Original Paper

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Reliability and Validity of The Turkish Version of Cognitive Assessment Interview (CAI-TR)

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ABSTRACT:

Reliability and validity of the Turkish version of cognitive assessment interview (CAI-TR)

Objective: The Cognitive Assessment Interview (CAI) is an interview-based scale developed to assess cognitive functioning of patients diagnosed with schizophrenia. It is scored by a clinician according to patient and informant interview. This study aimed to determine the reliability and validity of the CAI-Turkish Version (CAI-TR).

Methods: The Cognitive Assessment Interview (CAI) was translated to Turkish and back to English and the back-translated form of the scale was approved by Dr. Ventura, its original developer. The translated text was administered to five schizophrenia outpatients as a pilot study and was deemed appropriate following a joint review by the research team. Ninety clinically stable outpatients with schizophrenia or schizoaffective disorder diagnosis were evaluated by clinicians using SCID-I (CV), PANNS, and Social Functioning Scale. To assess the patients' neurocognitive status, certified expert psychologists administered a neurocognitive test battery including Öktem Verbal Memory Process Test, Wechsler Memory Scale-Digit Span, Verbal Fluency Test, Continuous Performance Test, Trail Making Test-A, Tower of London Test, The "Reading the Mind in the Eyes" test (Eyes Test), and Facial Emotion Identification and Discrimination Test.

Results: Internal consistency of CAI-TR was good, with Cronbach's alpha value of 0.97. For patient scores, Cronbach's alpha value was 0.91. Each item of CAI-TR was correlated with the related neurocognitive test ($r=0.242-0.564$; $p<0.05$). Moreover, overall scores of CAI-TR showed statistically significant correlations with Global Assessment of Functioning (GAF) ($r=-0.538$, $p<0.001$), social functioning ($r=-0.520$; $p<0.01$), and objective neurocognitive tests. As a measure of external validity of CAI-TR, statistically significant correlations were determined between patient, informant and interviewer evaluations independent of source of information ($r=0.707$, $r=0.830$, $r=0.835$, respectively; $p<0.001$ for all). Mean duration of patient interview was 18.7 minutes (8-30 min; SD=5.4), mean duration of informant interview was 18.0 minutes (10-25 min; SD=5.0) and total mean duration of CAI administration was 36. 6 minutes (18-55 min; SD=9.7).

Discussion: The analysis indicated that CAI-TR was a reliable and valid instrument to evaluate cognitive functioning. Ratings obtained from patient interview were also significant. CAI-TR is found to be a very practical and useful tool with some additional advantages such as being a clinically based interview with a brief administration time providing information about patients' functioning.

Keywords: cognitive assessment, cognitive functioning, schizophrenia

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INTRODUCTION

Cognitive symptoms in schizophrenia have been recognized; indeed, the condition had been defined as "dementia preacox" by Kraepelin. However, these cognitive symptoms have been ignored by clinicians until the neurodevelopmental model in schizophrenia emerged in the 1980s. Nearly 75% of

all schizophrenia patients are affected by cognitive impairment[1]. Presence of cognitive impairment reported in first-episode schizophrenia patients suggests that cognitive disorder in schizophrenia is a primary disorder independent from factors such as adverse effects of drugs or the chronic course of the disorder[2].

Cognitive symptoms are associated with loss of function in patients' daily lives[3]. Cognitive improvement is found to be related with improvement in clinical symptoms and functioning[4]. Main areas impaired in schizophrenia are attention (vigilance), executive functions, long-term memory, learning, working memory, and verbal fluency[5,6]. Long-term memory, learning, and attention skills are shown to be more important than positive and negative symptoms of schizophrenia in predicting functionality[3].

There has been a need for convenient tools to evaluate the efficacy of any therapeutic intervention in the treatment of schizophrenia. Current batteries of neuropsychological testing are generally not easily accessible, expensive, and time-consuming. In addition, how patients' cognitive deficits reflect on their daily functionality also needs to be known. Given this necessity, in 2008 Ventura et al. developed the Cognitive Assessment Interview (CAI)[7-9]. The CAI emerged by combining and adapting the Schizophrenia Cognition Rating Scale (SCoRS)[10] and the Clinical Global Impression of Cognition in Schizophrenia (CGI-CogS)[11,12].

CAI is a 10-item scale completed by the examiner during interviews with the patients and their relatives (informants), where each question is given a score on a likert scale ranging from 1 to 7. Patient's, relative's and the interviewer's assessment are scored separately (Figure1). The rating scale is based on healthy people with similar education and sociocultural level. CAI assesses verbal learning, working memory, reasoning and problem solving, speed of processing, attention/vigilance, and social cognition. The scale gives the general severity of cognitive impairment scored from one to seven, which is determined after these evaluations. High scores show poor cognitive status with a negative impact on daily functioning. CAI also has a Global Assessment of Functioning-Cognition in Schizophrenia section. This section is similar to the DSM IV General Assessment of Functioning (GAF) scale[13].

CAI has good internal consistency and high reliability (Cronbach'a alpha=0.92 and test-retest r=0.83) in the original validity/reliability study. It was found that CAI was correlated to objective neurocognitive tests, social functioning, occupational functioning, and general functionality[8].

