

# Adaptation of the Measures of Criminal Attitudes and Associates to the Turkish Language: Validity and Reliability Study



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## SUMMARY

**Objective:** There are many biopsychosocial determinants among factors that trigger criminal behavior. Social variables such as the number of friends involved in criminal activity and the amount of time spent with them, as well as psychological processes such as sentiments of entitlement, antisocial attitudes of the individual can influence the possibility of getting involved in acts of crime. The purpose of this study was to adapt the Measures of Criminal Attitudes and Associates (MCAA) to Turkish language and to test its reliability and validity of the Measurement of Criminal Attitudes and Associates (MCAA), adapted to the Turkish language (MCAA-TR).

**Method:** The Turkish version of the scale was tested on 202 adult convicts and 208 undergraduate university students. In order to assess the concurrent validity of the MCAA-TR, the UPPS Impulsive Behavior Scale and Criminal Thinking Scale (MCAA) were given to participants.

**Results:** Principal component analysis showed that the factor structure of the MCAA-TR was highly consistent with the original version of the scale. The Cronbach's Alpha internal consistency was 0.86 for the total scale and ranged from 0.68 to 0.82 for subscales. Results of discriminant function analysis showed a classification efficiency of 77.6%. Also, the total sub-dimension scores of the MCAA-TR showed significant correlation with the scores on the relevant sub-dimensions of the scales used to evaluate concurrent validity.

**Conclusion:** The MCAA-TR was found to be a valid and reliable tool for assessing crime related cognitions and attitudes

**Keywords:** Measurement of Criminal Attitudes and Associates, reliability, validity, crime, risk, dangerousness

## INTRODUCTION

There are various psychological, sociological, legal theories and models providing explanations for acts of crime. In this section, psychosocial variables related to acts of crime will be briefly discussed within the purpose and scope of the study. Andrews and Bonta (2010) categorize the structures associated with the perpetration of crime under the two main headings "Big Four" and "other criminogenic factors". The Big Four comprises the history of antisocial behavior, antisocial personality pattern, antisocial cognitions, and antisocial relationships. Other criminogenic factors include

family/marital status, educational level, professional or monetary level of success, pro-social leisure time and substance addiction. Among the cited factors, antisocial personality pattern, antisocial cognitions and antisocial relationships are relatively dynamic variables and can be evaluated by using observation, interview or self-report methods. It is considered that using valid and reliable measurement tools in the evaluation of the effectiveness of the treatment programs at the design and preparation stages and during and after implementation would be useful in the prevention of recurrent crime. Indeed, Walters and Lowenkamp (2016) state that antisocial cognition included

\*This article is a part of the PhD thesis named as "Psychological Variables That Predicting Physical Violence Criminal Behavior in Adult Convicts in Prisons" supervised by Assistant Professor Sedat Işıklı at the Hacettepe University Department of Clinical Psychology.

Received: 05.04.2018, Accepted: 22.05.2019, Available Online Date: 10.10.2019

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in the “Big Four”, should be measured regularly in criminal individuals lest our ability to understand and interfere with criminal behavior weakens.

Another variable focused on by research on criminal behavior is the thoughts of entitlement or the tendency to legitimize an act of crime. For example, in one study the entitlement sub-dimension of the Psychological Inventory of Criminal Thinking Styles significantly predicted recidivism (Walters et al. 2015). The results of study on making open-ended thought chains showed that entitlement was among the danger factors in the thoughts of sex offenders (Pemberton and Wakeling 2009). According to the data of the Republic of Turkey Ministry of Justice General Directorate of Prisons and Detention Houses (2018), the numbers of adult individuals held in the state penitentiaries at the end of 2010 and 2015 were, respectively, 86.037 and 152.140. Information acquired from the database of The Turkish Statistical Institute 76,607 adults (73,933 males and 2,674 females) were convicted in 2008 for repeated acts of crime. Given these statistical accounts, there is need for assessment tools developed in (or adapted to) the Turkish language to facilitate the programs for prevention or criminal behavior. Reviewing the relevant literature has shown the availability of such validated self-report measurement scales including the Antisocial Behavior Scale (Kartallar 1996), the Levenson Self-Report Psychopathy Scale adapted to the Turkish language by Engeler (2005) and the Criminal Thinking Scale adapted to the Turkish language by Öncül (2014). The Antisocial Behavior Scale comprises the 4 sub-dimensions “destructive tendency”, “uncontrolledness/aggression”, “optimism” and “social disability”. The Levenson Self-Report Psychopathy Scale can make a dual distinction between primary and secondary psychopathy. While primary psychopathy includes less diagnostic features such as “callousness”, “manipulative behavior”, “egocentricity”, the secondary psychopathy examines features that are more diagnostic groups such as “impulsiveness”, “antisocial behaviors” and “substance abuse”. Lastly, the Criminal Thinking Scale (CTS) consists of the five subscales “entitlement”, “justification”, “power orientation”, “Cold Heartedness”, and “Criminal Rationalization”.

