

## Validation of the Oxford- Liverpool Inventory of Feelings and Experiences (O-LIFE) Questionnaire

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Article information	Abstract
<p>Article history: Received: 9 Jan 2011 Accepted: 2 Mar 2011 Available online: 16 Oct 2012</p> <p>Keywords: Oxford-Liverpool Inventory of feelings and experiences Factor analysis Validity Reliability Validation Schizotypy</p> <p>*Corresponding author at: Department of Psychology, Faculty of Education and Psychology, Azarbaijan Shahid Madani University, Tabriz, Iran. E-mail: yaghoubi.hassan@yahoo.com</p>	<p><b>Background:</b> The Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) is a 104-item tool made based on the factor analysis of 15 available scales to measure schizotypy. This research aims to investigate the psychometric properties of Oxford-Liverpool Inventory of Feelings and Experiences.</p> <p><b>Materials and Methods:</b> Conducted as an ex-post facto survey, this study is a descriptive cross-sectional research. A sample of 482 patients was selected and assessed through stratified random sampling from different faculties of Shahid Madani University of Azarbaijan. Data were analyzed using exploratory factor analysis method by means of the Principal Component Analysis method.</p> <p><b>Results:</b> Factor analysis using the Principal Component Analysis method extracted five principal factors, which were named cognitive disorganization, impulsive nonconformity, unusual experiences/magical thinking, introvertive anhedonia, and isolation. In addition, two other types of validity (concurrency and correlation of subscales with the total scale and each other) and three types of reliability (test-retest, half-splitting, and internal consistency) were reported.</p> <p><b>Conclusion:</b> According to the findings of the present study, O-LIFE has favorable psychometric properties in the Iranian society and is applicable in psychiatric and psychological researches as a valid tool.</p>

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### Introduction

Schizotypal personality disorder is a pervasive pattern of social and interpersonal deficits characterized by aberrant cognition or perception such as ideas of reference, magical thinking, unusual perceptual experiences, odd thinking and speech, paranoid ideation, social anxiety, odd and eccentric behavior, and a low capacity for close and intimate relationships [1]. Schizotypy is considered as a mild and non-clinical, as well as prodromal personality of schizophrenia [2, 3] and is usually supposed as some liability to schizophrenia [4].

Based on different theoretical perspectives, numerous scales were made to measure schizotypal traits. These scales can be classified in three groups: personality centered, syndrome centered, and symptom centered [5]. The main personality centered representative tool is the Eysenck Personality Questionnaire (EPQ), especially its psychoticism scale. Some syndrome centered scales include Physical and Social Anhedonia [6], the Perceptual Aberration Scale [7], and the Magical Ideation Scale [8]. These scales measure special aspects of schizotypal personality disorder [5]. In contrast, the schizotypal personality scale [9], the schizotypal personality questionnaire [10], and its short version [11] are symptom centered scales made based on clinical patterns of schizotypal personality disorder mentioned in the Diagnostic and Statistical Manual of Mental Disorders, in DSM-III and DSM-III-R [12, 13]. Hence, a range of

important schizotypal symptoms discussed outside the DSMs frameworks (such as introvertive anhedonia) have been ignored in these scales.

The constructed tools were either heavily influenced by the DSM (such as Schizotypal Traits questionnaire A form (STA) and Schizotypal Personality Questionnaire (SPQ)) or evaluated through a small range of schizotypy (such as Perceptual Aberration Scale and illusion scale). The Oxford-Liverpool Inventory of Feelings and Experiences is a tool that can compensate for these limitations and cover other symptoms of domains of schizotypy by considering DSM criteria and the heterogeneous nature of schizotypy. Recently revised [15], this is the most comprehensive survey tool made by Mason et al. to assess schizotypy [14]. The Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) was made based on the factor analysis of 15 available scales to measure schizotypy. Most scales made for schizotypy so far evaluate three factors that stand along with the triad symptoms of schizophrenia [16, 17]. The first factor concerns aberrant opinions and perceptions or abnormal opinions and experiences, including the non-clinical and mild form of some positive symptoms of psychosis like delusion and hallucination. The second factor of schizotypy is non-clinical cognitive failure such as thought obstruction and attention problems that increase social anxiety when combined. The third

