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Antisocial Personality Disorder; Anger; Childhood Behavioral Problems; the State-Trait Anger Scale

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Abstract

We aimed to evaluate the relation between the crimes committed, and the childhood behavioral problems, current clinical characteristics and anger levels of patients with antisocial personality disorder (ASPD). One hundred and fifty-three patients with ASPD were enrolled. The diagnosis was made according to the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criteria. DSM-IV conduct disorder criteria and life history inventory was used to assess childhood characteristics. The State-Trait Anger Scale (STAS) was used to assess experience, expression, and control of anger. The main differences between crime groups were as follows: A head trauma history was more frequent in ASPD patients who had a crime history of physical assault. Loss of a parent in childhood was more frequent in individuals who committed burglary. Divorce or separation of the parents in childhood was more frequent in those who committed murder. The usage of weapons in fight during childhood was significantly higher in those who committed murder and aggravated assault. According to STAS scores, the anger control scores were significantly lower in those who committed murder. Childhood and behavioral characteristics of ASPD patients is not homogenous. There is a need for further studies to demonstrate these differences and make a new classification for ASPD. **(Journal of Cognitive Behavioral Psychotherapy and Research 2015; .:…-…)**

Keywords: Antisocial personality, antisocial personality disorder, crime, childhood, anger

Özet

Antisosyal Kişilik Bozukluğu: Öfke, Çocukluk Çağı Davranış Problemleri, Durumsal-Sürekli Öfke Ölçeği

Bu çalışmada antisosyal kişilik bozukluğu olan hastalarda suç işleme ve işlenen suçlar ile çocukluk çağı davranış problemleri, klinik özellikler ve öfke düzeyleri arasındaki ilişkinin değerlendirilmesi amaçlanmıştır. DSM IV'e göre antisosyal kişilik bozukluğu (ASKB) tanısı alan 153 hasta çalışmaya dâhil edilmiştir. Çocukluk çağı özelliklerini değerlendirmek için DSM IV davranım bozukluğu kriterleri ve yaşam öyküsü envanteri kullanılmıştır. Öfke yaşantısı, dışavurumu ve kontrolü Sürekli Öfke-Öfke Tarzı Ölçeği (SÖÖTÖ) ile değerlendirilmiştir. En sık suç tipi kavgaya karışmadır. Çalışma grubumuzda çocukluk çağı davranış problemleri ve fiziksel istismar yüksek oranda bulunmuştur. Bazı özgeçmiş özellikleri ve çocukluk çağı davranış sorunları ile işlenen suç türleri ilişkili bulunmuştur. Kafa travması öyküsü fiziksel kavgaya karışan kişilerde daha sıktır. Hırsızlık suçu işleyen grupta çocuklukta ebeveyn kaybı daha sık cinayet işleyen grupta ise çocukluk çağında ebeveyn boşanması/ayrılığı daha sık olarak tespit edilmiştir. Çocuklukta kavgada silah niteliği taşıyabilecek alet kullanma cinayet ve yaralama suçu işleyenlerde anlamlı olarak daha sıktır. SÖÖTÖ puanlarına göre öfke kontrolü cinayet işleyen grupta anlamlı olarak düşüktür. ASKB hastaların çocukluk çağı ve davranış özellikleri homojen değildir. Bu farklılıkları açığa çıkarmak ve ASKB için yeni bir sınıflama yapmak için yeni çalışmalara gereksinim duyulmaktadır. **(Bilişsel Davranışçı Psikoterapi ve Araştırmalar Dergisi 2015; .:…-…)**

Anahtar Kelimeler: Antisosyal kişilik, antisosyal kişilik bozukluğu, suç, çocukluk, öfke

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INTRODUCTION

The main characteristic of antisocial personality disorder (ASPD) described in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criteria is the violation of social rules and committing crime (American Psychiatric Association, 1994). Patients with ASPD often have problems with the judiciary system such as being arrested, taken into custody or being imprisoned, as they do not respect the rights of others, violate the laws, and due to the high frequency of drug addiction or misuse among these individuals (Dinwiddie & Daw, 1998). Personality disorders are proposed to be divided into five types in the DSM-5 criteria, released in 2010. In this new proposal, one of the five prototypic personality disorders is the antisocial/psychopathic type. The criteria for antisocial/psychopathic personality disorder is comprised of six antagonism traits (callousness, aggression, manipulativeness, hostility, deceitfulness, narcissism) and three disinhibition traits (irresponsibility, recklessness, impulsivity) (American Psychiatric Association, 2011, 2013).