Although all of the above referred scales have contributed to the measurement of antisocial tendencies and cognitions, it has not been possible to identify an individual’s attitudes to violence and to reach the cognitions of an individual relating to the antisocial tendencies shared with others by means of the available scales. In order to overcome this limitation, Mills et al. (2002) developed the Measures of Criminal Attitudes and Associates (MCAA). Briefly viewing the recent studies making use of the MCAA, significant correlations are observed between the total score on the scale, attitudes towards

violence and antisocial relationships, entitlement thoughts and antisocial intentions and reconvictions for violent crime (Mills and Kroner 2006). The relationship between the changes in the attitudes to antisocial relationships and recidivism was investigated after completion of a treatment based on Cognitive Behavioral Therapy focused on antisocial relationships given during parole to adults convicted for different crimes (Kroner and Yessine 2013). It was shown among adults convicted for different crimes that the number of convicted friends did not predict the crime of murder (Boduszek et al. 2012). However, a significant positive correlation was detected between the number of convicted friends and recidivism by previously convicted individuals (Boduszek et al. 2011). Retrospective evaluation of the data on reconvicted individuals indicated that the number of convicted friends and the time spent with these friends were significant predictors of recidivism (Boduszek et al. 2014). It was reported that among adult males imprisoned for crimes of physical violence, the number of friends associated with the crime mediated between the attitudes to criminal behavior and the variable of recidivism (Boduszek et al. 2012). Among adult males convicted for crimes other than crimes of violence, cognitions related to crime predicted the number of convicted friends but not the reoffending (Bourke et al. 2013). The research results cited above have suggested that adaptation of the MCAA to the Turkish language would contribute to evaluations of the different cognitive orientations and friendship circles related to crime in studies on criminal behavior in Turkey. In this respect, the aim of the present study is to investigate the validity and reliability of the MCAA-TR to be used in Turkey.

## **METHOD**

### **Participants**

The research participants consisted of 202 adult male convicts at the Ankara Penitentiary Campus, with a mean age of 30.08 (SD = 8.97, range of 18-68) years and 208 male students studying at various undergraduate programs of Hacettepe University, with a mean age of 21.48 (SD= 1.96, range 18-30). The sociodemographic characteristics of the university students and the convicts are presented in Table 1 and Table 2, respectively.

### **Data Acquisition**

In the study, the demographic information forms were prepared separately for the university students and for the convicted individuals. Apart from the MCAA, the UPSS Impulsive Behavior Scale (UPPS) and the Criminal Thinking Scale (CTS) were used for criterion validity analyses.

**Table 1.** Sociodemographic Characteristics of the University Students

Variable	N	%	Min.	Max.	Mean	SD.
Age	207		19	30	21.47	1.96
Number of siblings	208		0	5	1.33	0.95
Settlement where he/she spends most of his life						
Village	7	3.4				
District	27	13.0				
City	71	34.1				
Metropolis (Population over 2 million)	103	49.5				
Mother's educational status						
Illiterate	2	1.0				
Literate	1	0.5				
Primary school	40	19.2				
Middle school	19	9.1				
High school	63	30.3				
University	81	38.9				
Father's educational status						
Illiterate	0	0.0				
Literate	1	0.5				
Primary school	19	9.1				
Middle school	20	9.6				
High school	56	26.9				
University	112	54.9				

**Table 2.** Sociodemographic Characteristics of the Convicted Individuals

Variables	N	%	Min.	Max.	M	SD
Age	169		18	68	30.10	8.97
Number of children	88		0	6	1.49	1.13
Number of siblings	197		0	13	3.73	2.38
Age at the first criminal act	189		8	45	20.74	7.59
The number of criminal offences committed before the last offence	177		0	35	3.73	2.38
The year of commitment of the offense that he is currently in prison for	182		1989	2017	2012.68	4.46
Total penalty (in months)	161		3	528	121.52	106.86
Educational status						
Primary school	37	18.3				
Middle school	104	51.5				
High school	49	24.3				
Associate degree	3	1.5				
University undergraduate	7	3.5				
University graduate	1	0.5				
Marital status						
Single	109	54.0				
Married	54	26.7				
His wife has passed away	1	0.5				
Divorced	21	10.4				
Not divorced but not associating with his wife	4	2.0				
Common marriage	12	6.0				

Continued Table 2.