factor is introvertive anhedonia, the non-clinical and mild form of the negative semiology of psychosis such as social isolation and anhedonia. Moreover, the O-LIFE questionnaire has identified a fourth factor of schizotypy as a social behavior that shows the heterogeneous nature of schizotypy better and more. This factor confirmed Eysenck's viewpoint on psychoticism which seemed invalid due to the lack of relation with the clinical criteria of schizotypy. Also, it showed that schizotypy is a heterogeneous and multi-dimensional construct which in addition to schizotypal specific symptoms, reflected in DSMs, includes another spectrum of symptoms observed somehow in other psychologic disorders such as bipolar and obsessive compulsive disorders and borderline and antisocial personalities.

This study was based on the lack of a comprehensive tool consistent with Iran's society. This questionnaire, due to its relation with theory and research and covering all related signs of schizotypy, was selected as an appropriate option to prepare the field to apply it in Iran. The main objectives of this study were to analyze the principal components and to identify the validity and reliability of the Oxford-Liverpool Inventory of Feelings and Experiences.

## Materials and Methods

This research is a correlation-oriented survey. In this cross-sectional study, from all male and female students of Azarbaijan Shahid Madani University in the 2008-2009 academic year, 482 persons were selected through the stratified sampling method based on the Morgan sampling table and were enrolled in the study.

At first, the O-LIFE questionnaire was translated into Persian. Then, two English language specialists were asked to translate the Persian translated items into English. Then, the resulted test was conducted on a few subjects as a trial, and the possible problems for the final application were corrected. After selecting one classroom in each faculty, at first the researcher introduced the research and its objective to the students. Then the O-LIFE questionnaires were handed out. Subjects were informed that there was no time limit and they should answer yes or no to the questions, based on their type. The schizotypal personality scale (STA) was simultaneously used on at least 80 persons as a second tool to verify the validity. In order to observe research ethics and subjects rights, it was explicitly announced that participation in this study was voluntary, both orally (before implementation) and written (above questionnaire) that the requested information in questionnaire is merely for research purposes and for reassurance, except for gender, no name or other private profiles were needed. The data were analyzed using exploratory factor analysis through principal component analysis, *t*-test for independent groups, and Pearson correlation. The O-LIFE questionnaire was made by Mason et al. [14] to measure schizotypal traits in clinical and non-clinical samples. The questionnaire contains four

sub-scales: unusual experiences (aberrant beliefs and perceptions), cognitive disorganization, introvertive anhedonia, and impulsive nonconformity (a social behavior).

Mason et al. [14] reported psychometric and normative properties of the O-LIFE as follows: mean and standard deviation of unusual perceptual experiences, cognitive disorganization, introvertive anhedonia, and impulsive nonconformity scales as 9.7 and 6.7, 11.6 and 5.8, 6.1 and 4.6, 9.1 and 4.3, respectively. Alpha values for unusual perceptual experiences, cognitive disorganization, introvertive anhedonia, and impulsive nonconformity scales were 0.89, 0.87, 0.82, and 0.77, respectively.

The schizotypal personality scale (STA) was made to measure schizotypal personality patterns and mainly to measure positive schizotypal semiology. The STA includes 37 items as yes or no answering. The answer yes scores one and the answer no scores zero. This scale has three factors: unusual perceptual experiences, paranoid suspiciousness/asocial anxiety, and magical thinking. Claridge and Jacon [18] have reported the test-retest reliability coefficient for the STA as 0.64. Rawlings et al. [19] also have reported the reliability coefficient of internal consistency as 0.85 for the STA. The simultaneous validity of the STA with the neuroticism scale of the Eysenck Personality Questionnaire (EPQ) has been reported to be 0.61 in original culture [19]. Standardization and psychometric properties of this scale in Iran were performed by Mohammad-Zadeh et al. [20], and the simultaneous validity of its factors with the neuroticism scale of the Eysenck Personality Questionnaire revised form (EPQ-R) were reported as 0.73, 0.50, 0.55, and 0.69, respectively. In addition, the STA also has an optimal factor and discriminant validity; the test-retest reliability coefficient of the STA within 4 weeks of the whole scale was calculated as 0.86, and unusual perceptual experiences, paranoid suspiciousness/asocial anxiety, and magical thinking were calculated as 0.65, 0.75, and 0.59, respectively.

