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Validation of the Korean Version of the Community Assessment of Psychic Experiences in General Population

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Objective The Community Assessment of Psychic Experiences has been widely translated and commonly used as a measure for psychotic experiences and psychosis proneness in clinical and research environments worldwide. This study aimed to establish the psychometric properties (reliability and validity) and factor structure of a Korean version of the Community Assessment of Psychic Experiences (K-CAPE) in the general population.

Methods A total of 1,467 healthy participants completed K-CAPE and other psychiatric symptom-related scales (Paranoia scale, Patient Health Questionnaire-9, Dissociative Experiences Scale-II, and Oxford-Liverpool Inventory of Feelings and Experiences) via online survey. K-CAPE's internal reliability was analyzed using Cronbach's alpha coefficient. Confirmatory factor analysis (CFA) was performed to investigate whether the original three-factor model (positive, negative, and depressive) and other hypothesized multidimensional models (including positive and negative subfactors) were suitable for our data. Exploratory factor analysis (EFA) was conducted to explore better alternative factor solutions with a follow-up CFA. To assess convergent and discriminant validity, we examined correlations between K-CAPE subscales with other established measures of psychiatric symptoms.

Results K-CAPE showed good internal consistency in all original three subscales (all greater than α=0.827). The CFA demonstrated that the multidimensional models exhibited relatively better quality than the original three-dimensional model. Although the model fit indices did not reach their respective optimal thresholds, they were within an acceptable range. Results from the EFA indicated 3–5 factor solutions. In 3-factor solution, "negative-avolition" items were founded to be loaded more consistently with depressive items than with the negative dimension. In 4-factor solution, positive items were divided into two subfactors: "positive-bizarre experiences" and "positive-delusional thoughts," while negative symptoms were separated into two distinct subfactors in 5-factor solution: "negative-avolition (expressive)," and "negative-social (experiential)." The correlation coefficients between K-CAPE subscales and corresponding measurements were significant ($p<0.001$), confirming the convergent and discriminant validity.

Conclusion Our study provides evidence to support the reliability and validity of the K-CAPE and its use as a measure of psychotic symptoms in the Korean population. Although alternative factor structures did not improve the model fit, our EFA findings implicate the use of subfactors to investigate more specific domains of positive and negative symptoms. Given the heterogeneous nature of psychotic symptoms, this may be useful in capturing their different underlying mechanisms.
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Keywords Community assessment of psychic experiences; Psychosis; Validation study; Reliability and validity; Prodromal symptoms.

INTRODUCTION

Community-based studies over the past few decades have shown that a high proportion of the nonclinical populations report psychotic-like experiences (PLE).[1-6] It has been suggested that individuals with PLE share demographic, func-

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tional, and pathophysiological characteristics with clinical populations and that they have an increased risk of transitioning to clinical conditions in the future.[4,7-9] With such increasing evidence, the continuum hypothesis of psychosis has been proposed, which states that the psychotic symptoms exist within a wide spectrum from subclinical psychotic experiences to a full diagnosis of psychosis,[10-12] with varying severity and duration.[5,8,13] Accordingly, clinical attention to nonclinical groups with PLE has grown as investigations into these populations may provide a better understanding of the etiology of psychosis and other psychiatric disorders. Along with this trend, several terms indicating nonclinical populations with PLE have emerged. For instance, "Ultra-high risk (UHR)" for psychosis refers to people who are at high risk of developing psychosis although the severity of their current symptoms is not up to clinical diagnostic standards for psychotic disorders.[14,15] The Diagnostic and Statistical Manual of Mental Disorders, 5th edition also included "attenuated psychosis syndrome," as a condition requiring further study as a means of minimizing duration untreated psychosis and promoting better outcomes in treating psychotic disorders.[16] Besides, recent studies have revealed that early intervention in the high-risk of psychosis may prevent and/or delay the onset of psychosis.[17-19] Such progression has emphasized the importance of early identification of high-risk groups in community samples, which can lead to early intervention before the transition to clinical psychosis, improving the prognosis of patients with psychotic disorders.

The process of identifying nonclinical populations with PLE requires thorough clinical interviews conducted by trained professionals. Comprehensive Assessment of At-Risk Mental States is one of representative assessment tools currently used in research settings.[20] However, it is time-consuming and impractical considering that most nonclinical populations with PLE do not visit hospitals, resulting in blind spots where high-risk groups cannot receive a proper intervention. It would be useful to develop improved screening tools that can easily identify the presence of psychotic symptoms and track the course of psychosis in community samples. Previous studies have revealed that self-reported questionnaires are valid in detecting UHR individuals and assessing psychotic symptoms.[21] By employing pre-diagnostic filtering via self-report, results can be used as references for further professional steps and can overcome limitations in clinical settings (i.e., lack of trained staff and time constraints), increasing the efficiency of identification.