Variables	N	%	Min.	Max.	M	SD
Mother's educational status						
Illiterate	45	22.3				
Literate	13	6.4				
Primary school	94	46.5				
Middle school	36	17.8				
High school	10	5.0				
University	1	0.5				
Father's educational status						
Illiterate	12	5.9				
Literate	17	8.4				
Primary school	95	47.0				
Middle school	34	16.8				
High school	33	16.3				
University	9	4.5				
Place of Settlement before imprisonment						
Village	4	2.0				
District	18	8.9				
City	57	28.2				
Metropolis (Population over 2 million)	122	60.4				
Frequency of alcohol usage before imprisonment						
Never	61	30.2				
In special days	57	28.2				
Once a month	22	10.9				
1-2 days a week	4	20.8				
Every day	19	9.4				
Use of addictive substances other than cigarettes before imprisonment						
Uses	85	42.1				
Does not use	117	57.9				
History of crime among family members						
No one	149	73.8				
Mother	0	0				
Father	13	6.4				
Sibling(s)	28	13.9				
Mother and father	1	0.5				
Father and sibling(s)	10	5.0				
Mother, father and sibling(s)	1	0.5				
Type of the crime for imprisonment now*						
Crimes against the person <sup>a</sup>	119	58.9				
Crimes against the society <sup>b</sup>	47	23.3				
Crimes against nation and state <sup>c</sup>	2	1.0				
International crimes	0	0.0				
Opposition to the execution and bankruptcy law <sup>d</sup>	1	0.5				
Violation of probation measure	4	2.0				
Smuggling	4	2.0				
Tax irregularity	3	1.5				

\*Made according to the classification in the Turkish Penal Code.

<sup>a</sup>Kill; attempt to kill; crimes against sexual immunity; fraud; qualified theft; theft; attempted theft; spoil; qualified looting; damage to property

<sup>b</sup>Use, buy or trade drugs; kidnapping or holding the child as hostage; cyber-crimes; forgery of official documents

<sup>c</sup>Debit; resist

<sup>d</sup>Not to make payment on due date

**The Demographic Information Forms:** The researchers prepared two different forms for the university student group and the prison group. Common questions in the two different forms were the year of birth, marital status, educational status of parents, and the number of siblings. Specific questions included for the university students were gender, department of study, working status of parents, settlement unit where the life was mostly spent, and the monthly net income of the family. Specific questions for the prisoners were the number of children, educational status, settlement unit before commitment to prison, frequency of alcohol use before imprisonment, use of addictive substances other than cigarettes and alcohol before imprisonment, age of the first criminal act, the total number of offenses until today, and the history of crime among family members (parents, siblings).

**The Measures of Criminal Attitudes and Associates (MCAA):** The 66-item scale was developed by Mills et al. (2002) to measure the antisocial tendencies and relationships of individuals. The MCAA consists of two sections and 6 sub-dimensions. The first part assesses the number and coefficient of friends who committed a crime. The second part consists of 12 items on attitudes towards violence, 12 items on attitudes towards entitlement, 12 items on antisocial intention and 10 items on attitudes towards associates. In the first part, the individual is asked to answer the questions on the four adults they spend the most of their free time with as Yes or No, and to mark the amount of time spent on a 4-point Likert-type scale. For each friend, the total number of yes responses is multiplied by the amount of time spent, and the scores obtained from 4 friends are summed up to obtain a coefficient. In the second section, items are rated as Agree or Disagree. Sub-dimension total scores can be calculated by adding the items belonging to each sub-dimension. When item scores are summed, items 3, 8, 16, 24, 31, 32 and 43 are reverse coded. The sub-dimension on attitudes towards violence demonstrates the level of attitudes of individuals supporting violence. The sub-dimension on the attitudes towards entitlement measures the self-centered expectation level to have everything the individual wants. The sub-dimension on antisocial intention evaluates the individual's intention to engage in antisocial actions. Finally, the sub-dimension on the attitudes towards associates aims to measure the consent level of making friendship with antisocial persons who have engaged in criminal acts. In addition, a total score can be obtained by summing the scores of 4 sub-dimensions. In the original study the Cronbach's alpha coefficients for all sub-dimensions, except that on attitudes towards entitlement, were found to range between 0.80 and 0.84. The test-retest coefficient of the

sub-dimensions ranged between 0.65 and 0.81 ( $p < 0.01$ ,  $n = 41$ ) (Mills et al. 2002).

