Original Article

Resilience Associated with Self-Disclosure and Relapse Risks in Patients with Alcohol Use Disorders

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ABSTRACT

Background   The aim of this study was to clarify the self-disclosure and risks of relapse associated with promoting resilience of patients with alcohol use disorders (AUD) and participating in self-help groups.

Methods   An anonymous, self-administered questionnaire survey was administered to 48 patients with AUD and participating in self-help groups; this questionnaire consisted of basic attributes, a bidimensional resilience scale to assess both innate and acquired resilience factors, a scale to assess depth of self-disclosure, and a scale assessing relapse risks. We conducted an evaluation by dividing the respondents into a high group and low group based on their median values for both innate and acquired resilience.

Results   Innate/acquired resilience had a mutually reinforcing relationship, and, compared with the low resilience group, the high resilience group had significantly reduced risks for relapses and resulted in deeper self-disclosure.

Conclusion   Patients with high resilience had lower risk of alcohol relapse and deeper self-disclosure. The results suggest that one way of supporting patients with AUD in recovery is assisting them in building personal relationships with others and in deepening self-disclosure in a setting where they can relax, thus promoting their natural ability to recover.

Key words   alcohol-related disorders; self-disclosure; self-help groups; recurrence; rehabilitation

Harmful use of alcohol causes biological, social, and psychological damages. It is one of the greatest risk factors for health disorders across the globe. In May 2010, the 63rd World Health Assembly adopted "Global Strategies to Reduce the Harmful Use of Alcohol," leading to prevention measures against alcohol-related problems on a global level.[1]

At present, the estimated number of people with alcohol use disorders (AUD) in Japan is approximately 570,000, and the estimated number with scores of 20 points or higher on the Alcohol Use Disorders Identification Test (AUDIT)[2] is 1.07 million.[3] However, according to a 2014 survey, an estimated 49,000 patients with alcohol dependency were in psychiatric hospitals[4]; this seems to indicate that many patients with AUD did not receive the required treatment. AUD requires an extended period of time before a patient can obtain intervention treatment. These problems were part of the context in which the Basic Act on Measures Against Alcohol-related Health Harm to prevent damage to health due to alcohol was enacted in June 2014 in Japan.

The biopsychosocial model[5] is often utilized when discussing factors influencing AUD.[6, 7] As for the cognitive-behavioral model[8] that attempts to prevent relapses of AUD, some have reported on influencing factors, such as individual factors, coping skills for mental anguish, and a variety of environmental factors, like the means of acquiring alcohol and interpersonal relationships. As a treatment for AUD, people receive medical treatment for physical complications caused by alcohol and are assisted in being re-socialized through regular life experiences in rehabilitation facilities.[9]

One treatment for AUD is participation in self-help groups, which is empirically proven as one of the effective recovery methods.[10] An assessment of relapse risk with a consideration of a variety of factors was conducted to indicate recovery from AUD, and rehabilitation was offered to improve people's quality of life.

Resilience has been noticed as individually differing among those with AUD, chemical dependency, or in recovery from these conditions.[11] Resilience is the phenomenon whereby individuals attempt to adapt, regardless of serious risks.[12–14] Indeed, psychiatry has begun to use resilience as a recovery concept. More specifically, resilience refers to the ability to recover psychologically even if one is temporarily faced with adversity and mal-

adapted to the situation. Resilience includes a variety of individual inherent factors and environmental factors acquired in various circumstances.[15] Therefore, this study investigated changes in resilience of patients with AUD who participated in self-help groups and effects that the changes have on relapse risk and self-disclosure. We conducted this investigation with the objective of promoting support to reduce risk of relapse in patients with AUD.

SUBJECTS AND METHODS
Study samples
An anonymous, self-administered questionnaire survey was given to 135 AUD patients who participated in self-help group meetings across Japan and who agreed with the study's objective. The area of the survey covers Tottori, Shimane and Okayama Prefectures.