## Results

The frequencies of participants from different faculties of Shahid Madani University of Azarbaijan were literature 73 persons, theology 71 persons, education 152 persons, technical 54 persons, basic science 51 persons, and IT 81 persons. The frequencies of the participants separated by gender were 188 male (39%) and 294 female (61%); the total sample size was 482 persons. The age mean and standard deviation of the whole sample, male group, and female group were 20.58 and 1.44, 20.80 and 1.37, and 20.42 and 1.47, respectively. At first, the ability of the factor analysis was investigated through Kaiser-Meyer-Olkin Measure and Bartlett's Test of Sphericity. Accordingly, the amount of Kaiser-Meyer-Olkin Measure (KMO=0.77) shows the adequacy of sampling and the specificity of Bartlett's Test of Sphericity (5870.20) were significant ( $p=0.0001$ ), which shows that the data correlation matrix is not zero in the society, therefore the

factoring action is justifiable. Items 33, 34, 51, 53, 71, and 78 were repeated in more than one factor and due to the relation of each item with one extracted factor, they were included in the related factor. Then, to determine the factor structure, the exploratory method and principal components analysis with Promax rotation was used. Items with factor loadings of 0.30 or higher were included in a factor. Table 2 shows the factor loadings for each after Promax rotation. In total, 34 factors had eigenvalues higher than one and explained 61.64% of the observed variances. Plotting the diagram proposed eigenvalues (graph 1) and factor loadings pattern of five factors. These factors were retained and then subjected to orthogonal Promax rotations. Overall, three main factors explained 24.97% of the total variance.

The eigenvalue diagram shows that the factor structure of the questionnaire is composed of five factors. The first factor (15 items) has an eigenvalue of 0.60, which explains 9.71% of the observed variance. This factor is called "cognitive disorganization" and includes questions such as, "Do you often have difficulties in controlling your thoughts?"

The second factor (17 items) was called "impulsive nonconformity" with an eigenvalue equal to 3.31. This value explains 4.87% of the total variance and includes items like, "Do you at times have an urge to do something harmful or shocking?"

The third factor (16 items) has an eigenvalue equals to 2.78 which explains 4.09% of the observed variance. This factor is called "unusual perceptual experiences/magical thinking" and includes questions such as, "When in the dark, do you often see shapes and forms even though there's nothing there?"

The fourth factor (17 items) has an eigenvalue of 2.51 which explains 3.69% of the observed variance. This factor is called "introvertive anhedonia" and includes questions such as, "Do you think having close friends is not as important as some people say?"

The fifth factor (5 items) has an eigenvalue equal to 1.77, which explains 2.61% of the observed variance. This factor is called "the tendency to isolation" and includes the questions like, "Do you often feel lonely?"

In order to compare genders, the *t*-test was used for independent groups. First, in order to use parametric analysis tests to analyze the data, the homogeneity premises of the variances were evaluated. The Levine test results confirmed the equality of the variances in the total scale and in factors 1, 3, 4, and 5, but the assumption of variance equality was not observed in factor 2. However, since the applied tool was a criterion, using parametric tests was permitted.

The results of the *t*-test are depicted in table 3. This table shows that the difference of scores between female and male groups in O-LIFE and its factors are not significant (except for the second component in which the male group scores were higher). In this study, internal correlations of subscale scores with each other and with total scale were extracted as another index of validity, which is summarized in table 4. This table shows that the

correlation between the O-LIFE and cognitive disorganization, impulsive nonconformity, unusual perceptual experiences/magical thinking, introvertive anhedonia, and tendency to isolation factors were 0.66, 0.65, 0.71, 0.38, and 0.57, respectively, which is a desirable validity. The correlation among factors was between 0.10 and 0.52 that are significant at level 0.01.

To investigate the concurrent validity, the schizotypal personality scale (STA) was used. To this end, 80 persons who were randomly selected from the research sample answered simultaneously to two questionnaires. The results of Pearson correlation analysis showed that the correlation between these two questionnaires was 0.89. Table 5 has summarized this part of the research.