Several screening tools for psychotic symptoms have been developed, among which Community Assessment of Psychic Experience−42 (CAPE-42) has been widely used in clinical and research environments.[22,23] CAPE-42 is a self-reported assessment tool developed to measure the frequency and distress of a lifetime of psychic experiences in the general population. Containing three dimensions (positive, negative, and depressive symptoms), it evaluates the overall psychotic experiences usually observed in schizophrenia. Along with its proven psychometric properties,[24-27] it has played a key role as an essential assessment tool for research examining the continuum hypothesis of psychosis.[8,28] However, the validity and reliability of the Korean version of CAPE-42 (K-CAPE-42) have not yet been evaluated, though CAPE-15, comprising only positive symptoms, has been translated into Korean and validated.[29] Symptoms frequently observed in the prodromal stage include depression, increased anxiety, social isolation, and lack of motivation.[30-32] Given the heterogeneous symptoms in psychotic disorders, the simplified version may have limitations in assessing overall aspects of psychotic experiences for early detection of psychotic disorders.

Accordingly, the K-CAPE-42 seems to have the great potential to be effectively used in research and medical settings if validated as an assessment tool for individuals with PLE. Thus, we aim to evaluate the reliability and validity of the K-CAPE-42, examining whether it can be used as a measure of the degree of psychotic symptoms in the general population.

METHODS

This study was approved by the Institutional Review Board of Seoul National University Bundang Hospital (IRB no. B-2011-648-306), and we obtained informed consent from all participants. The present study was done as a part of an ongoing project, "Investigating the Mechanisms underlying Psychosis Associated with Childhood Trauma," which aims to investigate the effect of childhood trauma on behavior, brain, and mental state.

Participants

The inclusion criteria of this study were: 1) participants who are aged 18 to 40 years, 2) those who are fluent in Korean to understand the instructions , and 3) those who have no current or lifetime history of psychotic-related diseases and psychiatric medications. Among 1,467 registered participants, 17 were excluded due to incomplete responses and/or being found to be younger or older than the age criterion.

Assessments

K-CAPE-42

In the same way as the original version, K-CAPE-42 involves 42 items, consisting of three dimensions: positive, negative, and depressive symptoms (20, 14, and 8 items, respec-

tively). Each item contains two 4-point Likert scales. That is, participants' lifetime prevalence of psychic experiences was first rated as "never," "sometimes," "often," and "nearly always" (from 1 to 4). Next, they further indicated the degree of subjective distress as "not distressed," "a bit distressed," "quite distressed," and "very distressed" (from 1 to 4).

Prior to the translation process of K-CAPE-42, we first obtained permission from the original author.[1] A clinical neuropsychologist, who is fluent in both English and Korean, translated the English version into Korean. After that, two professional psychiatrists (KET and KSY) participated in the back-translation process. Lastly, they evaluated whether translated words and phrases convey the same meaning and/or implications as the original tool despite cultural differences. As there were no significant differences between the original and the translated version, the final Korean version of CAPE with 42 items was developed (Supplementary Material in the online-only Data Supplement).

Scales used for the validation process

To evaluate the convergent and discriminant validity of the K-CAPE's three symptom dimensions (positive, negative, and depressive), we employed several psychotic symptom-related scales. For convergent validity, each three CAPE dimensions and their corresponding tools are supposed to measure the same construct and be related to each other. Conversely, for discriminant validity, two measures should be measuring different constructs and unrelated. Thus, we assumed that two related scales would be more significantly correlated than other unrelated scales. For example, scales concerning positive symptoms would have higher correlation coefficients with CAPE-positive (CAPE-pos) dimension than with CAPE-negative (CAPE-neg) and CAPE-depressive (CAPE-dep) dimension scores. In the process of selecting scales, we considered whether it is widely used, validated, easily accessible, and measuring the same content.

The Dissociative Experiences Scale (DES-II) is a self-evaluated instrument for screening dissociative symptoms such as derealization/depersonalization, absorption, and amnesia.[33] A validation study of the Korean version of DES has been performed and proven to be valid to assess dissociative symptoms in clinical and nonclinical samples.[34] Of the three subscales, we used the depersonalization/derealization (DES-II-DD) subdomain for analysis, expecting a high correlation with the CAPE-pos dimension.

The Paranoia Scale (PS), consisting of 20 items, is a self-report screening instrument measuring the frequency of subclinical levels of paranoia, including ideas of persecution and reference.[35] The Paranoia Scale translated into Korean (K-PS) has been validated.[36]

The Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) is a 20-item self-report scale that measures psychosis-proneness covering four dimensions: "unusual experiences (e.g., magical thinking and perceptual disturbance)," "cognitive disorganization (e.g., poor attention and decision-making)," "introvertive anhedonia (e.g., reduced feelings of social and physical pleasure)," and "impulsive nonconformity (e.g., impulsive, anti-social mood and behaviors)." In this study, the dimension of introvertive anhedonia (O-LIFE-IA) and unusual experiences (O-LIFE-UE) were used for analysis to compare with positive and negative symptoms, respectively. The validity and reliability of the Korean version of these screening tools have not yet been investigated, and the validation process is in progress.