**The UPPS Impulsive Behavior Scale (UPPS):** This scale, developed by Whiteside and Lynam (2001), evaluates impulsiveness in the 4 sub-dimensions: urgency, lack of premeditation, lack of perseverance and sensation seeking. The UPPS, consisting of forty-five items, is designed as a 4-point Likert type scale (1 = does not fit me at all, 4 = it fits me very well). The urgency sub-dimension aims to measure the tendency of the individual to control his/her behaviors when experiencing negative emotions. The lack of premeditation sub-dimension aims at evaluating the tendency of the individual to make a plan before making an act. In the sensation-seeking sub-dimension, it is aimed to measure the tendency of the individual to cause excitement-triggering behaviors. The last sub-dimension, lack of perseverance, aims to assess the individual's patience and ability to focus in order to complete a task. Yargıç et al. (2011) adapted the UPPS to the Turkish language and reported Cronbach's Alpha values ranging between 0.80 and 0.86 for the sub-dimensions. Test-retest reliability coefficient for the whole scale was 0.81 ( $p < 0.01$ ,  $n = 40$ ). The internal consistency values obtained in this study were 0.85 for the total score and ranged between 0.72 and 0.87 for the scores of the sub-dimensions.

**The Criminal Thinking Scale (CTS):** The CTS has 37 items rated on a 5-point Likert type scale and distributed in the 6 sub-dimensions (1) entitlement, (2) justification, (3) power orientation, (4) cold heartedness, (5) criminal rationalization; and (6) personal irresponsibility (Knight et al. 2006). The higher the score the higher the support for the crime in the relevant sub-dimension. The entitlement sub-dimension aims to determine the level of belief that an individual's own interests are more important than the rights of the others. The justification sub-dimension targets the tendency to underrate criminal behavior, alleviate negative emotions, and restore self-esteem. The power orientation sub-dimension queries the level of effort made to succeed by using force over other people. The cold heartedness sub-dimension aims to evaluate the level of psychopathy in interpersonal relationships. The sub-dimension of criminal rationalization assesses the level of thinking that the authorities are not put on trial despite committing crimes. The last sub-dimension personal irresponsibility queries the level of acceptance of responsibility in criminal behavior. The Cronbach's alpha values of the CTS adapted to the Turkish language by Öncül (2014) were 0.84 for the total score and in the 0.59-0.71 range for the sub-dimensions. The test-retest reliability coefficient was 0.70 for the whole scale and in the 0.23-0.67 range for the sub-dimensions. In this study, the internal consistency values were determined



to be 0.87 for the total score and in the 0.52-0.75 range for the sub-dimensions.

### Procedure

After obtaining the permission of the authors who developed the original form of the Measures of Criminal Attitudes and Associates, the scale items and instructions were translated by a certified translator and notarized by a notary public. Subsequently, two professors of clinical psychology and one clinical psychologist, expert in the clinical psychology literature and in both languages, evaluated and provided recommendations on the translation made. The final version of the scale in the Turkish language, the MCAA-TR, was constituted by the authors of this study, taking into consideration the suggestions received from the three experts.

Firstly, the necessary permissions were obtained from Hacettepe University Ethics Commission and from the Ministry of Justice General Directorate of Prisons and Detention Houses. The purpose of the study was made known to the undergraduate students in 28 different departments of Hacettepe University during the March-July 2017 term. The queries received were answered and the students volunteering to join the study were asked to sign the written informed consent form. Thereafter, starting with the Demographic Information Form, the MCAA-TR, the UPSS and the CTS were given consecutively for completion. The scales were distributed and collected by the researcher during class hours. Hacettepe University Psychology Department undergraduate students were tested again on the MCAA-TR after an interval of 4 weeks for the test-retest reliability assessment. The initial and the re-test results were matched using the nicknames given by the students.