To determine test-retest reliability, 43 persons were selected through volunteer sampling, and retested within 4 weeks. The reliability coefficient of the total scale and of cognitive disorganization, impulsive nonconformity, unusual perceptual experiences/magical thinking, introvertive anhedonia, and tendency to isolation subscales were calculated as 0.87, 0.75, 0.56, 0.73, 0.57, and 0.58, respectively. All coefficients were significant at level 0.0001. To measure the reliability of the scale's internal consistency, Cronbach's alpha coefficient was used. Based on these results, the alpha coefficient for the total scale and for cognitive disorganization, impulsive nonconformity, unusual perceptual experiences/magical thinking, introvertive anhedonia, and tendency to isolation subscales were calculated as 0.82, 0.75, 0.61, 0.72, 0.58, and 0.58, respectively. To determine the splitting reliability, the data of total sample (n=482) were used. For this purpose, the questions were divided into two parts of even and odd, and the test scores were calculated in each part. Then, the correlation coefficient between these two was calculated based on Spearman-Brown corrected correlation coefficient. This coefficient was 0.60 for the total scale and 0.73, 0.61, 0.69, 0.62, and 0.66 for cognitive disorganization, impulsive nonconformity, unusual perceptual experiences/magical thinking, introvertive anhedonia, and tendency to isolation subscales, respectively.

