

ADLI BİLİMLER VE SUÇ ARAŞTIRMALARI DERGİSİ

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Adli Bilimler ve Suç Arařtırmaları Dergisi

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Editörden,

Sevgili Okuyucular,

Adli Bilimler ve Suç Arařtırmaları Dergisi'nin bu sayısını sizlere sunmaktan büyük bir onur duyuyorum. Bu sayımızda, adli bilimlerin disiplinlerarası doğasını ve geniş yelpazesini yansıtan dört önemli makale yer alıyor. Her biri, adli bilimin hem teorik hem de uygulamalı yönlerine yeni ve derinlemesine bakış açıları getiriyor.

İlk makalemiz, "Bir E-İntihar Notunun Psikodilbilimsel Analizi", günümüzde giderek dijitalleşen dünyada meydana gelen intihar vakalarına odaklanıyor. Bu çalışmada, sosyal medya üzerinden paylaşılan bir e-intihar vakasının psikodilbilimsel analizi yapılmış ve dijital platformların intihar notlarının çözümlemesinde ne kadar önemli bir kaynak olabileceği tartışılmıştır. Çalışma, siber dünyada paylaşılan bu tür içeriklerin adli psikoloji açısından derinlemesine incelenmesinin önemini vurguluyor.

İkinci makale, "Schrödinger'in Kedisi Paradigması Adli Kanıtlara Uygulanabilir mi? Disiplinlerarası Eleştirel Bir İnceleme", adli bilime kuantum fiziği perspektifinden bakıyor. Schrödinger'in ünlü paradoksu üzerinden adli kanıtların gözlemlenebilirliği ve değerlendirilmesindeki süperpozisyon durumunun incelendiği bu çalışma, adli bilimler ve felsefe arasında güçlü bir köprü kurarak yenilikçi bir bakış açısı sunuyor.

Üçüncü makale, "Travmanın İzleri: Çocukluk Deneyimlerinin Suç ve Dayanıklılık Üzerindeki Rolü", bireylerin çocukluk çağı travmalarının suça yatkınlıkları üzerindeki etkisini araştırıyor. Psikolojik dayanıklılığın bu süreçte nasıl bir rol oynadığını ve suç eğilimlerini nasıl değiştirdiğini derinlemesine analiz eden çalışma, suçla mücadelede travmanın etkilerini anlamak adına önemli veriler sunuyor.

Son makalemiz, "Kumaşlar Üzerindeki Atış Artıklarının Fourier Dönüşümlü Kızılötesi Spektroskopisi (FTIR) ile İncelenmesi", adli bilimin teknik yönüne odaklanıyor. Atış artıklarının kumaş üzerindeki izlerinin FTIR tekniği ile incelenmesi, adli balistik alanına yenilikçi bir yaklaşım getiriyor. Çalışma, mühimmat türlerinin ve atış mesafelerinin detaylı bir analizini sunarak, adli arařtırmaların doğruluğunu artırmada büyük katkı sağlıyor.

Bu sayımızda yer alan makaleler, adli bilimin hem teorik hem de uygulamalı alanlarına dair yeni bilgi ve yöntemler sunarak, alana katkı sağlamayı amaçlamaktadır. İnanıyoruz ki, bu makaleler adli bilimler üzerine çalışan akademisyenlere, arařtırmacılara ve uygulayıcılara ilham verecek niteliktedir.

Keyifli okumalar dileriz,

Doç. Dr. Hasan Sencer Peker

Editor's Foreword,

Dear Readers,

It is a great honor to present to you this issue of the Journal of Forensic Sciences and Crime Research. In this edition, we feature four significant articles that reflect the interdisciplinary nature and broad spectrum of forensic sciences. Each article offers new and in-depth perspectives on both the theoretical and applied aspects of forensic science.

Our first article, "A Psycholinguistic Analysis of an E-Suicide Note", focuses on the increasing prevalence of suicide cases in the digital world. This study examines a suicide case shared via social media through the lens of forensic psychology. The psycholinguistic analysis highlights how digital platforms can serve as crucial resources in the interpretation of suicide notes, emphasizing the importance of deep analysis in understanding the dynamics of cyber suicides.

The second article, "Does Schrödinger's Cat Paradigm Apply to Forensic Evidence? A Critical Interdisciplinary Review", brings a quantum physics perspective to forensic science. By using Schrödinger's famous paradox, this paper explores the superposition state of forensic evidence, emphasizing the role of observation in the evaluation of evidence. It creates a strong bridge between forensic science and philosophy, offering an innovative viewpoint.

The third article, "Traces of Trauma: The Role of Childhood Experiences in Crime and Resilience", investigates how childhood traumas influence individuals' proclivity towards crime. The study delves into the role of psychological resilience and its impact on criminal tendencies, providing crucial insights into understanding the effects of trauma in crime prevention efforts.

Our final article, "Examination of Gunshot Residues on Fabrics Using Fourier Transform Infrared Spectroscopy (FTIR)", focuses on the technical aspect of forensic science. The study employs FTIR techniques to analyze gunshot residues on fabric surfaces, offering an innovative approach to forensic ballistics. The detailed analysis of different ammunition types and shooting distances contributes significantly to enhancing the accuracy of forensic investigations.

The articles presented in this issue offer new knowledge and methodologies that enrich both the theoretical and practical fields of forensic science. We believe these articles will inspire academics, researchers, and practitioners working in forensic sciences.

Happy reading,

Assoc. Prof. Dr. Hasan Sencer Peker

Travmanın İzleri: Çocukluk Deneyimlerinin Suç ve Dayanıklılık Üzerindeki Rolü*

Melva řenocak**, Melike Ceylan***

Öz: Suça yatkınlık bireylerin yasa dıřı davranıřlarda bulunma olasılıklarını artıran çeřitli biyolojik, psikolojik ve sosyal faktörlerin etkileřimi sonucunda ortaya çıkmaktadır. Bu konunun derinlemesine incelenmesi, suça yönelik önleme stratejilerinin geliřtirilmesi ve toplumsal düzenin korunması aısından kritik öneme sahiptir. Bu bağlamda yapılan arařtırmalar sonucu çalışmanın temel problemi, bireyleri suça yatkın olmaya iten faktörlerin psikolojik saęlıklı ve çocukluk çaęı travmaları çerçevesinde arařtırılmasıdır. Arařtırmanın amacı da çocukluk çaęı travmalarının ve psikolojik dayanıklılıęın suça yatkın olmayı yordama gücünü incelemektir. Arařtırmanın kapsamında katılımcılara, Aydınlatılmıř Onam Formu, Demografik Bilgi Formu, Çocukluk Çaęı Travmaları Ölçeęi, Yetiřkinler için Psikolojik Dayanıklılık Ölçeęi ve Suça Yönelik Tutumlar ve İliřkiler Ölçeęi uygulanmıřtır. Katılımcılara Google Forms aracılıęıyla ulařılmıřtır. Verilerin analizinde SPSS 25.0 istatistik paket programı kullanılmıřtır. Pearson korelasyon katsayıları hesaplanmıřtır, T-testi ve ANOVA analizleri uygulanmıřtır. Deęiřkenler arasındaki iliřki incelendięinde çocukluk çaęı travmalarına göre psikolojik dayanıklılıęın suça yönelik tutumlar ve iliřkiler üzerinde daha fazla anlamlı yordayıcısı olduęu bulunmuřtur. Psikolojik dayanıklılık arttıkça suça yönelik tutumlar ve iliřkiler azalmaktadır. Arařtırma bulguları ilgili alanyazın çerçevesinde tartıřılmıřtır.

Anahtar kelimeler: Çocukluk çaęı travmaları, psikolojik dayanıklılık, suça yönelik tutumlar ve iliřkiler

* Bu çalışma, "Melva řenocak"ın Melike Ceylan danıřmanlıęında hazırladıęı "18-35 Yař Arası Bireylerde Çocukluk Çaęı Travmaları, Psikolojik Dayanıklılık ve Suça Yatkınlık Arasındaki İliřkinin İncelenmesi" adlı tezden üretilmiřtir.

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Traces of Trauma: The Role of Childhood Experiences in Crime and Resilience

Melva Şenocak, Melike Ceylan

Abstract: The predisposition to crime emerges as a result of the interaction between various biological, psychological, and social factors that increase the likelihood of individuals engaging in illegal behaviors. A thorough examination of this topic is crucial for the development of crime prevention strategies and the preservation of social order. In this context, the core issue of the study is to investigate the factors that lead individuals to be predisposed to crime within the framework of psychological resilience and childhood trauma. The aim of the research is to examine the predictive power of childhood traumas and psychological resilience in determining predisposition to crime. The study sample consists of a total of 360 individuals aged 18-35. The participants were administered the Informed Consent Form, Demographic Information Form, Childhood Trauma Questionnaire, Psychological Resilience Scale for Adults, and the Attitudes and Relationships Toward Crime Scale. The participants were reached via Google Forms. SPSS 25.0 statistical software was used for data analysis. Pearson correlation coefficients were calculated, and t-tests and ANOVA analyses were conducted. When examining the relationship between variables, it was found that psychological resilience was a more significant predictor of attitudes and relationships toward crime than childhood trauma. As psychological resilience increases, attitudes and relationships toward crime decrease. The research findings were discussed within the framework of the relevant literature.

Anahtar kelimeler: *Childhood traumas, psychological resilience, attitudes towards crime and relationships*

Introduction

In contemporary society, issues related to crime such as neglect and abuse have garnered increasing attention, resulting in a surge of academic research focused on combating these types of offenses. A critical area of inquiry has emerged around understanding the factors that predispose individuals to criminal behavior. This quest to comprehend the underlying causes of criminal activity is driven by the societal imperative to mitigate such behaviors. To effectively reduce criminal behavior, it is essential to identify the potential antecedents.

Each individual reacts differently to these negative situations, some are constructive and some are destructive. Psychological resilience is that the reactions of individuals to these adverse conditions are constructive ([Tümlü&Recepöđlu, 2013](#)). The field defines the three psychological resilience features. The first basic feature of psychological resilience is the perception that individuals who are able to overcome difficulties despite adverse circumstances and develop better than expected have a personal ability. The second feature of psychological resilience is the ability of individuals to adapt quickly to stressful and difficult life experiences. The third feature involves being able to cope with traumatic situations such as experiencing natural disasters, losing a loved one, or having an accident ([Tümlü&Recepöđlu, 2013](#)). Within the framework of these basic characteristics, studies have been carried out on resilience, defined as resistance by adaptation of individuals when exposed to adverse experiences, and three components of psychological resilience have been identified. The first component of control is the belief that an individual can change the events they will encounter in his life and thus the result they want ([Azeem, 2010](#)). The second component of bonding is that individuals stick to life while they are exposed to all the disadvantages ([Durak, 2002](#)). People with high levels of attachment can have a positive view of negative situations. The third component of the challenge is that people struggle knowing that they will be challenged by the negative life experiences they encounter. It has been noted that challenging helps people not personalize their defects, but only internalize them as defects ([Gökçe, 1993](#)). There must be these three components to speak of psychological resilience ([Maddi, 2006](#)).

Individuals experience many events throughout their lives that affect them negatively, cause them to feel sad and anxious. But we don't call all of these situations trauma. Trauma means that the incident poses a threat to a person's life and the person feels inadequate to cope with the situation ([Şar, 2017](#)). If we come to the definition of childhood trauma, childhood traumatism can be defined as physical, sexual and emotional abuse and neglect, as well as loss of parents, separation from parents, divorce, migration, witnessing violence, being a witness to an accident, natural disasters living ([Çelik&Hocaođlu, 2018](#)). These experiences are often referred to as serious negative experiences. Childhood traumatic

experiences are common throughout the world ([Saveanu&Nemeroff, 2012](#)). Childhood trauma is the most difficult form of trauma to be diagnosed and treated because it is recurrent, generally exposed to by those closest to the child, and may have a significant impact on the child's future life ([Çelik&Hocaođlu, 2018](#)). This trauma can be seen in every cultural class, social community, ethnic group and socio-economic level ([Bostancı et al., 2006](#)). The definition of abuse that causes childhood trauma is physically abused, emotional abuse, sexual abuse; neglect is also studied under the heading physical neglect and emotional neglect ([World Health Organization, 2002](#)). The frequent occurrence of childhood trauma causes some adaptation problems ([Skowron&Reinemann, 2005](#)).

Individuals face difficulties in many areas, such as loss of loved ones, natural disasters such as earthquakes, fires, floods, disease processes, poverty, and terrorist catastrophes ([Bonanno&Mancini, 2008](#)). We often assume that people who experience these kinds of life events are experiencing emotional disturbances ([Fletcher&Sarkar, 2013](#)). The concept of psychological resilience, a different concept of injury, has begun to emerge. Psychological resilience is that individuals are transformed against the increasing problems and challenges they encounter throughout their lives and the reactions they give to these problems ([Cevizci&Müezzın, 2019](#)). Another definition of psychological resilience is that people who are at risk behave better than expected, adapt positively in spite of stressful situations, and have a positive recovery process after the trauma ([Masten et al., 1990](#)). People with high levels of psychological resilience have been found to have a greater capacity to influence people around them and to gain from negative and sad situations ([Soysal, 2016](#)). In addition, individuals with high levels of psychological resilience are less anxious and have higher levels of self-confidence ([Yalçın, 2013](#)). Individuals with low levels of psychological resilience have weakened self-control, resistance to distance and adaptation to changes ([Soysal, 2016](#)). The characteristics of individuals with high and low psychological resilience have been mentioned. The question arises as to what characteristics individuals need to have in order for their psychological resilience to be high. These are characteristics of a person such as family compatibility and family support, individual characteristics and structural characteristics, external support (social environment, colleagues), physical strength, sociality, intelligence, good communication skills, self-sufficiency ([Olsson et al., 2003](#)).

The study of criminal behavior, its inclination to crime and, on the basis of this, its prevention, is a very necessary work from a social point of view. Crime is a deviation from social and cultural values and a violation of rules of social conduct in a society ([Altunpül, 2022](#)) and also is a concept that has existed since the earliest ages, and as people move into public life, the rates and types of crime have increased ([Sulan, 2013](#)). Crime, which is considered to arise with humanity, is a sociological, psychological, biological, socio-economic, and socio-cultural, multidimensional concept ([Adams&Gullotta, 1989](#)). The concept of crime has

therefore been investigated in a number of ways, drawing attention from areas such as biology, psychiatry, psychology, religion, law, and sociology ([Yılmaz, 2009](#)). As a result of this research, the concept of crime has been investigated in a variety of ways. Crime theories are examined under three main headings: biological, psychological and sociological ([Yılmaz, 2009](#)). One of the theories psychologically explaining crime is based on psychopathology. According to this view, crime is linked to criminal behavior with psychopathic individuals who, with their antisocial personality disorder and unsocialized behavior, are in constant conflict with society ([Erkan&Erdoğan, 2006, as cited in Yılmaz, 2009](#)). It was found that, where it was associated with many concepts of psychology, such as the relationship of crime with psychopathology. From the theories of social control and social learning that first explained criminal behavior to the current general theory of crime and the life cycle theory, almost all theories reveal the dynamics of the relationship between the criminal behavior in the individual/child of the interaction and the family experience ([Demirel, 2017](#)). Considering the relationship between childhood abuse and neglect towards crime, the higher the level of neglect and abuse, the greater the number of friends of college students who have committed criminal behavior, the positive level of attitude towards crime and attitudes towards violence ([Altunpul, 2022](#)).

The Importance and Objective of Research

The primary objective of this study is to explore the factors contributing to criminal susceptibility, with a particular emphasis on psychological resilience and childhood trauma. Childhood trauma has long been a subject of study in psychology. Childhood experiences are known to have an impact on many aspects of an individual's life ([Sevük, 2017](#)). It is imperative to examine the impact of childhood experiences when considering criminal behavior. This investigation seeks to elucidate the complex interplay between these variables in shaping criminal propensity. The study will explore the concepts of psychological resilience, childhood trauma and predisposition to crime.

This study deals with psychological resilience and childhood trauma, which is thought to be linked to criminal predisposition in individuals. It's intended to contribute to the well-being of individuals that we often start to recall after shocking events such as psychological resilience, pandemics, earthquakes. In fact, from the past to the present, childhood trauma has also been associated with counseling and therapy. The study of the concept of psychological resilience, on the other hand, especially when it comes to childhood trauma, has been studied. It has been found to be an important concept: the psychological resilience of individuals who have suffered childhood trauma. He was involved in a study on childhood trauma ([Çorbacı, 2017](#)). The study found that there was a meaningful relationship

between them ([Altunpul, 2022](#)). Based on this study, children with childhood trauma and low levels of psychological resilience were identified in the study. The aim of the study is to investigate the causes of individuals being susceptible to crime in the context of psychological resilience and childhood trauma and to find a relationship between them. The objective of these two concepts is to investigate and develop ideas to prevent predisposition to crime.

In this research, it is hypothesized that individuals with high levels of childhood trauma also have high levels of susceptibility to crime (H_1), individuals with low psychological resilience levels have high crime proneness levels (H_2), individuals with high levels of childhood trauma have low levels of psychological resilience.

Method

This section will include participants, data collection tools, data collection process and data analysis.

Participants

The sample (participants) of the research consists of individuals between the ages of 18-35. In this context, 361 people were reached. The sample was reached using the convenience sampling method. Participants were reached via Google Forms. The distribution of the study group according to demographic characteristics is given in Table 3.1.

Table 3.1 Distribution of Participants by Demographic characteristics

		n	%
Educational background	Literate	12	3.3
	Primary school graduate	2	0.6
	Secondary school graduate	8	2.2
	High school graduate	107	29.7
	Graduated from a University	192	53.3
	Master's-Ph.D.	39	10.8
Socio-economic level	Low	17	4.7
	Low-medium	48	13.3
	Middle	194	53.9
	Medium-high	88	24.4
	High	13	3.6

In Table 3.1, large proportion of the participants (53.3%) are university graduates. 53.9% of the participants stated that they were at a medium socio-economic level. The rate of participants stating that their parents are alive is 90.6%. A large proportion of the participants' parents live together (90.3%) and their parents are identical (98.6%). The ages of the participants ranged between 18 and 35, and the average age was calculated as 25.74 (Sd = 4.95).

Data Collection Tools

In the research, 'Informed onsent Form' was used to obtain the consent of the participants, 'Demographic Information Form' was used to learn their demographic information, 'hildhood Trauma Scale' was used to learn about childhood traumas, 'Psychological Resilience Scale for Adults' was used to learn the level of psychological resilience, and 'Psychological Resilience Scale for Adults' was used to measure their attitudes towards crime. 'Attitudes and Relationships Towards rime Scale' was used.

Demographic information form

Prepared by the researcher. It includes information such as participants' gender, age, educational status, socio-economic level, parental health status, parental cohabitation status, and parental marital status.

Childhood trauma scale

The original form of the Childhood Trauma Scale was developed by Bernstein et al. (1994) in order to retrospectively and quantitatively evaluate abuse and neglect experiences before the age of 20, according to the person's answers (Bernstein et al. 1998, cited in Altunpul, 2022). Validity and reliability studies of the Turkish form of the scale, consisting of 28 items, were conducted by Şar et al. (2012). This scale consists of six subscales. These; physical abuse, emotional abuse, sexu-al abuse, physical neglect, emotional neglect and overprotection. The scale is in 5-point Likert format (Altunpul, 2022). Internal consistency coefficients of the subscales of the scale; The dissociative experiences scale was found to be 0.95, the Beck depression inventory was 0.94, and the relationship scales survey was 0.61 (Şar et al., 2012). In this study, the internal consistency coefficient of the scale was found to be 0.84.

