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### The role of problem-solving styles in committing suicidal behavior: a case-control study on Iranian pill-takers

**Abstract:** *Objectives:* Pill-takers seem to have some deficiencies in developing problem-solving styles, in which it plays an important role in their mental health. The present study has aimed to examine the role of problem-solving styles in individuals who have suicidal behavior by taking pills.

*Methods:* This research is a case-control study in which 100 people who had attempted to commit suicide by taking pills and had gone to the toxicity emergency room of the Razi Educational and Therapeutic center in Rasht city, were compared with 100 normal people who were selected as the control group. These two groups of people were compared with each other in terms of their problem-solving styles (which is measured using Cassidy and Long problem solving styles questionnaire).

*Results:* After adjusting the effects of the confounding variables, i.e. level of education, marital status, residential status, history of psychiatry and alcohol addiction, it became clear that pill-takers group in comparison with the control group scores significantly higher in the non-adaptive problem-solving styles i.e. helplessness, problem-solving control, and avoidance styles ( $P < 0.0001$ ) and also lower scores in adaptive styles, i.e. creative, confidence and approach styles ( $P < 0.0001$ ). The interactive effects of group membership and gender were not significant in any of the problem-solving styles ( $P < 0.05$ ).

*Conclusions:* Problem-solving styles are regarded as important risk factors when it comes to attempting to commit suicide by taking pills. Thus, it is essential to teach problem-solving styles to at-risk patients in order to preventing suicidal behavior.

**Keywords:** pill-takers, attempted suicide, problem solving, suicide

#### Introduction

Suicide is a preventable issue which is common among developing and developed countries and it is considered as an important health issue which hinders the development of different societies (WHO, 2014). Suicidal behavior is a reaction identified by trying to escape from unbearable pain and negative self-awareness where hopelessness is the dominating and most prominent feeling (O'Connor et al., 2008). This phenomenon occurs in all social classes; however, based on the reports of World Health Organization (2015) over the past 45 years, the number of suicide attempts has increased in the entire world, especially among young women and adults.

Currently, suicide is regarded as a serious threat to the public health all over the world, which is more common in low-income and average-income countries. The rate of death caused by suicide has been reportedly close to 800 thousand people per year. Suicide is the second leading cause of death among 15 to 29-year-old people. In fact, 78% of the suicide attempts are seen in low-income and average-income countries (World Health Organization, 2017).

In 2012, Suicide death rate was estimated to be 11.4 per 100000 people (15 in men and 8 in women) in the world and 5.2 per 100000 people (6.7 in men and 3.6 in women) in Iran (World Health Organization, 2014). The findings show that suicide rate in Iran is lower than

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other countries, especially Western countries, however its considered higher in comparison with most of the Middle Eastern Countries (Moradi & Khademi, 2002). Recently, the rate of death caused by suicide has experienced an upward trend and it is predicted that the rate of death caused by suicide will undergo a 24% increase by the year 2020 in comparison with this rate in the year 1998 (18%) (Bertolote & Fleischmann, 2009).

Method of suicide attempts varies in different societies, including self-immolation, hanging oneself, intentional poisoning, etc. Intentional poisoning itself can be done in different ways such as inhaling toxic gases, taking toxic plants, using detergent tablets, Pesticides – such as rice pills – and also consumption of drugs. Among these methods, taking drugs is the most frequently reported and among most commonly used methods in committing suicide throughout the world (Fadum et al., 2014).

It is necessary to pay attention to suicide attempts caused by poisoning, particularly drug poisoning, because it is more common and prevalent than other methods for committing suicide (Shams Vahdati et al., 2015). On the other hand, at a global level, the patterns of drug poisoning are quite different and in many cases, taking acetaminophen with Sedatives – such as benzodiazepines and barbiturates, as well as antidepressants – are among most important drug combinations that are used for attempting suicide (Fadum et al., 2014). Suicidal behaviors are influenced by various biological, genetic, mental, social, environmental and local factors (Wasserman et al., 2010). Suffering from mental diseases or having a history of mental diseases, substance and alcohol abuse, chronic illness, emotional issues, sudden huge changes in one's life, unemployment, low income and a previous history of suicide attempt are among most important risk factors associated with suicide and the more the number of these factors increases, the higher the chance of successful commitment of suicide will be (Amiri et al., 2012; Vijayakumar, Kumar, & Vijayakumar, 2011; Nock et al., 2008).