Measures
The study used an anonymous, self-administered questionnaire survey. It was conducted from February to April 2015. The questionnaire consisted of demographics of participants, resilience scale, self-disclosure scale, and alcohol relapse risk scale.

Demographics
Demographic features constituting the questionnaire were as follows: age, gender, whether or not they lived with another person or had a key person with whom to consult in their lives, employment status, age when diagnosed with AUD, treatment time period, abstinence period, number of sessions and time period participating in self-help groups, other psychological disorders, and physical disorders.

Resilience scale
Resilience is a term used to describe relative resistance to psychosocial risk experiences.[16] Dynamic processes with positive changes are defined in inconvenient situations clarified by resilience definition.[17] Inherent resilience factors which are inherited effects and biological effects are difficult to change.[18] However, resilience is formed into an interaction between an environment and a growth.[19] This study used the bidimensional resilience scale developed in Japan.[20, 21] This scale is comprised of innate-resilience factors (12 questions related to individual factors) and acquired-resilience factors (9 questions related to environmental factors). *The innate* resilience factors indicate those that are strongly related to the individual's inherent nature; *acquired* factors indicate learned methods of resilience. This scale uses a five-point rating for the questionnaire with higher total scores

indicating greater resilience. In this study, the Cronbach's α coefficient for the bidimensional resilience scale was 0.910; thus, internal consistency was maintained.

Self-disclosure scale
The scale to assess depth of self-disclosure[22] was created based on the social penetration theory. This scale consists of 24 items on four levels: hobbies (level 1), difficult experiences (level 2), foibles (level 3), and inferior personality characteristics and abilities (level 4). The evaluation uses a seven-point scale, and higher scores indicate a greater extent of self-disclosure. The evaluation uses a seven-point scale, and higher scores indicate a greater extent of self-disclosure. For the scale to assess the depth of self-disclosure in this study, the Cronbach's α coefficient was 0.957; thus, internal consistency was maintained.

Alcohol relapse risk scale
To measure risk of AUD relapse, we used the Alcohol Relapse Risk Scale (ARRS).[23] This scale consists of 32 items on five sub-scales as follows: stimulus-induced vulnerability (SV); emotionality problems (EP); compulsivity for alcohol (CA); lack of negative expectancy for alcohol (NE); and positive expectancy for alcohol (PE). The ARRS includes 5 items to measure insight into mental condition: awareness of illness (AI). The ARRS total score is the average score from the five sub-scales (or their total score). When five supplementary items indicating the respondent's intensity of awareness of their illness were included, this scale consisted of a total of 32 items. The evaluation uses a three-point scale, and higher scores indicate greater risk for alcohol relapse. In this study, the Cronbach's α coefficient for the 32 items in the ARRS was 0.915; thus, internal consistency was maintained.

Statistical analysis
The target group's resilience scores were divided into two groups based on median scores from their innate- and acquired-resilience factors. The cut-off point of resilience scales was not established. The number of the sample is small, and the scores of the resilience scales exhibited a non-normal distribution. Hence, to clarify the characteristics of the resilience, the target groups were divided into two groups depending on the both median innate and acquired resilience scores. Then, a comparison descriptive test was performed by dividing these two groups into a high and low group. Spearman's rank correlation coefficient analysis was used to assess the correlation relationships among resilience, ARRS, and self-disclosure scale.

The Mann-Whitney U test was used on each quantitative factor from all scales. A multiple logistic regression analysis (maximum likelihood method) was performed by setting the high and low group of both innate- and acquired- resilience factors as dependent variables and by using as independent variables the items which the comparison test's results indicated as having a significant difference. We measured the variance inflation factor of the variables used in logistics analysis and studied multicollinearity. We conducted analysis of missing values data. We conducted missing values pattern analysis for data.

Statistical analyses were performed using IBM SPSS 24.0 J for Windows (SPSS, Chicago, IL), and the significance level was set at 5% for all tests.

