares	df	Mean Square	F	Sig	EtaS
psychological disturbances	within group	Time	435.81	2	217.90	6.10	0.002	0.14
		effect	405.11	2	202.55		0.003	0.13
		Error	2520.4	76	33.16			
	Between group	Group	31817.6	1	31817.63	231.04	0.001	0.85
		Error	5233.0	38	131.71			
Psychocapital	within group	Time	1521.86	2	760.93	5.89	0.004	0.13
		effect	347.40	2	173.70		1.34	0.026
		Error	9818.73	76	129.19			
	Between group	Group	26730.6	1	26730.6	67.78	0.001	0.64
		Error	14984.3	38	394.32			
Problem solving	within group	Time	96.46	2	48.23	7.17	0.001	0.15
		effect	109.55	2	54.77		8.14	0.001
		Error	511.15	76	6.72			
	Between group	Group	6.76	1	6.76	0.54	0.01	0.54
		Error	674.81	38	17.75			

Table 3 shows that there is a significant difference between the groups in the stages (pre-test, post-test, and

follow-up) in all three variables ($P < 0.05$). Also, the interaction between the group and stages (pre-test, post-

test, and follow-up) was significant in all three variables ($P < 0.01$). 14% of inter-group changes in psychological disturbances and 85% of between-group changes in psychological disturbances were caused by ACT training. 13% of inter-group changes in psychological capital and 64% of between-group changes in psychological capital were caused by ACT training.

15% of inter-group changes in problem-solving styles and 85% of between-group changes in problem-solving styles were caused by ACT training. In order to compare the difference between the averages of the two groups over time, the Ben-Ferroni post hoc test was used, the results of which are presented in Tables 4,5.

Table 4. Post hoc Bonferroni test for the experimental group

exam group	psychological disturbances			Psychocapital			Problem solving		
Comparison	Mean Difference	Std Error	Sig	Mean Difference	Std Error	Sig	Mean Difference	Std Error	Sig
Pre-test -post-test	-0.60	2.65	0.002	-11.15	4.88	0.048	3.92	0.89	0.001
Post-test - follow-up	8.15	2.65	0.010	0	4.88	1.00	0	0.89	1.00
Pre-test - follow-up	7.55	2.65	0.018	-11.15	4.88	0.048	3.92	0.89	0.001

Table 5. Post hoc Bonferroni test for the control group

control group	psychological disturbances			Psychocapital			Problem solving		
Comparison	Mean Difference	Std Error	Sig	Mean Difference	Std Error	Sig	Mean Difference	Std Error	Sig
Pre-test - post-test	-1.25	2.56	1	-4.25	4.43	1	-0.22	1.13	1.00
Post-test - follow-up	0.70	2.56	1	-3.65	4.43	1	0.20	1.13	1.00
Pre-test - follow-up	-0.55	2.56	1	0.60	4.43	1	-0.025	1.13	1.00

Tables 4 and 5 show a significant difference between the experimental group's pre-test, post-test, and follow-up scores in all three variables, with a confidence of 0.95 ($P < 0.05$). However, the post-test scores remained relatively constant in the follow-up phase of the study. The effect of ACT training still lasts. This effectiveness remained stable over the next two months. According to the results, ACT training affects all three variables in female prisoners, and the research hypothesis is confirmed.

4. Discussion and Conclusion

Participants reported positive outcomes from their work in ACT group therapy, personal and interpersonal. Exercises and metaphors were valuable components of this training. The effect of "ACT training on psychological disturbances (anxiety, stress, and depression) in female prisoners" was associated with the results ($Wilks\ lambda = 0.76$, $f(2,37) = 5.64$, $P < 0.01$, and $EtaS = 0.23$). Many studies have been done in this direction. For example, this result is in agreement with previous findings (Bahatab & Alhadi, 2021; Wynne et al., 2019; Twohig & Levine, 2017; Yarvisi et al., 2021; Okati et al., 2021) and is consistent. According to various texts, in explaining this finding, it can be said that ACT is a modern behavior analysis that is applied to all kinds of clinical problems, including mental disorders. The ultimate goal of ACT for mental disorders is to help people cope better with the stress and anxiety (or related symptoms) they are experiencing. So that people can perform better (Hayes et al., 1999, p. 101). If stress and anxiety are experienced in the form of fusion (for example, harmful and dangerous) and the mind adds

some things (such as a worrying evaluation of the situation), it will lead to experiential avoidance. By teaching the anxious person, ACT invites him to deal neutrally with inner experiences as they are, without transformed functions (what the mind adds to them). With the process of acceptance (which is considered a type of behavior and not an attitude), the anxious person is suggested to act with his anxiety in the form of a "behavior." When anxiety is experienced from a more flexible state of mind, it will have less impact on behavioral choices, and people can begin living in more meaningful ways. As a person becomes more skilled in performing valuable actions, the acceptance of inner experiences also increases (Twohig & Levin, 2017). Similar to stress and anxiety, the goals of ACT for depression are not to eliminate depression per se but to increase participation in practical life activities. Individuals who endorse more reasons (verbal rules) for depression tend to have poorer outcomes in behavioral activation (Bahatab & Alhadi, 2021). A person learns that his mental emanations cause negative thoughts, and using cognitive defusion techniques can reduce the number of negative thoughts. ACT with behavioral activation emphasizes increasing meaningful activities among depressed clients. However, ACT also emphasizes targeting relevant cognitive and psychological barriers that may prevent worthwhile action (Twohig & Levin, 2017). Likewise, because anxious and depressed people have many "negative self-evaluations" of themselves, and it unintentionally affects their actions, by teaching the "self as context" process, these types of self-evaluations can be cancelled (Masuda et al., 2004).