Rehabilitative endeavors in schizophrenia have picked up pace after community mental health centers became widespread in Turkey. There is a

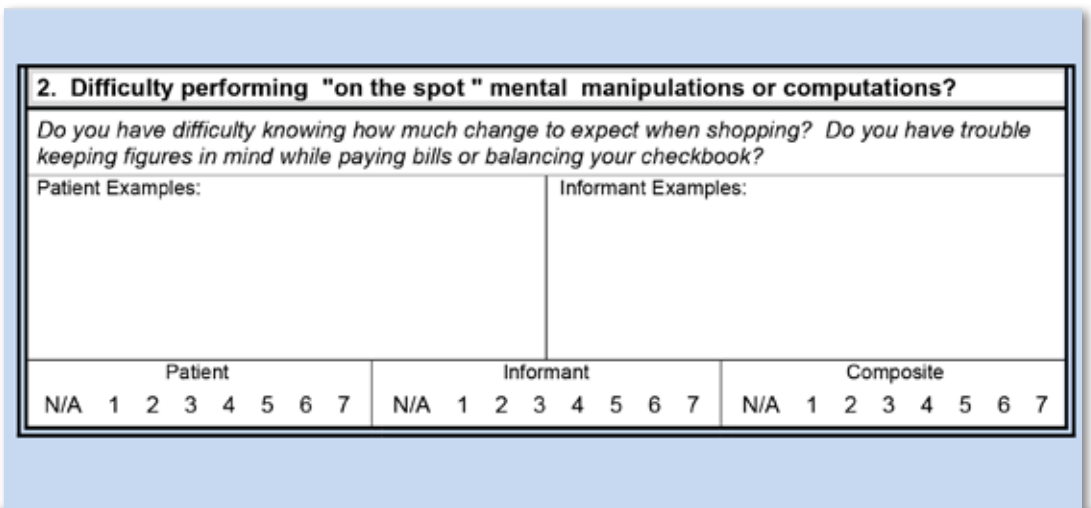


Figure 1: An example question from the original version of the Cognitive Assessment Interview

need for convenient tools to evaluate these rehabilitation practices in addition to assessing the neurocognitive impact and functionality effects of the treatments given by the clinician. Therefore, we aimed to establish the validity and reliability of the Turkish version of the Cognitive Assessment Interview (Turkish CAI).

METHODS

Turkish Translation of CAI

CAI was translated into Turkish by the members of the research group. The translated text was deemed appropriate following a joint review of the research team and it was administered to five schizophrenia outpatients and their relatives as a pilot assessment. Thus, being tested for comprehensibility, the scale was finalized. The Turkish version was translated back to English by an expert translator. The author of the interview (Ventura) reviewed the back-translation. On the basis of changes suggested by the author, the interview was revised and then given its final version.

The videos of original applications of the interview were watched from the internet and the inter-rater reliability coefficients were determined. Interviewers who were to administer CAI videotaped their own interviews. The records were reviewed again during joint meetings of the same research group. Expert views on scoring were discussed.

Subjects

The sample consisted of 95 clinically stable outpatients with schizophrenia or schizoaffective disorder diagnosis (PANNS positive scores ≤ 4, no evidence of aggressive or violent behavior resulting in self-injury or injury to others or property damage, no suicidal behavior or suicidal ideation in the last three months) and their caregivers aged 18-65 years who were recruited from Kocaeli University Department of Psychiatry, Kocaeli Derince Training and Research Hospital Department of Psychiatry, and Derince Community Mental Health Center. Patients had had an education of at least 5 years, and their diagnosis of schizophrenia or schizoaffective disorder was based on DSM-IV[13]. Exclusion criteria were history of conditions that affect cognitive functions such as head trauma, cerebrovascular accidents or epilepsy, having had ECT within 6 months prior to the study, history of alcohol/drug abuse or addiction, and diagnosis of mental retardation. The diagnosis was confirmed by a psychiatrist using the Turkish translation of the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Clinician Version (SCID-I, CV) disorders[14].

Procedures

The Positive and Negative Syndrome Scale (PANNS) was used to assess symptoms and the Social Functioning Scale was administered to assess functionality. CAI-TR was applied to patients and relatives.

To assess the neurocognitive status of the patients, a neuropsychological test battery was used. Practical and quickly administered tests with confirmed Turkish reliability and validity were given preference during the selection of the neurocognitive test battery. To provide objective assessments, two independent interviewers evaluated the patients. One interviewer administered the neurocognitive test battery and the other one adminestered CAI-TR and other scales. Neurocognitive tests were administered by certified expert psychologists. Clinical assessments were made by psychiatry specialists and experienced psychiatry residents. Kocaeli University Ethics Committee approved the study and written informed consents were obtained from patients and their relatives (ethics committee approval no: KOU KAEK 2013/69).

Materials

The Positive and Negative Syndrome Scale (PANSS): It is a semi-structured interview scale developed by Kay et al.[15] The scale evaluates

positive and negative symptoms and general psychopathology by 30 items rated on a seven-point severity scale. Total score is between 30 and 210. Higher ratings reflect a greater severity of symptoms. Reliability and validity for the Turkish scale was studied by Kostakoğlu et al.[16]

The Social Functioning Scale. It is a scale developed by Birchwood et al.[17] It evaluates performance of patients with schizophrenia in seven areas, which are social withdrawal, interpersonal communication, daily life activities, leisure time activities, social interactions, independent living, and occupational functioning. Each item is rated between 0 and 3. Higher scores indicate better functioning. Reliability and validity of the Turkish scale was studied by Erakay[18].

Neuropsychological Test Battery

Öktem Verbal Memory Process Test (VMPT). This is a word-list learning test developed by Öktem, based on the Rey Auditory Verbal Learning Test[19]. VMPT gives the opportunity to evaluate the processes of working memory, learning or acquiring knowledge, retention of information, and recalling. In the evaluation, immediate memory score, complete learning points (number of attempts ensuring complete learning = "access to criteria" score), total learning score (total number of words recalled in each trial), the highest learning point (the maximum number of words the subject could remember in trials) and long-term recall scores are determined. In this study, to evaluate verbal learning and working memory (verbal), total recall and reaching criteria scores were used (question 1, 5, and 6 in CAI-TR).