Ethical considerations

After receiving approval from the Tottori University Faculty of Medicine Ethics Review Committee (approval number 2646), this study was conducted in accordance with the fundamental principles set forth in the Helsinki Declaration. Informed consent was obtained from each participant after the procedure(s) had been fully explained.

RESULTS

A total of 86 questionnaires were collected (a collection rate of 63.7%) from the participants, and 48 questionnaires had valid responses (a valid response rate of 35.6%). Table 1 displays the basic demographic features. The study sampled 86 subjects. After eliminating missing values, 48 were eliminated so the respondents' percentage was 55.8%. Therefore, by eliminating all missing values, there is possibility for bias to occur. The analysis results judged the "missing completely at random" and used the list-wise case deletion.

The sample group's average age was 60.1, $s = 10.5$ years old (29–75), and the average age was 4 years younger than the age group (65–69 years old),[4] with the highest AUD rate in Japan. Based on the average length of treatment, assumingly 14.7 years based on average age and average age of diagnosis [45.4, $s = 10.7$ years old (27–70)] , it was found that diagnosing people with AUD typically took a long period.

The average number of self-help group meetings that respondents attended per week was 2.6, $s = 2.9$, and these respondents participated regularly and were able to continue participating.

The target group's average period of abstinence from drinking alcohol was 133.1, $s = 114.8$ months. Due to the fact that the average number of weekly self-help group sessions attended (2.6) and that approximately 70% were employed and 90% married, the target group for this study not only had favorable treatment results, but they had continued abstaining from alcohol for a long period through continued treatment.

Table 1. Demographic characteristics of the sample

Items	Values	M ± SD
Number of participants	48	
Gender (% male)	97.9	
Age (years)		60.1 ± 10.5
Employment status (% work)	68.8	
Presence of key person (% yes)	85.4	
Living with someone (% yes)	89.6	
Treatment state (*n*)		
Outpatient	17	
Inpatient	4	
Untreated	7	
Cessation of treatment	10	
Unknown	10	
Age when diagnosed with AUD (years)		45.4 ± 10.7
Treatment time period (months)		39.6 ± 57.6
Abstinence period (months)		133.1 ± 114.8
Number of sessions and time period participating in self-help groups (weekly)		2.6 ± 2.9
Ther psychological disorders (*n*)	12	
Physical disorders (*n*)	18	
Bidimensional resilience scale		
Innate-resilience factors		38.2 ± 8.1
Acquired-resilience factors		30.1 ± 5.5
Self-disclosure scale (A scale to assess depth of self- disclosure)		
Level 1 (hobbies)		31.7 ± 9.5
Level 2 (difficult experiences)		18.6 ± 4.9
Level 3 (foibles)		24.5 ± 7.7
Level 4 (inferior personality characteristics and abilities)		28.5 ± 9.1
Total		103.3 ± 26.9
Alcohol Relapse Risk Scale		
Stimulus-induced vulnerability		11.7 ± 4.7
Emotionality problems		12.3 ± 3.7
Compulsivity for alcohol		3.8 ± 1.5
Lack of negative expectancy for alcohol		6.5 ± 2.2
Positive expectancy for alcohol		4.3 ± 2.1
Awareness of illness		10. 6 ± 2.8
Total		38.5 ± 10.5

AUD, alcohol use disorders; M, mean; *n*, number of participants.

The histograms of the total scores of each scale are shown in the Fig. 1 (innate-resilience scores: Fig. 1a, acquired-resilience scores: Fig. 1b, Alcohol Relapse Risk

(a)

(b)

(c)