In the American literature, the incidence of ASPD was reported as 3% for males and 1% for females (Robins, 1987). The lifetime incidence of ASPD was determined as 3% in an epidemiologic study conducted in Turkey (Doğan et al., 1996). Most of the studies included in the literature on ASPD were conducted on criminals instead of individuals with ASPD. It was determined that 50-80 % of the criminals in prison were diagnosed with ASPD when DSM criteria were implemented (Robins, 1987).

This personality which is historically named as psychopathy and sociopathy, has been termed as ASPD along with the implementation of DSM-III criteria, and the diagnostic criteria were re-arranged, mostly based on observable behaviors (Hare, 1996). This new title and the ASPD criteria included in the DSM diagnostic system were criticized for describing a heterogeneous group based on behavioral characteristics, rather than a specific personality structure. In the literature it has been noted that psychopathy, the antecedent of antisocial personality, and the ASPD describe a heterogeneous group of patients, and are comprised of several sub-types (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Moreover, it has been asserted that the antisocials are comprised of five sub-types as the following; nomadic antisocial (i.e., displaying schizoid and avoidant characteristics), covetous antisocial (a variant of pure antisocial), risks taking antisocial (displaying histrionic characteristics), malevolent antisocial (displaying sadistic paranoid features), and reputation-defending antisocial (displaying narcissistic characteristics) (Millon, Millon, Meagher, Grossman, & Ramnath, 2004).

Based on clinical observations, Murphy and Vess (2003) stated that psychopathy comprised of four sub-groups such as narcissistic, borderline, sadistic and antisocial. Blackburn (1998) divided psychopaths into four sub-groups according to the control of violent behaviors. These groups were primary psychopaths (impulsive, aggressive, hostile, extroverted, self-confident, low anxiety), secondary psychopaths (hostile, impulsive, aggressive, socially anxious, withdrawn, emotional, and low in self-esteem), controlled (defensive, controlled, sociable, and non-anxious), and inhibited (shy, withdrawn, controlled, moderately anxious, low in self-esteem). Another method in the classification of patients with ASPD is to classify them according to the crimes committed (Beck, Freeman, & Davis, 2004).

Freeman, who was mainly engaged in cognitive theory of personality disorders, classified patients with ASPD into 12 sub-groups based on the crimes committed (Beck et al. 2004).

According to this theoretical background, first aim of our study was to classify antisocial patients according to the crime types committed, and after that to compare these subgroups in terms of childhood behavioral problems, family history (e.g. abuse, divorce history in family of origin), current sociodemographic characteristics and anger levels. Hypothesis of the research is that ASPD was comprised of different sub-groups, which has distinct characteristics. In this regard, the secondary hypothesis is that, based on the behavioral dimension sub-typing might be conducted in accordance with the crimes committed. Hence we looked at observable offending behaviors of the individuals and compared the behavioral patterns in childhood and adulthood.

MATERIAL AND METHOD

Participants

In the current study, we aimed to evaluate the relation between the crimes committed and the childhood behavioral disorders and clinical variables of the individuals with ASPD. The patients admitted to the outpatient clinic and the clinic of Adolescent and Adult Psychiatry of the SSK Ankara Teaching and Research Hospital and the Psychiatry clinic of the Regional Military Hospital between January 1999 and March 2002 were enrolled in the study.

Interviews were conducted to select the individuals with antisocial characteristics, and 153 male individuals between 20 and 40 years of age, fulfilling the criteria for ASPD, were included in the study. Written informed consents were obtained from the individuals prior to the study, and ethics committee of the hospitals approved the study.

The crimes committed by the patients with ASPD were; getting involved in a fight, aggravated assault (physical assault causing injury), robbery, murder, burglary, bullying, vandalism, forgery-fraud and drug dealing. As the number of individuals who committed bullying (n = 2), vandalism (n = 1), forgery-fraud (n = 1) and drug dealing (n = 1) were low; these groups were not included in the analysis because of statistical reasons. The patients were evaluated in six groups as follows, antisocial patients who were not involved in any type of crime, patients who got involved in a fight, patients who injured somebody and patients who committed robbery, murder, and burglary.