The Patient Health Questionnaire (PHQ-9) is a self-administered questionnaire which involves 9 items and screens the severity of depression.[37] Its Korean version of PHQ-9 has also been validated.[38]

Statistical analysis

All statistical analyses were conducted using R (version 4.1.1; R Foundation for Statistical Computing, Vienna, Austria). For factor analysis, the R package lavaan was utilized (version 0.5−17).[39] The validation process is illustrated in Figure 1.

Internal reliability

First, to verify the reliability of K-CAPE-42, assessing how well scale items are correlated with one another and measuring the same construct, we calculated Cronbach's alpha coefficient for frequency and distress scores of the entire 42 items and those of three subfactor frequency scores (positive, nega-

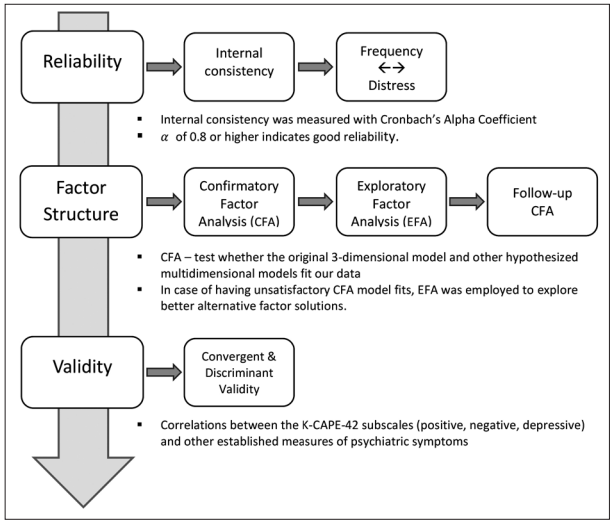

Figure 1. Diagram illustrating the validation process. K-CAPE-42, Korean version of Community Assessment of Psychic Experience–42.

tive, and depressive). Alpha values greater than 0.70 indicates an acceptable level of internal consistency for further analysis.

Confirmatory factor analysis

CAPE's positive scale was initially developed in one dimension, but subsequent studies have proposed several multidimensional structures. Representatively, there are three-subfactors structure that distinguishes "strange experiences," "hallucinations," and "delusional ideations" and a five-subfactors structure that further decomposes delusional ideation into subdimensional "paranoia," "grandiosity," and "magical thinking" (Table 1).

We performed confirmatory factor analysis (CFA) using maximum likelihood estimation in the whole sample to investigate whether the original model and the multidimensional model fit our data. In order to assess the model fit, the goodness-of-fit indices including root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and Tucker-Lewis index (TLI) were calculated to determine whether to maintain or improve the the original model. CFI and TLI of higher than 0.90, and RMSEA of less than 0.08, and SRMR less than 0.06 are considered to indicate that they are suitable for our data.[42-44]

Exploratory factor analysis

In case of having unsatisfactory CFA model fits, we would need to further investigate to see if we could find a better factor solution. Before any further analysis, the entire sample was randomly divided into two subsamples. Using the first half random sample, exploratory factor analysis (EFA) was conducted to investigate better alternative factor solutions. We employed principal component analysis with a promax rotation as our method of factor extraction. In the next step, the follow-up CFA was employed for the factor models that were generated from EFA using data from the second random sample.

Convergent and discriminant validity

Lastly, the degree of correlation between the K-CAPE subscales (CAPE-pos, CAPE-neg, and CAPE-dep) and other corresponding scales (DES-II, PS, O-LIFE-UE, O-LIFE-IA, and PHQ-9) was analyzed using Spearman's correlation coefficient to examine convergent and discriminant validity. This analysis included a total of 1,373 participants who completed all scales.

RESULTS

Demographic characteristics

A total of 1,450 participants aged from 18 to 42 years were included in the final analysis. The mean age of the participants was 26.84 (standard deviation=5.56) years, and there were more women than men in the total sample (n=1,011, 69.72%). The entire sample was randomly divided into two subsamples for EFA, as described in the "method" section. Since sample 1 and 2 did not differ in mean age, gender ratio, and weighted total frequency scores, the randomization was considered successful. Participants' demographic characteristics are provided in Table 2.

Reliability

Cronbach's alpha value of total frequency and distress scores were 0.921 and 0.924, respectively, which indicates excellent internal consistency.[45] In addition to the total scores, internal reliability of frequency scores for three subfactors (Table 3) was found to be good for further analysis.