(d)
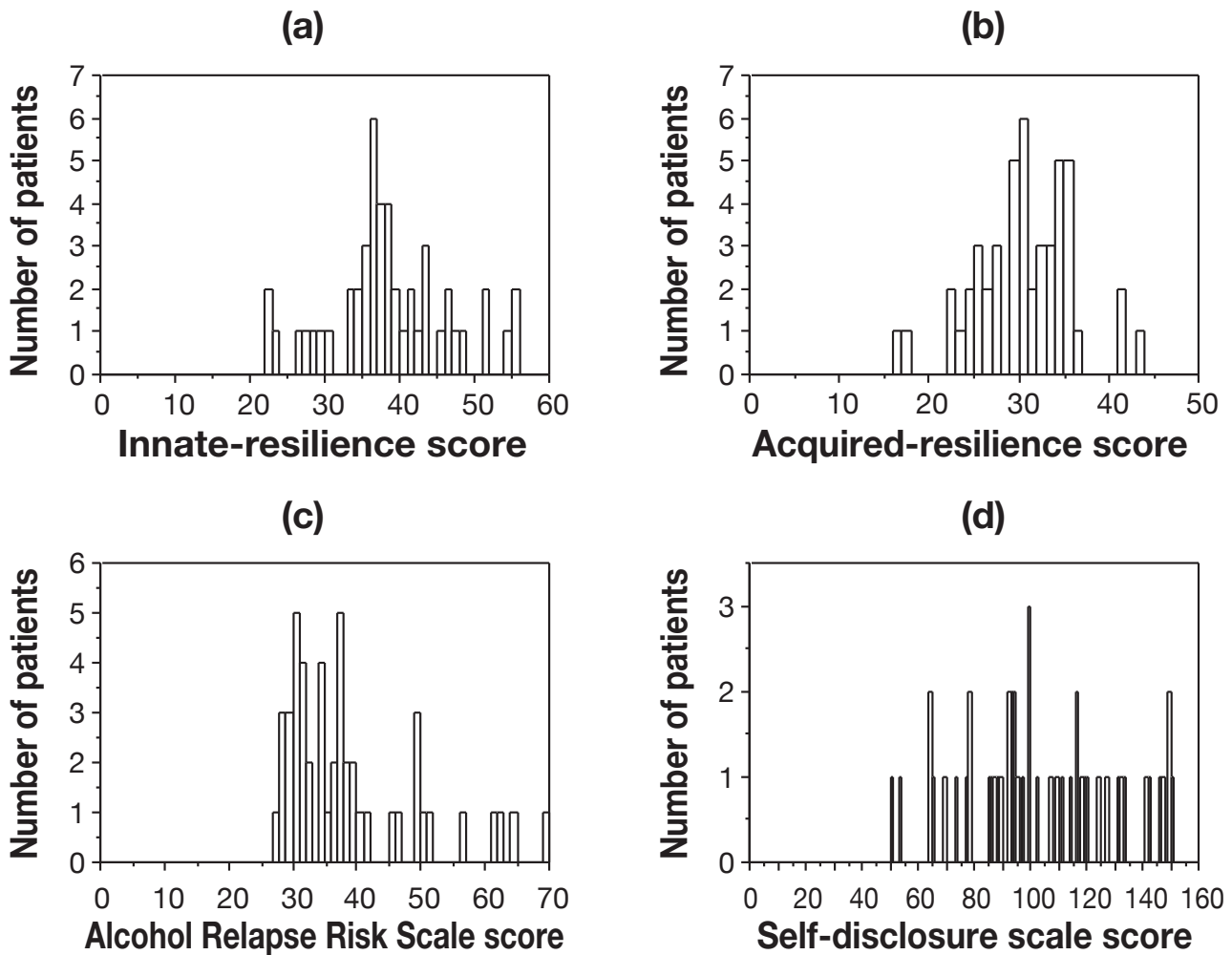
Fig. 1. Histograms of the total scores of each scale. (**a**) Innate-resilience scores. (**b**) Acquired-resilience scores. (**c**) Alcohol Relapse Risk Scale scores. (**d**) Self-disclosure scale scores.

Scale scores: Fig. 1c, self-disclosure scale scores: Fig. 1d).