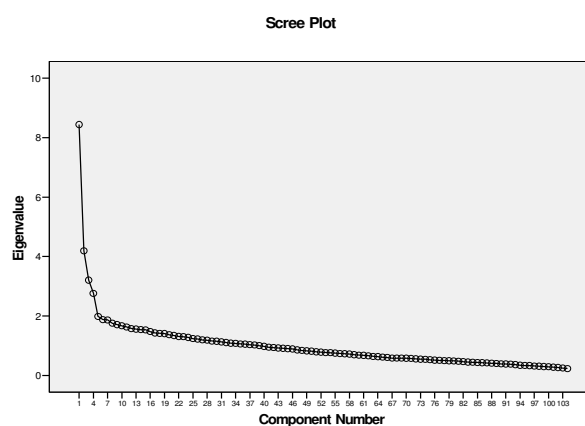


Figure 1. Eigenvalues

**Table 1.** O-LIFE factors and factor loadings of each item

Item	Factor loading
<b>The First Factor: Cognitive Disorganization</b>	
44 Do you often have difficulties controlling your thoughts?	0.60
40 Do you easily lose your courage when criticized or failing in something?	0.58
49 Are you easily confused if too much happens at the same time?	0.56
50 Are you easily distracted from work by daydreams?	0.53
31 Are you easily distracted when you read or talk to someone?	0.52
35 Is it hard for you to make decisions?	0.52
42 Do you frequently have difficulty starting to do things?	0.47
33 Do you often experience an overwhelming sense of emptiness?	0.45
36 Are you a person whose moods goes up and down easily?	0.44
47 No matter how hard you try to concentrate, do unrelated thoughts always creep into your mind?	0.41
39 Do you dread going into a room by yourself where other people have already gathered and are talking?	0.39
52 Do you worry too long after an embarrassing experience?	0.38
48 When in a crowded room, do you often have difficulty following a conversation?	0.36
45 Do you often worry about things you should not have done or said?	0.35
<b>The Second Factor: Impulsive Nonconformity</b>	
88 Do you at times have an urge to do something harmful or shocking?	0.60
101 Have you ever taken advantage of someone?	0.57
102 Would you like other people to be afraid of you?	0.56
89 Do you ever have the urge to break or smash things?	0.50
103 Do you often overindulge in alcohol or food?	0.47
100 Do you consider yourself to be pretty much an average kind of person?	-0.45
85 Do you often have an urge to hit someone?	0.44
83 Do you often feel like doing the opposite of what people suggest, even though you know they are right?	0.41
95 Have you ever felt the urge to injure yourself?	0.39
82 Do people who drive carefully annoy you?	0.39
94 Have you ever cheated at a game?	0.37
53 Would you call yourself a nervous person?	0.36
84 Do you often feel the impulse to spend money which you know you can't afford?	0.36
87 Are you usually in an average sort of mood, not too high and not too low?	-0.35
92 Do you think people spend too much time safeguarding their future with savings and insurance?	0.34
91 Do you stop to think things over before doing anything?	0.32
99 Would you take drugs which may have strange or dangerous effects?	0.31
<b>The Third Factor: Unusual Perceptual Experiences/Magical Thinking</b>	
13 Can some people make you aware of them just by thinking about you?	0.51
10 When in the dark, do you often see shapes and forms even though there's nothing there?	0.51
17 Do you think you could learn to read other's minds if you wanted to?	0.49
15 Do the people in your daydreams seem so true to life that you sometimes think they are real?	0.49
21 Have you ever felt that you have special, almost magical powers?	0.48
3 Do you ever suddenly feel distracted by distant sounds that you are not normally aware of?	0.46
16 Do you sometimes feel that your accidents are caused by mysterious forces?	0.46
30 Do your thoughts sometimes seem as real as actual events in your life?	0.43
6 Have you felt as though your head or limbs were somehow not your own?	0.41
9 On occasions, have you seen a person's face in front of you when no one was in fact there?	0.40
11 When you look in the mirror, does your face sometimes seem quite different from usual?	0.40
18 Does it often happen that nearly every thought immediately and automatically suggests an enormous number of ideas?	0.37
28 Have you sometimes had the feeling of gaining or losing energy when certain people look at you or touch you?	0.38
7 Have you sometimes sensed an evil presence around you, even though you could not see it?	0.35
20 Does your voice ever seem distant or faraway?	0.34
19 Does a passing thought ever seem so real it frightens you?	0.30
<b>The Fourth Factor: Introverted Anhedonia</b>	
70 Do you think having close friends is not as important as some people say?	0.51
65 Are you much too independent to really get involved with other people?	0.48
57 Do you feel that making new friends isn't worth the energy it takes?	0.47
78 Do you love having your back massaged?	-0.47
62 Is it fun to talk with other people?	-0.45
69 Do you like mixing with people?	0.43
60 Do you prefer watching television to going out with other people?	0.43
77 Do you feel very close to your friends?	-0.42
68 Do you have many friends?	-0.42
59 Do you like going out a lot?	-0.38
56 Do people who try to get to know you better usually give up after a while?	0.35
81 Is it true that your relationships with other people never get very intense?	0.34
63 Are people usually better off if they stay aloof from emotional involvements with people?	0.34
74 Is trying new foods something you have always enjoyed?	-0.32
72 Has dancing or the idea of it always seemed dull to you?	0.31
61 Do you usually have very little desire to buy new kinds of food?	0.31
71 Does it often feel good to massage your muscles when they are tired or sore?	-0.31
<b>The Fifth Factor: the Tendency to Isolation</b>	
33 Do you often experience an overwhelming sense of emptiness?	0.43
51 Do you often feel fed up?	0.30
34 Do you often feel lonely?	-0.45
43 Do you often feel that there is no purpose to life?	0.36
76 When things are bothering you do you like to talk to other people about it?	-0.34

**Table 2.** A comparison of male and female groups in O-LIFE and related factors

	sex	N	Mean $\pm$ SD	p-Value
O-LIFE	Male	187	12.49 $\pm$ 50.08	0.36
	Female	279	10.35 $\pm$ 49.11	
Factor 1	Male	188	3.25 $\pm$ 6.11	0.72
	Female	285	3.09 $\pm$ 6	
Factor 2	Male	187	2.90 $\pm$ 7.27	0.001
	Female	281	2.53 $\pm$ 6.39	
Factor 3	Male	188	3.52 $\pm$ 7.56	0.96
	Female	285	3.27 $\pm$ 7.57	
Factor 4	Male	188	2.10 $\pm$ 8.40	0.64
	Female	284	1.85 $\pm$ 8.32	
Factor 5	Male	188	1.46 $\pm$ 2.78	0.17
	Female	285	1.42 $\pm$ 2.60	

**Table 3.** Internal correlation of subscale scores with each other and with the total O-LIFE scale

	O-LIFE	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
O-LIFE	-					
Factor 1	*0.66	-				
Factor 2	*0.65	*0.27	-			
Factor 3	*0.71	*0.30	*0.30	-		
Factor 4	*0.38	*0.12	*0.21	*0.13	-	
Factor 5	*0.57	*0.52	*0.35	*0.26	*0.09	-

\* Correlations are significant at level 0.01. (n=482)

**Table 4.** Results of concurrent validity

	O-LIFE	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
STA	*0.89	*0.76	*0.54	*0.78	0.10	*0.56