The individuals, convicted of different offences, to be included in the study were determined in accordance with the exclusion criteria by the directorates of one open and one closed prison in Ankara. The convicts were gathered in the classrooms of the institution in groups of thirty under the supervision of correction officers and psychosocial service workers (psychologists and social workers); and the purpose of the scale adaptation research was explained. Those volunteering to participate and signing the informed consent form were firstly given the Demographic Information Form, followed the MCAA-TR, the UPSS and the CTS. The scales were distributed and collected by the researcher in the institutional classrooms during working hours. In order to prevent any impact on the voluntary participation of the students and the convicted individuals, awards, such as fees, additional points or privileges in the service received, were not considered.

### Statistical Analysis

The Cronbach's alpha coefficient, Spearman-Brown half-test reliability and test-retest reliability were computed in order to determine the internal consistency of the MCAA-TR. Principal component analysis method was used to evaluate the factor structure of the scale. Pearson correlation analysis was used to investigate the relationship of the MCAA-TR with the UPSS and the CTS. Also, discriminant function analysis was carried out to determine the discriminating power of the scale.

## RESULTS

### Validity Analysis

Factor structure: Firstly, the Kaiser-Meyer-Olkin (KMO) and Barlett tests were carried out on the combined data of the university students and the convicted individuals. Obtaining a KMO value of 0.82 (higher than 0.50) and a statistically significant result on the Barlett test ( $\chi^2 = 4262.81$ ,  $df = 1035$ ,  $p < 0.00$ ) showed that the data were suitable for factor analysis. Factor analysis was carried out by varimax rotation and the number of factors was fixed to 4, similarly to the 4 sub-dimensions structure of the original form of the scale, before analyzing the basic components. These 4 factors explained 31.9% of the total variance. Although loading of some items were loaded on different factors as compared to the original form, the distribution determined by factor analysis was consistent with the distribution in the original form of the scale. Accordingly, item 30, belonging to the sub-dimension "attitudes towards entitlement" in the original form of the scale was loaded on the "attitudes towards associates" by using a Turkish population sample. Also, items 2 and 26 loading the subdimension "entitlement" in the original form were loaded on the sub-dimension "antisocial intent". The item 17 belonging to the sub-dimension "attitudes towards violence" in original form was allocated to the sub-dimension "attitudes towards entitlement" by the Turkish participants. Item 29 was removed from the MCAA-TR because it loaded on the antisocial intention sub-dimension but was irrelevant to that dimension. Lastly, item 31 did not load any sub-dimension. It was decided that the MCAA-TR consisted of 64 items. The results of the factor analysis for the scale were presented in Table 3.

Concurrent Validity: In order to test concurrent validity, correlation coefficients between the sub-dimension scores of the MCAA-TR and the sub-scale scores of the CTS and the UPPS coefficients showing the strength of the relationship between the MCAA-TR sub-dimensions and