Over the past few decades, according to the reviews of deviations and behavioral disorders, it has been concluded that many disorders and damages are rooted in people's inability to accurately and properly analyze one's condition and situation, inability to feel control over one's condition or to feel personally competence to face difficult situations, and in unpreparedness to solve life problems properly (Arie et al., 2008; Kwok et al., 2015; ZahediAsl & Khadari, 2015). In other words, there are some individual properties and specifications that lead to commitment of suicide, including inability to find a proper solution for problems, to find ways and develop strategies for overcoming stressful and anxious factors, inflexibility and having limited number of solutions for problems (Barnes et al., 2017; Shamsikhani et al., 2016). Therefore, deficiency in the problem-solving process and using inefficient methods are among important cognitive issues in people who commit suicide. The effect of these factors in increasing the likelihood of committing suicide has been reviewed and confirmed in many studies (Barnes et al., 2017; Kwok et al., 2015; Hirsch et al., 2012; Arie et al.,

2008). Cassidy and Long (1996) define problem-solving style as a cognitive and behavioral process which is used by people to identify and come up with effective strategies for overcoming problematic situations in everyday life. In their opinion, problem-solving styles include helplessness, problem-solving control, avoidance style, creative style, problem-solving confidence and approach. The first three categories are non-adaptive styles and the other three categories are adaptive styles (Cassidy, 2002).

Problem-solving skills have a developing nature and include effective decision making, flexibility and the ability to examine alternative solutions for social and cognitive issues (Anisi et al., 2006). In this respect, and based on the Suicide Readiness Model, Schotte and Clum (1987) have emphasized the relationship between negative mental pressures of life, cognitive closure, weakness in association with problem-solving skills on one hand and disappointment in developing suicidal thoughts or committing suicide on the other hand. According to the aforementioned model, an individual who is characterized by deficiency in divergent thinking is cognitively unprepared to encounter and overcome a high level of mental pressures in life and is likely to get disappointed in such situations. Weakness in problem-solving skills caused by high mental pressures in life, increases the risk of depression, disappointment and suicidal behavior. In this regard, by conducting a research, Quiñones et al. (2015) concluded that the level of passive problem solving is high in individuals with a history of suicide attempt. However, this problem-solving style was not able to moderate the relationship between depression and suicide attempt in the future. By reviewing the findings of Barnes et al. (2017), it becomes clear that using intervention and teaching problem solving skills for preventing suicide attempts in individuals suffering from moderate to severe brain injury are interpreted as satisfying and useful and free of negative effects method by the participating patients. In Iran, EdalatiShateri, Ashkani and ModaresGharavi (2009) evaluated 66 female subjects suffering from clinical depression in terms of pathological concern and problem-solving styles and found out the mean concern and avoidance style are higher in individuals with tendency to commit suicide than normal people. In addition, they specified that there is a relationship between non-adaptive problem-solving styles (i.e. helplessness, problem-solving control and avoidance styles) and concern.

Regarding the studies conducted in Iran, Majority of poisoning cases are unfortunately intentional and with suicidal purposes, carried out by people in the age group of 21 to 30 years (Shadnia et al., 2007). Reportedly, most of the poisonings in Iranian cities are caused by taking pills and drugs (Khajeh et al., 2014). Of course, some of the reasons for this statistics is the fact that people have easy access to pills, they are familiar with different types of pills and this is a painless way of committing suicide. For example, in a cross-sectional study conducted by Mehrpoor in 2013, it became clear that in Iran, 8 per 1000 patients in the general units of the hospitals and 109 per 1000 patients in the intensive care unit die because of intentional poisoning.

Considering that suicide is common among young adults and it destroys the intellectual and economic capitals of the country, it is necessary to review the effective factors that pave the way for people to commit suicide. It is obvious that recognizing factors that affect suicide attempts build the substrate for reducing tendency to suicidal behaviors among young adults, especially determining the role of problem-solving styles and planning for preventing social damages and deviations. In this respect, the present study has attempted to answer the following question: what is the difference between individuals with and without suicidal behaviors through taking pill based on problem-solving styles? By answering the above-mentioned question, recognizing the main psychological factors associated with suicide attempts such as problem-solving styles will be easier. Furthermore, the results obtained from this research have confirmed the necessity of its conduction. Thus, the findings of this study can be clinically applied on patients. Therefore, the present study has aimed to examine the role of problem-solving styles among individuals who take pills and have suicidal behaviors.

### Materials and Methods

The present study is a case-control research in terms of method which is categorized as retrospective studies. Statistical population of this study has been composed of all individuals who had attempted to commit suicide in the September, October and November of 2014 who had visited Razi Health and Education Center in Rasht. These patients have attempted suicide by taking pills with mostly medical or agricultural uses. Since it was not possible to select the research samples directly from the research population and a complete list of members of the population with a history of suicide attempt was not available; therefore, the randomized sampling methods could not be used and patients were selected using the availability sampling method. The sample size in this research was 100 people in each group with the type I error (alpha) 0.05, test power of 0.80 and expected effect size of 0.40 between the two groups. The sample size was calculated based on Machin, Campbell, Fayers and Pinol (1997) tables sample size. To control the gender variable, each group contained 50 men and 50 women.