Psychological resilience scale for adults

The Psychological Resilience Scale for Adults was developed by Friborg et al. (2005). This scale includes the dimensions of personal power, structural style, social competence, family harmony and social resources (Basım&Çetin, 2011).

A

later study ([Friborg et al., 2005](#)) showed that the scale better explains the psycho-logical resilience model with its six-dimensional form. In this new study, personal power dimension; It is divided into two: self-perception and future perception, and a six-dimensional structure is formed. The validity and reliability study of the scale was conducted by Basım and Çetin ([2011](#)). The internal consistency coefficients of the subscales of the scale were found to vary between 0.66 and 0.81 ([Basım&Çetin, 2011](#)). In this study, the internal consistency coefficient of the scale was found to be 0.89.

Attitudes and relationships towards crime scale

It was developed by Mills, Kroner and Forth ([2002](#)) to measure people's antisocial orientation and relationships. The scale consists of 2 parts and a total of 6 sub-dimensions ([Mills et al., 2002](#), cited in [Nergiz&Iřıklı, 2019](#)). The first part of the scale (part A) is the number and coefficient of friends who have shown criminal behavior; The second part consists of sub-dimensions of attitudes towards violence (12 items), thoughts of justification (12 items), antisocial intention (12 items) and relationships (10 items) ([Altunpul, 2022](#)). It was adapted into Turkish by Nergiz and Iřıklı ([2019](#)). There are 64 items in the Turkish form of the scale. The overall internal consistency coefficient of the scale was found to be 0.86 ([Nergiz&Iřıklı, 2021](#)). In this study, the internal consistency coefficient of the scale was found to be 0.77.

Data Collection Process

After obtaining the necessary permission from Istanbul Topkapı University Graduate Education Ethics ommittee, the data collection process started. Research data was collected online via 'Google Forms'. Data was collected from a population of adults aged 18-35. Participants were first given an 'Informed onsent Form' via the link created, explaining the purpose of the research and that participation was voluntary. Afterwards, 'Demographic Information Form', 'Childhood Trauma Scale', 'Psychological Resilience Scale for Adults', 'Attitudes Towards Crime and Relationships Scale' were given respectively. In order to ensure that participants answered all questions in the scale, moving to another question without answering was restricted. Since there was no age range in the study that did not meet the participation criteria, no participants were excluded from the analysis.

Analysis of Data

Skewness and kurtosis coefficients were calculated to examine the distribution of the scores of participants aged 18-35 from the childhood trauma, psychological resilience and crime attitudes and relationships scale. The fact that the skewness

coefficient is less than ± 3 and the kurtosis coefficient is less than ± 10 is sufficient to meet the normal distribution assumption (Kline, 2011). The calculated coefficients were within the specified range and it was observed that the scores obtained from the scales had a normal distribution.

Table 3.4 Descriptive Values of the Scores obtained from the Childhood Trauma, Psychological Resilience and Attitudes and Relationships Towards Crime Scale

Variables	Min.	Max.	Mean	Sd	Skewness		Kurtosis	
					z	Sh	z	Sh
Emotional abuse	5	22	7.58	3.27	1.67	0.13	2.03	0.26
Physical abuse	5	18	5.74	1.73	2.27	0.13	2.60	0.26
Physical neglect	5	19	7.14	2.59	1.55	0.13	2.67	0.26
Emotional neglect	5	23	10.64	4.22	0.69	0.13	-0.09	0.26
Sexual harassment	5	21	5.94	2.50	2.47	0.13	2.36	0.26
Overprotection-control	2	10	3.64	1.83	1.32	0.13	1.37	0.26
CTS Total	27	90	40.68	11.69	1.46	0.13	2.70	0.26
Psychological resilience	63	165	121.77	19.01	-0.24	0.13	-0.15	0.26
NFCB	0	0.56	0.02	0.08	2.55	0.13	2.87	0.26
CFCB	0	22	0.76	2.72	2.81	0.13	2.71	0.26
AR	0	9	1.35	1.61	1.48	0.13	2.10	0.26
AV	0	9	3.77	2.01	0.55	0.13	-0.45	0.26
AI	0	12	2.34	2.40	1.41	0.13	1.87	0.26
TR	0	10	3.57	2.20	0.25	0.13	-0.64	0.26

Number of friends who have engaged in criminal behavior (NFCB), Coefficient of friends who have engaged in criminal behavior (CFCB), Attitudes towards relationships (AR), Attitudes towards violence (AV), Antisocial intent (AI), Thoughts of Righteousness (TR)

Pearson correlation coefficients were calculated to examine the relationships between childhood trauma, resilience, and criminal attitudes and relationships scale scores. Multiple linear regression analysis was applied to determine the effect of childhood trauma and psychological resilience on attitudes and relationships towards crime. Independent groups t test and ANOVA were applied to compare the scores of childhood trauma, psychological resilience and attitudes and relationships towards crime according to the demographic characteristics of the participants. Before the comparison, some groups with a small number of participants were combined with a higher or lower group and included in the analysis.

For example, groups with a small number of participants, formed according to the health status of the mother and father, were grouped under the other category and included in the analysis. Data were analyzed using the SPSS 25.0 statistical package program.

Results

The research was examined within the scope of the hypothesis that individuals with high levels of childhood trauma also have high levels of susceptibility to crime (H_1) and the results are presented in Table 4.3.

Table 4.3. Pearson Correlation Coefficients for the Relationships Between Childhood Trauma and Crime Attitudes and Relationships Scale Scores

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.NFCB	1													
2.CFCB	.973**	1												
3.AR	.307**	.299**	1											
4.AV	.129*	.132*	.267**	1										
5.AI	.254**	.254**	.498**	.462**	1									
6.TR	-0.01	-.01	0.05	.221**	.206**	1								
7.ARTC	.593**	.602**	.624**	.643**	.772**	.465**	1							
8.Emotional abuse	.142**	.104*	.180**	.135*	.256**	.00	.215**	1						
9.Physical abuse	.171**	.145**	.105*	0.08	.128*	.06	.171**	.546**	1					
10.Physical neglect	0.08	0.06	.178**	0.06	.122*	.03	.137**	.355**	.315**	1				
11.Emotional neglect	0.07	0.04	.171**	.141**	.138**	.05	.162**	.665**	.439**	.610**	1			
12.Sexual harassment	.148**	0.10	.146**	0.04	.162**	.03	.152**	.308**	.285**	.106*	.237**	1		
13.Overprotection-control	0.07	0.03	0.08	.137**	.176**	.03	.142**	.612**	.429**	.199**	.492**	.266**	1	
14.CTS total	.151**	0.10	.211**	.144**	.229**	.04	.229**	.841**	.657**	.641**	.875**	.493**	.670**	1

** $p < 0.01$; * $p < 0.05$: Number of friends who have engaged in criminal behavior (NFCB), Coefficient of friends who have engaged in criminal behavior (CFCB), Attitudes towards relationships (AR), Attitudes towards violence (AV), Antisocial intent (AI), Thoughts of Righteousness (TR), Attitudes towards relationships and crime (ARTC)

In Table 4.3 are examined, there are low-level positive significant relationships between the number of friends who have engaged in criminal behavior and emotional abuse ($r = 0.142$; $p < 0.01$), physical abuse ($r = 0.171$; $p < 0.01$), sexual harassment ($r = 0.148$; $p < 0.01$) and CTS total ($r = 0.151$; $p < 0.01$). There are low-level positive significant relationship between coefficient scores of friends who have engaged in criminal behavior, emotional abuse ($r = 0.104$; $p < 0.05$) and

physical abuse ($r = 0.145$; $p < 0.01$). There are low-level positive significant relationships between attitudes towards relationships scores and various forms of abuse and neglect: emotional abuse ($r = 0.18$, $p < 0.01$), physical abuse ($r = 0.105$, $p < 0.05$), physical neglect ($r = 0.178$, $p < 0.01$), emotional neglect ($r = 0.171$, $p < 0.01$), sexual harassment ($r = 0.146$, $p < 0.01$), and CTS Total ($r = 0.211$, $p < 0.01$) scores. There was a low but statistically significant correlation between attitudes towards violence scores and emotional abuse ($r = 0.135$, $p < 0.05$), emotional neglect ($r = 0.141$, $p < 0.01$), and CTS Total scores ($r = 0.144$, $p < 0.01$). These findings indicate the presence of positive significant relationships at a low level.

There are low-level positive significant relationships between antisocial intention scores and various forms of abuse and neglect: emotional abuse ($r = 0.256$, $p < 0.01$), physical abuse ($r = 0.128$, $p < 0.05$), physical neglect ($r = 0.122$, $p < 0.05$), emotional neglect ($r = 0.138$, $p < 0.01$), sexual harassment ($r = 0.162$, $p < 0.01$), overprotection-control ($r = 0.176$, $p < 0.01$), and CTS Total scores ($r = 0.229$, $p < 0.01$). Additionally, there are low-level positive significant relationships between ARTC total scores and various forms of abuse and neglect: emotional abuse ($r = 0.215$, $p < 0.01$), physical abuse ($r = 0.171$, $p < 0.01$), physical neglect ($r = 0.137$, $p < 0.01$), emotional neglect ($r = 0.162$, $p < 0.01$), sexual harassment ($r = 0.152$, $p < 0.01$), overprotection-control ($r = 0.142$, $p < 0.01$), and CTS Total scores ($r = 0.229$, $p < 0.01$).

The research was examined within the scope of the hypothesis that individuals with low psychological resilience levels have high crime proneness levels (H_2) and the results are presented in Table 4.4.

Table 4.4 Pearson Correlation Coefficients of the Relationships Between Psychological Resilience and Criminal Attitudes and Relationships Scale Scores

Variables	1.	2.	3.	4.	5.	6.	7.	8.
Resilience	1							
NFCB	-.153**	1						
CFCB	-.121*	.973**	1					
AR	-.199**	.307**	.299**	1				
AR	-.185**	.129*	.132*	.267**	1			
AI	-.196**	.254**	.254**	.498**	.462**	1		
TR	-.02	-.01	-.01	.05	.221**	.206**	1	
ARTC	-.228**	.593**	.602**	.624**	.643**	.772**	.465**	1

** $p < 0.01$; * $p < 0.05$: N=360, Number of friends who have engaged in criminal behavior (NFCB), Coefficient of friends who have engaged in criminal behavior (CFCB), Attitudes towards relationships (AR), Attitudes towards violence (AV), Antisocial intent (AI), Thoughts of Righteousness (TR), Attitudes towards relationships and crime (ARTC)

When examining the statistically significant relationships in Table 4.4, we find that psychological resilience scores are negatively correlated with the number of friends who have engaged in criminal behavior ($r = -0.153$, $p < 0.01$), the proportion of friends who have engaged in criminal behavior ($r = -0.121$, $p < 0.05$), attitudes towards relationships ($r = -0.199$, $p < 0.01$), attitudes towards violence ($r = -0.185$, $p < 0.01$), antisocial intention ($r = -0.196$, $p < 0.01$), and ARTCS Total scores ($r = -0.228$, $p < 0.01$). These findings indicate that as psychological resilience increases, the number of friends involved in criminal behavior, the proportion of such friends, and scores on attitudes towards relationships, attitudes towards violence, and antisocial intention all decrease.

The research was examined within the scope of the hypothesis that individuals with high levels of childhood trauma have low levels of psychological resilience (H_3) and the results are presented in Table 4.5.

Table 4.5 Results of Regression Analysis Performed to Determine the Predictive Effect of Childhood Traumas on Psychological Resilience

Değişken	B	SH	β	t	p
(Constant)	154.92	3.47		44.70	0.00
Emotional Abuse	-0.60	0.40	-0.10	-1.51	0.13
Physical Abuse	0.04	0.59	0.00	0.06	0.95
Physical Neglect	-0.81	0.41	-0.11	-1.97	0.05
Emotional Neglect	-1.65	0.32	-0.37	-5.22	0.00*
Sexual Harassment	-0.34	0.35	-0.04	-0.95	0.34
Overprotection-Control	-0.95	0.59	-0.09	-1.61	0.11
Denial	-3.24	5.96	-0.02	-0.55	0.59
R=0,579	R ² =0.335		F(7;359)=25.36		p<0.01

* $p < 0.05$; Dependent Variable = Psychological resilience

When examined, emotional abuse, physical abuse, physical neglect, emotional neglect, sexual abuse and excessive protection-control together have a significant relationship with psychological resilience ($R = 0.579$; $F(7;359) = 25.36$; $p < 0.001$). Emotional abuse, physical abuse, physical neglect, emotional neglect, sexual abuse and overprotection-control variables explain 34% of the change in attitudes and relationships towards crime. When the significance values of the standardized beta coefficients are examined, it is understood that only emotional neglect ($\beta = -0.37$; $p < 0.05$) among the predictive variables is a significant predictor of psychological resilience. Emotional neglect negatively predicts psychological resilience.

As emotional neglect increases, psychological resilience decreases (Table 4.5).

Results of Regression Analysis Performed to Determine the Predictive Effect of Childhood Trauma and Psychological Resilience on Attitudes and Relationships Towards Crime

Within the scope of the main problem of the research, the predictive effect of childhood trauma and psychological resilience on attitudes and relationships towards crime was examined and the results are given in Table 4.6.

Table 4.6 Results of Regression Analysis Performed to Determine the Predictive Effect of Childhood Trauma and Psychological Resilience on Attitudes and Relationships Towards Crime

Değişkenler	B	SD	β	t	p
(Consant)	15.29	3.79		4.03	0.00
Psychological resilience	-0.06	0.02	-0.17	-2.70	0.01*
Emotional abuse	0.28	0.17	0.13	1.64	0.10
Physical abuse	0.20	0.25	0.05	0.82	0.42
Physical neglect	0.15	0.18	0.06	0.87	0.39
Emotional neglect	-0.15	0.14	-0.09	-1.07	0.29
Sexual harassment	0.23	0.15	0.08	1.50	0.13
Overprotection-control	-0.04	0.25	-0.01	-0.16	0.87
R=0.282	R ² =0.080		F(7;359)=4.36		p<0.001

*p<0.05; Dependent Variable = Attitudes and relationships towards crime

When examined, psychological resilience, emotional abuse, physical abuse, physical neglect, emotional neglect, sexual abuse and overprotection-control have a significant relationship with attitudes and relationships towards crime (R = 0.282; F (7;359) = 4.36 ;p<0.001). Psychological resilience, emotional abuse, physical abuse, physical neglect, emotional neglect, sexual abuse and overprotection-control variables explain 8% of the change in attitudes and relationships towards crime. When the significance values of the standardized beta coefficients are examined, it is understood that only psychological resilience ($\beta = -0.17$; p<0.05) among the predictive variables is a significant predictor of attitudes and relationships towards crime. This result showed that psychological resilience has a greater impact on attitudes and relationships towards crime than childhood tra-

umas. As psychological resilience increases, attitudes and relationships towards crime decrease (Table 4.6).

Conclusion

While going through the body of research, we discovered a lot of studies that forecasted the connection between psychological resilience and early trauma. Furthermore, studies have been done to forecast the connection between criminal propensity and early trauma. Nonetheless, there is a clear lack of research on the topic of examining psychological resilience and crime propensity together. In light of this gap, the current study set out to investigate the connection between psychological resilience, criminal propensity, and early trauma.

We examined the association between childhood trauma and the crime-oriented attitudes and relationships scale in light of the research's hypothesis (H_1) that people who had high levels of trauma as children are also more likely to commit crimes. The results showed that there was a low-level positive significant link between the childhood trauma scale and the criminal attitudes and relationships scale. The results show that there is a little rise in both susceptibility to criminality and childhood trauma. The study hypothesis has been validated in this instance. In a study, a positive significant relationship was found between the level of childhood abuse and neglect of university students and their attitudes towards crime ([Altunpul, 2022](#)). In another study, the reasons that push children to crime were investigated. Among the reasons that push crime, negative socio-economic status and environment, negative familial factors, impact of individual-psychological factors, impact of environmental factors and impact of familial factors have been found ([Öngören&Katılmış, 2021](#)). Negative familial, environmental and psychological factors make individuals prone to crime. In a study on how parental attitudes affect criminal behavior, it was found that if the parental attitude is protective-demanding, less criminal behavior is shown ([Yılmaz, 2009](#)). Research have demonstrated that a person's propensity to commit crimes is significantly influenced by their parents' behavior, which is included in the category of childhood traumas. Economic theory was found to be explanatory of property criminal conduct in a study looking into the socio-economic elements that lead to adult criminality ([Demirel, 2017](#)). The economic situation and the family's tendency towards violence were found to be significant factors in high school students' tendency towards violence, according to a study aimed at explaining the factors influencing the students' perception of violence and their level of tendency towards it ([Özgür et al., 2011](#)). It is seen that the research is also supported in the literature. Because individuals with high levels of childhood trauma are exposed to negative living conditions, they continue to have negative living conditions in their future lives and sometimes may expose others to them. Childhood traumas include witnessing violence, accidents, and natural catastrophes;

they also include losing a parent, being separated from parents, getting divorced, migrating, and experiencing sexual, physical, and emotional abuse and neglect before the age of 18 ([Çelik&Hocaoğlu, 2018](#)). Any behavior that endangers social interactions and has an impact on an individual's social, psychological, or physical well-being can be classified as a crime ([Yılmaz, 2009](#)). Based on two definitions, the fact that individuals have experienced trauma in childhood causes them to be prone to crime by exposing other people to trauma. Individuals who have experienced trauma have a high probability of exposing the people around them to trauma ([Yılmaz, 2009](#)). As a person grows up, he goes through various developmental periods. It is exposed to conflicts and abnormalities during developmental periods. These tensions generally coincide with the individual's childhood and developmental periods. It is difficult to fight the problems experienced in childhood, and the person grows up without solving these problems. Unresolved and covered-up problems lead to psychological problems in adulthood. Individuals with psychological problems show behaviors that deviate from society, and these deviant behaviors push people to criminal behavior ([Dolu, 2012](#)). The relationship between childhood trauma and crime proneness variables has been supported by research and definitions of concepts. The H_1 hypothesis of the research was found to be significant.