**Table 3.** Results of Factor Analysis on the Measures of Criminal Attitudes and Associates (MCAA-TR)

No	Item	Attitudes Towards Violence	Attitudes Towards Associates	Antisocial Intention	Attitudes Towards Entitlement
1	It's understandable to hit someone who insults you.	0.67			
25	It's not wrong to hit someone who puts you down.	0.65			
13	Someone who makes you very angry deserves to be hit.	0.61			
44	It is reasonable to fight someone who cheated you.	0.60			
33	It's not wrong to fight to save face.	0.59			
41	There is nothing wrong with beating up someone who asks for it.	0.59			
21	It's all right to fight someone if they stole from you.	0.57			
9	Sometimes you have to fight to keep your self-respect.	0.56			
37	Someone who makes you really angry shouldn't complain if they get hit.	0.50			
5	There is nothing wrong with beating up a child molester.	0.43			
28	I have friends who have been to jail.		0.79		
12	I know several people who have committed crimes.		0.71		
36	I have committed a crime with friends.		0.62		
*24	Most of my friends don't have criminal records.		0.60		
*8	None of my friends have committed crimes.		0.58		
40	I have friends who are well known to the police.		0.51		
20	I always feel welcomed around criminal friends.		0.43		
30	Taking what is owed you is not really stealing.		0.34		
4	I have a lot in common with people who break the law.		0.33		
*32	None of my friends has ever wanted to commit a crime.		0.28		
*16	I would not steal, and I would hold it against anyone who does.		0.23		
*43	I will not break the law again.			0.63	
19	I would be open to cheating certain people.			0.60	
23	I could easily tell a convincing lie.			0.55	
2	Stealing to survive is understandable.			0.53	
11	I could see myself lying to the police.			0.50	
39	For a good reason, I would commit a crime.			0.48	
35	I would run a scam if I could get away with it.			0.47	
15	In certain situations, I would try to outrun the police.			0.43	
26	A hungry man has the right to steal.			0.39	
27	Rules will not stop me from doing what I want.			0.36	
7	I would keep any amount of money I found.			0.30	
*3	I am not likely to commit a crime in the future.			0.26	
46	I would be happy to fool the police.			0.23	
34	Only I can decide what is right and wrong.				0.64
14	Only I should decide what I deserve.				0.61
38	A person should decide what they deserve out of life.				0.57
42	No matter what I've done, it's only right to treat me like everyone else.				0.53
10	I should be allowed to decide what is right and wrong.				0.51
22	It's wrong for a lack of money to stop you from getting things.				0.44
18	I should be treated like anyone else no matter what I've done.				0.42
17	People who get beat up usually had it coming.				0.35
45	A lack of money should not stop you from getting what you want.				0.33
6	A person is right to take what is owed them, even if they have to steal it.				0.32
29	Child molesters get what they have coming.				
31	I would not enjoy getting away with something wrong.				
	<i>Explained variance</i>	15.66%	6.06%	5.25%	4.99%
	<i>Total variance explained</i>	31.9%			
	<i>Cronbach's Alpha coefficient</i>	0.82	0.76	0.74	0.68
	For all scale	0.86			

\*Items should be reverse coded while calculating.

**Table 4.** Correlation Coefficients Between the Sub-Dimension Scores of the MCAA-TR and the Sub-Scale Scores of the CTS and the UPPS

	MCAA – Attitudes Towards Associates	MCAA – Attitudes Towards Violence	MCAA – Antisocial Intention	MCAA – Attitudes Towards Entitlement	MCAA Part B Total Score
UPPS - Lack of Premeditation	-0.15**	-0.15**	-0.21**	-0.09	-0.21**
UPPS - Urgency	0.33**	0.35**	0.27**	0.22**	0.41**
UPPS - Sensation Seeking	0.15**	0.30**	0.24**	0.20**	0.31**
UPPS - Lack of Perseverance	0.19**	0.18**	0.00	0.08	0.16**
CTS - Entitlement	0.45**	0.34**	0.49**	0.32**	0.57**
CTS- Justification	0.45**	0.37**	0.42**	0.27**	0.54**
CTS- Power Orientation	0.29**	0.50**	0.44**	0.25**	0.54**
CTS- Cold Heartedness	-0.20**	-0.02	0.12**	0.00	-0.04
CTS- Criminal Rationalization	0.34**	0.34**	0.30**	0.15**	0.42**
CTS- Personal Irresponsibility	0.42**	0.28**	0.24**	0.22**	0.41**
CTS Total	0.46**	0.48*	0.52**	0.32**	0.64**

\* $p < 0.05$ . \*\* $p < 0.01$ ; MCAA-TR: The Measures of Criminal Attitudes and Associates-TR; UPPS: the UPPS Impulsive Behavior Scale; CTS: The Criminal Thinking Scale

the sub-dimensions of the CTS and UPPS were statistically significant (Table 4).

### Reliability Results

Internal consistency coefficients, quasi-test reliability coefficients and test-retest reliability coefficients were calculated by analyzing data collected from 27 university students 4-weeks after the first testing. The internal consistency Cronbach's alpha coefficients for the sub-dimensions of the MCAA-TR ranged from 0.68 to 0.82. The Spearman-Brown half-test reliability values ranged between 0.72 and 0.87. The test-retest reliability coefficients obtained for the sub-dimensions of the scale were observed to be in the range of  $r = 0.21 - 0.59$ .