Assessment Tools

SCID-II. The patients were diagnosed according to the Structured Interview for DSM-IV (SCID), which is a semi-structured interview enabling diagnosis in accordance with DSM-IV (First, Gibbon, Spitzer, Williams, & Benjamin, 1997; Sorias, 1990). Prior to the interview, a socio-demographic questionnaire including detailed questions on the characteristics of childhood period, personal, family and medical history was filled out by each patient. Individual face-to-face interviews, lasting approximately 90 minutes, were conducted in a separate room in the psychiatry clinic.

The State-Trait Anger Scale (STAS) The experience and expression of anger was evaluated with the STAS. Original scale was developed by Spielberger (1980). It is a self-report measure of anger and consists of 44 items with four-point frequency scale (e.g., from "almost never" to "almost always"). Subjects assess either the intensity of their angry feelings or the frequency in which anger is experienced, expressed, or controlled. Translation and the validity study of the Turkish version of the scale was conducted by Ozer (1994), Turkish version of the scale involves State Anger, Anger-in, Anger-out, and Anger Control sub-scales and consists of 34 items. High scores from State Anger subscale indicates high anger levels, high scores from Anger Control indicates that the anger could be managed, high scores from Anger-out refers to express anger through either verbal or physical behaviors, and high scores from Anger-in indicate that anger is suppressed (Savaşır & Şahin, 1997).

Statistical Analysis

SPSS for windows statistics package program (Version 13.0 SPSS Inc, Chicago, IL, USA) was used for statistical analysis. In inter-group analysis, the independent sample t-test was applied for continuous variables and the Chi-square test was applied for categorical variables. One-way analysis of variance (ANOVA) test was used to examine the difference between the groups for continuous variables. Homogeneity of the group variances was analyzed with the Levene's test. The Scheffe's test, one of the post-hoc tests, was used in order to determine the significant differences between paired groups; a p value $< .05$ was considered statistically significant.

RESULT

The mean age of the subjects was 23.6 years (range 20–40 years) and the mean education level was 6.2 years. When the education status of the patients was considered, it was observed that most of the subjects were primary school graduates (56.2%). According to the marital status, 66.7% of the subjects were single, 24.2% were married and 9.1% were divorced or separated. When the subjects were evaluated in terms of profession, it was observed that more than one third was unemployed (39.2%) (Table 1). Most of the individuals with ASPD either were unemployed or were not able to keep a regular professional life.

A small fraction of the subjects with ASPD did not involve any action that could be considered a crime ($n = 24$, 15.7%). On the other hand 84.3% ($n = 129$) of the subjects had a history of crime. Even though the crimes committed varied a lot, it was observed that some of the crimes were observed more often. To be taken into the custody or imprisonment as a result of getting involved in a fight was the most often observed crime type ($n = 47$, 30.7%). The rates of the other crimes committed in descending order, were aggravated assault (causing physical injury to others) ($n = 27$, 17.6%), burglary ($n = 19$, 12.4%), murder ($n = 13$, 8.5%), robbery ($n = 12$, 7.8%), bullying ($n = 2$, 1.3%), vandalism ($n = 1$, .7%), forgery-fraud ($n = 1$, .7%) and drug dealing ($n = 1$, .7%) (Table 1).

When socio-demographic characteristics of the individuals were compared according to the crimes committed, no significant difference was found in terms of age, marital status and education levels of the patients ($p < .05$; Table 2). When we compared the groups in terms of the number of subjects who failed classes as another dimension of the educational life, the

rate of failing the class was found significantly higher in those involved in a fight (Pearson Chi-Square $\chi^2 = 13.089$ $p = .023$).

When the groups were compared according to the previous life history, no significant difference was found in terms of domestic physical violence and abuse during childhood (Table 3). A head trauma history was more frequent in those patients who committed aggravated assault (77.8%, Pearson Chi-Square $\chi^2 = 12.28$, $p = .03$), and the loss of a parent in childhood was more frequent in individuals who committed burglary (31.6%, Pearson Chi-Square $\chi^2=23.63$ $p = .009$). Divorce or separation of the parents in childhood were more frequent in those who committed murder (23.1%, 100%; $p = .005$) (Table 3).

Rates of self-mutilation did not differ between the groups. However, the rate of substance abuse was significantly higher in those who committed aggravated assault and who committed murder (100%, Pearson Chi-Square $\chi^2 = 17.96$, $p = .05$).