Within the scope of the research's hypothesis that individuals with low psychological resilience levels have high crime proneness levels (H_2), the relationship between psychological resilience and crime-oriented attitudes and relationships scale was examined. Findings show that as psychological resilience increases, the number of friends with criminal behavior, the coefficient of friends with criminal behavior, attitudes towards relationships, attitudes towards violence, and anti-social intention scores each decrease. Based on this finding, as psychological resilience increases, the individual's attitudes towards crime decrease. Increasing a person's psychological resilience means improving his perspective on events and being able to overcome difficulties strongly. People who commit crimes are individuals with psychological problems. Therefore, high psychological resilience keeps the person away from committing crimes. Psychologically resilient individuals are people who can stay calmer and think logically compared to other people when they are under difficult conditions ([Çaykuş&Çaykuş, 2020](#)). In a study, the relationship between individuals' empathy levels and crime was examined. It has been determined that the empathy levels of individuals who tend to commit crime are lower than those who do not tend to commit crime ([Yılmaz, 2009](#)). Empathy is one's ability to see from another person's perspective. A person whose perspective can be diverse indicates that he or she is a psychologically healthy individual ([Yılmaz, 2009](#)). Psychologically healthy individuals are more likely to have high resilience because being psychologically healthy is one of the protective factors for resilience. A study was conducted on the psychological resilience levels of children in institutional care. In this study, a positive significant relati-

onship was found between the social emotional learning abilities and self-efficacy of children in institutional care and their psychological resilience ([Toraman et al., 2022](#)). The importance of being psychologically healthy was also emphasized in order to increase psychological resilience. In a study investigating the reasons that push adults to crime, it was found that individual characteristics are effective in explaining criminal behavior ([Demirel, 2017](#)). In this study, the individual characteristic of the person in the behavior of harming someone's life is emphasized. Psychological resilience and being psychologically healthy are the individual characteristics of the person. A study found that as a person's self-esteem increases, their level of psychological resilience also increases ([Sankaya, 2015](#)). Theories that deal with crime from a psychological perspective draw attention to individual dynamics and the dynamics that lead the individual to behavior ([Altunpul, 2022](#)). A person's self-esteem also provides an example of the individual dynamics that lead to crime. In order to increase psychological resilience, it is necessary to carry out studies on emotions and the regulation of emotions ([Çınar&Eminoğlu, 2022](#)). Emotions operate through cognitive interpretations of real situations rather than the actual situations themselves. Our emotions form the basis of our motivation and behavior ([Soloshenko, 2017](#)). Since our emotions form the basis of our behaviors, working with emotions and increasing resilience will reduce impulsivity behaviors and indirectly reduce the tendency to crime. Protective factors related to crime are personal orientation and competencies, family environment and relationships, and external support systems ([Altunpul, 2022](#)). When we examine the protective factors for crime, they overlap with the protective factors of being psychologically resilient. The results of the research show that as psychological resilience increases, attitudes towards crime decrease. No direct study has been found in the literature on psychological resilience and susceptibility to crime. As supported by the aforementioned studies, there are indirect studies on psychological resilience and susceptibility to crime. When starting the research, it was seen as very valuable to explore such a gap in the field. The relationship between these two variables has been tried to be indirectly supported in the literature. The main thing is that this hypothesis is confirmed as a result of the research. Many studies in the literature that indirectly address these variables suggest that these two variables are related. Regarding an individual's psychological resilience, the literature emphasizes being psychologically healthy, working on emotions, and gaining perspective. These emphasized points are concepts that affect susceptibility to crime in the opposite direction.

Under the umbrella of the research hypothesis that people with high levels of childhood trauma have low levels of psychological resilience (H_3), the relationship between childhood trauma and psychological resilience was investigated. The results showed that psychological resilience was significantly predicted by emotional neglect. Psychological resilience is inversely correlated with emotional neglect. It was determined that psychological resilience declines with increasing

emotional neglect. The study's hypothesis was validated. Childhood trauma was discovered to be a topic that has been extensively researched both historically and currently in the literature study that was done before to the research. The relationship between these two variables is also often studied, as has been discovered recently with the rise in research on the idea of psychological resilience. Childhood traumas strongly predict psychological resilience, according to a study looking at the relationship between psychological resilience and childhood traumas ([Toksöz, 2022](#)). In a study conducted during the Covid-19 pandemic period, it was found that the psychological resilience of children decreased due to the pandemic ([Çaykuş&Çaykuş, 2020](#)). Although the pandemic period has affected every individual, it has affected children's resilience more because they cannot meet all their needs on their own, they have not completed their development, and they are more vulnerable to psychological health problems. Events experienced in childhood affect the resilience of both that period and adulthood. In a study, the relationship between people's self-esteem and psychological resilience was examined. The findings of the research show that as a person's self-esteem increases, the level of psychological resilience also increases. A significant prediction was found between self-esteem and parents' relationship status ([Sarıkaya, 2015](#)). Since the foundation of self-esteem is laid in childhood, it has been determined that childhood experience affects resilience. Emotional neglect is an important and common type of childhood trauma that involves multiple attitudes and behaviors in childhood ([Dinleyici&Dağlı, 2016](#)). Since emotional neglect and abuse are not easy to detect, the child may be exposed for a long time. The psychological and behavioral effects of this trauma on the person can last a lifetime ([Dinleyici &Dağlı, 2016](#)). Since these effects, which can last a lifetime, can deteriorate people's psychological health, the person will not be psychologically healthy. In a study, variables such as the number of siblings, the order in which they were born in the family, the number of people at home, the place of residence, socio-economic level, whether the parents are alive/together, substance use status, emotional sharing with the environment, and parental attitudes affect psychological resilience scores. was found ([Bahadır, 2009](#)). In a study conducted with high school students, the resilience levels of students whose parents were together were found to be higher than those of students whose parents were divorced ([Özcan, 2005](#)). In another study, it was found that perceived emotional abuse and neglect from parents served as a partial mediator in self-efficacy and psychological resilience ([Arslan&Balkıs, 2016](#)). In a study, it was determined that emotional neglect and abuse perceived from teacher and mother behavior significantly predicted behavioral problems ([Şimşek&Önder, 2011](#)). Psychological resilience is defined as the individual's ability to adapt to the difficulties brought by traumatic life events ([Toksöz, 2022](#)). There are some risk factors related to psychological resilience. One of these is the neglect of the child by his parents. Therefore, it can be said that neglect negatively affects people's psychological resilience by creating a risk

factor ([Toksöz, 2022](#)). Another risk factor for psychological resilience is familial risk factors. Familial risk factors include many items such as domestic neglect and abuse, parents not being alive, parents being divorced, and the presence of a family member who has committed a crime ([Gizir, 2007](#)). These risk factors prevent individuals from feeling psychologically well. However, the person cannot find the strength to be psychologically resilient. Experiencing trauma in childhood causes negative life experiences such as psychological disorders and distrust of life in adulthood ([Yargıç et al., 2012](#)). The concept of psychological resilience is, in short, the ability to adapt to the negativities of life. Risk factors of psychological resilience are discussed under three headings: personal, familial and environmental ([Gizir, 2007](#)). Individuals who experienced trauma in childhood have risk factors for resilience. Therefore, it follows that individuals who have experienced trauma in childhood are in a psychologically weaker position. As supported by literature research, experiencing trauma in childhood affects an individual's psychological resilience.

Within the scope of the main problem of the research, the predictive effect of childhood trauma and psychological resilience on attitudes and relationships towards crime was examined. The findings showed that psychological resilience has a greater impact on attitudes and relationships towards crime than childhood traumas. Additionally, as psychological resilience increases, attitudes and relationships towards crime decrease. They define psychological resilience as an individual's general success and adaptation process against important stress sources such as trauma, threat, family and relational difficulties, important health problems, work environment and economic problems ([Basım&Çetin, 2011](#)). Childhood traumas are defined as sexual, physical and emotional abuse and neglect that people are exposed to before the age of 18, as well as losing a parent, separation from parents, divorce, migration, witnessing violence, accidents and natural disasters ([Çelik&Hocaoğlu, 2018](#)). Crime can be defined as all actions that pose a threat and danger to social life and affect individuals socially, psychologically and physiologically ([Yılmaz, 2009](#)). Based on the definitions of all variables found in the research, it can be said that situations that affect individuals psychologically, physiologically and sociologically or that create behaviors as a result of being affected. The definitions of variables share a lot of similarities. Their connection grew intriguing when they realized how similar they were. Research on the connection between childhood trauma and psychological resilience as well as the association between childhood trauma and crime have been published in the literature. The connection between psychological resilience and criminality has not been studied. The association between the factors discovered in this research has not been studied. However, when examined indirectly, the interconnections of the variables are explained. Based on this indirect connection, it was stated in the hypotheses of the research that there would be a connection between the three variables. While a closer relationship was expected between childhood trauma and crime, a more significant relationship was found between psychological resilience

and crime susceptibility. In summary, a connection was found between the variables of childhood trauma, psychological resilience and susceptibility to crime, which is the main problem of the research.

Limitations

The majority of the participants in the study are university graduates. University graduates constitute a good group in terms of education level. The fact that there are individuals with a good level of education creates a limitation in terms of diversity of education levels. Capturing diversity in terms of education level in future research is valuable in terms of examining the subject in a wide area.

There are many studies in the literature on psychological resilience. However, the lack of direct research between the psychological resilience variable and the crime susceptibility variable is a limitation. There are studies in the literature related to the concepts found in the research, childhood trauma and psychological resilience. There are also studies on childhood trauma and susceptibility to crime. There are studies showing an indirect relationship between the concepts of childhood trauma and susceptibility to crime, but there is no research on the direct relationship between the two concepts. In order to explain the relationship between these two concepts, indirectly explained studies are included. In this study, the relationship between psychological resilience and crime proneness variables was demonstrated. Findings show that as psychological resilience increases, the environment and attitudes towards crime decrease. It is important for the field to conduct research on psychological resilience and susceptibility to crime in future studies.

This study shed light on the relationship between a person's propensity for crime and their history of childhood trauma and low psychological resilience. These days, fear and social insecurity are felt due to a rise in criminal activity. Since the ideas of childhood trauma, psychological resilience, and susceptibility to crime have not before been researched combined, it is believed that it will advance the area.

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Psycholinguistic Analysis of an E-Suicide Note

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Abstract: Although suicide cases are increasing today, studies on suicide are quite limited. This study aimed to handle a suicide case that occurred in Türkiye from the perspective of forensic psychology to understand the structure of suicide cases reflected in the cyber field, which are not yet found in the literature. 11 e-suicide cases between January 1, 2014 and January 1, 2020, from 1,298 suicide attempts in Turkey's internet archive and national newspapers are scanned to determine the case to be examined. The first case of e-suicide, which took place in Türkiye and was shared on social media, was selected for examination by random selection method among the cases. The case discussed is a 35-year-old male. The online video document selected as data was transcribed and the semantic level theme analysis method was used with induction, and an in-depth psycholinguistic analysis was carried out. Categories according to the analysis results were classified as "feelings", "perceptions", "functions" and "phantasies". As can be seen from this case, cyberspace suicide notes are publicly accessible and accessible. Evaluating a case in to understand the dynamics of suicide will be functional given the available data. It is thought that the present findings provide in-depth information on the self-perception and relationships of the person leaving the e-suicide note. Due to the nature of the qualitative analysis, although the findings are not generalizable, the current findings can be evaluated in the determination and prevention studies of people with suicidal tendencies in practice environments and social media.

Keywords: *Forensic psychology, e-suicide note, cyberpsychology, social media, case study, suicide*

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Bir E-İntihar Notunun Psikodilbilimsel Analizi

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Öz: Günümüzde intihar vakaları artmasına rağmen intihar ile ilgili yapılan çalışmalar oldukça sınırlıdır. Bu çalışmada henüz alanyazında çok bulunmayan, siber alana yansıyan intihar vakalarının yapısını anlayabilmek için ülkemizde meydana gelmiş bir intihar vakasının adli psikoloji bakış açısıyla ele alınması amaçlanmaktadır. İncelenecek vakayı belirlemek için Türkiye'nin internet arşivi (Facebook, Twitter, Instagram ve Youtube gibi sosyal medyada paylaşılan kamuya açık dijital veriler) ve ulusal gazetelerinde yer alan 1.298 intihar girişimi haberinden, 1 Ocak 2014 ve 1 Ocak 2020 tarihleri arasındaki 11 e-intihar vakası taranmıştır. Daha sonrasında elde edilen haberler detaylı olarak incelenmiştir. Tüm detayları (intihar eden bireyin cinsiyeti, yaşı, kendini öldürme nedeni ve yöntemi) kapsayan vakalar içerisinde rastgele seçim yöntemiyle ülkemizde gerçekleşmiş sosyal medya üzerinden paylaşılan ilk e-intihar vakası seçilmiştir. Ele alınan vaka 35 yaşında bir erkektir. Veri olarak seçilen çevrim içi video belgesinin yazıya dökülmesinin ardından, tümevarım ile anlamsal düzey tema analiz metodu kullanılarak derinlemesine psikodilbilimsel analiz yapılmıştır. Analiz sonuçlarına göre kategoriler "duygular", "algılar", "fonksiyonlar" ve "düşlemler" olarak sınıflandırılmıştır. Video paylaşımının ardından ailenin, müntehirin evine ulaştığı ve müntehirin doğalgaz borusuna ipe asılı hâlde bulunduğu bildirilmiştir. Olayla ilgili adli incelemeler yapılmıştır. Bu vakadan da görüldüğü üzere siber alan intihar notları kamuya açık, ulaşılabilir bir yapıdadır. İntiharın dinamiklerini anlayabilmek için bir vaka üzerinden değerlendirme yapmak mevcut erişilebilir veri gözetildiğinde işlevsel olacaktır. Bununla beraber bu konuyla ilgili bilimsel çalışmaların artırılması gerekmektedir. Mevcut bulguların, e-intihar notu bırakan kişinin kendilik algısı ve diğerleriyle ilişkilerine yönelik derinlemesine bilgi sunduğu düşünülmektedir. Nitel analizin doğası gereği elde edilen bulgular, genellenebilir olmamakla birlikte uygulama ortamlarında ve sosyal medyada intihar eğilimi olan kişilerin belirlenmesi ile önleme çalışmalarında değerlendirilebilir.

Anahtar sözcükler: Adli psikoloji, e-intihar notu, siber psikoloji, sosyal medya, vaka analizi.

Introduction

Living and surviving has been an indispensable goal and the strongest motivation for humans. What is interesting is the act of ending one's life despite this strong instinct. Since suicide is a complex structure, its causes and consequences should be examined by many disciplines.

The word suicide is defined by the Turkish Language Association as “a person ending his own life due to social and psychological reasons” (TDK, 2021). Clinical psychologist and suicide expert Edwin S. Shneidman explained suicide, as “the act of ending one's own life” (Leenaars&Edwin, 2010). Emile Durkheim defines it as “every act of death that is a direct or indirect result of a positive or negative action, performed by the victim himself” (Choron, 1972). In the context of Durkheim's explanation, Tanrıvere considers cutting one's own carotid artery, jumping from a high place, hanging oneself, or shooting one's own vital organs with a firearm as direct (active) suicide. He considers not meeting one's physiological needs such as food in order to die, refusing to receive treatment or use medication for a terminal illness, committing a crime that would result in the death penalty in countries with the death penalty, or committing an act that would require a law enforcement officer to shoot oneself with a firearm as indirect (passive) suicide. (Choron, 1972). Tanrıvere states that methods such as jumping from a height and jumping into water are referred to as passive suicide methods because it is not possible for the committer to harm his own body directly and with his own hands, and argues that in terms of behavior, both methods are direct suicides (Tanrıvere, 2016; Choron, 1972). In direct suicide, while the committer must perform an action; unlike indirect suicide, the person aims to die by refusing an action or causes someone else to kill himself (Tanrıvere, 2016). Freud defines suicide as an aggression directed towards oneself. However, it has been reported that when the death instinct is triggered in suicide, the anger is turned towards the person himself (Litman, 1996). Moreover, since suicide is a complex behavior, as Freud stated, “only the cooperation of very different and powerful instincts can make such an action possible” (Freud, 1917).

According to the World Health Organization (WHO) data, approximately 800,000 people worldwide end their lives every year, and according to the Turkish Statistical Institute, more than 3,000 people end their lives by suicide every year in Türkiye under the influence of many psychological, economic, and social factors (Evans, 2006; WHO, 2021; TUIK, 2021). In 2018, it was reported that approximately 4 out of every 100 thousand people committed suicide. Studies indicate that between 5% and 43% of devotees write suicide notes (Karbeyaz et al., 2014). Based on this, psychological examination of the suicide letter written by the individual before his attempt to end his own life; it is thought that it will contribute to the field both in understanding suicidal behavior and tendency, and

in the evaluation of the judicial process that begins with a person killing himself.

In the context of forensic sciences, it has been reported that since there may be an element of crime in events that appear to be suicide, or at least there will be suspicion of crime, the Public Prosecutor has a forensic examination and autopsy performed to investigate the material fact and clearly eliminate the suspicion on the cause of death. In this respect, the suicide letter left behind by the mercenary is thought to be one of the most important types of evidence in the conduct of the judicial process ([Tanrıvere, 2016](#)). Forensic sciences are defined as a group of sciences that conduct systematic studies to reveal the material truth. It contains many sciences and various non-science systems or methods ([Canter, 2010](#)). Within the scope of the current study, the phenomenon of suicide was discussed with psycholinguistic methods and forensic psychology approach under the umbrella of forensic sciences. Bartol and Bartol define forensic psychology as “a branch of science that examines aspects of human behavior directly related to the legal process and the professional application of psychology within the civil and criminal law system” ([Bartol&Bartol, 2004](#)).

As a subfield of applied psychology, case analyses are of great importance as it is a field of study that includes collecting, evaluating, and presenting information for legal processes ([Gudjonsson&Haward, 2016](#)). In our digital world, suicide letters have also become digital. Just like on social media platforms such as Facebook, Twitter, WhatsApp and Instagram, there are also suicide note posts on YouTube. Digital data collected through social media provides researchers and relevant personnel with the opportunity to perform faster analysis ([Behera et al., 2020](#)). When we look at the reasons why e-messages are generally preferred by users, it has been reported that the ability to reach many people at once and the speed of dissemination have a significant impact ([Cantor&Baume, 1998](#)). However, the text, photo, video and audio sharing opportunities offered by popular sharing platforms of the digital world such as Instagram, Twitter, Facebook and Youtube are used to share people’s existing suicide notes or to publish the act of suicide. The relevant example is called “cyberspace” in the literature. Although e-suicide and e-suicide cases, which include situations where the act of suicide takes place in a place connected to a computer network or the Internet, in short, in “cyberspace”, are frequently encountered today, they are rarely examined in the scientific literature. ([Ruder et al., 2011](#); [Soroni, 2019](#)).

In this study, an e-suicide note left as a video instead of being shared in writing on Facebook was examined through a case study. Some users may watch suicide acts shared on social media to harm themselves and learn new suicide methods ([Fu&Yip, 2008](#); [Sisask&Värmik, 2012](#); [Roth et al., 2020](#)). It is thought that such posts may have an indirect or direct relationship on suicidal behavior. For this reason this study aims to examine how e-suicide posts are presented. In addition, from a Lacanian perspective, it is aimed to investigate e-suicide notes on social

media platforms through the example of a suicide case in cyberspace using the content analysis technique ([Canbolat, 2018](#)).

Method

This study is a non-reactive research based on content analysis technique using qualitative research method. This method is a type of scientific research with high usability and applicability in psychology research in the field of social sciences. The difficulty of accessing data belonging to the cases within the scope of the study subjects of forensic psychology, especially in the context of file confidentiality, has been taken into consideration. For this reason, this method, which is an inductive, subjective type of research that opens up to postpositivist ideas, leads to multiple truths, and takes place in natural environments, has been preferred. While an informal language is used in this type of research, a semantic search comes to the fore ([Krysik&Finn, 2015](#)). In this study, content analysis, also called inductive analysis, was used to compile, and organize similar data around certain concepts and themes. By creating some headings, concepts, and categories; The data was coded, and various themes emerged from the analysis. In this context, the findings obtained were defined and interpreted.