#### Comparison of the MCAA-TR Scores of Students and Convicted Individuals

The t-test for independent samples was used in order to evaluate the differences observed in the MCAA-TR sub-dimension scores according to being or not being convicted (i.e., convicts vs university students). The results are presented in Table 5. The scores of the convicts on the sub-dimension "attitudes towards associates" were significantly higher (mean = 5.31, SD = 2.47) than that of the university students (mean = 2.21, SD = 2.12); ( $t(408) = 13.63$ ,  $p < 0.01$ ,  $r = 0.56$ ). The scores of the convicts (mean = 5.01, SD = 2.84) and the students (mean = 4.57, SD = 2.98) on the sub-dimension "attitudes towards violence" did not differ significantly ( $p > 0.05$ ). When the scores related to the sub-dimension "antisocial intention" were compared, the scores of the convicts (mean = 4.46, SD = 3.00)

**Table 5.** Comparison of MCAA-TR Subdimension Scores on the Basis of Being Convicted or Not

		N	M	SD	t	p
Attitudes Towards Associates	Prison	202	5.31	2.47	13.63	0.00
	University	208	2.21	2.12		
Attitudes Towards Violence	Prison	202	5.01	2.84	1.54	0.13
	University	208	4.57	2.98		
Antisocial Intention	Prison	202	4.46	3.00	0.92	0.36
	University	208	4.19	3.01		
Attitudes Towards Entitlement	Prison	202	4.12	2.46	2.53	0.01
	University	208	3.53	2.25		
Scale Total Score	Prison	202	18.91	8.11	5.86	0.00
	University	208	14.50	7.09		

did not differ significantly from the students (mean = 4.19, SD = 3.01). When the scores on the sub-dimension "attitudes towards entitlement" were evaluated, the scores of the convicts (mean = 4.12, SD = 2.46) were significantly higher than the scores of the students (mean = 3.53, SD = 2.25); ( $t(408) = 2.53$ ,  $p < 0.01$ ,  $r = 0.12$ ). The total score on part B of MCAA-TR was significantly higher in the convicted group (mean = 18.91, SD = 8.11) as compared to the student group (mean = 14.50, SD = 7.09); ( $t(408) = 5.86$ ,  $p < 0.01$ ,  $r = 0.28$ ).

#### The Discriminatory Power of the MCAA-TR

The capacity of the MCAA-TR to distinguish the prison group from the university group was tested by discriminant



**Table 6.** Classification Ratio Results of the Discriminant Function Analysis

		Predicted Group Membership			Total
		Group	Prison	University	
Real group membership	N	Prison	151	51	202
		University	41	167	208
	%	Prison	74.8	25.2	100.0
		University	19.7	80.3	100.0

function analysis. The total scores on the sub-dimensions “attitudes towards associates”, “attitudes towards violence”, “antisocial intention” and “attitudes towards entitlement” were tested as the predictor variables to determine whether the individual belongs to convict or the student group. A single discriminant function was obtained (Canonical R2 = 0.36), indicating that the relationships between the predictors and the groups were significant ( $\chi^2(4) = 184.95$ ,  $p < 0.01$ ). When the load matrix for the predictor variables and the discriminant function was analyzed, the strength of the discriminant predictors were ranked in the order “attitudes towards associates” ( $r = 0.89$ ), “entitlement” ( $r = 0.16$ ), “attitudes towards violence” ( $r = 0.10$ ) and “antisocial intention” ( $r = 0.06$ ). The correct discrimination rates obtained from the analysis are given in Table 6. It was observed that 77.6% of participants could be classified correctly with the classification accuracy of each group being 74.8% for the convicted group and 80.3% for the university students.

## DISCUSSION

The concept of crime is currently considered as a process resulting from the multiplicity of causes including psychological, social, economic factors and others, as against a fixed, entrenched feature of the individual who has committed crime. In this context, it is highly necessary to identify the possible triggers and sustainers and to develop and implement preventive and improving interventions. The Risk-Need-Responsivity Model by Andrews and Bonta (2010) emphasizes that curative interventions should focus on specific risk factors. Considering this approach, it is a mandatory step to determine whether there are individuals involved in crime in the immediate vicinity of individuals who have committed or are likely to be involved in crime and their attitudes towards crime. Hence, availability of validated and reliable measurement tools internationally will facilitate international cooperation and information exchange

and enable cross-cultural comparisons. For this reason, the Measures of Criminal Attitudes and Associates was adapted to the Turkish language in the present research.

The validity of the scale was tested by factor analysis, discriminant function analysis and concurrent validity analysis. Factor analysis, which was investigated with priority, indicated a factor structure that was consistent with the original version of the scale and factor loadings of the items ranged between 0.20 and 0.80. One item was found to load a structurally irrelevant sub-dimension, while item 31 could not be loaded on any factor, which may attributed to incomprehensibility by Turkish participants after its translation to the Turkish language. Although 3 items were found to be loaded on dimensions of the MCAA-TR that differed from those of the original MCAA, these were structurally related dimensions in both forms of the scale.