Diagnostic criteria for conduct disorder were used as the criteria to evaluate the childhood behavioral problems before the age of 15. These behavioral problems were as follows: running away from home, physical fight, using weapons in the fight, sexual assault, animal and human torture, vandalism, arson, lying, and stealing. When we compare the patients according to their crime types, we found that the usage of weapons in fight during childhood was significantly higher in those who committed murder (90.9%) and who committed aggravated assault (84%) ($p = .027$), pick pocketing during childhood was significantly higher in those who committed robbery (66.7%, $p = .004$), and burglary during childhood was significantly higher in those who committed burglary (78.9%) and robbery (66.7%; $p = .008$). There was no significant difference between the groups in terms of the other childhood behavioral problems (Table 4).

When the scores of the anger scale were considered; although it was not statistically significant, it was observed that anger-in scores were highest in those who committed robbery (23.50±3.07), and lowest in those committing murder (19.71±3.59). The anger-out scores were highest in those who committed murder (26.00±4.76) and lowest in those who committed burglary (22.40±4.06). The anger control scores were highest in subjects who were not involved in any crime (20.28±6.96), and lowest in those committing murder (10.83±3.18), and state anger scores were highest in those committing murder (34.50±5.35), and lowest in those committing burglary (29.85±5.24) (Table 5). However, the only statistically significant difference between the groups was observed in anger control scores. The anger control scores were significantly lower in subjects who committed murder ($p < .05$).

DISCUSSION

In the current study, we evaluated whether individuals with ASPD displayed different characteristics according to the crime types or not. We determined that they displayed different characteristics from each other in accordance with the committed crimes in certain points. Most of the individuals involved in our study were primary school graduates, poorly educated, unemployed, single, and grew up in large families (the mean number of siblings was 5). One of the most important characteristics of antisocial personality is not having a

regular education life (Goodwin & Guze, 1989). We observed similar trends in our study group.

The most frequent crime type committed by the individuals with ASPD was getting involved in a fight. This was followed by aggravated assault, burglary, murder and robbery. The relationship between antisocial personality and crime has been present since the very first years the term was put forward. Almost all researches conducted between 1930s and 1975s emphasized the relation between crime and antisociality (Reid, 1987). The relationship between crime and antisocial personality is two way street. The studies conducted on people who committed crime indicated that most of these individuals had ASPD also. In accordance with these studies, the frequency of ASPD in prison society was observed to be at a high rate as 75% (Kaplan & Sadocks, 1994). However, it should not be concluded that every person who has committed a crime has an ASPD or vice versa; for example in our study group 24 subjects (15.7% of the study group) did not commit any legal crime.

When the socio-demographic characteristics of the patients were compared according to the types of crime committed, although statistically not significant we found that the mean duration of education for patients with ASPD (n = 24) not involved in any crime was the longest (7.17 years); and for those who committed murder (5.67 years) was the shortest. A research which is examined the effect of education on crime, it is reported that the biggest impacts of graduation are associated with murder, assault, and motor vehicle theft (Lochner & Moretti, 2002). Our results were not such robust to confirm these conclusions.

Another important finding of our study was the establishment of the relationship between childhood antisocial behaviors and adulthood ASPD, previously stated in the literature (Loeber, Burke, & Lahey, 2002). The mostly observed childhood behaviors in the subjects according to the crime type committed were as follows; running away from home and lying in robbery group, getting into physical fights, using weapons during fights and animal torture in murder group, physically damaging the environment, arson and sexual assault in burglary group, torturing people in aggression.

According to our findings, during childhood, using weapons in fight was significantly higher in those who committed murder and who committed aggravated assault; on the other hand, pick pocketing during childhood was statistically significantly higher in those who committed robbery and burglary in childhood was also statistically higher in burglary and robbery group (Table 4). These results are in accordance with the idea that childhood behavioral problems are the precursors of the adult antisocial behavior. In a prospective cohort study on ASPD, observing individuals from childhood to 40 years of age, none of the individuals who did not display antisocial behavior until 18 years old, was diagnosed with ASPD in the adulthood (Robins, 1996). In the epidemiologic catchment area (ECA) study conducted in the United States, it was observed that school problems, barratry and lying preceded stealing, vandalism and use of alcohol and reaching to the final point of arrest, to be kicked out of school and drug-substance abuse (Savaşır & Şahin, 1997). Antisocial behavior during childhood always precedes antisocial personality in adulthood, even though serious crimes are committed during adulthood (Rutter, 1984; Zeitlin, 1983). In the ECA study, 95% of the adult males who had one to four antisocial personality traits showed at least one