In this research, the field method of study has been used for collecting the research data. In addition to this method, a questionnaire was distributed among both normal people and those who had attempted to commit suicide. Before evaluating the personality of the participants, the reasons and how this research is conducted were explained to the patients and they were reassured that their information will remain confidential. Then, they were reminded that they can chose not to participate in the study and this will not affect their treatment process. Finally, after they cautiously expressed their willingness to participate in the study, the evaluation process began. After providing short explanations about the questionnaire and how to fill it, the questionnaire was handed out to the participants.

In addition, personal information of the participants, such as their level of education, marital status, occupational status, residential status and history of suicide attempt were recorded in their demographic information sheet. Following this, mental health issues of the participants such as their history of psychological illness, substance abuse and dependency, alcohol abuse and dependency, were examined based on the DSM-IV-TR criteria by a clinical psychiatrist.

### Research tools

Cassidy and Long problem-solving styles questionnaire (1996): this scale has 24 questions which measures 6 factors. Each of these factors includes 4 items. Respondents earn the score 2 or 1 by selecting yes or no. Out of these 6 factors, 3 are non-adaptive styles including helplessness, problem-solving control and avoidance styles and the other three are adaptive styles including creative, confidence and approach styles. Each respondent earns a score between 4 and 8. Obtaining a higher score indicates that the respondent uses that specific style more than others. Cronbach's alpha coefficient for the problem-solving style scales was between 0.51 to 0.86 in the two studies conducted by Cassidy and Long. In addition, this scale has been used in a number of studies (e.g. Baker 2003; Cassidy, 2004), where it has been shown to be reliable and valid as well as practically useful. In Iranian population, Mohammadi and Sahebi (2001) reported an internal consistency reliability of 0.60 for this test using Cronbach's alpha coefficient. Moreover, the reliability coefficient of this scale in the study done by BabapoorKheyroddin et al. (2003) was reportedly between 0.77 and 0.87 using Cronbach's alpha coefficient.

### Statistical analyses

The data of this research was firstly transferred to the SPSS software Ver 22.0 and then the obtained information was reviewed using descriptive statistics methods (such as percentage, frequency, mean, standard deviation). Furthermore, to examine the main effects of group membership on problem-solving styles, after adjusting the demographic differences, multivariate analysis of covariance (MANCOVA) was used. In order to investigate the assumption of heterogeneity of variance-covariance matrixes, the Box'M test has been used. When this test is not significant, the assumption of heterogeneity of matrixes applies and Wilks Lambda test ( $\lambda$ ) can be used for examining the significance of the multivariate effects. When observation of this presumption does not seem possible, it would be recommended to use the Pillai's trace test (V) in order to determine the significance of multivariate effects (Gall, Borg, & Gall, 2004; Meyers, Gamst, & Guarino, 2006). Bonferroni alpha level was adjusted as 0.008 by taking into account the number of dependent variables (adjusted P-Value =  $\alpha/6$ ). The effect sizes of group membership were calculated using Partial Eta Squared ( $\eta_p^2$ ), accordingly, values higher than 0.010, 0.060 and 0.138 were respectively interpreted as small, medium and large effect sizes (Cohen, 1988).

### Results

In total, 100 of members of the pill-takers group (50 men and 50 women) and 100 the normal individuals (50 men and 50 women) participated in the study. The age range of participants from pill-takers group was  $31.1 \pm 11.59$  years ranging from 15 to 67 years. On average, they had a history of  $9.89 \pm 3.74$  years of education (ranging from 0 to 16). In control group with normal people, an age range of  $33.30 \pm 9.46$  years was recorded – ranging from 19 to 65 years and participants had a history of  $14.18 \pm 3.24$  years of education – ranging from 3 to 22 years. Student's independent t-test did not find a significant difference between the two groups in terms of mean age, but a significant difference was seen between the two groups in terms of level of education

( $P < 0.0001$ ,  $df = 198$ ,  $t = 8.65$ ) so that pill-takers had lower levels of education. Out of 100 pill-takers, 30 had a history of suicide attempts. Percentage and frequency of using chemical substances to attempt suicide were as follows: 20 people (20%) had used rice pill, 11 people (11%) had used rodenticides, 1 person (1%) had used detergent tablets, 6 people (6%) had used pesticides or aluminum phosphide pellets, 62 people (62%) had medical poisoning (including being poisoned by taking codeine tablets, sedatives and tablets prescribed for mental health issues. Table 1 displays the demographic features of the members of the two groups (control group and pill-takers group).