Results of the discriminant function analysis made to test the capacity of the MCAA-TR for correct prediction of convicted individuals and university students demonstrated that 78.5% of the results were correct in distinguishing the convicts from the students.

Concurrent validity was tested on the correlation of the MCAA-TR subdimension scores with the subscale scores of the CTS and of the UPPS. Significant correlations varying between -0.18 and 0.46 were observed between all dimensions of the MCAA-TR and the “urgency”, “lack of premeditation”, and “sensation seeking” subscales of the UPPS. Also, significant correlations were determined between the sub-dimensions of the MCAA-TR and all subscales except the “cold heartedness” subscale of the CTS which assesses structures as the MCAA-TR. In a study conducted with undergraduate students, negative and positive hastiness were found to be significant mediators in the relationship between anger and violence (Ammerman et al. 2015). Also, a positive relationship between the risk behavior score and antisocial personality disorder score was observed in individuals convicted of different crimes (Yıldız 2009).

Test-retest and internal consistency analyses were conducted for reliability assessment. The test-retest conducted with a 4-week interval on psychology students showed significant reliability within the 0.39-0.59 range in all MCAA-TR sub-dimensions, except that on “attitudes towards relations”. Also, the Cronbach’s alpha internal consistency coefficients of the sub-dimensions of the MCAA-TR ranged between 0.68 and 0.82. The split half reliability coefficients were in the range of 0.75-0.81.

In conclusion, it can be said that the MCAA-TR is a valid and reliable tool in determining crime-related risk factors in adult

individuals on the bases of its factor structure, the significance of its validity and reliability coefficients, the significant correlations between its scores with the scores of other scales assessing related structures and its high discriminatory power. The use of such a scale both in scientific research and for prevention, screening and evaluation studies in the field provides a multidimensional perspective by enabling the determination of the factors related to committing criminal offenses and the simultaneous estimation of the thoughts and attitudes of individuals and their close environment.

Use of the MCAA-TR in the penitentiary system will provide information on the level and direction of change in the areas assessed by the scale during the term of imprisonment, and thus will provide guidance on both the need for improvement in the penitentiary institution and the preparations for parole or release.

In addition to all these contributions, there are several important issues that must be considered when using the scale. Firstly, the MCAA-TR by itself does not provide precise information as to whether individuals will commit criminal acts. A more holistic and inclusive picture of the individual and the situation should be obtained with the different assessment tools such as individual interviews, other scales and the opinions of different occupational experts. The second issue is having included only adult male participants in this study. Therefore, the use of the scale in adult women and individuals under the age of 18 may have other results.

Considering the limitations of this study, the participants consisted of the students of a university in Ankara and individuals in two different prisons. Ankara is in the central position of Turkey and the second largest metropolis. Ankara, with a multi-cultural structure, does not represent the entire Turkish society. Therefore, it will be useful to conduct new validity-reliability studies including other provinces. Approximately 90% of university students and approximately 80% of the individuals in prisons agreed to participate in this study. Some convicted individuals, despite volunteering, had to be excluded from the study on grounds of problems with eyes and illiteracy which may have put a bias on the results. Also, while all of the students were high school graduates, 51.5% of the convicted individuals were middle/secondary school graduates indicating that an equivalence was not established on grounds of education. Given the resources made available to this study, a system equivalent to the varied education level in the prison population could not be reached and data was acquired on university undergraduates.

The MCAA-TR is a measurement tool designed for use with all adults who can read and write. In this respect, it has the capacity to provide information on applications in scientific,

social and community studies to determine risks and the needs to take preventive and protective measures concerning adults not only in the confines of the penitentiary institutions but also in areas and circles where the probability of criminal offence is high. Within this perspective, contribution of the MCAA to the Turkish language is expected to contribute to the psychosocial evaluation of the individuals prone to commit criminal offences.

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**Acknowledgement:** *The Scientific and Technological Research Council of Turkey (TÜBİTAK) Directorate of Science Fellowships and Grant Programmes (BİDEB) provided financial support for this study carried out as part of an academic PhD thesis. We thank TÜBİTAK for the given support.*

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