In the theme analysis section, four basic categories were created, divided into sub-themes ([Canbolat, 2018](#)). In this context, the basic categories are classified as “emotions”, “perceptions”, “functions” and “fantasies”. The sub-themes under the mentioned basic categories are as follows.

(a) The “Emotions” category consists of the themes of “positive emotions” and “negative emotions”. “Positive emotions theme” includes the sub-themes of love, gratitude, and relaxation. The “negative emotions theme” includes three sub-themes: feelings of responsibility, hopelessness, and anxiety.

(b) The category classified as “Perceptions” consists of two themes: “Perceptions towards the self” and “perceptions towards the others”. The first theme of this category includes the sub-themes of grandiose and inadequate self-perception. The second theme includes the ideal others and negative others sub-themes.

(c) The “Functions” category consists of three themes: “Functions for responsibility, informing others about suicide, and punishing”. This category includes the sub-themes of “responsibility-oriented functions”, the need to justify and the need to justify the others.

(d) The “Phantasies” category consists of two themes: “Fantasies about life after death and fantasies about controlling post-mortem events”. These themes explain the fantasies about controlling the possibilities that lie behind suicide. These are divided into last wishes and requests, directions, instructions and suggestions, and control of the others’ emotions.

It would be misleading to consider the mentioned basic categories and sub-themes separately from each other. As a matter of fact, there may be situations where they intersect with each other. The boundaries between these structures are thought to be fluid ([Canbolat, 2018](#)). In this section, the classification of basic categories and sub-themes were analyzed with an e-suicide note and quotations from some sample letters discussed in the literature.

Based on some quantitative and qualitative online documents, it is aimed to examine and describe a case of e-suicide and cyberspace cases realistically in its natural environment. Since it is not known whether the online content examined is a part of the non-response research; the effects of the independent variable on the phenomena were examined while the researcher was creating the data pool. It is thought that studies conducted with the data obtained under these conditions contribute to the literature. As a matter of fact, the techniques developed with this method leads us to a non-reactive research design ([Neuman, 2012](#)).

Limitations of The Study

One of the limitations of the study is that a limited period from January 1, 2014 to January 1, 2020, is considered when examining social media suicide posts reflected in the news in the research conducted via the search engine. The main reason for the restriction is to examine the first cyber suicidal behavior in Turkey in 2014 while also scanning and comparing other suicide cases in the following years. However, the duration was determined considering that the effect of the pandemic period could be a confusing variable. The selected case is different from other cases in that it is the first cyber world suicide case reported in the national press and the suicide video is thought to have some implicit psychological content compared to other posts.

In addition, the reason why the time period is considered limited is that there are many social media news in the media regarding the subject in question. If there are no restrictions, the scope of the research will expand and it is possible that there will be difficulties in achieving the main purpose. Another limitation of the study is that only the words “social media + suicide” were searched in the search engine. Conducting research on a keyword expands the scope of the research and causes some difficulties in reaching the specific target, resulting in increased information pollution by accessing a lot of information and news that are not included in the research ([Braun&Clarke, 2006](#)). Increasing the keywords and the fact that the concept of “cyberspace” is a new concept will make it more possible to directly access the desired information in new studies. As a result of the scanning, thematic analysis methods were reached.

Analyses

It was stated that the 35-year-old self-murderer killed himself by hanging. When the literature is examined, it is stated that men use firearms and hanging as means of suicide, and women use chemical substances more (Sayıl, 2000). As a matter of fact, when the act of suicide is examined in the context of psychoanalytic theory, it is defined as a person's identification with the object of love, when the anger felt towards the object of love turns towards his or her own self and takes the action of destruction (Can&Sayıl, 2004).

Since the type of suicide note is a video shared on a social media platform, it was thought that it should be classified as an e-suicide note. It shows that 80% of those who commit suicide have previously reported that they would commit suicide in some way. This finding supports the case of informing others about the case. It is also reported that 50% of those who committed suicide went to a doctor for medical help within a month before the suicide, and 25% within a week before the suicide. The behavior of these individuals, who do not have any physical illness, to see a doctor is considered as a call for help (Can&Sayıl, 2004).

According to the results obtained from the analyses, the categories were named "emotions", "perceptions", "functions" and "fantasies".

Emotions

The theme of positive emotions in the "Emotions" category includes sub-themes such as "love", "gratitude" and "relaxation". For example, in the e-suicide note of the case, "*I have a wonderful brother at the beginning of everything, the best sibling a person can have.*", "*...I have a very sweet nephew.*", "*...I loved very much, I was loved very much...*" and "*...beautiful.*" While the sentences "*I made friends, I made good friends, we had a lot of fun...*" were coded as love, "*...if we remove the unpleasant parts, I actually lived a very good life.*" "*Life has always been very generous about people, especially the people I have intersected with, who have touched and touched my life*". The sentence was evaluated within the scope of gratitude/gratitude. The self-murderer said, "*Sometimes it happens like this. Some people, well, are more prone to suicide, and I'm obviously one of them,*" was thought to reflect a sense of relief. In a study conducted in this context, Osgood and Walker reported that expressions of distress or relief obtained from suicide letters would yield higher results compared to the control group, and therefore expressions that could be considered as indicators of relief would be relatively fewer in suicide letters. It is emphasized that investigations into whether the expressions in the suicide note contain distress or relief may be significantly affected by the subjective judgments of the investigator (Osgood&Walker, 1959). It was thought that the specified sub-themes were also coded in the content of many suicide notes in the literature. On the other hand, the areas of "anxiety,

anger, guilt, shame, sadness and hopelessness” are examined in the context of the “negative emotions” theme. The domain of “feelings towards responsibility” is divided into two aspects: “Self-blame and blaming others”. The content of the suicide notes includes self-blame; it is observed as “feelings of guilt, shame, sadness and self-directed anger”.

The stated emotions were evaluated within the phenomenon of “self-blame” without distinguishing them from each other. Most often, expressions such as “Forgive me” or “I’m sorry” have been examined under this heading. McClelland, Reicher and Booth reported that the statements in the notes reflected the relationship dynamics of people who committed suicide and that the main function of the notes included “blaming oneself or the other (the people to whom the letter was written)” ([McClelland et al., 2000](#)). In a concrete example, we see that the case makes confessions in his suicide note, implicitly blaming himself. The self-murderer mentions that he tried all the options and made a decision without the influence of any substance or psychological depression. In this situation, when the suicide note is considered as a means of communication, it is thought that the person attributes all responsibility to his own will, blocks all future messages and blames himself:

“Let me get straight to the point, this is a suicide note. This morning I am closing my life notebook. We have come to the end of the time allotted to me. [Laughs] I hope nothing goes wrong, of course. As you can see, I am not under the influence of alcohol or any drugs. I’m quite sane. I think I have considered the issue with my free will for a long enough time. In fact, I think I evaluated it thoroughly, I talked to many of my friends during this process, indirectly or directly, I read, researched, even went to the doctor, but in the end, I made this decision. Uhhh... Actually, I have been unhappy for a very long time. My close friends already know this, and I think suicide is not a new thing for me, that is, it is not like the explosion or breaking point that happens with a recent period of depression and so on”.

In the context of the “self-blame” pattern, it was predicted that feelings of guilt, shame and sadness mostly dominate. As a matter of fact, in this case, the following sentences can be given as examples:

“I actually liked my job in general and there is nothing to complain about, but as I said, at one point I pushed myself into loneliness a little bit and I guess I couldn’t cope with the unpleasant aspects of life because I was kind, cheerful, entertaining, and had such grace and spirit in mind and soul.”, “I attach great importance to being a person with depth, and now protecting and providing these has become a serious burden for me”.

In this study, another subtheme of the “negative emotions” theme was coded as “hopelessness”. As a matter of fact, it is reported in the literature that feelings of hopelessness and pessimism prevail in people with suicidal tendencies after long psychotherapies. For example, excerpts from the e-suicide note of the self-murderer are as follows:

“I realized that I had run out of strength in this regard and that the dark side of the work was getting heavier and I could not bear it, and somehow I had not developed the equipment related to it over time, and that I was having a harder time getting myself together after such shocks.”

“Frankly, this has become a very boring vicious circle, I mean, after a point, I have to understand what I am dealing with, and then go back and build yourself again, etc., and frankly, I have lost the light on that subject”.

In the section coded as the “hopelessness” sub-theme, it is determined that hopelessness brings with it pessimism as well as uncertainty about predicting the future.

Perceptions

In the “Perceptions” category, two themes were coded: “Perceptions towards the self” and “perceptions towards the other”. In the self-oriented section, “grandiose/perfect self-perception” and “weak/insufficient self-perception”; in the part directed towards others, the “ideal other” and “negative other” patterns are seen. It has been evaluated as a “grandiose/perfect self-perception” that reflects itself with symptoms such as exaggerated self-importance, intense need for admiration, lack of empathy and superiority.

In his e-suicide note, he wrote:

“It’s partly related to the fact that I’ve dragged this suicide issue this far, I waited to exhaust everything and come to this point. A friend of mine also contributed a lot to this. I especially wanted to wait for her to complete her birth, so that she wouldn’t be affected. I mean her baby”.

In this expression, it is considered as an impression that the self-murderer reflects exaggerated self-importance.

The self-murderer stated that if he had not lost his internal motivation, he could overcome the problems stated as insurmountable and that there was a possibility of experiencing the good works and fun life he had experienced before.

Sharp, perfectionist and conditional discourses such as “magnificent, unfair, everything, more” and stating that the reference point for overcoming the problem is itself is the following discourse in another sentence: “Grandiose/perfect self-perception” due to the person basing the events on himself and reducing them. He continues as:

“Um, could this vicious circle be broken? Of course, life would go on, we would party more, we would have more fun, maybe good things would be done, but as I said, when I lose motivation, I have no energy to devote to my work, and it is a little unfair to the wonderful people I work with. And of course, this is also challenging in terms of resources, and I have not designed a life where I can plan to close everything and leave and do this”.

On the other hand, it was determined that the sub-theme of “weak/insufficient self-perception” included elements such as “weakness, inability, inability to do, worthlessness, inadequacy”. The following statement in his e-suicide note:

“...I guess I couldn't cope with the unpleasant aspects of life because I attach great importance to being a kind, cheerful, fun person who has such subtlety and depth in mind and soul, and now protecting and providing these has become a serious burden for me”.

It is classified as “weak/insufficient self-perception”.

The first subtheme coded under “perceptions of the other” is “ideal other”. The perception of the other here is likened to a Freud-Lacanian paradigm that assumes that the meaning of the existence of the other is external to itself, and the other is idealized. According to this paradigm, it has been reported that the meaning of existence occurs only through the other ([Grigg, 2008](#)).

For example, in the self-murderer's e-suicide note, he says

“I have a wonderful brother at the beginning of everything, the best brother a person can have. And right now he is raising a woman who is tougher than him, I have a very cute nephew. Other than that, I had wonderful girlfriends, they were amazing women. Most of them were maniacs, to be honest, but I'm not a very sane man either. I had a great time, I loved it very much, I was truly loved. “I have experienced love to the fullest, I never look back.” Another statement was that “when this is an issue to be resolved with the family, if Berna is interested in this issue, you know, if she respects my request and maybe something can be done about it, I don't know how the law works, I would be very happy if she could help”.

It can be thought that there were expectations for others.

The sub-theme of “negative other” can be evaluated with the statement in the self-murderer’s e-suicide note, which he wrote about the romantic partners who came into his life: *“Most of them were maniacs, actually, that’s true, but I am not a very sane man either”*. When considered in the context of a Freudian-Lacanian paradigm, the negative aspect of the other is emphasized. In addition, based on the knowledge that the other “does not have to be another person or human being”, the expression *“...a very boring vicious circle...”* belonging to the self-murderer was also considered in this context.

Functions

In the “Functions” category, three themes were coded: “Functions for responsibility”, “informing others about suicide” and “punishment”. In the context of responsibilities, “the need for justification (freeing from responsibility or blame)” and “the need to clear the other (free from responsibility or blame)” are discussed.

When the functions of liability are examined, some quotes can be cited as examples of justification and the need for justification. These are exoneration of others in the suicide note of the self-murderer; *“Of course, there are drops that make the glass overflow, but I don’t think it would be right to hold a few drops responsible for an overflowing glass, and to attribute that overflow entirely to them...”* and self-exculpation:

“I’ve been unhappy for a very long time, actually. My close friends already know this, and I think suicide is not a new thing for me, that is, it is not like the explosion or breaking point that happens with a recent period of depression etc.”

In his statement regarding the reason for the suicide, it was thought that the self-murderer acquitted himself by rationalizing and causalizing his decision by stating that he had been considering the decision to commit suicide for a long time and that he was not affected by any temporary emotional changes.

Additionally, the example sentence from the self-murderer’s note, *“You are all beautiful people, I’m glad you got in and out...”* can be evaluated. At the point of “the need to exonerate the other (to clear responsibility or blame)”, the statement “No one is responsible for my death” can be exemplified. This discourse is listed in the suicide note of the self-murderer, similar to different sentence structures with the same meaning. For example, in the e-suicide note of the self-murderer: *“As you can see, I am not drunk, I am not under the influence of alcohol or any drugs. I’m quite sane. I think I have considered the issue with my free will for a long enough time”*.

Similarly, these explanations for the act of suicide were evaluated in the same context and coded as “desire for justification”; *“...when I lose motivation, I don’t have the energy to devote to my work, and that’s a little unfair to the wonderful*

people I work with...”, “It’s partly related to the fact that I’ve dragged this suicide issue this far, I waited to exhaust everything and reach this point” and “I had a great time, I had a great time,” “I loved, I was truly loved,” “I have experienced love to the fullest, I never look back,” he says.

In the second theme, “I am closing my life notebook this morning” for “informing others about suicide.” “We have come to the end of the time allotted to me. [Laughs.] I hope nothing goes wrong, of course”. The statement can be evaluated in this context. During the analysis, it is seen that there are similar statements in the e-suicide note.

For “punishment”, which is the last theme of this category, the self-murderer does not have any notes about his mother and does not mention any names other than his brother:

“If Berna deals with this issue in some way, when this is an issue that can be solved with the family, maybe she will respect my request and do something about it. Something, I don’t know how it works legally, I would be very glad if it helps”

These sentences were evaluated in this context. In the context of Freudian psychoanalysis theory, it was thought that the self-murderer denied the facts, justified it with logical justifications, and punished his mother by not mentioning her. As a matter of fact, according to the Lacanian perspective, the first relationship with the mother is considered as the basis of the suicidal impulse, and the person who will commit suicide aims to regain the lost mother image through death. Moreover, it has been reported that unhealthy attitudes during the breastfeeding period can result in many disorders such as anorexia, substance addiction and gastric nervosa ([Roudinesco, 1997](#); [Erdoğan et al., 2021](#)).

Fantasies

In the “fantasies” category, two themes were coded: “Fantasies about life after death” and “fantasies about controlling post-death events”.

“Phantasies of life after death” are observed as a common pattern in suicide notes ([Evans, 2006](#); [Steinberg, 2007](#); [Sanger&McCarthy Veach, 2008](#)). There are interrogations here and there in the statements.

“...to be honest, I’m a little afraid. I mean, I’m not afraid, well, it’s related to the disruption of the thing, otherwise, as I said, I don’t think it’s something like I’ll go somewhere like that, it’ll happen like this, etc. I’ll see... [Pauses.] That’s right...”

Clear expressions are evident here and there. For example, the following quote from the e-suicide note of the self-murderer is discussed: “One thing... I have a will. That is to say, I do not have any religious beliefs, nor do I believe in God. I

don't want to be buried". In his statement, he does not want to be buried and at the same time, there is a fantasy about controlling the events.

The theme of "fantasies about control of post-death events" includes three sub-themes. These are coded as "last wishes and requests", "directions, instructions and suggestions", "control of the other's emotions". In the context of "last wishes and requests", the following statement quoted from the self-murderer's e-note can be evaluated:

"If Berna deals with this issue in some way, when this is an issue to be resolved with the family, she can respect my request and maybe do something about it, I don't know how the law works, I would be very pleased if she could help."

The following part of the e-suicide note of the author can be considered as an example of the sub-theme "Guidance, instructions and suggestions":

"I don't want to be buried, let them make a cadaver and give the body to scientific research. Here, let the kids play with my skeleton or something, I think it won't get too messy. No, let them throw it to the fish. That's a nice thing too, but I don't want a grave [emphasis], I definitely don't want to be buried".

In the sub-theme of "Control of the other's emotions", the last sentences of the self-murderer include him saying while drinking wine and listening to an Ella Fitzgerald song, *"Goodbye. Live with love, may your life be beautiful. It's like Ella songs like this; beautiful, clear, calm. Bye bye..."*

In his e-suicide note, the self-murderer stated that he would commit suicide in the English language below, in order to be understood by his friends who may watch the video and do not understand Turkish.

[07:20] "Oh! For my friends, who doesn't understand English: This is a suicide note. Sorry! I just wanted to thank you all for being in my life, bringing joy and inspiration to my life and being as awesome as you are! All of you. I love you all. Not all."

Then he said, *"Let's listen to one last song and I'll start drinking my wine. You all know how much I love Ella Fitzgerald, I think it's beautiful and meaningful for now."* saying at minute [10:01] of the video.

– Ella Fitzgerald's song Every Time We Say Goodbye starts from the computer.

It was observed that the self-murderer was singing along to the song and drinking wine and smoking cigarettes. [13:34] It was observed that he stopped the recording by saying [His behavior is relaxed.] *"Goodbye. Live with love, may your life be beautiful. It's like Ella songs like this; beautiful, clear, calm. Bye bye!"* [Recording stops at 13:47].

Discussion and Conclusion

In our digitalizing world, traumatic experiences and shares are open to users' access, and as emphasized in the context of the current study, the existence and easy accessibility of visual and written sources with suicide content has become undeniable. In this respect, it has become an area that requires a new and comprehensive interdisciplinary study.

According to Evans (2006) and Soleim (2012), while a person's desire to take action and move away expresses separation in a sense, the contents of all the traces left behind indicate an effort to re-establish a connection. In this respect, leaving behind a suicide note suggests that the person is still trying to stay in touch with others and continues to invest in their relationships.

According to the literature, the most important function of leaving a suicide note is to establish a connection with communication (McClelland, et al., 2000; Sanger&McCarthy Veach, 2008). Apart from this, the fact that the committer sha-red his suicide note publicly on social media is also supported by findings such as the "desire to be seen" and the "desire to be justified" in suicide cases.

According to Tura (Tura, 2013), since the body and the self are related; suicidal behaviors such as hanging oneself, cutting oneself, shooting oneself, poisoning oneself, and jumping from heights are all related to the body. The current study also supports the thesis that the self and the body are related. However, as it is frequently encountered by field workers; in autopsy reports and file information, it is stated that some suicide cases had tattoos on their bodies. As a matter of fact, similar findings were found in the file information of the case examined in the current study. In the literature, it has been reported that such marks on the body are a type of castration seen as a result of excessive pleasure (jouissance) and aggressive behavior (Recalcati, 2012). As a matter of fact, it has been reported that such behaviors can trigger a state of "inadequate control" over impulses. In support of this idea, it has been reported that "invasion of pleasure" and "insufficient control over impulses" are frequently encountered in psychotic cases of Lacanian analysis (Fink, 1997).