According to the results of chi-square test presented in the table above, there are significant differences between pill-takers and normal people in terms of their marital status, residential status, occupational status, history of

**Table 1. Demographic features of the participants in the two groups of pill-takers and normal people**

Variables	Normal group n = 100		Pill-Takers n = 100		df	$\chi^2$	P value
	(n)	(%)	(n)	(%)			
Marital status							
Single	28	28	35	35	3	22.90	0.0001
Married	66	66	41	41			
Divorced	4	4	24	24			
Widow	2	2	0	0			
Residential status							
Urban	95	95	75	75	1	15.68	0.0001
Rural	5	5	25	25			
Occupational status							
Employed	71	71	31	31	2	32.72	0.0001
Unemployed	29	29	67	67			
Psychiatric illness							
No	94	94	58	58	1	35.59	0.0001
Yes	6	6	41	41			
Substance abuse							
No	89	89	68	68	1	13.06	0.0001
Yes	11	11	32	32			
Substance dependency							
No	90	90	67	67	1	15.67	0.0001
Yes	10	10	33	33			
Alcohol abuse							
No	91	91	84	84	1	2.24	0.13
Yes	9	9	16	16			
Alcohol dependency							
No	100	100	88	88	1	12.76	0.0001
Yes	0	0	12	12			

psychiatric illness, substance abuse, substance dependence and alcohol dependence ( $P < 0.0001$ ); so that frequency of the divorce, living in rural areas, being unemployed, having a history of psychiatric illness, substance abuse and alcohol dependence and alcohol abuse was significantly higher in the pill-takers group than the control group. It should be noted that the demographic variables obtained through comparison of two groups were significant ( $P < 0.05$ ), and were used as covariate variable in analysis of variance of problem-solving styles scores collected from the two groups of pill-takers and normal people. Table 2 presents statistical specifications such as mean and standard deviation of the participants in the two groups based on the aforementioned problem-solving styles along with the results of the multivariate analysis of covariance (MANCOVA).

Before taking the MANCOVA test in association with the problem-solving styles scores, Box's M statistic showed a significant difference in the assumption of heterogeneity of variance-covariance matrixes of the groups (Box's  $M = 178.47$ ,  $df = 8.22$ ,  $P < 0.0001$ ). Following this, to review the significance of the difference between the mean

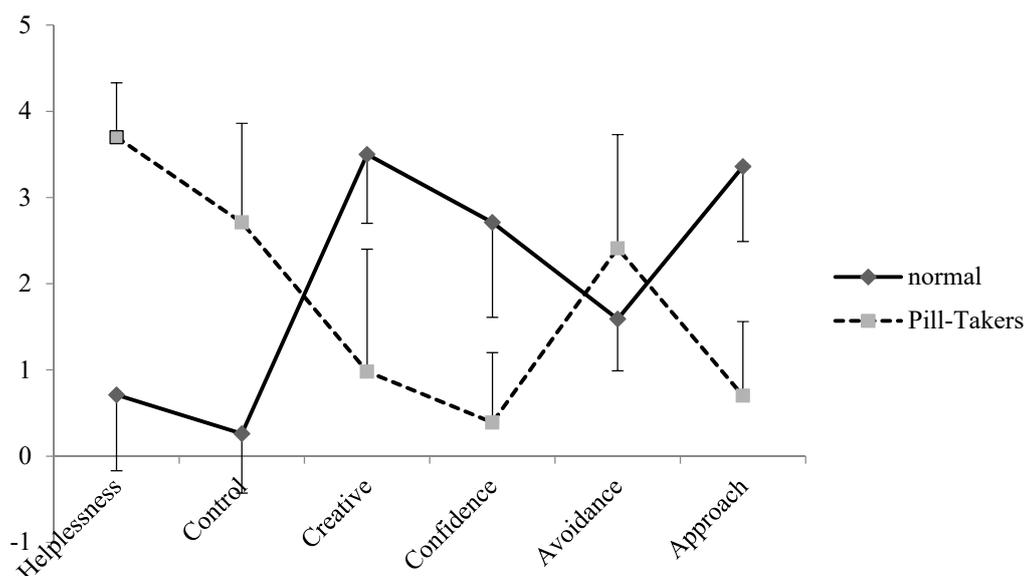
of the groups, scores assigned to the problem-solving styles were jointly analyzed using multivariate analysis of variance. In this regard, the results obtained from Pillai's trace test showed that the group membership variable has a significant impact ( $V = 0.75$ ,  $F_{6,187} = 98.23$ ,  $P < 0.0001$ ) on the linear combination of dependent variables. Table 2 illustrates the results of examining the effects of the group membership variable among the participants (pill-takers and normal people). This table also shows the overall significance of the MANCOVA model and the separate effect of each independent variable on the dependent variables.