Wechsler Memory Scale-R (WMS-R), digit span subtest. WMS-R is the final form of the Wechsler Memory Scale (WMS), which has been revised in many respects[20]. Immediate or delayed verbal and visual memory is measured by 13 WMS-R subtests, and the test also allows measurements of attention related to memory processes and concentration. Turkish standardization of WMS-R was completed as part of the BILNOT battery[21,22]. Reliability and validity studies for the Turkish form of WMS-R were also carried out[23-26]. These studies showed that WMS-R Turkish form, which was developed under the Standardization of BILNOT, is a valid evaluation instrument[27]. Digit span test is a subscale of WMS-R. It is particularly used to determine attention range (the ability to keep a certain amount of information in mind at a given time). In this study, to evaluate working memory, digit span test-forward was used (question 2 in the CAI-TR).

Trail Making Test (TMT), Part A: The Trail Making Test was first developed by psychologists working in the United States Army[28,29]. A Turkish validity and reliability study was carried out[30,31]. TMT is a test assesing visual-motor conceptual scanning, motor speed, planning, digital information, abstract thinking, inhibition of reaction tendency created by the physical properties of stimuli, change of set, concentration and tolerance against inhibition[32]. TMT consists of two parts, A and B. In each of these sections, stimulants are scattered on the test form. In section A, there are numbers as a stimulant, and the patient is expected to integrate the numbers in the correct order consecutively (1-2-3-4-5…) in circles. In each of these sections, measurements of time are made. In this study, TMT Part A was used to evaluate the speed of processing and attention - vigilance (question 9 in the CAI-TR).

Verbal Fluency Test (VFT): The Verbal Fluency Test consists of lexical and semantic fluency tests. Sustained attention and vocabulary skill scanning ability are measured[33]. The patient is asked to say as many words containing given letters (K, A, S) as possible in a minute, for word fluency. In category fluency, the patient is asked to say as many animal names as he or she can. The total number of words found is included to the scores[34]. In this study, the test was used to assess the speed of processing (question 9, question 3 and 4 in the CAI TR).

Continuous Performance Test (CPT): CPT is basically a test that measures sustained attention, selective attention, and suppression[35]. In the test,

an 82-letter series is read and the subject is asked to sign the previously identified target stimuli (letter A) by tapping fingers on the table. Then the sequence is read backwards, and this time they are asked to sign when they hear the letter A followed by E. The subject's number of correct answer gives the total score[36]. In our study, this test (questions 3 and 4 in the CAI-TR), was used in order to evaluate skills related to attention and vigilance.

Tower of London Test: This test was first developed by Shalliance in 1992. Turkish standardization for adults and a reliability study of the version of The Tower of London Test developed by Culbertson and Zillmer at Drexel University (LKDX)[37] was made by Atalay and Cinan[38]. This test was used to evaluate problem solving and reasoning. Test material, one set for the practitioner and one for the participant, consists of two wooden boards with 3 different-length bars; on the biggest of them, 3 beads can be placed, on the middle one 2 beads, and on the shortest one 1 bead. The participant's task is to reach the same position as the practitioner by using the lowest number of moves on his board. To evaluate reasoning and problem-solving skills, the total move scores were used (questions 7 and 8 in the CAI-TR).

Facial Emotion Identification Test and Facial Emotion Discrimination Test (FEI and FEDT): This test was developed by Kerr and Neale; it assesses social cognition[39]. Validity and reliability for the Turkish version was studied by Erol et al.[40] The test is composed of 19 black-and-white photos of faces showing six different emotions (happiness, sadness, anger, fear, surprise, and disgust). The photos in the test are set to appear in order for fifteen seconds each, with a ten-second interval between the photos. The subject is given a 19-item answer key in which six main emotions are written next to each question. The subject tries to select the right choice of emotion for each photo that is shown to him or her. Correct answers are scored. Highest score of the test is 19. This test was used to evaluate question 10 (social cognition) in the CAI-TR.

The Reading the Mind in the Eyes Test (Eyes Test): This test was developed by Baron-Cohen et al.[41]. Validity and reliability for the Turkish version was studied by Yıldırım et al.[42]. It is thought that the Eyes Test evaluates "mind reading" abilities according to the Theory of Mind[41]. Test material consists of photos showing only the individuals' eye region. Subjects are asked to choose the option that best describes the thoughts or emotion of the individual in the photo. Correct answers are taken into account. Higher scores mean better social cognition and mind-reading ability. In our study, this test was used for the evaluation of social cognition (question 10 in the CAI-TR).

Statistical Analysis

Statistical analyses were conducted using the SPSS 16.0 software. In addition to descriptive statistics, for internal consistency of the scale Cronbach's alpha value was calculated. The correlation between the CAI-TR items and objective neurocognitive tests was evaluated by calculating the Pearson correlation coefficient. The statistical significance was defined as $p<0.05$.

RESULTS

A total of 95 patients were included in the study, but five patients who did not complete all psychiatric evaluations and neuropsychological test batteries were excluded. The evaluation was performed on the data of 90 patients who completed all the tests.

Sociodemographic Data

While the mean age of the patients in the study was 36.7±9.0, the mean age of patients' relatives was 52.7±13.0. Sociodemographic data of the patients participating in the study and of their relatives are presented in Table 1.