The target group's median values of innate-, and acquired-resilience scores were 37.0, 30.0, respectively. A comparison test was conducted on the target group's attributes-after dividing them into high (37 ≤) and low (36 ≥) groups based on their innate-resilience scores (Table 2). There were 21 subjects (43.8%) in the high category for both innate-resilience and acquired-resilience, and 14 subjects (29.2%) in both the high and the low categories. The subjects of this study were irregularly distributed. Therefore, the 2 categories did not show same numbers because the samples were concentrated in the middle.

The results indicated that the high innate-resilience group had significantly low ARRS scores for PE [Z-score (Z) = –2.884 P = 0.004], SV (Z = –2.566, P = 0.010), and EP (Z = –3.294, P = 0.001); additionally, the results show that this group had high acquired-resilience scores (Z = 3.106, P < 0.001) and also that this group had deep

self-disclosure for level 1 (Z = 2.560, P = 0.010), and level 2 (Z = 2.627, P = 0.009).

A comparison test was conducted on the target group's attributes after dividing them into high (30 ≤) and low (29 ≥) groups based on their acquired-resilience scores (Table 3).

The results indicated that the high acquired-resilience group had significantly low ARRS scores for PE (Z = –2.722, P = 0.006) and EP (Z = –2.630, P = 0.009); this group also had significantly high innate-resilience scores (Z = 3.950, P < 0.001). The results further indicated that this group had deep self-disclosure at all four levels: level 1 (Z = 2.890, P = 0.004); level 2 (Z = 2.906, P = 0.004); level 3 (Z = 2.199, P = 0.028); and level 4 (Z = 2.378, P = 0.017).

Table 4 shows the correlations among resilience, ARRS, and self-disclosure scale. Negative correlations were found between both innate and acquired resilience,

Table 2. Comparison of variables between high and low groups based on innate-resilience scores

Variables	Innate-resilience		Z	P-value	
	Low group (n = 21) M ± SD	High group (n = 27) M ± SD			
Age (years)	56.6 ± 13.2	62.9 ± 7.0	1.540	0.124	
Age when diagnosed with AUD (years) (n = 47)	44.3 ± 11.1	46.2 ± 10.4	0.482	0.630	
Treatment time period (months) (n = 42)	45.6 ± 67.9	34.1 ± 47.3	−0.620	0.536	
Abstinence period (months)	103.4 ± 98.1	156.2 ± 123.1	1.434	0.151	
Number of sessions and time period participating in self-help groups (1week time) (n = 45)	3.0 ± 4.2	2.3 ± 1.1	0.367	0.713	
Scale					
Alcohol Relapse Risk Scale					
SV	13.4 ± 5.9	10.4 ± 3.0	−2.566	0.010	**
EP	14.1 ± 3.6	10.8 ± 3.0	−3.294	0.001	***
CA	4.2 ± 2.0	3.5 ± 0.8	−1.104	0.270	
NE	6.8 ± 2.1	6.2 ± 2.3	−1.073	0.283	
PE	5.4 ± 2.5	3.5 ± 1.3	−2.884	0.004	**
AI	11.6 ± 2.7	9.9 ± 2.7	−1.929	0.054	
Total	43.9 ± 12.2	34.4 ± 6.6	−3.186	0.001	***
Acquired-resilience	27.2 ± 5.2	32.3 ± 4.9	3.106	< 0.001	***
Self-disclosure scale					
Level 1	27.9 ± 8.9	34.6 ± 9.0	2.560	0.010	**
Level 2	16.6 ± 5.0	20.1 ± 4.2	2.627	0.009	**
Level 3	23.9 ± 8.6	25.0 ± 7.0	0.853	0.393	
Level 4	27.8 ± 9.2	29.1 ± 9.1	0.864	0.388	
Total	96.1 ± 27.1	108.8 ± 25.8	1.819	0.069	

Statistical evaluation is performed by the Mann-Whitney U test. **$P < 0.01$, ***$P < 0.001$.
The Self-disclosure scale assesses the depth of how much a person reveals about him- or herself. AI, awareness of illness; CA, compulsivity for alcohol; EP, emotionality problems; Level 1, hobbies; Level 2, difficult experiences; Level 3, foibles; Level 4, inferior personality characteristics and abilities; M, mean; n, number of participants; NE, lack of negative expectancy for alcohol; PE, positive expectancy for alcohol; SV, stimulus-induced vulnerability; Z, Z-score.

and ARRS, while positive correlations between both innate and acquired resilience, and self-disclosure scale.