Table 1. Structures of CAPE-42 consisting of CAPE-pos, CAPE-neg, and CAPE-dep with their respective subdomains based on previous exploratory analyses

Original	Hypothesized multidimension		
3-Factor*	5-Factor†	7-Factor‡	9-Factor‡§
Positive	Delusional Ideations	Paranoia	Paranoia
		Grandiosity	Grandiosity
		Magical Thinking	Magical Thinking
	Bizarre Experiences	Bizarre Experiences	Bizarre Experiences
	Hallucination	Hallucination	Hallucination
Negative	Negative	Negative	Social Withdrawal
			Affective Flattening
			Avolition
Depressive	Depressive	Depressive	Depressive

*original three factor structure as reported by Stefanis et al.[1]; †CAPE-pos three-factor structure as reported by Capra et al.[40]; ‡CAPE-pos five factor structure as reported by Wigman et al.[41]; §CAPE-neg three factor structure as reported by Schlier et al.[24] CAPE-42, Community Assessment of Psychic Experience–42; CAPE-pos, CAPE-positive; CAPE-neg, CAPE-negative; CAPE-dep, CAPE-depressive

Table 2. Demographic characteristics of K-CAPE-42 scale scores for the total sample, and for the two randomized subsamples separately

	Total (N=1,450)	Sample 1 (N=725)	Sample 2 (N=725)
Age (yr)	26.8±5.6	27.0±5.6	26.7±5.5
K-CAPE-42 sum scores			
Total score	76.7±15.8	76.4±15.4	77.0±16.1
Positive	30.2±6.5	30.0±6.3	30.4±6.7
Negative	28.4±7.4	28.3±7.4	28.6±7.4
Depressive	18.0±4.7	18.0±4.7	18.1±4.8
Sex			
Male	439 (30.3)	217 (29.9)	222 (30.6)
Female	1,011 (69.7)	508 (70.1)	503 (69.4)
Education			
High school	161 (11.1)	71 (9.8)	90 (12.4)
University	1,080 (74.5)	545 (75.2)	535 (73.8)
Graduate	188 (13.0)	94 (13.0)	94 (13.0)
Etc	21 (1.4)	15 (2.1)	6 (0.8)

Values are presented as mean±standard deviation or number (%). Before any further analysis, the entire sample was randomly divided into two subsamples. Sample 1 was used for EFA while Sample 2 was used for the follow-up CFA. Among 1,467 participants, 17 were excluded according to the inclusion criterion. K-CAPE-42, Korean version of the Community Assessment of Psychic Experiences; EFA, exploratory factor analysis; CFA, confirmatory factor analysis

Table 3. Internal reliability of K-CAPE-42 scale scores for the total sample, and for the two randomized subsamples separately

	Total (N=1,450)	Sample 1 (N=725)	Sample 2 (N=725)
Cronbach's alpha coefficient (number of items)			
Frequency			
Total sore (42)	0.921	0.921	0.921
Positive score (20)	0.828	0.831	0.825
Negative score (14)	0.865	0.871	0.859
Depressive score (8)	0.870	0.870	0.871
Distress			
Total sore (42)	0.924	0.924	0.924
Positive score (20)	0.840	0.843	0.837
Negative score (14)	0.857	0.865	0.848
Depressive score (8)	0.838	0.834	0.842

Before any further analysis, the entire sample was randomly divided into two subsamples. Sample 1 was used for EFA while Sample 2 was used for the follow-up CFA. Cronbach's alpha values greater than 0.70 were considered to be acceptable for further anlaysis. K-CAPE-42, Korean version of the Community Assessment of Psychic Experiences; EFA, exploratory factor analysis; CFA, confirmatory factor analysis

Correlation analysis between frequency and distress was performed for the total score and each dimension. Pearson correlation was significant between total scores of frequency and distress (r=0.893, p<0.001), and was also significant in three hypothesized dimensions (r>0.800 and p<0.001 for all dimensions) (Figure 2).

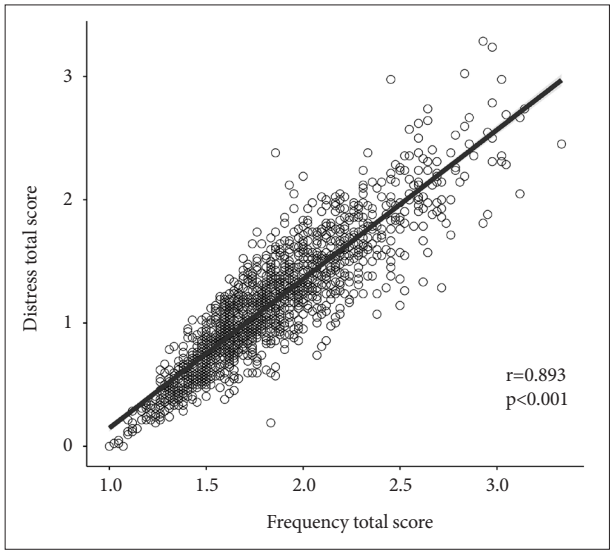

Figure 2. Linear pattern of the correlation between frequency and distress in the entire sample.