CAI-TR Interview Time

During the CAI-TR administration, the mean duration of interview with the patients was 18.7

Table 1: Sociodemographic data of patients and their relatives

	Patients	Patient's relatives
Age (years) (mean±SD)	36.7±9.0	52.7±13.0
Gender (n, %)		
Female	22 (24.4)	51 (56.6)
Male	68 (75.6)	39 (43.4)
Education (years) (mean±SD)	10.0±3.1	8.1±4.3
Marital status (n, %)		
Single	64 (71.1)	8 (8.9)
Married	19 (21.1)	73 (81.1)
Divorced /separated	7 (7.8)	9 (10.0)
Occupation (n, %)		
Employed	15 (16.7)	23 (25.6)
Student	3 (3.3)	1 (1.1)
Unemployed	55 (61.1)	21 (23.3)
Housewife	9 (10.0)	20 (22.2)
Retired	8 (8.9)	25 (27.8)
Diagnosis (n, %)		
Schizophrenia	81 (90.0)	
Schizoaffective disorder	9 (10.0)	
Duration of illness (years) (mean±SD)	13.8±7.4	
Number of hospitalizations (mean±SD)	2.5±2.8	

Table 2: Correlation of total CAI-TR interviewer scores and mean CAI-TR scores with CAI-TR items

	r (total CAI-TR interviewer scores)*	r (mean CAI-TR scores)*
CAI-TR item 1	0.761	0.766
CAI-TR item 2	0.692	0.798
CAI-TR item 3	0.828	0.826
CAI-TR item 4	0.747	0.831
CAI-TR item 5	0.831	0.794
CAI-TR item 6	0.730	0.809
CAI-TR item 7	0.704	0.814
CAI-TR item 8	0.735	0.776
CAI-TR item 9	0.627	0.675
CAI-TR item 10	0.750	0.776
CAI-TR total –patient		0.899
CAI-TR total –relative		0.923
CAI-TR total- interviewer		0.957

*Pearson's correlation coefficient

minutes (range=8-30; SD=5.4), with the relatives it was 18.0 minutes (range=10-25, SD=5.0), and the total mean of the CAI-TR administration time was determined as 36.6 minutes (range=18-55, SD=9.7).

Reliability of CAI-TR

The internal consistency of the Turkish translation of CAI (CAI-TR) was quite high. While Cronbach's alpha for the entire scale was 0.97, Cronbach's alpha for the patient evaluation was 0.91; Cronbach's alpha for the relatives' evaluation was 0.93, and for the interviewer it was calculated to be 0.95. In addition, the correlation of each item with the interviewer total test score was high in the assessment of the interviewer (range for Pearson correlation coefficient r=0.627-0.828; all p<0.001). Similarly, each CAI-TR item that the interviewer evaluated was in correlation with the total CAI-TR score (range for Pearson correlation coefficient r=0.675-0.831, all p<0.001) (Table 2). The total scores of the patients, their relatives, and the interviewers were highly correlated (Table 2 and 3).

Table 3: Correlations between total CAI-TR scores of patient, relative, and the interviewer

	CAI-TR total –patient	CAI-TR total –relative	CAI-TR total- interviewer
CAI-TR total scores- patient	1*	0.707* p<0.001	0.828* p<0.001
CAI-TR total scores- relative		1*	0.834* p<0.001
CAI-TR total scores- interviewer			1*

*Pearson's correlation coefficient

Table 4: Correlation of CAI-TR items (rated by the interviewer) with neurocognitive tests

CAI-TR (interviewer) ratings	Neurocognitive test	r*	p-value
CAI-TR item 1	VMPT (immediate memory)	-0.295	0.005
CAI-TR item 2	Wechsler Memory Test-Revised- digit span	0.354	0.001
CAI-TR item 3	Continuous Performance Test	-0.350	0.001
	Trail Making Test A	0.323	0.002
CAI-TR item 4	Continuous Performance Test	-0.303	0.004
	Trail Making Test A	0.451	<0.001
CAI-TR item 5	ÖVMPT (total remembering)	-0.285	0.006
CAI-TR item 5	ÖVMPT (reaching criteria)	-0.212	0.044
CAI-TR item 6	ÖVMPT (total remembering)	-0.360	0.001
CAI-TR item 7	Tower of London	0.248	0.019
CAI-TR item 8	Tower of London	0.272	0.010
CAI-TR item 9	Trail Making Test A	0.309	0.003
CAI-TR item 9	Verbal Fluency Test	-0.215	0.041
CAI-TR item 10	Eyes Test	-0.417	<0.001
CAI-TR item 10	FEIT	-0.282	0.007

ÖVMPT: Öktem Verbal Memory Processing Test, FEIT: Facial Emotion Identification Test, *Pearson correlation coefficient

Table 5: Correlations of total CAI-TR interviewer scores with neurocognitive tests

	r *	p-value
VMPT (immediate memory)	-0.256	0.015
Wechsler Memory Test-digit span	-0.366	<0.001
Continuous Performance Test	-0.381	<0.001
VMPT (total remembering)	-0.352	0.001
VMPT(total reaching criteria)	-0.220	0.038
Tower of London	0.205	0.052
Trial Making Test –A	0.411	<0.001
Verbal Fluency Test	-0.347	0.001
Eyes Test	-0.367	<0.001
FEIT	-0.321	0.002
CAI-TR total point- interviewer	1	

ÖVMPT: Öktem Verbal Memory Processing Test, FEIT: Facial Emotion Identification Test, *Pearson's correlation coefficient

Validity of the Turkish Translation of CAI

In our study, for each item neurocognitive tests known to measure that specific area were used and all the correlations were separately calculated for each item. Related neuropsychological tests showed a statistically significant correlation with each item of CAI-TR evaluated by the interviewer (p<0.05) (Table 4).

In addition, correlations between the total scores of the CAI interviewer and neuropsychological tests are summarized in Table 5.