When suicide letters were examined from a linguistic perspective, it was observed that some of these letters contained repeated, incomplete or interrupted and ambiguous discourses. This situation suggests that the language used in these letters differs from everyday language. It has been stated that structural disorders in the language may indicate psychosis or paranoia (Fink, 1997; Tanrıvere, 2016). In creating the text in the appendix of the study, the opinion of an expert in the field of Forensic Linguistics was taken, and by transcribing it using linguistic methods, the e-suicide note became a document. When examined in this context, it is seen that there are repeated, incomplete or interrupted discourses .

Another issue that is essential to consider is that, due to the nature of qualitative studies, the findings obtained from this study are not generalizable to cases in similar studies. However, it is thought that the data in this study serve the purpose of “rough description”.

Suicidal thoughts and actions are episodic. Consistent with the literature, in the current case, recurrences due to fluctuations in emotion and changes in cognition can be observed. Psychological autopsy studies have reported that approximately 44% of people who died by suicide had attempted suicide before. It has been stated that people with high suicidal tendencies are ambivalent and their desire to live or die varies ([Ovenstone&Kreitman, 1974](#); [Isometsä&Lönnqvist, 1998](#); [Sayıl, 2000](#)). Based on the finding that eight out of ten suicides give clues in advance, it is thought that the examination of e-suicide notes and social media posts with the possibility of suicide by field workers may be preventive ([Can&Sayıl, 2004](#)). Ethical responsibilities of media elements and prevention studies can be developed and evaluated. In the context of applications, in social media applications, users are informed that they can determine sensitive content that other users may not want to see, such as violence and obscenity, by appropriately marking their media settings. With this filtering, when objectionable and disturbing content (such as violence, obscenity, etc.) is wanted to be shared, it is censored and defined as “sensitive content”. Sensitive content elements, in the context of privacy and security, include violent, +18 materials, images containing dead people, and photos and videos that violate people’s privacy. Sensitive content elements of individuals who have previously attempted suicide or whose suicidal thoughts are detected in psychological treatment sessions can be examined, their past records can be evaluated by experts, and they can be prevented from attempting suicide again. In addition, awareness should be raised by multidisciplinary studies and clean content and short information (video, text, visual elements) on social media platforms. In addition, by examining the common points in the posts (such as the user’s age, gender, social media sharing frequency, content themes), a data pool is created about the mental state of the recent past, and when similar situations occur, an alarm button application is activated and the necessary teams (health team, law enforcement, forensic scientists etc.) should be communicated by reaching the person at risk of suicide attempt and prevention work should be progressed by integrating it into social media applications.

According to epidemiological research, qualified studies are needed to prevent the recurrence of these initiatives. In this context, information has been reported that suicide tools on social media affect suicide methods ([Yang et al., 2013](#)). Supporting our study, there are studies showing that real suicide cases on social media increase the number of copy e-suicides ([Yip Paul et al., 2006](#); [Ruder, et al., 2011](#); [Chen et al., 2012](#); [Maloney et al., 2014](#)). Identifying risk factors and researching representative cases on social media can ensure early rehabilitation of prone individuals ([Palmieri et al., 2008](#)).

As a matter of fact, the high probability of repeating the behavior after a suicide attempt is a serious problem. At the same time, it is thought that this situation places a burden on the public health system. For this reason, suicide intervention workers aim to prevent recurrences. It is thought that multidisciplinary studies are needed to examine suicidal behavior, which is a complex phenomenon, in more detail, to examine it with current approaches compatible with technological developments, and to contribute to prevention studies.

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Appendix

Manuscript of The Suicide Video of Mehmet Piskin (Translated to English from Turkish)

Mehmet Pişkin İntihar Videosu ve Vasiyeti [The Suicide Video and Legacy of Mehmet Piskin] – 2014. Retrieved from <https://www.dailymotion.com/video/x3in50r>.

[Recording begins. A middle-aged man (M.P.), dressed in black, starts speaking.]

[00:00] Hello, M... P... this is me. We are in the morning hours of October 16, 2014. Let me get straight to the point, this is a suicide note. This morning I am closing my life notebook. "We have reached the end of the time allotted to me." [Laughs.] I hope nothing goes wrong, of course. As you can see, I am not under the influence of alcohol or any drugs. I'm quite sane. I think I have considered the issue with my free will for a long enough time. In fact, I think I evaluated the issue thoroughly, talked to many of my friends during this process, indirectly or directly, read, researched, even went to the doctor, but in the end I made this decision. Uhhh... Actually, I have been unhappy for a very long time. My close friends already know this, and I think suicide is not a new thing for me, that is, it is not like an explosion or breaking point that happens with a recent period of depression etc.

[01:35] Of course, there are drops that break the glass, but I don't think it would be right to blame a few drops in an overflowing glass and attribute that overflow entirely to them. Especially in recent months, those who know me know that I wake up cheerful in the mornings and start the day energetically, but especially in recent months, I constantly wake up with this idea and I do not feel any desire to continue the rest of my life, I have no motivation and somehow I have not been able to break this vicious circle. To be honest, I lost some hope, not a little bit, about breaking it. This is the main reason. Could this vicious circle be broken? Of course, life would go on, we would party more, we would have more fun, maybe good things would be done, but as I said, when I lose motivation, I have no energy to devote to my work, and it is a little unfair to the wonderful people I work with. Of course, this is also challenging in terms of resources, and I have not designed a life where I can plan to close everything and leave and do this. It's partly related to the fact that I've dragged this topic of suicide this far, I waited to exhaust everything and come to this point. A friend of mine also contributed a lot to this. I especially wanted to wait for her to complete her birth, so that she wouldn't be affected. I mean, her baby.

[03:50] Pff, um... I don't really know what to say, actually, I just wanted to say goodbye because if we exclude the unpleasant parts, I actually lived a very nice life. From this life... He has always been very generous with people, especially the people I have intersected with, who have touched my life. First of all, I have a wonderful brother, the best sibling a person could have. And right now he is raising a woman who is tougher than him, I have a very cute nephew. Other than that, I had wonderful girlfriends, they were amazing women. Most of them were maniacs, to be honest, but I'm not a very sane man either. I had a great time, I loved it very much, I was truly loved. I have experienced love to the fullest, I never look back.

[04:48] Apart from that, I had the opportunity to establish very deep friendships, I had good friends, I made good friends, we had a lot of fun, we benefited a lot from each other, I don't know what to say. You are all nice people, I'm glad you got involved... I had the opportunity to work with very smart, passionate people. Indeed, this is a privilege, it really is. I had the opportunity to do work that I enjoyed. Actually, I loved my job in general and there is nothing to complain about, but as I said, at one point I pushed myself into loneliness a little bit and that's it, I guess I couldn't cope with the unpleasant aspects of life because I was kind, cheerful, fun, had such a delicacy and depth in mind and soul. I attach great importance to being a possessor, and now protecting and providing them has become a serious burden for me. I realized that I had run out of strength in this regard and that the dark side of the work was getting heavier and I could not bear it, and somehow I had not developed the equipment related to it over time, and that I was having a harder time getting myself together after such shocks. Frankly, this has become a very boring vicious circle, I mean, after a point, I have lost the light on what I am dealing with, and then go back and build yourself again, etc., etc. Sometimes it happens. Some people are, well, more prone to suicide, and I'm obviously one of them. Other than that, I don't know what else to say...

[07:20] Oh! [Continues in English] For my friends, who doesn't understand English: This is a suicide note. Sorry! I just wanted to thank you all for being in my life, bringing joy and inspiration to my life and being as awesome as you, you are! All of you. I love you all. Not all.

[08:01] One thing... I have a will. That is to say, I do not have any religious beliefs, nor do I believe in God. I don't want to be buried. I can do this somehow, when this is an issue to be resolved with the family. If B. [Name] is interested in this issue, you can respect my request and maybe do something about it, I don't know how the legal process works, I would be very grateful if she could help. I don't want to be buried, let them make a cadaver and give the body to scientific research. Here, let the kids play with my skeleton or something, I think it won't get too messy. No, let them throw it to the fish. That's a nice thing too, but "I don't want a grave" [emphasis], I definitely don't want to be buried.

[08:59] There's not much to say actually, there's no point in making it too long

and boring. Lastly, before we go, I want us to listen to a song together, and to be honest, I'm a little afraid of it. So I'm not afraid, well, I don't think it's about the disruption of the work, otherwise, as I said, I'll go somewhere like that and it'll happen like this or something like that. I'll see... [Pauses.] That's right... Let's listen to one last song and I'll start drinking my wine. You all know how much I love Ella Fitzgerald, I think it is beautiful and meaningful for now.

[10:01 – Music starts from the computer (Ella Fitzgerald – Everytime We Say Goodbye). He accompanies, drinks wine and cigarettes. His behavior is relaxed.]

[13:34] Goodbye. Live with love, may your life be beautiful. It's like Ella songs like this; beautiful, clear, calm. Bye bye! [Recording stops at 13:47.]

Does Schrödinger's Cat Paradigm apply to forensic evidence? A Critical Interdisciplinary Review

Ercan Seyhan*

Abstract: Erwin Schrödinger is a scientist who stands out with his work in quantum mechanics. The legendary Schrödinger's Cat continues to be popular in today's scientific world. This famous cat describes on a quantum basis a reality that is accepted in quantum reality, but which we cannot practically observe in the macroscopic world.

Schrödinger's experiment was created in which we cannot tell whether the cat is dead or alive until the box lid is opened. Therefore, if we do not open the lid, the probability of the cat being dead or alive will be 50%. The "superposition state" of the cat ends with an observational measurement.

Being aware of the evidence in the position of silent witnesses at the crime scene will reveal many truths. This awareness should be based primarily on observation. This observation is like understanding the book's main idea by reading the summary on the back page. It can be considered a logical measure of the suitability of the evidence. This measure can only be formed with the results obtained by good observation and analysis.

In short, the effective use of systematic crime scene investigation is the basis of reaching an understanding of evidence with high evidential power. But at the heart of these two important activities is awareness of good observation. It should not be forgotten that the difference between the seeing eye and the looking eye is that the seeing eye knows what it is looking for.

Keywords: *Schrödinger's cat, forensic evidence, superposition state, observation.*

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Schrödinger'in Kedisi Paradigması Adli Kanıtlara Uygulanabilir mi? Disiplinlerarası Eleřtirel Bir İnceleme

Ercan Seyhan

Öz: Erwin Schrödinger kuantum mekanięi alanında yaptıęı çalışmalarla öne çıkan önemli bir bilim insanıdır. Efsanevi Schrödinger'in Kedisi ise günümüz bilim dünyasında hem fen bilimlerinde hem de sosyal bilimlerde popüler olmaya devam etmektedir. Bu ünlü kedi kuantum gerçeğinde kabul gören ancak bizlerin makroskopik dünya gerçeğinde pratik olarak pek de gözlemleyemediğimiz bir gerçeęi kuantum temelinde anlatmaktadır. Schrödinger'in deneyi, kutunun kapaęı açılana kadar kedinin ölü mü yoksa canlı mı olduęunu anlayamadığımız bir deney olarak yaratıldı. Dolayısıyla eęer kapaęı açmazsak, kedinin ölü ya da diri olma olasılıęı %50 olacaktır. Kedinin "süperpozisyon durumu" gözlemsel bir ölçümle sona erer. Olay yerindeki sessiz tanıklar konumundaki delillerin farkında olmak birçok gerçeęin ortaya çıkmasını sağlayacaktır. Bu farkındalık öncelikle gözleme dayanmalıdır. Bu gözlem, kitabın ana fikrini arka sayfadaki özetini okuyarak anlamaya benzer. Kanıtın uygunluęunun mantıksal bir ölçüsü olarak kabul edilebilir. Bu ölçü ancak iyi bir gözlem ve analiz ile elde edilen sonuçlarla oluşturulabilir. Kısacası, sistematik olay yeri incelemesinin etkin kullanımı, kanıt gücü yüksek bir delil anlayıřına ulařmanın temelini oluřturmaktadır. Ancak bu iki önemli faaliyetin temelinde iyi gözlem yapma bilinci yatmaktadır. Unutulmamalıdır ki gören göz ile bakan göz arasındaki fark řudur: Gören göz ne aradıęını bilir.

Anahtar Kelimeler: Schrödinger'in Kedisi, adli kanıt, süperpozisyon durumu, gözlem.

Introduction

Crime scene investigation is accepted as a technical practice. This stage can directly affect the scientificity, reliability, and acceptability of the evidence. The main objective of crime scene investigation is to protect the crime scene, detect, record, and collect the evidence, and send it to forensic science laboratories ([Inman&Rudin, 2001](#)).

Forensic scientists may agree that forensic work is based on five main pillars. These are Locard's principles of "every contact leaves a trace"; classification and identification; individualization; liaison and restructuring. Although this paradigm continues to be valid in many forensic science applications, there is often individualization, especially in evidence that is only physically compared and matched. On the other hand, in evidence that requires physicochemical examination, restructuring may not be necessary. In short, although these paradigms are instructive, they cannot be applied together for each piece of evidence ([Ribaux et al., 2003](#)).

Erwin Schrödinger is an important scientist who stands out with his work in quantum mechanics. The legendary Schrödinger's Cat continues to be popular and has been the subject of many scientific articles written today ([Bhaumik, 2017](#)). This cat, which is both alive and dead at the same time, is now famous not only in the scientific platform but also in social life. It is frequently referenced in quantum physics articles and has bestowed a "cat state" reputation as a term that began to be used in quantum measurements. This term is used for the metaphor known as superposition in quantum physics. However, with the social and numerical scientific interpretations of the cat's melodramatic character and the meaning value it carries, it has suddenly gained a solid place in literature, television, movies, cartoons, and video games ([Monroe et al., 1996](#)).

This symbolic superposition entity is a paradigm for us to understand the co-existence of the real relationship that exists between quantum and classical understanding. In short, the cat case tries to show that two different states occurring on a microscopic scale are valid simultaneously for a single particle. However, in the macroscopic world, this superposition state lasts until the observer opens the box. In other words, when the box is opened and the situation inside is observed, the cat situation deteriorates and turns into a single situation ([Schrödinger, 1935](#)).

The Foundation of Knowledge in Forensic Sciences: Evidence

Evidence is transferred to reports by forensic scientists. Applied analytical laboratory techniques have the greatest share in this knowledge formation ([Houck, 1999](#)). The main purpose of laboratory analysis is nothing but the individualization of the evidence. Which is the attachment of evidence to a place, time, person, or event. In this association, statistics has great importance in determining

the accuracy and precision of the information. Forensic laboratories present their examination results with a certain scientific precision threshold level given in statistical values at certain intervals ([Cleland, 2001](#)).

Edmund Locard's principle that every contact leaves a trace emphasizes that mutual interaction and transfer will take place through the contact of any two thin-gs, even if the result is small or cannot be detected at first glance ([Locard, 1939](#)). What results from this transfer is valuable data. We can characterize and describe these data with proxy data that are frequently used in paleoclimatology ([Mann, 2002](#)). In forensic science, we can say that proxy data source is evidence. If the evidence is not collected and subjected to laboratory examination, no suggestion can be made within a certain uncertainty value range to reveal the truth ([Cleland, 2001](#)).

Human activities certainly leave an imprint. If a person commits a crime, he/she leaves behind something that was not there before, or when he first arrives at the scene, he takes something that is not on him and leaves. This formulation coincides with the following view put forward by Paul Kirk about the Locard Principle ([Locard, 1939](#)):

“Whether the suspect consciously or unconsciously steps, touches, or leaves something of himself behind, he leaves behind a silent witness who will testify against him, too. It can be not only fingerprints or shoe prints, but also hair, fibers, a piece of broken glass, tool marks, paint on the wall he rubbed, blood, and semen he left on the scene. These and more are silent witnesses on the scene. It is clear that evidence never forgets; is not confused by excitement, and continues to be at the scene. Because physical evidence is a reality. He does not lie to himself. He does not hide if he is at the scene. However, human error can delay its discovery and degrade its value through misinterpretation.”

Scientists accept that every object in the universe has significant and measurable differences, but they are not the same, no matter how similar they may seem. The principle of dissimilarity, which states that nothing in nature can be the same, expresses originality. It is impossible to compare an object with all other similar ones. Therefore, it is hardly possible to test this assumption directly with all other analogies. The indirect confirmation test of this hypothesis depends on the examiner's analytical ability. Forensic scientists are constantly working on techniques for proving the uniqueness of objects. However, it is a fact that forensic science disciplines, which conduct more comparative research, require distinctive application and selective principles. This principle is accuracy and precision in measurement ([Chang&Goldsby, 2014](#)).

Scientific methods are applied to monitoring changes in all science fields. This method is a systematic research approach. The results obtained from the research

can be qualitative values obtained by observing the system in general, or they can be quantitative values, that is, numerical values obtained by different measurements. After the experiments are completed and the results are recorded, the second step in the scientific method is the interpretation and evaluation of the observations. The researcher creates a hypothesis based on the data or explains a series of observations based on the experimental results. New experiments are created as possible to check the validity of the hypothesis. After collecting a sufficient amount of data, this information is summarized as a law ([Chang&Goldsby, 2014](#)). In science, a law is an appropriate verbal or mathematical expression that expresses the relationship between events and is always valid under the same conditions.

After many experimental studies, hypotheses are validated and turned into theories. The theory explains a decisive principle regarding any event and/or the laws underlying that event. The accuracy and precision of the values obtained in each hypothesis, theory, or law constitute the basis of quality and reliability. Accuracy and precision are two concepts that ensure the soundness and reliability of investigations in forensic sciences ([Inman&Rudin, 2001](#)).

For a scientist, accuracy and precision are completely different concepts. Accuracy refers to the closeness of measurements to the true value. Accuracy measures the closeness between a result and the true value. Precision describes the closeness between many results measured in the same way. Accuracy is expressed in terms of absolute error or relative error. Precision indicates the repeatability of measurements, that is, the closeness of results obtained in the same way. In general, the precision of a good measurement can be easily determined by repeating measurements with replicate samples ([Chang&Goldsby, 2014](#)).

Philosophy of Evidence in Forensic Sciences

Human beings naturally observe, measure, and make comparisons. However, the most important feature that distinguishes scientific measurement from others is objectivity. Because every observation or measurement may be subject to error at any time. So scientists want to know how much they can trust the measurement results. Determining the uncertainties and margins of error in the measurement approximately forms the basis of scientificity in measurement ([Chang&Goldsby, 2014](#)).

Measurement uncertainty is a quality indicator that is very important in the analytical sciences. Therefore, it is of great importance in terms of forensic sciences and evidence analysis. The outputs of the analysis are a measurement value (such as weight), what something is (such as a drug) or its characteristics (such as traces of a weapon on a hive), or similar results from other sub-disciplines ([Atkins &Jones, 1997](#)).

However, specifying the exact line among observations, evaluations, and analyses is very important in forensic science philosophy. While analysis is a measurement, observation, and evaluation are subjective evaluations. These are the techniques used in the forensic sciences sub-disciplines. If the same is obtained with other analysis methods, the measurements are objective.