Confirmatory factor analysis

Table 4 indicates the goodness of fit indices of the original three-dimensional and other hypothesized multidimensional model analyzed from the CFA. According to the CFA results, even though the model fit indices did not reach their respective optimal thresholds, they were within an acceptable range (RMSEA, SRMR, and RMR, but not CFI and TLI). Furthermore, multidimensional models showed relatively better quality compared to the original three-dimensional model, but it did not significantly improve the model fit.

Exploratory factor analysis and follow-up CFA

Since goodness of fit indices of the CFA did not reach the expected value, EFA was conducted to investigate another factor solution that optimally describes the data. Values of the Kaiser-Meyer-Olkin measure of sampling adequacy (MSA= 0.936) and Bartlett's sphericity test (χ^2=23,239; p<0.001) were calculated, which suggested our data were factorable. As a result, EFA proposed multiple factor solutions with 8 eigenvalues >1 while the result of the scree plot indicated 3−5 factor solutions (Figure 3).

In a 3-factor solution, "negative-avolition" items were found to be loaded more consistently with depressive items than with the negative dimension (Table 5). The 4-factor solution separated positive symptoms into two factors: "positive-bizarre experiences" and "positive-delusional thoughts," while, in addition to this, the 5-factor solution separated negative symp-

Table 4. Fit indices from the confirmatory factor analysis (CFA)

Number of factors	Goodness-of-fit index								
	χ^2	df	p	RMSEA	GFI	TLI	CFI	SRMR	RMR
3	6,925	816	<0.001	0.074*	0.775	0.695	0.711	0.074*	0.049*
5	6,702	809	<0.001	0.071*	0.792	0.723	0.740	0.071*	0.047*
7	5,175	798	<0.001	0.062*	0.828	0.791	0.807	0.060*	0.038*
9	3,752	783	<0.001	0.051*	0.883*	0.856	0.869	0.054*	0.033*
3-factor solution	3,618	816	<0.001	0.069*	0.789	0.747	0.760	0.077*	0.051*

"3-factor solution" (last row) presents fit indices from follow-up CFA. *denote indices greater than corresponding acceptable fit criteria. Meeting minimally acceptable fit criteria: RMSEA ≤0.08, GFI ≥0.85, CFI ≥0.90, TLI ≥0.90, SRMR ≤0.08, RMR ≤0.05. RMSEA, root mean square error of approximation; GFI, goodness of fit Index; TLI, Tucker-Lewis index; CFI, comparative fit index; SRMR, standardized root mean square residual; RMR, root mean square residual

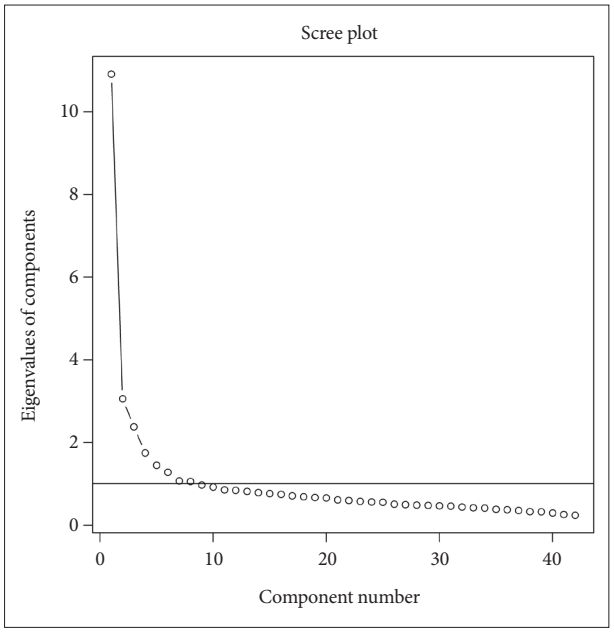

Figure 3. Scree plot of exploratory factor analysis. The scree plot indicated 3–5 factor solutions.

toms into two distinct factors: "negative-avolition (expressive)" and "negative-social (experiential)."

The three-factor model accounted for 38.9% of the total variance (depressive symptoms, 19.8%; positive symptoms, 11.8%; negative symptoms, 7.3%). The model fit statistics of the three-factor model showed an appropriate fit except for the CFI and TLI (Table 4). Based on the results of the follow-up CFA, we rejected four- and five- factor models because they did not significantly enhance the model fit.