CAI-TR, Psychiatric Symptoms and Functioning

Statistically significant results were obtained in evaluating the correlation of CAI-TR total scores and Clinical Global Impression of Cognition in

Table 6: Correlations of CAI-TR total scores, Clinical Global Impression of Cognition in Schizophrenia (CGI-cogS), Global Assessment of Functioning-Cognition in Schizophrenia (GAF-CogS), PANSS scores, Clinical Global Impression (CGI), Global Assessment of Functioning (GAF) score, and Social Functioning Scale (SFS)†

	CAI-TR total-patient	CAI-TR total-relative	CAI-TR total-interviewer	GAF-CogS	CGI-CogS patient	CGI-CogS relative	CGI-CogS interviewer
PANNS positive	0.141	0.349 **	0.240*	-0.292*	0.047	0.289 *	0.153
PANNS negative	0.488**	0.612**	0.632**	-0.730*	0.450 **	0.635**	0.654 **
PANNS general	0.292*	0.430**	0.335**	-0.404*	0.250*	0.399**	0.352**
PANNS total	0.396**	0.564**	0.485**	-0.590*	0.334 **	0.540**	0.476**
GAF	-0.510**	-0.619**	-0.564**	0.828**	-0.455**	-0.534**	-0.539**
CGI	0.485**	0.631**	0.593**	-0.773	0.439**	0.587**	0.527**
SFS- total	-0.479**	-0.664**	-0.534**	0.680**	-0.430**	-0.648**	-0.585**

*p<0.05, **p<0.001, †: Values shown in this table correspond to Pearson's correlation coefficient

Schizophrenia (CGI-CogS) assessed in CAI, Global Assessment of Functioning-Cognition in Schizophrenia (GAF-CogS), PANSS scores, Clinical Global Impression (CGI), Global Assessment of Functioning (GAF) score, and Social Functioning Scale (SFS). Results are summarized in Table 6.

DISCUSSION

The CAI is a scale based on semi-structured interviews, developed by Ventura et al. in 2008, to measure cognitive functions in schizophrenia[7,8]. This study has shown that the Turkish version of CAI (CAI-TR) is a good instrument to measure cognitive functions in patients with schizophrenia. CAI-TR administration required an average of 36.6 minutes. In the original study, this duration was reported to be 34.2 minutes[7]. By further practice and experience, the test application time is expected to be shortened.

Since patients with schizophrenia usually show a lack of motivation and fatigue, brief assessment scales are required by clinicians and researchers[43,44]. Thanks to its short administration time, CAI-TR gives the opportunity to minimize the patient's burden associated with the longevity of the assessment. It is reported that CAI is well tolerated by patients[45].

CAI-TR's Internal Consistency

Cronbach's alpha value calculated for the internal consistency of the scale was 0.97, which meant CAI-TR as well as the original CAI offer a near-perfect internal consistency. In addition, the correlations between each CAI-TR item and the total interviewer scores of CAI-TR as well as the mean overall scores of CAI-TR were high. This is consistent with the results of the original article reported by Ventura et al.[7,8] and is a good indicator of internal consistency of the Turkish CAI. In our study, as in the original, there are high correlations between the patients', their relatives', and the interviewers' overall scores. This result suggests that patient ratings alone may be sufficient for the CAI-TR evaluation[8]. However, the patients who participated in this study are clinically stable and have low PANSS scores, and they are known to have better insight (based on clinical observation). In the original study, it was reported that there is a correlation between patients' insights and CAI ratings; therefore it was emphasized that it would be appropriate to use all available sources of information[7].

Recent studies report that insight into neurocognitive deficits is independent from insight into illness[46,47]. Future research should investigate the relationship between cognitive insight, insight into symptoms, and patients' rating on CAI.

CAI-TR and Neurocognitive Tests

In this study, each cognitive function measured by CAI-TR items was examined separately, and the correlation between CAI-TR items and neurocognitive tests, which is considered to

evaluate related cognitive functions, was evaluated. Each item showed a statistically significant correlation with the neuropsychological test that evaluates a particular cognitive domain. Although CAI-TR was not developed to replace standard neurocognitive tests, it is a useful tool to rate cognitive functions and to evaluate the changes that therapeutic interventions make in the daily lives of the patients with schizophrenia.

CAI-TR and Psychiatric Symptoms

CAI-TR scores of the patients, relatives, and the interviewers were correlated with the PANSS scores. In particular, the high correlation between negative symptoms and cognitive impairment is found to be remarkable, which is consistent with the hypothesis that "psychiatric symptoms, especially negative symptoms, are individually related to neurocognitive symptoms"[48]. Several studies have suggested that neurocognitive deficits are associated with negative symptoms rather than positive symptoms[49]. Moreover, negative symptoms mediate the relationship between neurocognition and functional outcome[49].

Compared to other tests in this area, CAI is reported to be a more powerful tool in assessing the functionality[8]. In this study, CAI-TR ratings were found highly correlated not only with the social functioning scale but also with GAF. This is important both in terms of the strength of the scale and to assess the relation between cognitive functioning and general and social functioning.

Cultural adaptation of CAI was suggested to be easier than for other tests in this field[50]. Indeed, we gained the impression that the questions of Turkish CAI were comprehensible for patients and their relatives, as the interviewers were not required to produce alternatives for incomprehensible points.

Limitations and Strength of the Study

Having a larger sample compared to other validity and reliability studies is one of the strengths of this study. In addition, at least one neuropsychological test related with the cognitive area of each question was applied and statistically significant correlations were obtained. We can also consider that the application of numerous tests and significant correlations are strengths of the study. However, as there is no validity and reliability data for the MATRICS test battery used in the original CAI study, a different set of reliable and valid tests available in Turkey was chosen. Taking into consideration that the application of neuropsychological tests will be exhausting for the patient in relation to its duration, which might decrease their cognitive performance, short, easily applied subtests of neuropsychological tests were selected. This point may result in a limitation to yield detailed results. Evaluation of this issue is possible only with more detailed, prospective studies with larger samples.