In most of the procedures in the forensic sciences, comparison and matching take time. During this process, analytical results are taken and comparisons are made with each other. In forensic science, the difference between interpretation and evaluation is very clear. While interpretation is determining what something might be, evaluation is trying to determine what the interpreted thing means. While evaluating, it is trying to determine what the current sample matches and what this match might mean. In other words, the evidence interpretation is trying to evaluate the value of the proof in the event. So the deduction can be made. While there is a need for scientific knowledge in interpretation, evaluation, and analysis; information need continues to increase in intensity from interpretation to analysis at each stage. While analysis can usually be done by trained technicians with technical knowledge and skills; interpretation can only be done by those who have sufficient knowledge about the relevant discipline. Being able to interpret and evaluate the evidence needs to be efficient in both physical examination and instrumental analysis. Therefore, we can say that the product of the evaluation is an expert report.

A scientific approach to a problem consists of a series of scientific activities that include observation, measurement, hypothesis generation, and hypothesis testing. Observation can be performed without needing any measurement or can be based on a measurement. In both cases, the scientist can generate hypotheses and test the results. The source and cause of the effect are tried to be determined. Forensic scientists form and interpret hypotheses by deduction and induction. As the number of repetitions increases, the system's giving the same result will indicate that our hypothesis is correct and reliable. This principle constitutes the basis of the Bayesian Approach, which is frequently used in forensic science examinations and evaluations of evidence.

Sustainable Reliability-Objectivity/Impartiality

Forensic investigations are organized by a series of unit operations. While trying to reveal what happened at the crime scene, basic forensic science activities are carried out. These are the basic steps for reliable and objective forensic science applications (Kalia et al., 1997). The principles of divisibility and transferability of matter and other principles related to forensics are the basic rules for presenting evidence with scientific data. Identifying, individualizing, connecting, and restructuring the question “who? what? where? when? how?” while establishing

the scientific link between evidence, crime, and criminal. Unit operations are the basis for the answers to the questions. These questions are event-based and are shown as the basic triangle of the victim, suspect, and evidence/witness, which are the interactive elements of the crime scene ([Cook et al., 1998](#)).

The unit operation that chemists often use can be applied in all forensic science disciplines. Although unit operation is a term developed by chemical engineers, it is applied to many science branches. They can also be defined as logical structures used for analysis and synthesis activities in science disciplines. The targeted aim is to provide reliability with sustainable quality assurance ([Saks&Koehler, 2008](#)).

The description is the operation sequence that provides a better understanding of an event. We cannot describe identification as just a perception. It is to understand the event fully and in detail. When a scientist wants to identify an object of interest, he makes physical and chemical measurements with a certain degree of precision. Many forensic techniques are based on comparing evidence with a standard sample. The applied test techniques are considered validated and accepted if they are reproducible, sensitive, and specific. Repeatability is that the standard sample always returns the same correct value. Sensitivity is the ability to accurately detect the unique characteristics of the material under investigation. The specificity is that the test technique gives accurate and precise results for a particular material. Individualization is the next step after identification. Evidence can be individualized immediately after classification. The general approach to individualization in forensic science is to determine accurately and precisely when comparing two evaluated materials for the general classification. Chemistry, physics, and logic determine the uniqueness of an object. However, in terms of forensic sciences, individualization is the determination of uniqueness after classification. In other words, comparisons are made on samples from the same origin classification. Liaison is to establish the connection between the source (evidence) and the target (the suspect). This inference is the phase of the transferred material's positive detection. Source and target are two relative concepts. Sometimes the transfer can be detected on both sides. The unit operates at this stage where hypotheses are compared and a decision is made. The hypothesized evidence probability is the probability of any contact between the target and the source ([Kaye, 2010](#)).

Restructuring is linking the connections in time and space from the data obtained. At this stage, answers are sought to “where, how, and when”. Evidence found at the crime scene can be used to reveal the situations that occurred before, during, and after the event. In other words, the evidence can answer the questions of “in what order the activity occurred” and “in what order of time it occurred” in the period of the event. Sometimes, claims can be confirmed or refuted by reconstructing only a part of the event. Reconstruction begins with a crime scene investigation. It continues with the identification, collection, and examination of evidence. It is supported by the records obtained at the crime scene and witness statements.

Restructuring is a unit operation consisting of a somewhat complex chain of operations. The deductive method is used in the basic thinking style. However, it also requires induction in the stages within itself. Common restructuring activities generally interested in are trace evidence transfers, blood pattern analysis, bullet path detection, fracture and crack analyses on materials, and post-fire and explosion crime scene structuring.

In general, changes occur because an effect creates physical signs and symptoms in the environment. These signs and symptoms can be observed, tested, measured, and recorded. In short, we can define restructuring as the determination of the chronological time sequence of the process in which the investigated event occurred.

Schrodinger's Cat Paradigm

The Schrödinger's Cat paradigm is an experiment in measurement. The "cat" in the Schrödinger experiment is placed in a steel box with a radioactive source that has a 50/50 probability of oscillation for a total of one hour. A cyanide capsule is placed inside the box, the activation of which depends on the emission of radiation by a separate mechanism and which will be broken by a hammer. If gamma-ray emission occurs inside the can, the sensor will activate, triggering the hammer that will break the cyanide capsule. In this case, the cat will die. But if the release does not occur, the poison capsule will not break and the cat will also live. In this experiment, we cannot tell whether the cat is dead or alive until the lid of the box is opened and observed ([Schrödinger, 1935](#)).

In the classical-quantum sense, this is the case when the cat is both dead and alive. From another point of view, if the radiation source in the experiment oscillates, it determines the cat's fate. In this case, it will be impossible for us to understand the condition of the cat unless we open the box lid. So, the probability of being dead or alive will be 50/50. This statistical probability is epistemic. In other words, decisions can be made based on information from observation ([Gribbin, 1995](#)).

If we see that the cat is dead, we will understand that gamma rays were released, the hammer broke the tube and the poison was released. That is, the cat was dead immediately after the gas release. If we see that the cat is alive, we will understand that there is no gamma emission, that the hammer did not break the tube, and that no poison release occurred. So the cat is still alive.

However, before the observation was made, Schrödinger focused on what would happen inside the box in a quantum sense. Before the lid was opened, it was assumed that the cat was in superposition, that is, both dead and alive.

Because the radioactive source oscillating probability is 50/50, the cat's death/survival rate was accepted as 50/50. Therefore, nothing definite can be said about

the condition of the cat before making an observation. Whenever the lid is opened and observed, then the cat state collapses from the superposition to one of two possible states. So it is understood that he is dead or alive. The same is true for the radiation source. If the cat is dead, oscillation is made, if the cat is alive, there is no oscillation. In both cases, it is necessary to open the cover and observe ([Everett, 1957](#)). This cutting-edge uncertainty situation is based on the assumptions underlying the measurement process. Two propositions are valid before the observation. The first is the fact that this system state, which Schrödinger put forward, will constantly evolve and the cat will continue to be in superposition. The second is the fact that two possible sub-eigenstates of the superposition, namely “being alive” and “being dead”, will end with the observation. So, one of the 50/50 possibilities will deterministically come true and one of the possibilities will collapse.

Schrodinger’s Cat-Measurement and Probability

Although the idea of a cat in a superposition state in quantum thinking has been criticized by many physicists, it may not be a very strange concept on a quantum basis. So the cat is both dead and alive. However, this is based on the probabilities ([Monroe et al., 1996](#)).

While evaluating the probability, some possibilities may coexist with the same ratio. Although this situation creates conceptual confusion, the problem to be emphasized is the determination of how these possibilities occur. So how and when did the possibilities become reality? What are the reasons for the possibilities to become reality?

By observation, the dichotomy of being dead/alive in Schrödinger’s Cat turns into being either dead or alive, and one of the possibilities turns into a reality. However, there is another statistical situation which is a case of randomness. In this experiment, Schrödinger assumed that a random radioactive release would kill the cat. Therefore, observation is impossible until the lid is opened. When the cover is closed and alpha particles are released; alpha particles reach the Geiger counter in time t , the hammer connected to an electrical circuit powered by a Geiger counter drops, the cyanide tube is broken by this hammer and the gas released into the box kills the cat.

However, the cat’s death is statistically random and it cannot be determined exactly when it died. Because it is not possible to determine when the oscillation will occur and which particle will activate the device. If we open the lid at time t , the statistical probability of particle oscillation, hence the death of the cat, will be 50%. If we open the lid in $t/2$ time, there will be a 25% chance that the cat is dead. However, if we open the lid later than t time, for example at $2t$ time, there will be a 25% chance that the cat is alive this time. Therefore, without observati-

on, quantum can only provide us with statistical information, that is, probability information ([Fine, 1993](#)).

Schrödinger experimented by blending the quantum functions in the nuclear world with the realities of the macroworld. Although it continues to receive many criticisms today, new information continues to be produced/suggested with alpha particles and the Geiger counter. For example, with the recording devices added to the Geiger counter, the time of the oscillation can be recorded. The death of the cat can be monitored with a mechanical recording system, or the approximate time of death can be determined by an autopsy performed after the test results in the death of the cat. This will give us the approximate time of the gamma irradiation. In this case, it will be as if the cat's body recorded the event ([Monroe et al., 1996](#)).

This cat paradox produced is an experiment pointing to the use of physics solutions in the measurement problem. In the Schrödinger experiment, the superposition state, which occurs according to the presence or absence of radioactive particle emission in the microscopic environment, relates to a deterministic understanding of a cat being both dead and alive in the macroscopic environment, that is, the superposition state ([Ghirardi et al., 1986](#)).

In general, the universe records all kinds of information by observing itself. In other words, traces of every event continue to exist in the universe. Therefore, macro and micro environmental events can be revealed with good observation and measurement. The important point here is the issue of "being aware".

Conclusion: Schrödinger's Cat and Evidence

Schrödinger's experiment was created in which we cannot tell whether the cat is dead or alive until the box lid is opened. Therefore, if we do not open the lid, the probability of the cat being dead or alive will be 50%.

If we see that the cat is dead, we understand that the gamma has been released, the hammer has broken the tube and the poison has been released. So, the cat is dead immediately after the gas is released. If we see that the cat is alive, we will understand that there is no gamma emission, that the hammer did not break the tube, and that no poison release occurred. So, the cat is still alive. In short, the "superposition state" of the cat ends with an observational measurement.

Forensic science reveals the temporal and spatial relationship between people and places with events in the past. Evidence is a means of proof that provides for revealing certain facts from the past. It is very difficult to reach the truth without evidence. Being aware of the evidence in the position of silent witnesses at the crime scene will reveal many truths. This awareness should be based primarily on observation. This observation is like understanding the book's main idea by reading the summary on the back ([Trimmer, 1980](#)).

In Schrodinger's experiment, the silent witness is the cat. Until the lid is opened, it is both dead and alive in a quantum sense. The observer is in a serious dilemma until the lid is opened. In terms of forensic sciences, after the cover is opened, the condition of the cat also becomes evidence to indicate whether gamma-ray emission has been made or not. This state of the evidence, namely the superposition is a paradigm that is present at every stage associated with the evidence we have described throughout our article. Clarification of this position can be accepted as a situation that can continue until the first response, secure, detection, collection of evidence, and sending to the forensic laboratory for a scientific report of analytical examinations. In other words, evidence can become a real proof tool via observation and analytical examinations ([Monroe et al., 1996](#)).

The reliability of the evidence is directly proportional to the power of the proof. The power of proof can be considered a logical measure of the evidence's suitability for the purpose. This measure can only be formed by good observation and analysis.

In short, the effective use of systematic crime scene and analytical investigation methods is the of basis for understanding the evidential power. But at the heart of these two important activities is awareness of the evidence. This awareness is very important not to experience dichotomy about evidence at any stage in the forensic science process. It should not be forgotten that the difference between the seeing eye and the looking eye is that the seeing eye knows what it is looking for.

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Kumařlar Üzerindeki Atıř Artıklarının Fourier Dönüřümlü Kızılötesi Spektroskopisi (FTIR) İle İncelenmesi*

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Öz: Adli bilimler en kısa ve öz haliyle bilimin hukuka uygulanması olarak tanımlanabilir. Adli bilimler herhangi bir suç iřlendiğinde olayın nasıl iřlendiđi, kim veya kimler tarafından iřlendiđi, gerçekteřirilen eylemde hangi aletlerin kullanıldıđı gibi birçok soruya cevap vermemizi sađlar. Adli kimya, adli biyoloji, adli fizik, balistik, adli toksikoloji, belge inceleme, adli genetik gibi birçok alan bulunduran adli bilimler, hukuk sistemine bilimsel ve teknik yöntemlerle destek sađlayan bir multidisipliner alandır. Adli bilimler, kanıtların dođru bir řekilde toplanmasını, incelenmesini, analiz edilmesini ve yorumlanmasını sađlayarak adil bir yargılama sürecine katkıda bulunur.

Kumař hedef yüzeylere 0 cm, 5 cm, 50 cm ve 100 cm mesafelerden Türkiye yapısı, Sarsılmaz marka, 9 mm. çapında, Kılıç 2000 Light model tabanca, İtalya yapısı, 7,65 mm. çapında, Beretta marka tabanca, Türkiye yapısı, Bahadır marka, 12 kalibre, av tüfeđi ve İngiltere yapısı, 7,9 mm. çapında Lee-Enfield marka tüfek ile atıřlar yapılmıřtır. Atıř sonrası yüzeyde oluşan atıř artıkları Fourier Dönüřümlü Kızılötesi Spektroskopisi (FTIR) ile incelenmiř ve PCA (Principal Component Analysis) analizi kullanılarak mühimmatın cinsine ve mesafesine bađlı olarak deđerlendirilmiřtir.

Kumař hedef yüzeyindeki atıř artıklarının incelenmesi için Fourier Dönüřümlü Kızılötesi Spektroskopisi (FTIR)'nin tahribatsız ve elverişli bir yöntem olduđu görölmüřtür. Aynı mesafeden farklı silahlarla yapılan atıřlarda farklı mühimmat türlerinin PCA analiz ile gruplanabildiđi tespit edilmiřtir.

Anahtar Kelimeler: Adli bilimler, Atıř artıđı, mühimmat, kumař, FTIR.

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Examination of Gunshot Residues on Fabrics Using FTIR Spectroscopy

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Abstract: Forensic sciences can be defined as the application of science to law in its shortest and most concise form. Forensic sciences enable us to answer many questions such as how the crime was committed, by whom or by whom it was committed, which tools were used in the action performed. Forensic sciences, which include many fields such as forensic chemistry, forensic biology, forensic physics, ballistics, toxicology, document examination, is a multidisciplinary field that provides support to the legal system with scientific and technical methods. Forensic sciences contribute to a fair trial process by ensuring that evidence is collected, analysed and interpreted correctly.

The fabric target surfaces were shot at distances of 0 cm, 5 cm, 50 cm, and 100 cm with a Turkish Sarsılmaz pistol with a 9 mm. diameter, Kılıç 2000 Light pistol, an Italian Beretta pistol with a 7,65 mm. diameter, a Bahadır shotgun with a 12 calibre, and a British Lee-Enfield rifle with a 7,9 mm. diameter. The shot residues formed on the surface after firing were analysed by Fourier Transform Infrared Spectroscopy (FTIR) and evaluated depending on the type and distance of the ammunition using PCA analysis.

It was determined that Fourier Transform Infrared Spectroscopy (FTIR) is a non-destructive and convenient method for the examination of shot residues on the fabric target surface, and that different types of ammunition can be grouped by PCA analysis when fired at the same distance.

Key Words: *Forensic science, gunshot residue, ammunition, fabric, FTIR.*

Giriş

İnsanoğlunun var oluşu ile ortaya çıkan suç kavramı, gelişen teknoloji ile farklı türlerde karşımıza çıkmaktadır. Suçla mücadelenin önemli bir basamağı olan olay yeri inceleme, meydana gelmiş olayın anlaşılabilmesi failin tespit edilebilmesi için büyük önem taşımaktadır. Olay yeri inceleme, olay yerinde bulunan ve delil niteliği taşıyabilecek her bulgunun bilimsel yöntemlerle incelenmeli, belirlenmeli, kaydedilmeli, toplanmalı, korunmalı ve delil teslim zincirine uyarak kriminal laboratuvarlara göndermelidir. Adli olayların aydınlatılabilmesi için doğru bir şekilde olay yeri incelemesi yapılması gerekmektedir. Bu nedenle, adli vakaların soruşturulmasında olay yeri inceleme süreci en önemli unsurlardan biri olarak kabul edilmektedir ([Durmuş, 2010](#); [Yüksekoğlu vd., 2008](#)).

Deliller maddi ve beyan olmak üzere ikiye ayrılır. Beyan deliller sözlü açıklamalardır. Görgü tanıklığı beyan delillerine örnektir. Maddi delillerse fail- mağdur- olay yerinin ilişkisinin açıklayan delillerdir. Fiziksel, biyolojik ve kimyasal deliller gibi delil türleri maddi deliller sınıfına girmektedir. Olay yerinde toplanarak kriminal laboratuvara yollanan her şey bulgudur. Toplanan bulgular olayın anlaşılmasına hizmet ettiği durumlarda ise delil olarak adlandırılır.

İnsanlık var olmaya başladığından beri avlanmak, kendini soğuktan ve yabancı hayvanlardan korumak için sapan ile taş, mızrak, balta, ok gibi ilkel silahlar kullanmışlardır. İlkel insan toplulukların metali işlemeyi öğrenmesiyle metal uçlu oklar, mızraklar ve hatta kama, kılıçlar üretilmeye başlanmıştır. MS.900'lü yıllarda Çinliler tarafından keşfedilen kara barut silah tarihçesine yeni bir yön vermiş ve ateşli silahların icadına ön ayak olmuşlardır. Gelişen toplum ve teknoloji ile silahlar çeşitlenmiş ve kullanım alanları artmıştır. Artan silahlanma ile suç işleme oranı da doğru orantılı olarak artmıştır. "Dünyada her yıl ateşli silah şiddetinden dolayı 200.000'den fazla kişi hayatını kaybetmektedir. Bunların 150.000'i cinayet, 65.000'i intihar ve 20.000'den fazlası silah kazasıdır. Türkiye'de ise her yıl 2.000'den fazla kişi ateşli silahlardan dolayı hayatını kaybederken 3.000'in üzerinde kişi çeşitli yerlerinden yaralanmaktadır" ([Yasuntimur ve Ögünç, 2022](#)).

Olay yerinde ateşli ya da ateşsiz silah kullanıldığı tespit edilen durumlarda adli balistik alt dalı ile inceleme yapılır. Balistik alanı ateşli veya ateşsiz her türlü silahta inceleme yapar. "Ateşli ve Ateşsiz Silahların kullanıldığı olaylarda olay yerinden elde edilen balistik bulguların, balistiğin alt bilim dallarının temel kaideleri ve Adli Balistik Biliminin metotları kullanılarak incelendiği; bulguların, delil kimliğine kavuşturulduğu bilim dalıdır." ([Emniyet Genel Müdürlüğü, 2023](#)).

Ateşli silahlarda balistik 4 ana başlık altında incelenir. Bunlar iç balistik, ara balistik, dış balistik ve hedef balistiğidir.

- *İç Balistik*: Ateşlenme sonrası mermi çekirdeğinin namlu içerisindeki yolu inceler.
- *Ara Balistik*: Namludan çıkan mermi çekirdeğinin namluyu terk ettiği 4-5 saniyeyi inceler.

- *Dış Balistik*: Mermi çekirdeğinin namluyu terk ettiği 4-5 saniye sonrası ile hedefe varıncaya kadarki sürede gerçekleşen olayları inceler.
- *Hedef Balistiği*: Mermi çekirdeğinin hedefte yaptığı tahribatı inceler.