Given these findings, it can be said that the main effect of group membership has a significant impact on all of the scores assigned to the problem-solving styles ( $P < 0.0001$ ). According to the results associated with the means (shown in Table 2), there is a significant difference between the two groups and the scores assigned to the non-adaptive styles (i.e. helplessness, problem-solving control, and avoidance styles) are significantly higher for the members of the pill-takers group than the members of the control group. The scores assigned to the adaptive

**Table 2. Results of MANCOVA respecting the scores assigned to the problem-solving styles of the two groups (pill-takers and normal people)**

Problem Solving Styles	Groups	Mean	Std. Deviation	Mean Square	F	P-value	Partial Eta Squared
Helplessness	normal	.7100	.87957				
	Pill-Takers	3.7000	.62765	211.498 <sup>a</sup>	368.899	.0001	.658
	Total	2.2050	1.68140				
Control	normal	.2600	.69078				
	Pill-Takers	2.7100	1.14852	135.231 <sup>b</sup>	151.699	.0001	.441
	Total	1.4850	1.54977				
Creative	normal	3.5000	.79772				
	Pill-Takers	.9800	1.42120	142.867 <sup>c</sup>	109.636	.0001	.363
	Total	2.2400	1.70792				
Confidence	normal	2.7100	1.09448				
	Pill-Takers	.3900	.81520	131.503 <sup>d</sup>	141.049	.0001	.424
	Total	1.5500	1.50960				
Avoidance	normal	1.5900	.60461				
	Pill-Takers	2.4100	1.31882	21.233 <sup>e</sup>	19.710	.0001	.093
	Total	2.0000	1.10276				
Approach	normal	3.3600	.87062				
	Pill-Takers	.7000	.85870	162.956 <sup>f</sup>	221.683	.0001	.536
	Total	2.0300	1.58799				

Note: a. R Squared = .804 (Adjusted R Squared = .797); b. R Squared = .642 (Adjusted R Squared = .629); c. R Squared = .569 (Adjusted R Squared = .553); d. R Squared = .605 (Adjusted R Squared = .591); e. R Squared = .145 (Adjusted R Squared = .114); f. R Squared = .719 (Adjusted R Squared = .708).

**Figure 1. The status of problem-solving styles for the both groups two groups of pill-takers and normal people**

styles (i.e. creative, confidence and approach styles) are significantly higher for the members of the normal group than the members of the pill-takers group ( $P < 0.0001$ ). Figure 1 displays the status of problem-solving styles for the both groups and in comparison to one another. According to Partial Eta-Squareds, this could be said that, 9 to 66% of this difference is caused by the effect of group membership. The effect of gender alone and also the interactive effects of group membership×gender were not significant in any of the problem-solving styles ( $P > 0.05$ ) That's why the results associated with them have not been shown here.

### Discussion

The present study has aimed to examine the role of problem-solving styles in committing suicide by Iranian pill-takers. The results of the present study have shown that there is a significant difference between the problem-solving styles of pill-takers and normal people (Table 2); in the sense that pill-takers obtained lower scores of adaptive styles (i.e. creative, confidence and approach styles) and higher scores of non-adaptive styles (i.e. helplessness, problem-solving control and avoidance styles) ( $P < 0.0001$ ). The above-mentioned results are in the same direction as the other obtained findings in this field (Barnes et al., 2017; Kwok et al., 2015; Hirsch et al., 2012; Ajtay et al., 2012; Linda, Marroquín, & Miranda, 2012; Gibbs et al., 2009; PerczelForintos & Póos, 2008; Roskar et al., 2007; Jeglic et al., 2005; Pollock & Williams, 2004; McAuliffe et al., 2003).

Deficiency in the problem-solving process of the individuals with tendency to commit suicide is a hypothesis which is confirmed by strong scientific evidence and there are numerous studies which have shown that most of the individuals who attempt to commit suicide have shortcomings when it comes to their problem-solving

skills in association with facing the problems that exist in their interpersonal relationships and use non-adaptive problem-solving styles (Barnes et al., 2017; Kwok et al., 2015; Quiñones et al., 2015). As we already know, adaptive styles of solving problems enables an individual to solve their life problems in a more effective way. Life problems would create psychological distress if they remain unresolved and that is why some people turn to suicide to be free of this anxiety (Gilmour, 2016).

In current study, pill-takers, compared to normal people, apply more helplessness styles which would indicate their hopelessness and lack of plans and programs when encountering a problem. High mean of "control style" in pill-takers is an indication of a high level of self-blame, feeling deficient in causing a problem and lack of confidence when resolving it. They also use the avoidance problem-solving style more than normal people. In other words, they seek shelter in suicide, to opt out of daily challenges and skip problems. The adaptive problem-solving styles, i.e. creative, confidence and approach styles are used significantly less by pill-takers compared to normal people. Considering various alternative solutions – in confronting problems – is disabled in pill-takers case and having different perspectives and offering possible solutions – to increase the chance of resolving it – becomes impossible. In contrast, these individuals act on the first solution that comes to their minds and ignore other possible solutions, because they lack trust in their abilities in problem-solving. When confronted by life problems, they lack a disciplined plan and they do not consider various solutions and they seek a less positive approach to their problems (Cassidy & Long, 2006).