The original study reported that CAI has good test-retest reliability (r=0.83)[7]. In our study, retest evaluation was not studied after the Turkish validity was proven, and it was considered that the replicate has similar characteristics as the original, as it makes similar measurements.

CONCLUSIONS

Turkish CAI is a practical test that can be used to measure cognitive functions of patients with schizophrenia; it has a short administration time and is an easily applicable form that is both valid and reliable.

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BDG

BİLİŞSEL DEĞERLENDİRME GÖRÜŞMESİ

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Sürüm 2 - 1/18/08

Şükrüye Boşgelmez, Mustafa Yıldız, Esra Yazıcı, Eda Kavur, Ümit Karabulut, Celaleddin Turgut, Ayşe Kırcalı,
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Türkçe güvenirlik geçerlik çalışması- BCP-2015

Genel Bilgiler		
HASTA ile ilgili alanlar		
	Hasta	
Gözlem / Değerlendirme		
Görünüm – genel temizlik, giyim (giyimin mevsime uygunluğu, düzgünlüğü, renk uyumu, ilikli olup olmaması, bağcıkları vb).	Not alın:	
Tüm bilgi kaynaklarını kullanın.	Kaynakları kaydedin:	
Tedavi uyumu		
İlaçlarını önerildiği şekilde uygun doz ve uygun zamanda alıyor mu?		
İlaç Değişimleri.		
Genel yönelim		
Zaman (gün, yıl, tarih), yer (şehir, ilçe-mahalle-semt, klinik), kişi.		
Hastanın kiminle ve nerede yaşadığını tanımlayın.		
Hastanın psikotik belirtileri var mı? Örn. Varsanılar.	Lütfen tanımlayın:	
Hastanın yazı yazmak için hangi elini baskın olarak kullandığını belirtiniz.		
Hastaya bilgi veren kişi ile ilişkisini sorunuz.		
Haftada kaç saat birlikte zaman geçirirler?	Bilgiyi kaydedin:	
HASTA ve BİLGİVEREN ile ilgili alanlar		
	Hasta	**Yakını**
İlişkili öykü		
Yakın zamandaki klinik durumlar, hastanın diğer hastalıkları, önemli toplumsal ya da kişisel olaylar. Klinik durumdaki belirgin dalgalanmalar (Kontrol değerlendirmesi için: İlk görüşmeden sonraki klinik durumlar).		
Nüfus Bilgileri		
Eğitim düzeyi (Yıl)		
Meslek / Öğrencilik durumu		
Doğum tarihi		
Görüşmenin Süresi	Dakika olarak kaydedin:	Dakika olarak kaydedin:
Notları kaydedin		

ALAN: İşlem belleği		
1. Yeni öğrenilen sözel bilgileri kısa sürede akılda tutmada güçlük çekme (anlık kullanıma yetecek kadar)		
Yeni tanıştığınız insanların isimlerini hatırlamakta zorluk çeker misiniz? Size söylenen telefon numaralarını tekrar etmekte sorun yaşar mısınız? Doktorunuzun görüşme sırasında söylediklerini hatırlamakta sorun yaşar mısınız? Bilgileri hatırlamak için bir yere yazma gereksinimi duyar mısınız? Bir toplantıya gittiniz, beş kişiyle yeni tanıştınız, bu kişilerin isimlerini duyduktan kısa bir süre sonra bu isimlerden kaç tanesini hatırlayabilirsiniz? Hatırlayamadıklarınız varsa: Bu isimleri hatırlamanız için kaç kere daha tekrarlanması gerekir? Bir numarayı öğrenmek için 118'ni aradığınızda, söylenilen numarayı aklınızda tutabilir misiniz?		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7
2. Zihinsel işlem ya da hesaplamaları "anında" yapmada güçlük çekme		
Alış veriş yaparken beklediğiniz para üstünü hesaplama konusunda güçlük yaşar mısınız? Kredi kartı hesabını ya da faturaları öderken rakamları aklınızda tutmakla ilgili sorun yaşar mısınız? *(Hatırlatma: Hasta faturaları kendisi ödemiyorsa nedenini sorun. Eğer hasta, bu tür işleri annesinin yaptığını söylerse, ödemeyi siz yapıyor olsaydınız sayıları aklınızda tutabilir miydiniz? şeklinde sorulabilir.)*		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7

ALAN: Dikkat / Uyanıklık		
3. Dikkati sürdürmede (yoğunlaşmada) sorun yaşama (Dikkat dağıtan bir durum olmaksızın)		
Dikkatinizi sürdürmede sorun yaşar mısınız? Sıklıkla ara verir misiniz? Televizyon izlerken, radyo dinlerken ya da bir metin okurken dikkatinizi vermekte sorun yaşar mısınız? (Okuma / dinleme / tüm makale / bölüm / programı bitirecek kadar) Bir yazı okuduktan ya da film izledikten sonra ne okuduğunuzu/izlediğinizi hatırlayabiliyor ya da başkaları ile bunları tartışabiliyor musunuz? Az önce okuduğunuz yazıyı/ izlediğiniz televizyon yayınını unuttuğunuz oluyor mu?		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7
4. Bir konu üzerine odaklanmada güçlük çekme (Eğer ortada dikkat dağıtan belirgin bir durum yoksa)		
Markette ihtiyacınız olan şeyi bulmakta sorun yaşar mısınız? Yönlendirme işaretlerine bakarak yolunuzu bulmakta zorluk çeker misiniz? *Hatırlatma: Hastaya hastanede tabelalara bakarak gideceği yeri bulmada sorun yaşayıp yaşamadığını sorduğunuzda hasta bu hastaneyi zaten çok iyi bildiğini söylüyorsa, hastaya eğer ilk defa gittiği bir hastanede olsaydı gideceği yeri bulmada sorun yaşayıp yaşamayacağı sorulabilir.*		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7