Atışın kimin tarafından gerçekleştiği, hangi mesafeden ateşlendiğinin bulunması için başvurulan yöntemlerden bir tanesi atış artığı (Gunshot Residue, GSR) incelemesidir. Olay yerinde bulunan kovan ve mermi çekirdeği, ateşleme yapılan silahının ve ateşleme yapılan konumun bulunmasında kullanılan çok önemli delillerdir ([EGM, 2023](#)).

Bu çalışmada, kumaş hedef yüzeyler üzerindeki atış artığının incelenmesinde Fourier Dönüşümlü Kızılötesi (FTIR) Spektroskopisini elverişli bir yöntem olup olmadığı incelenmiş, mühimmat ve mesafeye bağlı olarak değerlendirilmiştir. TDK de silah sözcüğü en genel tanımı ile savunmak veya saldırmak amacıyla kullanılan araç olarak tabir edilmektedir. 6136 Sayılı Ateşli Silahlar ve Bıçaklar İle Diğer Aletler Hakkındaki Kanun'da ise “canlıları öldürebilen yaralayan, etkisiz bırakan, canlı organizmaları hasta eden, cansızları parçalayan veya yok eden ruhsata tabi araç ve aletlerin tümü olarak tanımlanmıştır.

Dünya üzerinde silahlar, çalışma prensiplerine ve kullanım alanlarına göre farklılık gösterir. Genel olarak bir sınıflandırma yapılacak olursa; ateşli silahlar, ateşsiz silahlar ve N.B.C. (nükleer, biyolojik, kimyasal) olarak sınıflandırma yapılabilir ([Yalçın Sarıbey, 2008](#)).

6136 sayılı kanunda ateşli silah; “mermi çekirdeği veya saçma tabir edilen özel şekil ve nitelikteki maddeleri, barut gazı veya bu neviden patlayıcı ve itici güç ile uzak mesafelere kadar atabilen silahlar” şeklinde tanımlanmıştır.

Ateşli silahlar ağır ateşli ve hafif ateşli silahlar olarak iki gruba ayrılmaktadır. Ağır ateşli silahlar ordu bünyesinde bulunan uçak savarlar, havan topları gibi ağır silahlardır. Hafif ateşli silahlar ise bir kişi tarafından kullanılabilen ve tahrip gücü ağır ateşli silahlardan daha az olan ateşli silahlardır. Hafif ateşli silahlar kısa ve uzun namlulu olmak üzere iki sınıfa ayrılırlar. Uzun namlulu ateşli silahlar; av silahları ve harp silahları olarak gruplara ayrılır. Kısa namlulu ateşli silahlar ise tek atışlı tabancalar, toplu tabancalar, otomatik tabancalar (tam otomatik, yarı otomatik), makineli tabancalar, havalı tabancalar, işaret tabancaları, gaz tabancaları olarak gruplandırılırlar.

Silah ateşlendikten sonra kovan atma boşluğu, namlu ve silahın diğer mekanik boşluklarından etrafa atış artıkları yayılır. Atış artığının içeriğini is, yanmış, yanmakta olan ve yanmamış barut taneleriyle birlikte baryum antimon ve kurşun elementleri oluşturur. Ateşleme sonrası mermi çekirdeğiyle birlikte atış artıkları da hedefe doğru ilerler. Dolayısı ile hedefte de atış artığı bulma ihtimali söz konusudur. Hedef uzak bir konumdaysa hedef üzerinde bulunan atış artığı miktarı da azalacaktır. Fakat atış artığının miktarı da olayın çözülmesi, hedef ile atış yapanın arasındaki mesafe tayininde rol oynayacaktır.

Ateşli silahlardan iz delili tespiti, bir kişinin silahla ateş edip etmediğini belir-

lemek için yaygın olarak kullanılır. İz kanıtları genellikle çıplak gözle tespit edilemez. Ateşli silah kalıntısı (GSR), şiddet içeren suç soruşturmalarında incelenen en yaygın ve en kapsamlı şekilde incelenen iz delil kaynaklarından biridir ([Aksoy vd., 2015](#)).

Atış artığı; baruttan kaynaklanan kısmen yanmış ve yanmamış partiküller, kapsülünden kaynaklanan artıklar, kovan, mermi çekirdeği ve silahın kendisine ait bileşimlerden oluşmaktadır. Atış artığının araştırılması ve belirlenmesinde genellikle şu soruların cevabı aranmaktadır:

Şüpheli kişinin ateş edip etmediğinin araştırılması,

Mermi giriş deliğinin tespitine yönelik araştırmalar,

Atış mesafesinin değerlendirilmesine yönelik araştırmalar (Romolo ve Margot, 2001).

Ateş eden elin tespitine yönelik olarak yapılan çalışmalarda; ateş eden elden pamuk, özel swap alma kiti, yapışkan bant, vb. malzemeler kullanılarak toplanan atış artıkları zamanla farklı yöntemler kullanılarak incelenmiştir.

Spektroskopi; çeşitli ışınların ve madde arasında dalga boyunun bir fonksiyonu olarak ortaya çıkan etkileşim ya da bu etkileşimi inceleyen bilim dalı için ifade edilen genel bir terimdir. Spektrometri ve spektrometrik yöntemler ise, madde miktarını veya bir maddenin türünü belirlemek için kullanılmaktadır. Ölçüm yapmak için kullanılan cihaza da genel anlamıyla spektrometre denilmektedir. Çeşitli alanlarda kullanılan pek çok spektroskopik yöntem bulunmaktadır. Yöntemler, analiz edilecek türün moleküler ya da atomik spektroskopi olup olmamasına, analiz edilecek ışımının madde ile etkileşiminin çeşidine ve elektromanyetik spektrum genişliğine göre değişmektedir. Spektroskopik yöntemler; inorganik ya da organik bileşiklerin analizi, maddelerin yapılarının belirlenmesi gibi pek çok konuda kullanılmaktadır ([Şimşek, 2021](#); [Soluk, 2023](#)).

FTIR, Fourier Transform Infrared Spectroscopy (Fourier Dönüşü Kızılötesi Spektroskopi) maddenin kızılötesi bölgesindeki ışığı absorbe etme özelliğini kullanarak bileşiklerin kimyasal yapısını analiz etmek için kullanılan bir analitik tekniktir. FTIR spektroskopisi, günümüzde birçok modern laboratuvarında karakterizasyon için en sık kullanılan araçlardan biridir. Çeşitli endüstrilerde IR spektroskopisinin kullanılması, ilgili maddenin hızlı ve güvenilir karakterizasyonu ve bilinmeyen veya yabancı maddelerin saptanmasında kolaylıklar sunmaktadır.

FTIR spektroskopisi, bir örneğe kızılötesi ışık uygulayarak örnek tarafından absorbe edilen veya saçılan ışığın spectral dağılımını kaydeden bir dedektör kullanılır. Bu spektrum, örnekteki moleküler titreşim ve dönme modlarına bağlı olarak karakteristik emme pikleri üretir. Bu emme pikleri, örnekteki farklı kimyasal grupların varlığını ve yapısal bilgileri sağlar. FTIR analizi için örnek, optik bir pencere üzerine yerleştirilir ve kızılötesi ışık kaynağından geçirilir. Örnek ışığı absorbe eder ve geri kalan ışık bir dedektör tarafından algılanır. Bu şekilde örnek tarafından absorbe edilen kızılötesi ışığın spektrumu kaydedilir. FTIR spektroskopisi, maddenin kimyasal yapısını ve bileşenlerini analiz etmek için kullanılan analitik tekniktir ([Saferstein ve Roy, 2020](#); [Yalçın Sarıbey, 2008](#)).

ATR (Attenuated Total Reflection) FTIR, FTIR'ın bir türü olup yaygın olarak kullanılan spektroskopi yöntemlerinden biridir. Klasik FTIR spektroskopisinden farklı olarak, ATR-FTIR spektroskopisi numune hazırlığı gerektirmez. Günümüzde ATR-FTIR spektroskopisi yöntemiyle birlikte PCA (Principal Component Analysis) ve LDA (Linear Discriminant Analysis) gibi analiz yöntemleri de Adli Bilimler alanında kullanılmaktadır. Bu yöntemler, numunelerin kimyasal bileşenlerini ve yapılarını analiz etmek için değerli araçlar sunmaktadır ([Taştekin, 2021](#); [Onursoy, 2023](#); [Özçelik, 2023](#)).

Materyal ve Metot

Kumaş materyali olarak %100 polyester şönil iplikli orta sınıf dokuma kumaşı kullanılmıştır. Bu kumaş mobilya kumaşı olarak seçilmiştir. 20x20 cm boyutlarında 16 adet kumaş kesilerek farklı mesafelerden atışlara hazırlanmıştır. Atış için Türkiye yapısı, Sarsılmaz marka, 9 mm. çapında, Kılıç 2000 Light tabanca, İtalya yapısı, 7,65 mm. çapında, Beretta marka tabanca, Türkiye yapısı, Bahadır marka, 12 kalibre, av tüfeği ve İngiltere yapısı, 7,9 mm. çapında Lee-Enfield marka tüfek olmak üzere 2 tabanca, 2 uzun namlulu ateşli silah kullanılmıştır. Atış mesafeleri 0 cm, 5 cm, 50 cm, 100 cm olarak belirlenmiştir.

Atış Artıklarının FTIR Spektroskopisi ile Analizi

Farklı mesafelerden, farklı silah ve mühimmatlarla kumaş üzerine yapılan atışlar sonucu kumaş yüzeyindeki atış artıkları Üsküdar Üniversitesi Adli Kimya Laboratuvarında Agilent markasının Cary 630 ATR-FTIR spektroskopi cihazı ile analiz edilmiştir. Cihazın kullanımı aşağıda sıralanmıştır:

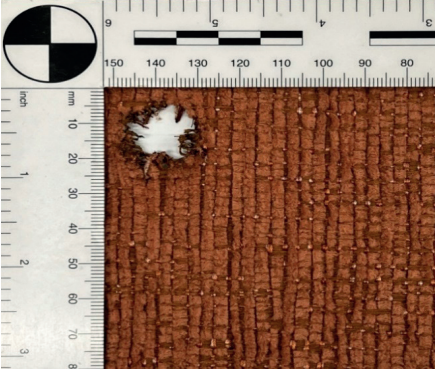
1. microLabPC yazılımı kullanılarak uygun metot seçilmiştir. Absorbans, çakıştırma, background scans: 32, sample scans: 32, resolution: 4 olarak seçilmiştir.
2. Cihazın kristali her analiz öncesinde yüzde %70'lik etil alkol çözeltisiyle temizlenmiştir.
3. Background olarak kumaş cihaza okutulup atış artığının olduğu kısımlar analiz edilmiştir. Her analiz 3 kere tekrarlanmıştır.
4. Sonuçlar "betulkoksal_gsr" ismiyle oluşturulan kütüphaneye eklenmiştir.
5. Her bir analiz .spc formatında kaydedilmiştir.

PCA Analizi

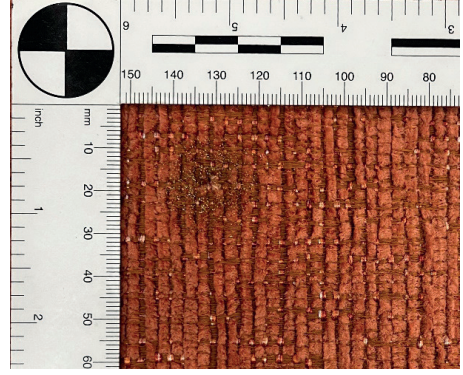
PCA analizinin yapılması için SpectraGryph yazılımı (versiyon 1.2.16.1) ile Orange Data Mining yazılımı (versiyon 3.36.1) kullanılmıştır. microLabPC programı ile alınmış .spc dosyaları SpectraGryph yazılımı ile Excel dosyası haline getirilmiştir. Hazırlanan Excel dosyaları, Orange yazılımındaki PCA ve Scatter Plot fonksiyonlarına bağlanmıştır.

Bulgular

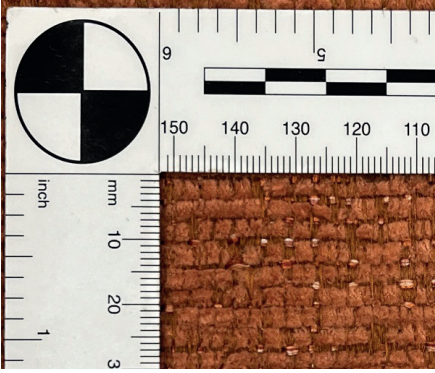
7,65 mm. Fiřek ile Yapılan Atıřlar



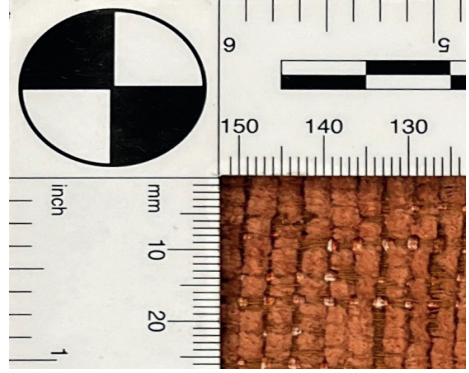
Şekil 1. Bitiřik (0 cm) atıř.



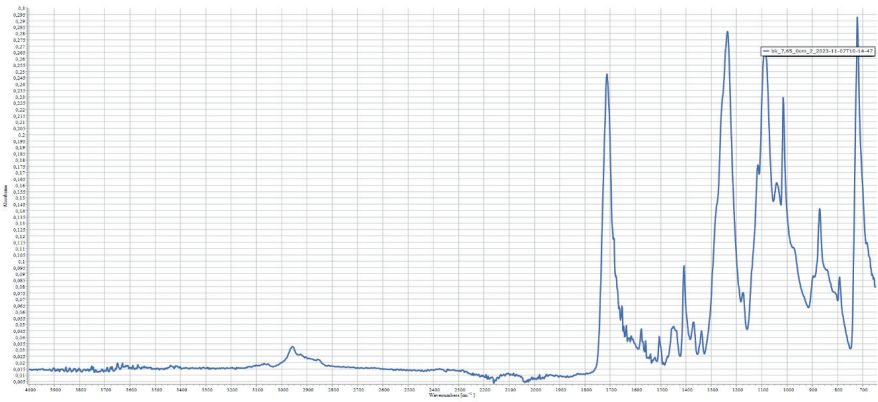
Şekil 2. Bitiřięe yakın (5 cm) atıř.



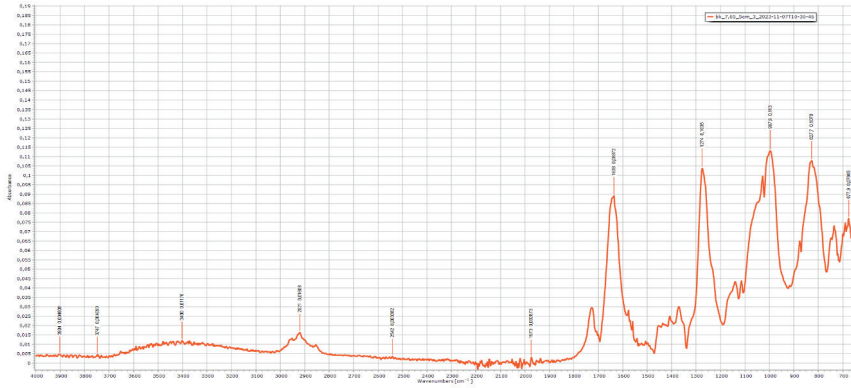
Şekil 3. Yıkın (50 cm) atıř.



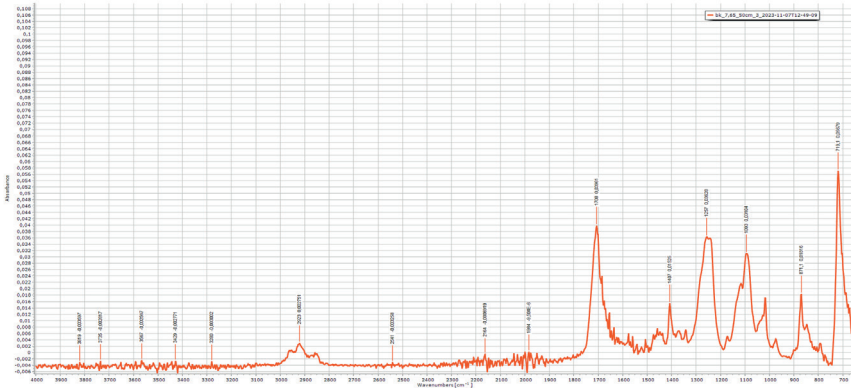
Şekil 4. Uzak (100 cm) atıř.



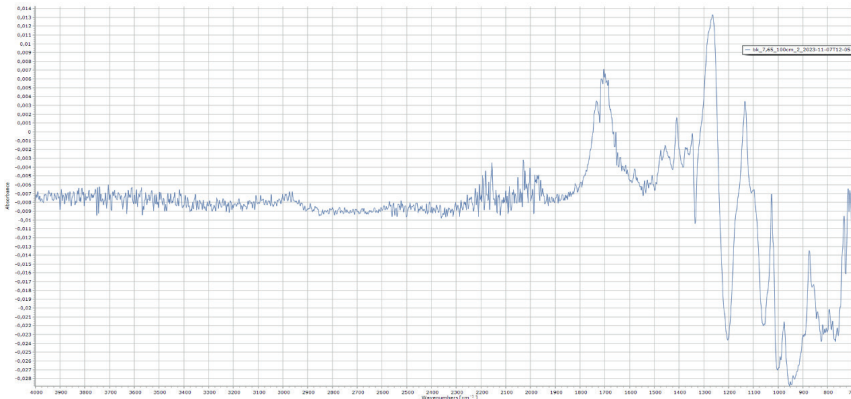
Şekil 5. 7,65 mm. fişek ile bitişik atışta meydana gelen atış artığının FTIR spektrumu.



Şekil 6. 7,65 mm. fişek ile bitişğe yakın atışta meydana gelen atış artığının FTIR spektrumu.

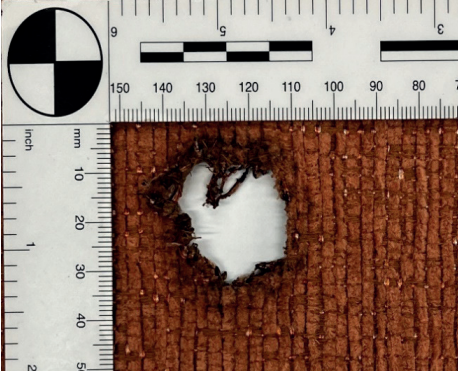


Şekil 7. 7,65 mm. fişek ile yakın atışta meydana gelen atış artığının FTIR spektrumu.

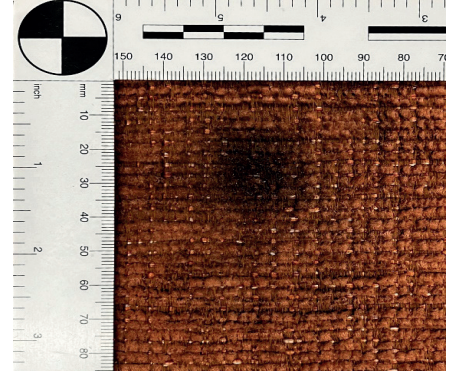


Şekil 8. 7,65 mm. fişek ile uzak atışta meydana gelen atış artığının FTIR spektrumu.