The effect of "acting training on psychological capitals" in female prisoners was associated with the results ($Wilks\ lambda = 0.78$, $f(2,37) = 4.93$, $P < 0.01$, and $EtaS = 0.21$). This result is in agreement with previous findings (Fang & Din, 2020; Ain Beigi et al., 2021; Marmarchi et al., 2018; Vaezi et al., 2021; Saeedi et al., 2021) and is consistent. Research evidence shows that psychological capital dimensions have a positive role in promoting well-being and psychological flexibility. Also, ACT can reduce people's stress and improve their well-being (Wersebe et al., 2018), while individual well-being with Psychological capital has a positive correlation (Culbertson et al., 2010).

Therefore, ACT can improve psychological capital. Values-based self-knowledge and values reconstruction may be effective in reducing negative thoughts. People (such as prisoners) who are probably less confident about their abilities to perform behaviors such as adapting to new situations, feeling efficient, etc., may be stuck in the pre-contemplation or ignorance stage and feel hopeless about the possibility of change. For the disappointed person to reach the decision-making stage and readiness to act, his sense of self-efficacy must be strengthened. With the help of cognitive breakdown techniques, setting appropriate assignments, completing assignments, working on values, and discussing the possibility of change, a person can reduce cognitive confusion, improve self-efficacy beliefs, and take responsibility for treatment. Because one of the essential steps in most treatments, especially ACT, is the responsibility of the participants (Bagheri et al., 2017).

Moreover, committing to act causes a change in a person's behavior. By achieving a high self-concept, goals are pursued with more motivation, increasing hope in a person. Hope is a process through which a person determines their goals and plans to achieve them. Hopeful people are treated quickly due to having positive beliefs because it creates positive physiological changes in them, and the person finds their life meaningful, which leads to the improvement of daily functions and mental health of the individual. In the future, the field of increasing resilience will also be provided. Tolerant people have a different perspective on stressful situations; they do not give in and fight with the situation. This requires understanding the environmental conditions, and ACT helps people focus all their attention on the situation by increasing mindfulness. Redirect existing conditions without judgment (Baradaran et al., 2016). People who receive ACT with a values component have high resilience against pain. It is even possible to use the self-evaluation of people's "toughness" to strengthen their resilience because self-evaluations are not always good or bad, and according to the nature of the act, they depend

on the context (Twohig & Levin, 2017).

The effect of "acting training on problem solving styles in female prisoners" with the results ($Wilks\ lambda = 0.61$, $f(2,37) = 11.54$, $P < 0.01$ and $EtaS = 0.38$). This result is consistent with previous findings (Yaravisi et al., 2022; Vaezi et al., 2020; Amiri et al., 2021). In explaining this finding, it can be said that language and cognition allow humans to constantly compare themselves with their unrealistic ideal selves, to be unable to solve problems by remembering the painful past and drawing a scary future or to take unprincipled solutions. Hayes et al., 1999). Therefore, the concept of "diffusion" is explained to the clients, and exercises of separation between themselves (with negative internal experiences) are done so that the psychological disturbances of the person become less, and the person can gradually use adaptive problem-solving strategies. In research, Lira et al. (2020) also showed that worry and anxiety can disrupt problem-solving and reduce trust in solutions. The ability to trust in solving problems creates a positive view of problems, and problems are seen as challenges rather than threats; optimism is created in people and the sense of self-efficacy increases. They take enough time to solve the problem and use negative emotions as a source of information. Act is not about control but about acceptance; therefore, with Act exercises, one can keep a person away from having a controlling style in solving problems and separate from having a feeling of helplessness in solving problems and pains and suffering. encouraged him to open his arms to the pains and complex issues of his life, created a positive attitude towards problems and sufferings in the person and increased the desire to face and not escape in the person, and as a result, the person from maladaptive styles (avoidance styles, control, and helplessness) problem solving tends to adaptive problem-solving styles (creative styles, orientation, and trust) (Yarvisi et al., 2022). Next, the person is encouraged to evaluate his behavior based on successful strategies (which usually help people to act according to their values.

In general, millions of people are involved in criminal justice systems with significant mental health needs. Various factors such as cruelty, injustice, abuse, passivity, experiential avoidance, lack of clarity of values, and inflexibility can lead people to all kinds of abnormalities. People with mental disorders are people who are usually not familiar with these disorders and how to deal with them, and ACT, as an educational and therapeutic program, can be used to deal with the challenge. The evaluation of the participants showed that using ACT training motivates them to use this program in their daily lives. Exercises and metaphors are beneficial components of this training, and people were

by very willing to share what they learned with others, which shows the high acceptance and acceptability of this training. In total, the current research has achieved the effect of ACT training on the studied variables, and this effectiveness can be used in educational and training centers, counseling, and therapy.

Research Limitations The limitations of this research included many problems obtaining permission, low cooperation of relevant institutions, limited generalization of the results to the male population (female statistical population), and the exclusion of low-educated people due to the specific concepts of ACT. There was difficulty in choosing a training protocol that was specific to this group, which led us to combine instructions from three relevant books.

Research and practical suggestions: It is suggested that related institutions cooperate more in implementing research projects similar to this project. Arrangements should be made to prevent the interaction between the control and experimental groups and to repeat this research. Local exercises and metaphors appropriate to the culture should be used.

5. Ethical Considerations

Compliance with ethical guidelines

This article has observed ethical considerations such as informed consent, the principle of least error, observing the principle of anonymity, preserving privacy and confidentiality of information, and providing training for the control group. Before the project's implementation, the code of ethics was under the number IR.AZARUNIV.REC.1401.021 was obtained from the Ethics Committee of Shahid Madani University of Azerbaijan.

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Authors' contributions

All authors participated in the design, implementation, and writing of all sections of the present study.

Conflicts of interest

The authors declare that there is no conflict of interest in this article.

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