ŞİDDET DERECELENDİRMESİ			
YB= Derecelendirmeye uygun değil ya da yetersiz bilgi	1. Normal, bozukluk yok	2. En düşük düzeyde bilişsel bozulma, fakat işlevsellik genellikle olağan	3. İşlevsellik üzerinde biraz etkili olan hafif düzeyde bilişsel bozulma
4. İşlevsellik üzerinde belirgin etkili olan orta dereceli bilişsel bozulma	5. Günlük işlevselliği etkileyecek düzeyde ciddi bilişsel bozulma	6. Bağımsız yaşamayı engelleyecek düzeyde ağır bilişsel bozulma	7. Kişinin kendisine ya da başkalarına zarar verecek düzeyde bilişsel bozulma

ALAN: Sözel öğrenme ve bellek		
5. Sözel bilgileri öğrenme ve hatırlamada sorun yaşama		
Yönergeleri ya da önemli bilgileri öğrenme ve daha sonra hatırlamada sorun yaşar mısınız (Ör: ilaçların isimleri)? *Tanıştıktan sonra insanların isimlerini öğrenme ve hatırlamada sorun yaşar mısınız? Hatırlamak için bazı şeyleri yazmaya gereksinim duyar mısınız? Bir yere yazmazsanız ne olur? Yazdığınız halde başkalarının yardımına gereksinim duyduğunuz olur mu?*		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7
6. Son zamanlardaki olayları anımsamada güçlük yaşama		
Başkalarının size yaşanmış olayları hatırlatmasına gereksinim duyduğunuz olur mu? Bir akşam önce ne yediğinizi anımsıyor musunuz? Son günlerdeki haberler hakkında bilgi verebilir misiniz? Son günlerde yaptığınız bir etkinlik varsa, bilgi verebilir misiniz?		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7

ALAN: Akıl yürütme ve sorun çözme		
7. Gerektiğinde farklı planlar geliştirme konusunda esnekliğin olmaması		
Planlarınız bozulduğunda yeni seçenekler üretmede zorluk çeker misiniz? (Ör: O gün mutlaka halletmeniz gereken bir iş için düzenli olarak kullandığınız ulaşım aracı yoksa ya da genellikle gittiğiniz mağaza kapalıysa ne yaparsınız?) *NOT: Hastanın eve döneceğini söylemesi durumunda bunun, seçenek oluşturma yetisindeki bozukluktan mı yoksa yoksunluk belirtilerinden mi kaynaklandığının ayırt edilmesi gerekir.*		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7
8. Çözüme yönelik karar verme durumlarında sorun yaşama		
Eğer… (elektrikler kesilirse… anahtarı evde unutursanız… lavabo tıkanırsa… ampul patlarsa…) ne yaparsınız? *Hatırlatma: "Yöneticiyi/çilingiri/tamirciyi/elektrikçiyi çağırırım, ararım" yanıtı "Yöneticiye/çilingire/tamirciye/elektrikçiye ulaşamazsanız ne yaparsınız?" şeklinde devam ettirilmelidir.*		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7

ŞİDDET DERECELENDİRMESİ			
YB= Derecelendirmeye uygun değil ya da yetersiz bilgi	1. Normal, bozukluk yok	2. En düşük düzeyde bilişsel bozulma, fakat işlevsellik genellikle olağan	3. İşlevsellik üzerinde biraz etkili olan hafif düzeyde bilişsel bozulma
4. İşlevsellik üzerinde belirgin etkili olan orta dereceli bilişsel bozulma	5. Günlük işlevselliği etkileyecek düzeyde ciddi bilişsel bozulma	6. Bağımsız yaşamayı engelleyecek düzeyde ağır bilişsel bozulma	7. Kişinin kendisine ya da başkalarına zarar verecek düzeyde bilişsel bozulma

ALAN: İşlem yapma hızı		
9. Görevleri yapma hızında düşme		
Yaptığınız işlerin olması gerekenden daha uzun sürdüğünü düşünür müsünüz (Ör: yemek yapma, alış veriş yapma, eşyaları düzenleme, yönergeleri okuma)? *Hatırlatma: Hastanın kendi işlem yapma hızı hakkında içgörüsü yoksa bir başkasının (örn: annesinin) hastanın işleri bitirmede yavaş olduğundan şikayet edip etmediği sorulabilir.*		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7

ALAN: Toplumsal biliş		
10.Başkalarının niyet ve bakış açılarını anlamakta zorluk çekme		
Diğer insanların düşünce ve niyetlerini anlamakta zorluk çeker misiniz? Yüz ifadelerinden, ses tonlarından ya da davranışlarından o kişilerin niyetlerini ya da duygularını anlayabilir misiniz? Siz konuşurken karşıdaki kişi saatine bakarsa, onun ne hissettiğini düşünürsünüz?		
Hasta örneği	**Yakının örneği**	
Hasta YB 1 2 3 4 5 6 7	Yakını YB 1 2 3 4 5 6 7	Görüşmeci YB 1 2 3 4 5 6 7

ŞİDDET DERECELENDİRMESİ			
YB= Derecelendirmeye uygun değil ya da yetersiz bilgi	1. Normal, bozukluk yok	2. En düşük düzeyde bilişsel bozulma, fakat işlevsellik genellikle olağan	3. İşlevsellik üzerinde biraz etkili olan hafif düzeyde bilişsel bozulma
4. İşlevsellik üzerinde belirgin etkili olan orta dereceli bilişsel bozulma	5. Günlük işlevselliği etkileyecek düzeyde ciddi bilişsel bozulma	6. Bağımsız yaşamayı engelleyecek düzeyde ağır bilişsel bozulma	7. Kişinin kendisine ya da başkalarına zarar verecek düzeyde bilişsel bozulma