Occurrences of problems are inevitable and people are meant to confront and resolve them. Individuals who use the avoidance styles, would avoid getting involved in problems and have their problems unresolved and piled up. Failure in application of useful patterns and styles, such as

creative, approach and confidence problem-solving styles, leads to the accumulation of problems and together with lack of efficient problem-solving styles, a deficient cycle would result that only worsens the condition of future suicide victim. Moreover, non-adaptive problem-solving styles restrict the use of rational and psychological abilities in individuals. Consequent mental and physical disabilities would lead to a level of inhibition and avoidance and devotion of attention in complex situations would be distorted. In such cases, occurrence of numerous mental and physical disorders would be certain. Consequently, reduction in the level of happiness would lead victims toward health issues and mental disorders. Some scholars, such as Dixon, Heppner and Rudd (1994) believe that inability in problem-solving and suicide attempts are linked to another variable called hopelessness. They realized that people would be emotionally distressed and hopeless if they fail to solve problems. Development of suicidal thoughts and behaviors are subsequent to hopelessness. Therefore, hopelessness and mental pressure – caused by lack of effective resolution of a problem- can lead people to commit suicide.

From a cognitive perspective, suicidal behavior can hypothetically relate to this concept that “disturbance in accessing specific information from one’s personal bank of information, results in application of non-adaptive problem-solving styles, following individual’s failure in overcoming stressful situations” (Kaviani et al., 2005). In fact, one’s capacity in using adaptive problem-solving styles would result in their psychological adaptation and as a result, adapting to the requirements of living in groups would be possible. Presumably, confidence in one’s ability in overcoming and solving problems assures a positive approach toward life issues and reinforces creative solutions in case of problems. Therefore one would feel less lonely in difficult situations and taking advantage of individual and social resources in problem-solving would result. These factors together increase happiness (Hirsch et al., 2012; Kwok et al., 2015). However, those performing weaker in such situations – applying non-adaptive problem-solving styles (e.g. helplessness style)-experience more anxiety, depression and stress (Kant, 1997). They fail to inhibit and therefore express their negative behaviors and feelings which can lead to a decrease in their level of happiness. To conclude, one’s problem-solving style plays a role in predicting his/her future tendencies.

In the present study, in regard to the non-adaptive problem-solving styles used by pill-takers and their considerable effect on some psychological variables that affect suicidal behavior, its recommended to counselors and workers who work at hospitals to hold group interventions for groups of individuals who have attempted to commit suicide and are more vulnerable in case of problem solving and to reinforce their problem-solving skill and teach them adaptive styles. This measure is associated with the prevention of mental problems and reinforcement of their mental health. Reinforcing the adaptive problem-solving styles in this group will help them in adaptively

encountering and solving life problems and issues and will return their mental flexibility to them. As a result, they will hopefully give their minds and thoughts the opportunity to look at the issue from various angles when they are faced with a problem and to think of various solutions for the problems they have and not to think that a problem is unresolvable when a solution is not available.

On the other hand, the role of problem-solving styles in suicide attempt is significant, but the role of other variables in predicting suicide attempt should not be ignored; because as we know, the number of factors that are involved in expressing risky behaviors such as suicide is not limited and this phenomenon is the outcome of an interaction between social, environmental, family and individual factors. Thus, to increase the accuracy and efficiency of the prevention programs in the future studies, it is better to identify and review other variables as well and to study the structural relations between them in the respect of preventing suicide attempts by taking pills.

The present study has some limitations, one of which is this research being cross-sectional. Because of this, it is not possible to follow-up on the samples under study throughout the course of a long period of time. Therefore, it is recommended to scholars to consider long-term follow-ups and the probability of the recurrence of suicidal behaviors. Moreover, in the present research, only those individuals who have attempted suicide by taking pills and visited the toxicity centers and the emergency room at the hospitals have been studied. As a result, the results obtained from this study cannot be generalized or extended to other types of suicide, e.g. for individuals who try to hang themselves. Further, the culture and economic conditions of the society have also influenced the aforementioned results; thus, we must be cautious in generalizing the results and extending them to individuals from other cultures. Eventually the results of this study are limited in terms of generalization regarding socio-cultural considerations, since the assessed problem-solving strategies have been based on a self-reporting scale. Future researchers should apply qualitative studies to obtain deeper data from the viewpoint of suicide attempters.

## References

- Ajtay, G., Bérdi, M., Szilágyi, S., & Perczel, F. D. (2012). An effective method of therapy in suicide prevention: problem solving training in the clinical population. *Psychiatria Hungarica*, 27(2), 92–102.
- Amiri, B., Pourreza, A., RahimiForoushani, A., Hosseini, S. M., & Poorolajal, J. (2012). Suicide and associated risk factors in Hamadan province, west of Iran, in 2008 and 2009. *Journal of Research in Health Sciences*, 12(2), 88–92.
- Anisi, J., Fathiashtiani, A., Slotaninejad, A., & Amiri, M. (2006). Study of spreadthinking suicide among soldier and effectiveness factors on that. *Iranian Journal of Military Medicine*, 8(2), 113–118.
- Arie, M., Apter, A., Orbach, I., Yefet, Y., & Zalzman, G. (2008). Autobiographical memory, interpersonal problem solving, and suicidal behavior in adolescent inpatients. *Comprehensive Psychiatry*, 49(1), 22–29. doi: 10.1016/j.comppsy.2007.07.004
- Baba Pour Khairuddin, J., RasoulzadehTabatabaee, S., Ejehei, J., & Fathi-Ashtiani, A. (2003). The relationship between problem solving methods and psychological health of students. *Journal of psychology*, 7(1), 3–16. [Persian]