Convergent and discriminant validity

We analyzed the correlations between three dimensions of K-CAPE (pos, neg, and dep) and their corresponding symptom scales. As presented in Table 6, K-CAPE-pos total scores had stronger positive correlations with total scores of DES-II-DD (r=0.595, p<0.001, df=1,371), O-LIFE-UE (r=0.639, p<0.001, df=1,371), and PS (r=0.643, p<0.001, df=1,371), while it has lower correlations with total scores on O-LIFE-IA (r=0.241, p<0.001, df=1,371) and PHQ-9 (r=0.455, p<0.001, df=1,371). On the other hand, K-CAPE-neg total score was highly correlated with O-LIFE-IA (r=0.566, p<0.001, df=1,371) the most, while the correlation with other scales was relatively lower. Lastly, K-CAPE-dep dimension scores had a higher correlation coefficient with PHQ-9 (r=0.726, p<0.001, df=1,371) than others.

DISCUSSION

This study aimed to evaluate the reliability and validity of the K-CAPE-42 for application as assessment tool in community samples. Our findings established favorable internal consistency and robust convergent (and divergent) validity with their relevant subscales. Factor analysis showed that fit indices of the three-dimensional original model derived from CFA were not optimal and that EFA proposed alternative factor solutions with different item loadings but did not significantly improve the model fit. Thus, our study provided evidence to support that the Korean version applying the original three-dimensional model is suitable.

According to CFA, it is found that the original three-dimensional model of K-CAPE-42 exhibited inconsistent fit indices; CFI and TLI values were below the cutoff (>0.95) while RMSEA, RMR, and SRMR were satisfactory (<0.05). However, this is consistent with previous findings that not all fit indices of the translated versions exceed the acceptable criteria.[13,46,47] Also, it was suggested that CFI is not a valid indicator because it has a negative bias when the correlations between items are generally low.[24,42] RMSEA is an absolute measure of fit that determines how well the hypothesized model fits the perfect fitting model, whereas CFI and TLI are incremental fit indices evaluating the hypothesized model compared to the baseline model in which no items covary.[43] It has been calculated that when RMSEA is less than 0.158, ob-

Table 5. Exploratory factor analysis of the K-CAPE-42 items

	Items	Subdomain	Full sample		
			1	2	3
1	Feel sad	Depressive	0.646		
7	Feeling persecuted	Pos (Paranoia)	0.415		
9	Pessimistic about everything	Depressive	0.729		
12	No future for you	Depressive	0.821		
14	Do not want to live anymore	Depressive	0.711		
18	Lacking in motivation to do things	Neg (Avolition)	0.747		
19	Cry about nothing	Depressive	0.538		
21	Lacking in energy	Neg (Avolition)	0.620		
22	People look at you oddly	Pos (Paranoia)	0.441		
23	Empty mind	Neg (Avolition)	0.543		
25	Spending days doing nothing	Neg (Avolition)	0.722		
29	Lacking in spontaneity	Neg (Soc. Withd)	0.667		
35	Neglecting your appearance/personal hygiene	Neg (Avolition)	0.434		
36	Never getting things done	Neg (Avolition)	0.690		
37	Lack of hobbies/interests	Neg (Avolition)	0.516		
38	Feel guilty	Depressive	0.542		
39	Feel like a failure	Depressive	0.864		
40	Feel tense	Depressive	0.429		
2	People drop hints/say things with a double meaning	Pos (Paranoia)	0.304	0.378	
5	Message on TV/magazines especially for you	Pos (Biz. Exp)		0.515	
6	People are not what they seem to be	Pos (Paranoia)		0.330	
10	Conspiracy against you	Pos (Paranoia)		0.545	
11	Feeling destined to be someone important	Pos (Grandiosity)	-0.563	0.694	
13	Being a very special or unusual person	Pos (Grandiosity)	-0.589	0.650	
15	Communicate telepathically	Pos (Mag. Think)		0.619	
17	Electrical devices can influence the way you think	Pos (Biz. Exp)		0.315	
20	Believing in witchcraft/voodoo/the occult	Pos (Mag. Think)		0.474	
24	Thought withdrawal	Pos (Biz. Exp)		0.442	
26	Thoughts in your head are not your own	Pos (Biz. Exp)		0.481	
28	Thoughts so vivid that other people may hear them	Pos (Biz. Exp)		0.505	
30	Thoughts echoed	Pos (Biz. Exp)		0.535	
31	Feeling under the control of some force or power	Pos (Biz. Exp)		0.549	
33	Hearing voices	Pos (Hallucination)		0.587	
34	Hearing voices talk to each other	Pos (Hallucination)		0.476	
41	Capgras	Pos (Hallucination)		0.323	
42	Seeing things other people cannot see	Pos (Hallucination)		0.411	
3	Not very animated person	Neg (Soc. Withd)			0.758
4	Not much of a talker	Neg (Soc. Withd)			0.464
8	Experiencing no/few emotions	Neg (Aff. Flat)			0.659
16	No interest to be with other people	Neg (Soc. Withd)			0.478
27	Emotions lack intensity	Neg (Aff. Flat)			0.813
32	Blunted emotions	Neg (Aff. Flat)			0.862
			Factor 1	Factor 2	Factor 3
		SS loadings	8.296	4.968	3.068
		Proportion Var	0.198	0.118	0.073
		Cumulative Var	0.198	0.316	0.389