The variable we used to analyze the logistics is the variance inflation factor. The VIF value was less than 2.2.

Because we took multicollinearity into consideration as the variable for logistics analysis, we did not use a sub scale but rather used the total score and the variables that showed the significant difference.

A multiple logistic regression analysis (maximum likelihood method; results shown in Table 5) was performed by setting the high and low groups of innate-resilience factors as dependent variables and by using the three items (ARRS scores; acquired resilience; self-disclosure) as independent variables which the comparison test's results indicated as having a significant difference. The results indicated that the factors significantly correlated with the high innate-resilience group were ARRS score [OR (odds ratio) = 0.918, 95% confidence interval (CI) (0.846–0.997); $P = 0.042$] and the acquired-resilience score [OR = 1.200, 95% CI (1.017–1.415); $P = 0.031$].

Another multiple logistic regression analysis (maximum likelihood method) was performed by setting the high and low groups for acquired-resilience factors as dependent variables and by using the three items (ARRS scores; innate-resilience; and self-disclosure) as independent variables which the comparison test's results indicated as having a significant difference. The results indicated that the factor significantly correlated with the high acquired-resilience group was the innate-resilience score [OR = 1.289, 95% CI (1.095–1.517); $P = 0.002$].

DISCUSSION

Upon clarifying attributes and characteristics of innate and acquired resilience of AUD patients who participate in self-help groups, we now examine factors associated

Table 3. Comparison of variables between high and low groups based on acquired-resilience scores

Variables	Acquired-resilience		Z	P-value	
	Low group (n = 20) M ± SD	High group (n = 28) M ± SD			
Age (years)	56.1 ± 13.0	63.0 ± 7.4	1.644	0.100	
Age when diagnosed with AUD (years) (n = 47)	43.8 ± 9.7	46.6 ± 11.4	0.657	0.511	
Treatment time period (months) (n = 42)	36.5 ± 63.8	42.1 ± 53.3	0.698	0.485	
Abstinence period (months)	110.0 ± 114.2	149.6 ± 114.4	1.590	0.112	
Number of sessions and time period participating in self-help groups(1week time) (n = 45)	3.3 ± 4.2	2.1 ± 1.1	−0.966	0.334	
Scale					
Alcohol Relapse Risk Scale					
SV	13.2 ± 6.0	10.7 ± 3.2	−1.702	0.089	
EP	13.8 ± 3.8	11.1 ± 3.2	−2.630	0.009	**
CA	4.1 ± 1.8	3.6 ± 1.3	−0.664	0.507	
NE	6.7 ± 2.0	6.3 ± 2.4	−0.940	0.347	
PE	5.2 ± 2.4	3.7 ± 1.6	−2.722	0.006	**
AI	11.5 ± 2.5	10.0 ± 2.9	−1.835	0.066	
Total	42.9 ± 12.1	35.4 ± 8.1	−2.619	0.009	**
Innate-resilience	25.1 ± 3.7	33.7 ± 3.4	3.950	< 0.001	***
Self-disclosure scale					
Level 1	26.9 ± 10.2	35.1 ± 7.3	2.890	0.004	**
Level 2	16.2 ± 5.1	20.3 ± 4.0	2.906	0.004	**
Level 3	22.1 ± 9.2	26.3 ± 6.0	2.199	0.028	**
Level 4	25.4 ± 10.3	30.7 ± 7.5	2.378	0.017	**
Total	90.5 ± 28.8	112.4 ± 21.5	2.814	0.005	**