- Baker, S. R. (2003). A prospective longitudinal investigation of social problem-solving appraisals on adjustment to university, stress, health, and academic motivation and performance. *Personality and Individual Differences, 35*(3), 569–591. doi:10.1016/S0191-8869(02)00220-9
- Barnes, S. M., Monteith, L. L., Gerard, G. R., Hoffberg, A. S., Homifar, B. Y., & Brenner, L. A. (2017). Problem-solving therapy for suicide prevention in veterans with moderate-to-severe traumatic brain injury. *Rehabilitation Psychology, 62*(4), 600–608. doi: 10.1037/rep0000154
- Bertolote, J. M., & Fleischmann, A. (2009). A global perspective on the magnitude of the suicide morality. New York: Oxford Textbook of Suicidology and Suicide Prevention. 9–91.
- Cassidy, T. (2002). Problem solving style, achievement motivation, psychological distress and response to a simulated emergency. *Counseling Psychology Quarterly, 15*, 325–332. doi: 10.1080/0951507021000029658
- Cassidy, T. (2004). Mapping variables related to social identity, distress and perceived health in an undergraduate student population. *Social Psychology of Education, 7*, 339–352. doi:10.1023/B:SPOE.0000037504.24380.b3
- Cassidy, T., & Long, C. (1996). Problem solving style, stress and psychological illness: Development of a multifactorial. *British journal of clinical psychology, 35*, 256–277. doi: 10.1111/j.2044-8260.1996.tb01181.x
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Dixon, W. A., Heppner, P. P., & Rudd, M. D. (1994). Problem-solving appraisal, hopelessness, and suicide ideation: Evidence for a mediational model. *Journal of Counseling and Psychology, 41*(10), 91–98. doi: 10.1037/0022-0167.41.1.91
- EdalatiShateri, Z., Ashkani, N., & ModaresGharavi, M. (2009). Investigation of the association between worry, problem solving styles, and suicidal thoughts (without depression) in non clinical population. *Scientific Journal of Kurdistan University of Medical Sciences, 14*(1), 92–100. [Persian]
- Fadum, E. A., Stanley, B., Qin, P., Diep, L. M., & Mehlum, L. (2014). Self-poisoning with medications in adolescents: a national register study of hospital admissions and readmissions. *General Hospital Psychiatry, 36*(6), 709–715. doi: 10.1016/j.genhosppsych.2014.09.004
- Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational research: An introduction* (6th ed). New York: Longman.
- Gibbs, L. M., Dombrowski, A. Y., Morse, J., Siegle, G. J., Houck, P. R., & Szanto, K. (2009). When the solution is part of the problem: problem solving in elderly suicide attempters. *International Journal of Geriatric Psychiatry, 24*(12), 1396–1404. doi: 10.1002/gps.2276
- Gilmour, H. (2016). Threshold and subthreshold Generalized Anxiety Disorder (GAD) and suicide ideation. *Health reports, 27*(11), 13.
- Hirsch, J. K., Chang, E. C., & Jeglic, E. L. (2012). Social problem solving and suicidal behavior: ethnic differences in the moderating effects of loneliness and life stress. *Archives of Suicide Research, 16*(4), 303–315. doi: 10.1080/13811118.2013.722054
- Jeglic, E. L., Sharp, I. R., Chapman, J. E., Brown, G. K., & Beck, A. T. (2005). History of family suicide behaviors and negative problem solving in multiple suicide attempters. *Archives of Suicide Research, 9*(2), 135–146. doi: 10.1080/13811110590903981
- Kant, G. L., D'zurilla, T. J., & Maydeu-Olivares, A. (1997). Social problem solving as a mediator of stress-related depression and anxiety in middle-aged and elderly community residents. *Cognitive Therapy and Research, 21*(1), 73–96. doi: 0147-5916/97/0200-0073s12/050/0
- Kaviani, H., Rahimi-Darabad, P., & Naghavi, H. R. (2005). Autobiographical Memory Retrieval and Problem-Solving Deficits of Iranian Depressed Patients Attempting Suicide. *Journal of Psychopathology and Behavioral Assessment, 27*(1), 39–44. doi:10.1007/s10862-005-3264-0
- Khajeh, E., Hosseinpoor, M., Sedigh, B., & Rezvani, Y. (2014). Image of suicide in Hormozgan province. *Medical Journal of Hormozgan University, 1*, 61–67.
- Kwok, S. Y. C., Yeung, J. W. F., Low, A. Y. T., Lo, H. H. M., & Tam, C. H. T. (2015). The roles of emotional competence and social problem-solving in the relationship between physical abuse and adolescent suicidal ideation in China. *Child Abuse & Neglect, 44*, 117–129. doi: 10.1016/j.chiabu.2015.03.020.