Only items with factor loadings ≥0.30 are shown. K-CAPE-42, Korean version of Community Assessment of Psychic Experience; Depressive, depressive symptoms; Pos, positive symptoms; Neg, negative symptoms; Soc. Withd, social withdrawal; Biz. Exp, bizarre experience; Mag. Think, magical thinking; Aff. Flat, affective flattening; SS loadings, the sum of squared loadings; Var, variance

Table 6. Spearman's coefficients of correlation among the K-CAPE-42, paranoia scale, DES, O-LIFE, and PHQ-9

	Positive			Negative	Depressive
	Paranoia Scale	DES-II-DD	O-LIFE-UE	O-LIFE-IA	PHQ-9
K-CAPE-Pos	0.643*	0.595*	0.639*	0.241	0.455
K-CAPE-Neg	0.582	0.404	0.407	0.566*	0.623
K-CAPE-Dep	0.633	0.409	0.438	0.434	0.726*

*denote the greatest value among correlation coefficient with other scales. K-CAPE-42, 42-item Korean version of Community Assessment of Psychic Experiences; Pos, positive domain; Neg, negative domain; Dep, depression domain; DES, Dissociative Experiences Scale; DD, depersonalization/derealization; O-LIFE, Oxford-Liverpool Inventory of Feelings and Experiences; UE, unusual experience; IA, introvertive anhedonia; PHQ-9, 9-item Patient Health Questionnaire

tained CFI values would be too small.[42] In our analysis, as the RMSEA of the baseline model was 0.135 (less than 0.158), the CFI and TLI (and other incremental fit indices) may not be very informative.[44] Thus, it is reasonable to conclude based on RMSEA and SRMR rather than on CFI and TLI, which suggests the acceptability/adequacy of the original model.

On the other hand, EFA suggested alternative factor solutions in which item loadings differ from the original CAPE-42. In factor solutions, several negative items ("avolition") were consistently loaded with depressive items than negative items. However, this result is consistent with other previous validation studies on the translated version of CAPE-42 in which the depression factor included few negative items.[25,46] It should also be noted that the negative (especially "avolition" symptoms) and depressive domains are conceptually overlapping and have common phenomenological characteristics with negative symptoms.[48-51] Since K-CAPE-42 was conducted through self-report, and detailed information and phenomenology are required to distinguish it, it is reasonable to obtain different item loading results. For example, positive item 7 ("Feeling persecuted") and item 22 ("People look at you oddly") were repeatedly included with depressive items rather than positive items. Even though both items were originally designed to cover the "paranoia" domain of positive symptoms, they can also be regarded relating to "low self-esteem." People with low self-esteem has a lack of confidence and feel worthless about themselves, which is deeply associated with depression and also acts as a risk factor for depression.[52,53] Despite the different item loadings, this seems acceptable when considering overlapping characteristics of psychotic disorder. However, these alternative factor solutions were not selected since the follow-up CFA on these solutions did not significantly improve the model fit. Thus, we concluded that the three-factor model was suitable, as in the originally proposed.

Lastly, the correlation coefficients between the K-CAPE-42 subscales and their corresponding measurements (e.g., CAPE-pos & DES-II vs. CAPE-pos & O-LIFE-IA) were the highest while the subscales were less correlated with scales of other dimensions, confirming convergent and divergent validity. As mentioned above, with respect to the EFA results that "negative-avolition" and "positive-paranoia" items were included in the depressive domain, the correlation between CAPE-neg and PHQ-9 ($r=0.623$, $p<0.001$) and between CAPE-pos and PHQ-9 ($r=0.455$, $p<0.001$) were relatively higher than those with other irrelevant scales (but lower than those with corresponding scales), which again indicates overlapping features of psychotic symptoms (i.e., depression with "negative" and "positive" subdomains).

Our study is the first validation report of the K-CAPE-42 which includes reliability, factor structure, and convergent-divergent validity. There have been multiple CAPE variants depending on the language of the translation, the validation process, the target population, and what items they included (CAPE-42 or CAPE-P15).[24-26,41,54-56] Specifically, although there is one study that validated the K-CAPE-15, consisting only of positive items and involving only young adults for analysis,[29] the present study can be further generalized as it includes a wider range of participants and all three subdomains. K-CAPE-15 conducted face-to-face clinical interviews to evaluate the diagnostic validity and determined the cutoff values for UHR detection. Yet, we excluded individuals who have been diagnosed with psychotic disorders from the study and did not conduct follow-up investigations; further research is needed to evaluate the usefulness of detecting whether participants developed a psychotic disorder. When choosing a scale, it would be advantageous to consider the pros and cons of these different versions of CAPE, depending on the purpose of the measurement. In addition, due to the self-reporting system and recruitment via online social media, there might be potential biases such as response bias (e.g., social-desirability bias, over or underreported symptoms) and selection bias, which possibly influence the quality of data. Nevertheless, even with such limitations, K-CAPE-42 can be effectively used as a pre-screening tool for "at-risk" populations.