\* Correlations are significant at level 0.01. (n=80)

## Discussion

Five factors were extracted during the factor analysis of the O-LIFE questionnaire through principal components analysis: cognitive disorganization, impulsive nonconformity, unusual perceptual experiences/magical thinking, introvertive anhedonia, and tendency toward isolation. The factors of the present study are almost similar to previous factor analyses done by Mason et al. [14] and Mason and Claridge [15]. These previous studies had reported 4 factors of cognitive disorganization, impulsive nonconformity, unusual perceptual experiences, and introvertive anhedonia to measure schizotypy in O-LIFE questionnaires; however, in the present study, a fifth factor called tendency toward isolation was added, showing that loneliness preference is a major symptom of schizotypy in our society.

In general, the cognitive disorganization factor measures the aspects related to attention and concentration deficit, lack of decision making power, and social anxiety of schizotypy. This factor reflects thought disorder and other disturbances in psychosis. The impulsive nonconformity factor describes impulsivity and the forms of anti-social

and eccentric behavior in schizotypy. Unusual perceptual experiences/magical thinking factors include items for describing aberrant perceptions, magical thinking, and illusions; representing positive semiology of psychosis – also called positive schizotypy. Introvertive anhedonia and tendency to isolation factors point out the lack of pleasure from pleasant physical and social resources, avoidance of intimacy, and a preference for loneliness; they represent schizoid schizotypy mood and are called positive schizotypy.

A comparison of scores for female and male groups did not show any difference between mean female and male group scores in the O-LIFE questionnaire (except in the second factor). Since schizotypy is considered as the mild and non-clinical form and presymptomatic personality of schizophrenia in the research literature related to the range of schizophrenia disorders [3, 21], this finding is consistent with DSM reports regarding the lack of difference in the prevalence of schizotypy and schizophrenia in both genders. However, based on research background [11, 22-24], it was expected that women would gain higher scores in positive schizotypy factors (unusual perceptual experiences/magical thinking).

This inconsistency is probably due to the nature of the present research sample; this study was conducted on students, and since schizophrenia has low prevalence in highly-educated individuals, the distribution of schizotypal traits may be different in distinct social classes, and this difference had probably affected somewhat the quality of the shown relation of schizotypy with gender in the study. The scores of males were higher than females in the second factor, i.e. impulsive nonconformity; this finding seems justified because it measures the tendency toward antisocial behaviors, usually higher in men than women [1]. Except for the factor validity, factors' correlation with each other and with the total scale was calculated to verify the validity. The results indicate that all factors have a high correlation with the total questionnaire; however, the correlation between factors is low and medium. Therefore, although the above factor has a high correlation with the total questionnaire, since each one are separate factors, they have low but significant correlation with each other, which means that the questionnaire and its factors possess good validity.

According to concurrent validity, the findings of this study showed that there is a positive correlation between the O-LIFE questionnaire and its fivefold factor with the schizotypal personality scale (STA), and since the schizotypal personality scale (STA) is the most applied schizotypy tool in different studies [19], no positive correlation was seen between the O-LIFE questionnaire and the STA.

The cause of this lack of relationship is the absence of items for the assessment of introvertive anhedonia, because the STA was made based on clinical models of schizotypal personality disorder mentioned in DSM; therefore, a range of schizotypal symptoms of great importance (like introvertive anhedonia) discussed

outside the DSM framework but not mentioned in the DSM are ignored in this scale. Thus, low correlation with this scale is expected. The test-retest reliability for the total scale and its factors gives desirable values for four weeks, which indicates that this scale is less subject to variables of condition and state, and because it measures the schizotypal character, has an appropriate stability over time. The results of validity through internal consistency method between the O-LIFE and its subscales showed good validity of the scale, and due to high internal consistency, the same results are obtained in various conditions. These findings were consistent with the results reported by Mason et al [14]. Most correlation coefficients reported in this study are similar to the coefficients reported by authors of the scale in the original culture. These results indicate that the conformity of the original version with Iranian culture has been done as desired. Overall, these results indicate that the O-LIFE can satisfactorily measure schizotypal properties in students and possibly in other Iranian social groups. The use of this inventory can pave the way for many researches in which the comprehensive measurement of

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