Statistical evaluation is performed by the Mann-Whitney U test. *P < 0.05, **P < 0.01, ***P < 0.001.The Self-disclosure scale assesses the depth of how much a person reveals about him- or herself. AI , awareness of illness; CA, compulsivity for alcohol; EP, emotionality problems; Level 1, hobbies; Level 2, difficult experiences; Level 3, foibles; Level 4, inferior personality characteristics and abilities; M, mean; n, number of participants; NE, lack of negative expectancy for alcohol; PE, positive expectancy for alcohol; SV, stimulus-induced vulnerability; Z, Z-score.

Table 4. Bivariate correlations among variable 2 vs. variable 2's resilience

	Innate-resilience	Alcohol Relapse Risk Scale							Self-disclosure scale				
		SV	EP	CA	NE	PE	AI	Total	Level 1	Level 2	Level 3	Level 4	Total
Innate-resilience	1.000	−0.528 **	−0.572 **	−0.219	−0.294 *	−0.507 **	−0.413 **	−0.629 **	0.532 **	0.584 **	0.282	0.311 *	0.458 **
Acquired-resilience	0.653 **	−0.400 **	−0.477 **	−0.003	−0.275	−0.244	−0.193	−0.461 **	0.468 **	0.493 **	0.390 **	0.432 **	0.497 **

Values are expressed as Spearman's ρ. *P < 0.05, **P < 0.01.
The Self-disclosure scale assesses the depth of how much a person reveals about him- or herself. AI , awareness of illness; CA, compulsivity for alcohol; EP, emotionality problems; Level 1, hobbies; Level 2, difficult experiences; Level 3, foibles; Level 4, inferior personality characteristics and abilities; NE, lack of negative expectancy for alcohol; PE, positive expectancy for alcohol; SV, stimulus-induced vulnerability.

with self-disclosure and relapse risks.

The target group's resilience scores were nearly the same values as those obtained from prior research with university students using the same scale [24]; their innate-resilience scores were 38.6, s = 6.9, and acquired-resilience scores were 29.9, s = 4.7. Considering the fact that the target group voluntarily works toward their recovery while maintaining interpersonal relationships within their families and self-help groups, presumably, the target group originally had both high innate and acquired resilience. This could potentially have been influenced by the fact that the target group being members of self-help groups. This could have been influenced by the fact that the target group already had

Table 5. Summary of logistic regression analysis for variables contributing to high and low groups of innate- and acquired-resilience factors

	β	SE	Wald	df	P-value	OR (95% CI)
Innate-resilience						
ARRS	−0.085	0.042	4.154	1	0.042*	0.918 (0.846–0.997)
Acquired-resilience	0.182	0.084	4.654	1	0.031*	1.200 (1.017–1.415)
Acquired-resilience						
Innate-resilience	0.254	0.083	9.266	1	0.002**	1.289 (1.095–1.517)

OR and 95% CI were calculated with the use of logistic regression analysis. *$P < 0.05$, **$P < 0.01$.
ARRS, Alcohol Relapse Risk Scale; CI, confidence interval; df, degrees of freedom; OR, odds ratio; SE, standard error.

a support system; the respondents already belonged to self-help groups and approximately half of them continued with treatment.

The comparison of the high resilience group with the low resilience group made it clear that patients with high resilience had deeper levels of self-disclosure. Self-disclosure is defined as the method of conveying one's own thoughts, emotions, or feelings to other people using linguistic communication.

In this study, self-disclosure levels of patients with high innate-resilience were significantly deeper for such items as level 1 and level 2. Approximately similar results were obtained in the correlation analysis. Self-disclosure levels for patients with high acquired-resilience were significantly deeper for all items. It can be said that the level of self-disclosure deepens alongside the recovery process from the fact that high resilience patients had deeper self-disclosure for acquired-resilience than for innate-resilience.