childhood period symptom (Robins & Regier, 1991). It has been observed in our sample that criminal behavior does not appear out of nowhere but emerge during childhood, and the type of committed crime in the childhood display relevant characteristics with the crime to be committed in the future. An example for this is the display of physical aggression and usage of weapons during the fights in childhood period in individuals who commit murder in adulthood.

Some longitudinal research showed that 40-59% of the patients displaying severe behavioral disorders became severe criminals and/or antisocial adults (Werry, 1997). In a controlled study conducted by Aydınalp, Erol, and Akçakın (1977), comparing ASPD patients with schizophrenic patients, intense and continuous antisocial behaviors during childhood were related to antisocial personality and indicated the risk for future ASPD. Besides that the type of behavioral problems displayed in childhood continues in adult life. Helgeland, Kjelsberg, and Torgersen (2005) conducted a follow-up of 130 former adolescent psychiatric inpatients 28 years after the index hospitalization. In this study regression analysis demonstrated that disruptive behavior disorder in adolescence was a significant and independent predictor of ASPD in males but not in females. Our findings partly supported this view; childhood behavioral problems exert themselves also in adulthood.

The research conducted on those who committed murder revealed that these people were exposed to violence, were beaten during early childhood and experienced bad parent models in this sense (Spielberger, 1980). In our sample, 80.5% were exposed to beating during childhood period. It is believed that being exposed to violence has a unique way of preparing antisocial personality. In accordance with the crime groups 94.7% of those committing burglary, 88.9% of those committing murder, 83.3% of those committing robbery were exposed to beating during childhood. This situation supports the findings stated in the literature. No significant difference was determined between the groups in terms of being exposed to beating. It is an often-reported symptom in the literature that domestic violence prioritizes violence during the upcoming stages of life (Gunderson & Phillips, 1995). It is also noted in the literature that family problems, loss of a parent or single parent family type comprise a risk in terms of crimes of violence (Spielberger, 1980).

Anger control scores were highest in antisocials who were not involved in any crime (20.28±6.96), and lowest in those who committed murder (10.83±3.18), and the difference was statistically significant. If it is considered that, antisocials who committed crimes are the most dangerous and the most prone group to acts of violence in this regard, this group is discriminated from the other antisocials in terms of low anger management. Low impulse control is a feature of personality is different in patients who committed murder. Then this finding support that in ASPD, both the quality of the crime and the way it is committed are closely related with the personality structure (Mullen & Lindqvist, 2000).

These findings should be considered in the light of certain limitations. The relatively small sample size is a limitation that may make generalizing our results difficult. That the study group consisted of who presented to the psychiatry unit should also be considered when the conclusions are drawn. Another limitation is the cross-sectional design so that it is impossible to pursue individuals' memory bias about the childhood conduct problems. Additionally,

because of the small sample size, further analysis could not be performed considering co-morbid conditions and their relationships to childhood behavioral problems. Besides, since the study has no control group these results should not be considered as causal relationships.

All our research findings, considered collectively, suggest that certain childhood behavioral disorders may be the indicators for adult ASPD and being exposed to domestic violence may pave the way for antisocial personality in the future. Additionally, we suggest that ASPD is not a homogenous monotype disease but is comprised of several subgroups displaying different characteristics, and types of crime committed might be an indicator to differentiate these sub-groups from each other. Groups display differences not only in childhood behaviors and life history but also in current clinical characteristics and anger levels in accordance with the grouping conducted as per crime types. Anger control score was the lowest in the group committing murder.

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Table 1: Socio-demographic characteristics of the patients with antisocial personality disorder

Characteristics (n=153)	
Age (years)	23.62±2.95
Education (years)	6.19±2.56
Number of Siblings	5.05±2.34
Marital Status	
Single	103 (66.7)
Married	37 (24.2)
Separated or Divorced	14 (9.1)
Educational Status	
Illiterate	3 (2.0)
Literate	17 (11.1)
Primary School	86 (56.2)
Secondary School	31 (20.2)
High School	16 (10.5)
Profession	
Unemployed	60 (39.2)
Laborer	38 (24.8)
Self-employed	50 (32.7)
Other	5 (3.3)

Characteristics (n=153)	
Type of Crime	
Not involved in crime	24 (15.7)
Burglary	19 (12.4)
Fight	47 (30.7)
Aggravated assault	27 (17.6)
Murder	13 (8.5)
Robbery	12 (7.8)
Other Crimes	11 (7.3)

Data are presented as mean±standard deviation or number (%).