In conclusion, this study showed that the K-CAPE-42 is a valid and effective screening tool with sufficient psychometric properties to measure PLE in community settings. Although the K-CAPE-42 is not a diagnostic tool for UHR, it aims to

pre-screen individuals at potential risk for psychotic disorders, which consequently facilitates early identification and intervention as well as psychosis research.

Supplementary Materials

The online-only Data Supplement is available with this article at https://doi.org/10.30773/pi.2023.0011.

Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author on reasonable request.

Conflicts of Interest

Euitae Kim, a contributing editor of the *Psychiatry Investigation*, was not involved in the editorial evaluation or decision to publish this article. All remaining authors have declared no conflicts of interest.

Author Contributions

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SUPPLEMENTARY MATERIALS

K-CAPE-42 Questionnaire

다음의 각 항목을 얼마나 자주 경험하고, 그로 인해 얼마나 괴로웠는지 답해주십시오.

1. 슬픔을 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
2. 사람들이 당신에 대해 암시를 주거나 다른 의미를 가진 말을 하는 것 같은 느낌이 든 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
3. 당신이 감정 표현이 풍부하지 않은 사람이라고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
4. 사람들과 대화할 때 당신은 말수가 적은 사람이라고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
5. TV나 잡지의 내용이 특별히 당신을 위해 쓰여진 것 같다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
6. 어떤 사람들이 겉으로 보이는 것과 다른 것 같다는 느낌이 든 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
7. 어떤 식으로든 당신이 괴롭힘 당하고 있는 것 같다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
8. 중요한 사건에 대해서 당신이 거의 또는 전혀 감정을 느끼지 못한 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
9. 모든 것에 비관적으로 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
10. 당신을 둘러싼 음모가 있는 것 같은 느낌이 든 적이 있습니까?				

전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
11. 당신이 매우 중요한 사람이 될 운명을 타고난 것 같다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
12. 당신에게 미래는 없는 것 같다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
13. 당신이 매우 특별하거나 비범한 인물이라고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
14. 더이상 살고 싶지 않다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
15. 사람들이 텔레파시로 의사소통을 할 수 있다고 생각한 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
16. 다른 사람들과 어울리는 데 관심이 없다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
17. 컴퓨터와 같은 전자 기기들이 당신이 생각하는 방식에 영향을 주는 것처럼 느껴질 때가 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
18. 무언가를 할 의욕이 부족하다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
19. 아무 이유 없이 눈물이 난 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				

'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
20. 초자연적인 마법, 주술이 효력이 있다고 믿습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
21. 당신이 에너지나 기운이 부족하다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
22. 당신의 외모 때문에 사람들이 당신을 이상하게 쳐다보는 것 같은 느낌이 든 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
23. 당신은 생각이(머리가) 텅 빈 것 같다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
24. 당신의 머리 속 생각들을 누군가 빼앗아 가고 있는 것처럼 느껴질 때가 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
25. 당신이 아무것도 하지 않으면서 일생을 보낸다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
26. 당신의 머릿속 생각들이 당신의 것이 아닌 것처럼 느껴질 때가 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
27. 당신이 느끼는 감정들의 강도가 약하다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
28. 당신의 생각들이 너무나 생생해서 다른 사람들이 당신의 생각을 들을까봐 걱정된 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다

29. 당신의 자발성이 부족하다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
30. 당신의 생각을 메아리처럼 들어본 적이 있습니까				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
31. 어떤 기운이나 힘이 당신을 통제하는 것처럼 느껴질 때가 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
32. 당신의 감정이 무디다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
33. 혼자 있을 때 어떤 목소리를 들은 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
34. 혼자 있을 때 서로 대화하는 목소리를 들은 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
35. 당신의 외모나 위생상태를 잘 관리하지 못한다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
36. 당신이 어떤 일도 끝내지(완수하지) 못한다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
37. 당신의 취미나 관심사가 매우 적다고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
38. 죄책감을 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				

'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
39. 당신이 실패자라고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
40. 긴장감을 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
41. 가족이나 친구, 지인이 그들이 아닌 닮은 사람이라고 느낀 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다
42. 다른 사람 눈에는 보이지 않는 어떤 사물이나, 사람, 혹은 동물을 본 적이 있습니까?				
전혀	가끔	자주	거의	항상
'가끔' 또는 그 이상으로 대답했다면, 이것이 일어날 때 얼마나 괴로웠습니까?				
'전혀'라고 대답	괴롭지 않다	약간 괴롭다	꽤 많이 괴롭다	매우 괴롭다