Self-disclosure of patients with AUD relates their own experiences in self-help groups, but disclosing in these settings is different from self-disclosure that happens in daily life with friends and families. These groups aim at a curative effect and are also a means of empowerment.[25] Moreover, the participants of self-help groups disclose themselves[26] so that they can gain spiritual experiences, which leads to their recovery.[27] This apparently indicate that patients deepen their levels of self-disclosure by participating in self-help groups and that being more empowered plays a part in increasing resilience.

The comparison of the high resilience group with the low resilience group made it clear that patients had reduced risks of relapse. The correlation analysis showed same similar results. Patients with high innate-resilience had significantly lower scores on the three items— SV, EP, and PE. They also tended to score significantly lower on one item—intensity of AI. Patients with high acquired resilience had significantly lower scores on two items such as EP and PE. Also, it was shown that they

had a tendency to have significantly lower scores on such an item as intensity of AI.

These results indicate that relapse risks for patients with high resilience were reduced by the following four items: SV, EP, PE, and intensity of AI. Furthermore, the two items among those concerned with relapse risks that did not have significant differences were NE and CA; however, average scores for these items were low for patients with high resilience. Having considered these results, patients with high resilience had reduced risks of alcohol relapses.

The results of the logistic regression analysis indicated that innate-and acquired-resilience factors were mutually reinforcing, which is a factor for the one with high innate-resilience to lower the ARRS score of positive expectancy for alcohol.

In supporting people's recovery from AUD, the validity[28] of an approach that utilizes intervention under the transtheoretical model,[29] which shows the process of behavior modification, has been demonstrated. Based on positive expectancy decreasing in patients with high resilience, intervention that corresponds with stages of behavior modification, seems to increase resilience effectively.

This study's results suggested the following characteristics of resilience in patients with AUD who participate in self-help groups: high resilience patients deepened their acquired-resilience more than their innate one through self-disclosure, and this reduced risk of relapse. In fact, some have reported that the concept of resilience, as the natural ability to recover intrinsic to patients, must be considered in connection with recovery from AUD.[30] Patients' participation in self-help groups allows them to acquire sociality[31] and deepen self-disclosure[32]; a degree of accomplishing these can be an indicator of recovery from dependency. Since this study suggested that patients' participation in self-help groups deepened acquired-resilience and reduce relapse risks, it is required to lead those with AUD to attend self-help groups as a measure to enhance their self-disclosure.

Because innate- and acquired-resilience factors are mutually reinforcing, it is essential to mutually improve both individual and environmental factors as a way of supporting patients with AUD for their resilience enhancement.

It was reported that traumatic experiences, including abuse during childhood, can be one of the factors that reduce resilience.[33] One proven method for improving the resilience of teenagers at high risk for alcohol or drug dependency is improving the family's resilience through intervention in a form of community-based programs.[6, 34] This suggests the necessity of intervention during childhood or with families to improve resilience.

This study has clarified that patients with high resilience have reduced risk of relapsing, and the resilience of patients faces traumatic growth[35] due to recovery. The results suggest that one way of supporting patients for their recovery is to assist them in building personal relationships and provide support that allows them to disclose deeply in a setting where they can relax, thus promoting their natural ability to recover.

Self-disclosure is to know oneself and is an element necessary to build close relations with others.[36] The help seeking skill is a means of self-disclosure and is an important early intervention for AUD.[37] The need to acquire help seeking skills for early intervention of AUD was suggested.

This study has several limitations. First, the study obtained valuable data from the small target group. Thus, there were limitations to generalizing the findings and sampling bias in the target group cannot be denied. Second, this was a cross-sectional study. Conducting further studies with larger target groups is necessary.

In conclusion, AUD patients with high resilience had reduced risks for relapsing and self-disclosure was deepened during the recovery process as acquired-resilience increased. The preparing for an environment conductive to promoting natural ability of patients with AUD to recover is necessary.

The authors declare no conflict of interest.

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