Table 2: Socio-demographic characteristics of the patients with antisocial personality disorder according to the crime types committed

Characteristics (n=153)	Burglary (n=19)	Fight (n=47)	Aggravated assault (n=27)	Murder (n=13)	Robbery (n=12)	Not committed crime (n=24)
Age (years)	24.16±3.16	23.74±3.27	22.85±2.46	24.42±1.97	24.00±4.34	22.88±2.17
Education (years)	5.72±1.52	6.29±3.05	6.15±1.89	5.67±2.74	6.33±1.37	7.17±2.88
Number of siblings	4.89±1.88	5.00±2.39	5.63±3.20	4.92±1.89	4.17±1.69	5.00±2.20

Data are presented as mean±standard deviation.

Table 3: Clinical characteristics of the patients with antisocial personality disorder according to the crime types committed

Characteristics (n=153)	Burglary (n=19)	Fight (n=47)	Aggravated assault (n=27)	Murder (n=13)	Robbery (n=12)	Not committed crime (n=24)
Head trauma	68.4	41.3	77.8[a]	53.8	58.3	41.7
Domestic violence	94.7	81.4	74.1	88.9	83.3	69.6
Loss of a parent	31.6[a]	2.2	3.7	15.4	25.0	8.3
Self mutilation	73.7	71.7	85.2	69.2	81.8	70.8
Drug abuse	84.2	93.6	100.0	100.0	91.7	91.7
Separation in family	0	15.2	3.1	23.1	16.7	8.3

[a] Statistically significant $p<0.05$

Data are presented as percentages.

Table 4: Frequency of childhood behavioral problems in patients with antisocial personality disorder according to the crime types committed

Childhood Behavioral Problems (n=153)	Burglary (n=19)	Fight (n=47)	Aggravated assault (n=27)	Murder (n=13)	Robbery (n=12)	Not committed crime (n=24)
Truant	88.9	97.4	84.0	83.3	100.0	90.9
Run away from home	78.9	87.5	92.0	92.3	100.0	90.9
Barratry	73.7	92.7	92.0	100.0	81.8	86.4
Use of weapons during a fight	72.2	76.3	84.0[a]	90.9[a]	44.4	50.0
Sexual assault	35.3	15.8	12.0	36.4	11.1	22.7
Animal torture	52.6	60.5	36.0	63.6	55.6	54.5
Harming	52.6	51.3	72.0	58.3	44.4	45.5
Harm the environment	68.4	64.1	60.0	36.4	55.6	63.6
Arson	57.9	47.4	52.0	54.5	44.4	54.5
Lying	72.2	55.3	72.0	63.6	88.9	54.5
Burglary	78.9[b]	28.9	48.0	36.4	66.7[b]	36.4
Pick pocketing	33.3[a]	15.8	16.0	9.1	66.7[c]	9.1

Data are presented as percentages.

[a] p=0.027, [b] p=0.004, [c] p=0.008

Table 5: STAS scores according to the groups

STAI Sub-scales	Burglary (n=19)	Fight (n=47)	Aggravated assault (n=27)	Murder (n=13)	Robbery (n=12)	Not committed crime (n=24)
Anger-In	20.4±4.2	21.2±4.1	21.5±5.2	19.7±3.6	23.5±3.1	20.9±5.2
Anger-Out	22.4±4.1	23.5±5.0	23.05±6.6	26.0±4.8	24.7±2.7	22.6±4.2
Anger control	17.6±4.4	17.8±6.9	18.4±13.1	10.8±3.18[a]	16.7±3.5	20.3±6.9
State anger	29.8±5.2	33.5±3.4	32.40±7.6	34.5±5.3	31.7±4.0	30.8±5.8

STAS: The State-Trait Anger Scale; STAI: State-Trait Anxiety Inventory

[a] Significantly lower than the other groups

Data are presented as mean±standard deviation.