- Linda, W. P., Marroquin, B., & Miranda, R. (2012). Active and passive problem solving as moderators of the relation between negative life event stress and suicidal ideation among suicide attempters and non-attempters. *Archives of Suicide Research, 16*(3), 183–197. doi: 10.1080/13811118.2012.695233
- Machin, D., Campbell, M., Fayers, P., & Pinol, A. (1997). *Sample Size Tables for Clinical Studies*. Second Ed. Blackwell Science.
- McAuliffe, C., Corcoran, P., Keeley, H. S., & Perry, I. J. (2003). Risk of suicide ideation associated with problem-solving ability and attitudes toward suicidal behavior in university students. *Crisis, 24*(4), 160–167. doi:10.1027//0227-5910.24.4.160
- Mehrpour, O., Zamani, N., Brent, J., & Abdollahi, M. (2013). A tale of two systems: poisoning management in Iran and the United States. *Daru, 21*(1), 42–46. doi:10.1186/2008-2231-21-42
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2006). *Applied multivariate research: Design and interpretation*, (2nd ed., pp. 365–403). Thousand Oaks: Sage Publication.
- Mohammadi, F., & Sahebi, A. (2001). Problem-solving style in depressed people and comparison with normal people. *Journal of Psychological Sciences, 1*(3), 33–50. [Persian]
- Moradi, S., & Khademi, A. (2002). Investigate the causes of suicide in the city Kuhdasht. *The Journal of Social Welfare, 6*, 291–75.
- Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A. et al. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry, 192*(2), 98–105. doi: 10.1192/bjp.bp.107.040113
- O'Connor, R. C., Fraser, L., Whyte, M. C., Machale, S., & Masterton, G. (2008). Comparison of specific positive future expectancies and global hopelessness as predictors of suicidal ideation in a prospective study of repeat self-harmers. *Journal of Affective Disorders, 110*, 207–214. doi: 10.1016/j.jad.2008.01.008.
- PerczelForintos, D., & Póos, J. (2008). Out of hopelessness – problem solving training in suicide prevention. *Psychiatria Hungarica, 23*(1), 4–21.
- Pollock, L. R., & Williams, J. M. (2004). Problem-solving in suicide attempters. *Psychological Medicine, 34*(1), 163–167. doi: 10.1017/S0033291703008092
- Quiñones, V., Jurska, J., Fener, E., & Miranda, R. (2015). Active and passive problem solving: moderating role in the relation between depressive symptoms and future suicidal ideation varies by suicide attempt history. *Journal of Clinical Psychology, 71*(4), 402–412. doi: 10.1002/jclp.22155
- Roskar, S., Zorko, M., Bucik, V., & Marusic, A. (2007). Problem solving for depressed suicide attempters and depressed individuals without suicide attempt. *Psychiatria Danubia, 19*(4), 296–302.
- Schotte, D. E., & Clum, G. A. (1987). Problem Solving skills in suicidal psychiatric patients. *Journal of Consulting Psychology, 51*, 85–99. doi:10.1037//0022-006X.55.1.49
- Shadnia, S., Esmaily, H., Sasanian, G., Pajoumand, A., Hassanian-Moghaddam, H., & Abdollahi, M. (2007). Pattern of acute poisoning in Tehran-Iran in 2003. *Human & Experimental Toxicology, 26*(9), 753–756. doi:10.1177/0960327107083017
- Shams Vahdati, S., Moradi, N., Ghadim, J., & Tajoddini, S. (2015). Evaluation of Suicide attempts with drug poisoning in North-West of Iran. *Journal of Emergency Practice and Trauma, 1*(1), 1–2.
- ShamsiKhani, S., Rahgoo, A., FallahiKhoshknab, M., & Rahgozar, M. (2007). Effects of problem solving training on coping skills of suicidal clients. *Iranian Journal of Nursing Research (IJNR), 1*(3), 31–39. [Persian]
- Vijayakumar, L., Kumar, M. S., & Vijayakumar, V. (2011). Substance use and suicide. *Current Opinion in Psychiatry, 24*(3), 197–202. doi: 10.1097/YCO.0b013e3283459242.
- Wasserman, D., Carli, V., Wasserman, C., Apter, A., Balazs, J., Bobes, J. et al. (2010). Saving and empowering young lives in Europe (SEYLE): a randomized controlled trial. *BMC Public Health, 10*, 192. doi: 10.1186/1471-2458-10-192.
- World Health Organization, (2014). Preventing suicide: a global imperative. World Health Organization. URL: [http://apps.who.int/iris/bitstream/10665/131056/1/9789241564779\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/131056/1/9789241564779_eng.pdf)