BİLİŞSEL BOZULMANIN GENEL KLİNİK İZLENİMİ		
Bu hasta için toplanan tüm bilgileri göz önüne alarak bilişsel işlevsellik alanlarının günlük yaşamı nasıl etkilediğini günlük işlevlerini yerine getiren herhangi biri ile karşılaştırarak bilişsel bozulmanın genel şiddetini derecelendirin, bu kişi bilişsel olarak nasıl etkilenmiş? (Bir şıkkı işaretleyin)		
BİLİŞSEL BOZULMANIN GENEL ŞİDDETİ - HASTA GÖRÜŞMESİNDEN		
YB= Yetersiz bilgi	4 = Orta derece bozulma	Notlar
1 = Normal, bilişsel bozulma yok	5 = Belirgin bozulma	
2 = Sınırda bozulma	6 = Şiddetli bozulma	
3 = Hafif bozulma	7 = En şiddetli bozulma	
BİLİŞSEL BOZULMANIN GENEL ŞİDDETİ - YAKINIYLA YAPILAN GÖRÜŞMEDEN		
YB= Yetersiz bilgi	4 = Orta derece bozulma	Notlar
1 = Normal, bilişsel bozulma yok	5 = Belirgin bozulma	
2 = Sınırda bozulma	6 = Şiddetli bozulma	
3 = Hafif bozulma	7 = = En şiddetli bozulma	
BİLİŞSEL BOZULMANIN GENEL ŞİDDETİ - GÖRÜŞMECİNİN KARARI		
YB= Yetersiz bilgi	4 = Orta derece bozulma	Notlar
1 = Normal, bilişsel bozulma yok	5 = Belirgin bozulma	
2 = Sınırda bozulma	6 = Şiddetli bozulma	
3 = Hafif bozulma	7 = = En şiddetli bozulma	

İşlevselliğin Genel Değerlendirmesi - Şizofrenide Biliş (İGD-ŞB)	
100 | 91	Pek çok etkinlikte üst düzeyde bilişsel işlevsellik vardır, bilişsel işlev gerektiren sorunların çözümünde üst düzey zihinsel işlevsellik sürdürülmektedir.
90 | 81	Bilişsel eksiklik yok ya da en alt düzeydedir (ara sıra bellek yanılmaları ya da sözcük bulmakta güçlük çekse de), tüm bilişsel alanlarda işlevsellik iyidir, bilişsel alanla ilgili görevlerde etkin işlevsellik ve katılım gösterir, bilişsel başarımla ilgili olağan endişeler dışında sorun yoktur.
80 | 71	Bilişsel eksiklikler varsa bile bunlar gelip geçicidir ve stres durumlarında ortaya çıkan olağan tepkilerdir (Örn: Aile içinde bir tartışma sonrası yoğunlaşma zorluğu); bilişsel eksiklik nedeniyle toplumsal, iş ya da akademik işlevsellikte hafif bir bozulma vardır.
70 | 61	Bazı hafif bilişsel belirtiler (Örn: Yoğunlaşma zorluğu ya da bellek yanılmaları) ya da bilişsel sorunlar nedeniyle toplumsal, iş ya da akademik işlevsellikte bazı zorluklar yaşar (Örn: Bilişsel sorunlar nedeniyle okuldaki bir dersi tekrar etmek zorunda kalmıştır).
60 | 51	Orta derecede bilişsel belirtiler (Örn: Dikkatini vermede sürekli sorun yaşama ya da programlanmış etkinlikleri unutma) YA DA bilişsel sorunlar nedeniyle toplumsal, iş ya da akademik işlevsellikte orta derecede zorluk yaşar (Örn: Devamsızlık nedeniyle okulu bırakmak zorunda kalmıştır).
50 | 41	Ciddi bilişsel sorunlar (Örn: Dikkat, bellek ya da planlamayla ilgili sürekli sorunlar) YA DA bilişsel sorunlardan dolayı toplumsal, iş ya da akademik işlevsellikte herhangi bir ciddi bozulma vardır (Örn: Bilişsel eksiklikler nedeniyle aile sorunları yaşar, işini sürdüremez).
40 | 31	Toplumsal, iş ya da akademik işlevselliği bozan şiddetli bilişsel sorunlar (Örn: Kişi normal bir iş yerinde çalışamaz, destekli bir işte bile zorluk yaşar, yaşam alanındaki günlük işlerini sürdürmekte zorlanır).
30 | 21	Bilişsel bozulma, anlamlı iletişimi ve hedefe yönelik davranışları da içerecek şekilde işlevselliğin tüm alanlarını etkileyecek düzeyde belirgindir (Örn: Karşılıklı konuşmayı sürdürmede, günlük yaşamdaki temel gereksinimleri karşılamada zorluk yaşar).
20 | 11	Bilişsel bozulma nedeniyle kendine ya da başkalarına zarar verme açısından bazı riskler vardır (yargılamada /planlamada belirgin bozulmalar, davranışlarının sonuçlarını anlamada yetersizlik, sıklıkla amaçsız dolaşma ya da yönelimde bozulma hali).
10 | 1	Kendine ya da başkalarına zarar verme tehlikesi YA DA bilişsel bozulmadan dolayı kişisel temizliğini sürdürememe (Örn: Anlamlı iletişimin olmaması, davranışlarını düzenlemedeki sorunlar nedeniyle temel özbakımı sağlayamama).
0	Yetersiz bilgi.