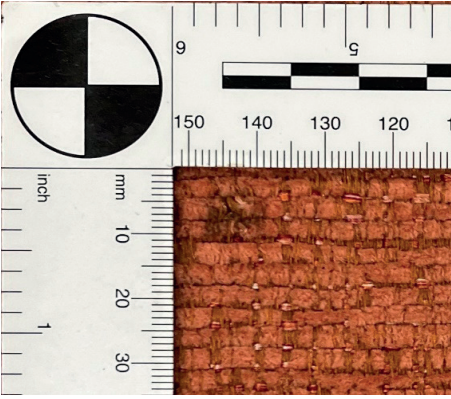
9 mm. Fiřek ile Yapılan Atıřlar



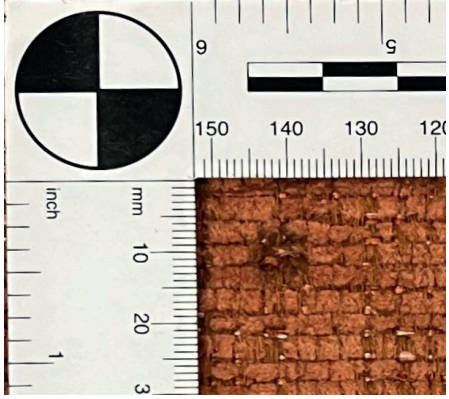
Şekil 9. Bitiřik (0 cm) atıř.



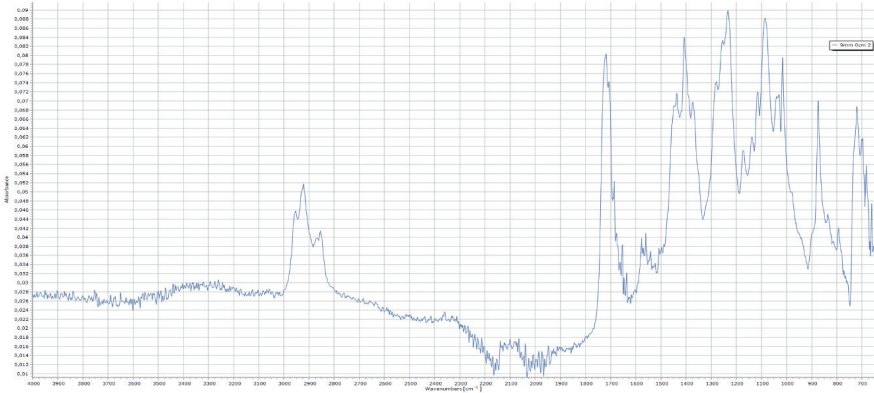
Şekil 10. Bitiřiđe yakın (5 cm) atıř.



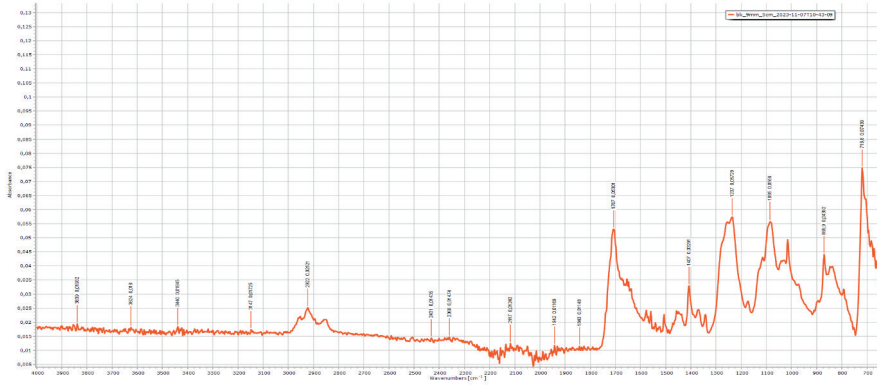
Şekil 11. Yakın (50 cm) atıř.



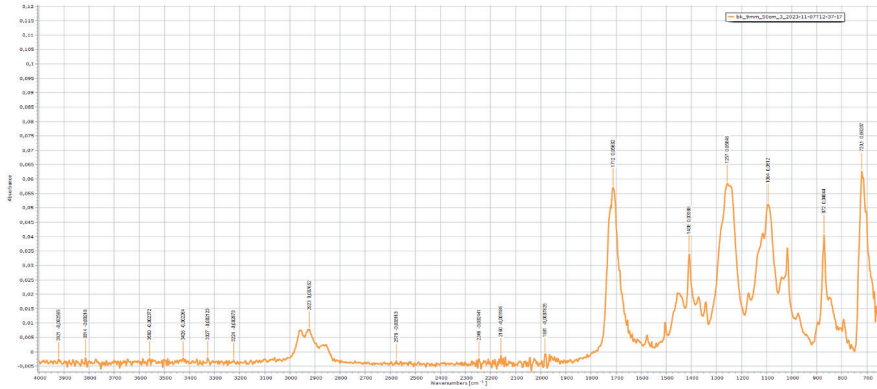
Şekil 12. Uzak (100 cm) atıř.



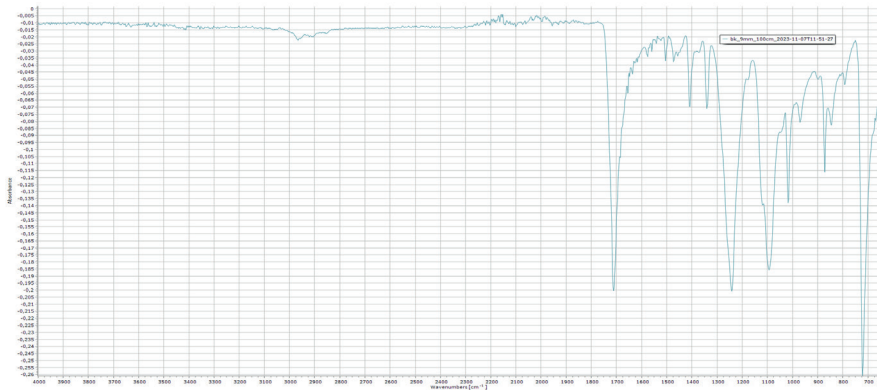
Şekil 13. 9 mm. fiřek ile bitiřik atıřta meydana gelen atıř artıđının FTIR spektrumu.



Şekil 14. 9 mm. fişek ile bitişiğe yakın atışta meydana gelen atış artığının FTIR spektrumu.

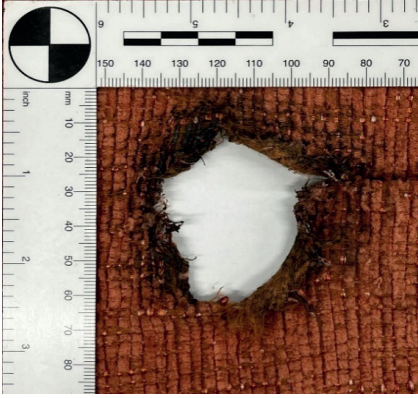


Şekil 15. 9 mm. fişek ile yakın atışta meydana gelen atış artığının FTIR spektrumu.

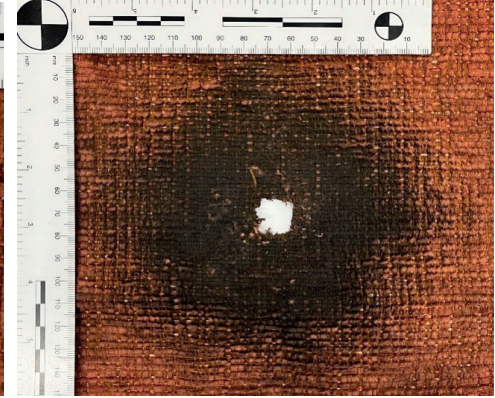


Şekil 16. 9 mm. fişek ile uzak atışta meydana gelen atış artığının FTIR spektrumu.

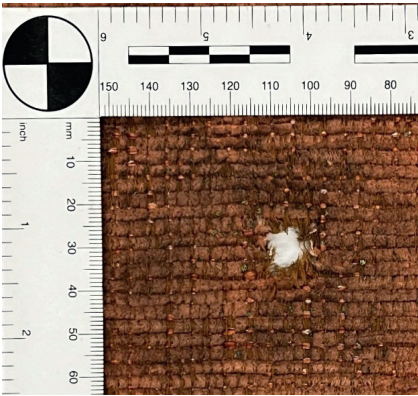
12 Kalibre Fiřek ile Yapılan Atıřlar



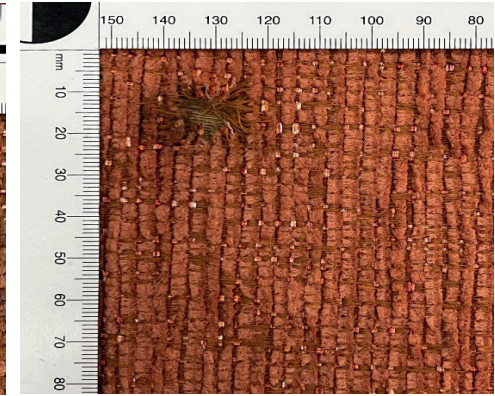
Şekil 17. Bitiřik (0 cm) atıř.



Şekil 18. Bitiřiđe yakın (5 cm) atıř.



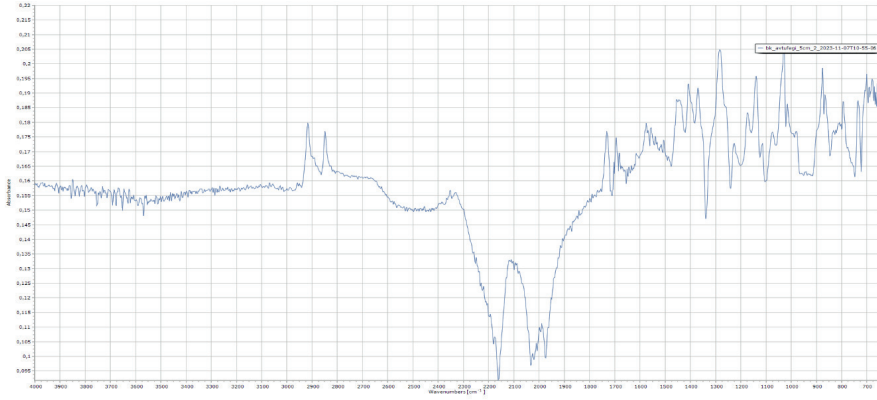
Şekil 19. Yakın (50 cm) atıř.



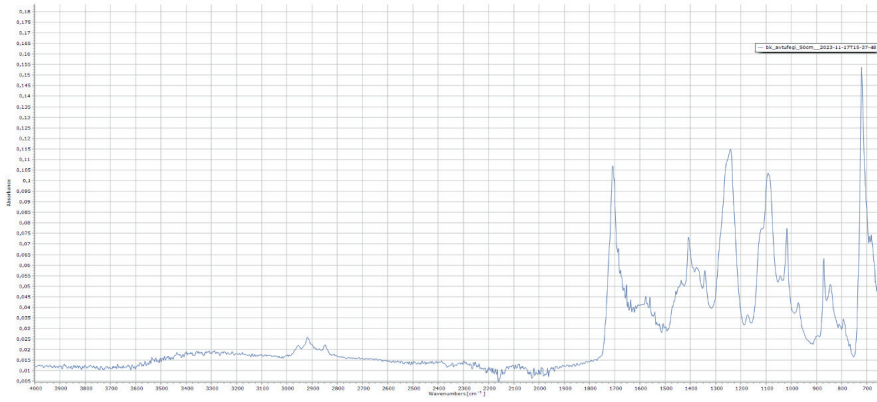
Şekil 20. Uzak (100 cm) atıř.



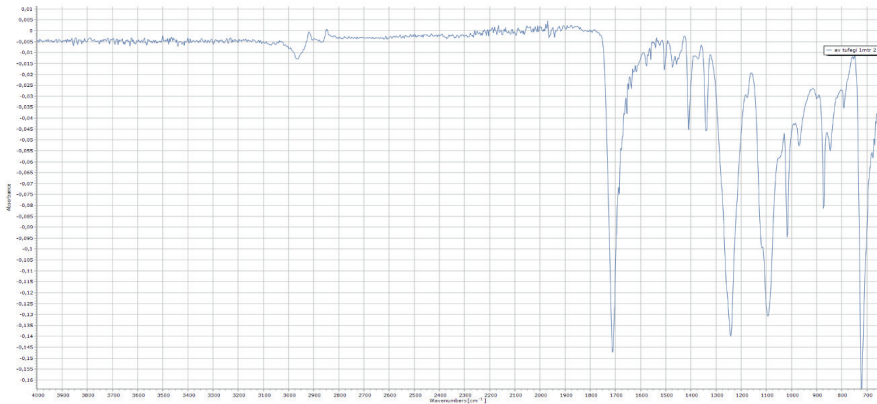
Şekil 21. 12 Kalibre fiřek ile bitiřik atıřta meydana gelen atıř artıřının FTIR spektrumu.



Şekil 22. 12 Kalibre fişek ile bitişğe yakın atışta meydana gelen atış artığının FTIR spektrumu.



Şekil 23. 12 Kalibre fişek ile yakın atışta meydana gelen atış artığının FTIR spektrumu.

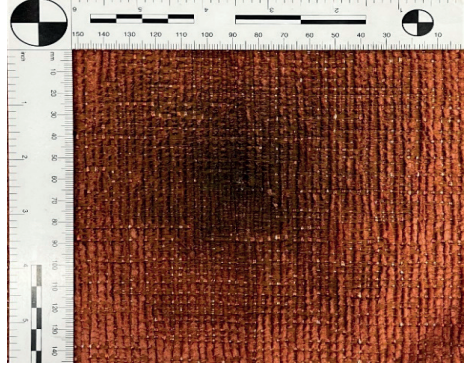


Şekil 24. 12 Kalibre fişek ile uzak atışta meydana gelen atış artığının FTIR spektrumu.

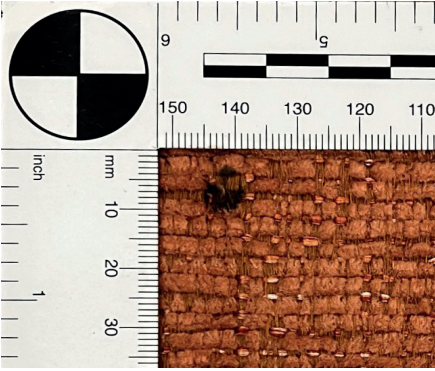
7,9 mm. Fiřek ile Yapılan Atıřlar



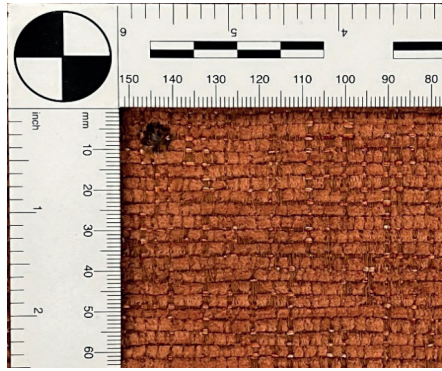
Şekil 25. Bitiřik (0 cm) atıř.



Şekil 26. Bitiřige yakın (5 cm) atıř.



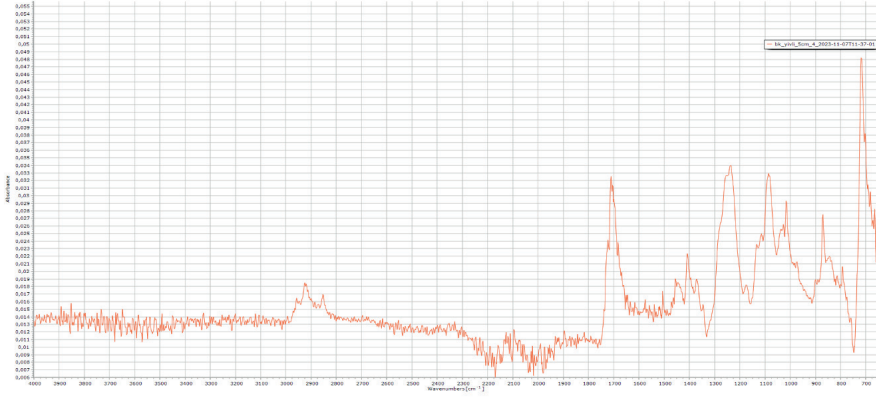
Şekil 27. Yakın (0 cm) atıř.



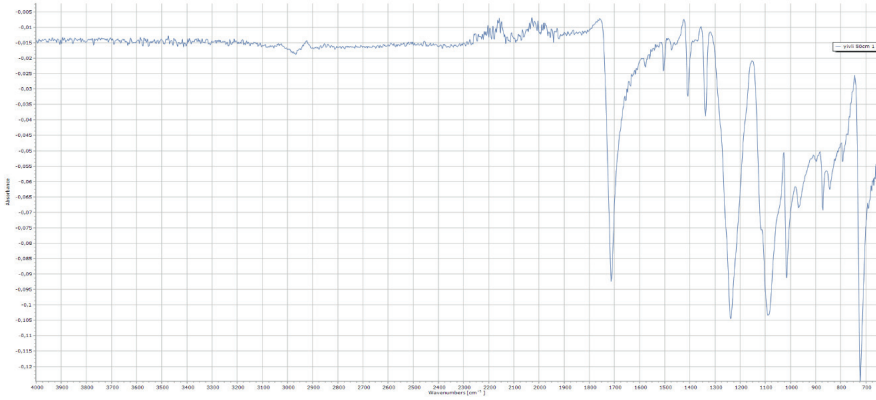
Şekil 28. Uzak (100 cm) atıř.



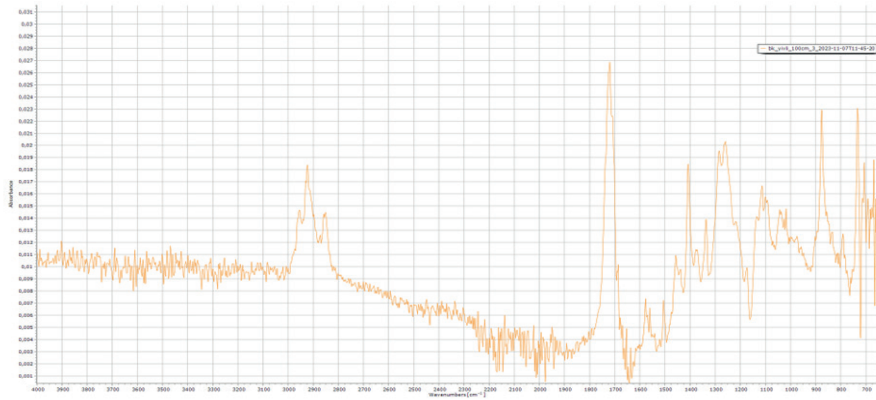
Şekil 29. 7,9 mm. fiřek ile bitiřik atıřta meydana gelen atıř artıřının FTIR spektrumu.



Şekil 30. 7,9 mm. fişek ile bitişğe yakın atışta meydana gelen atış artığının FTIR spektrumu.



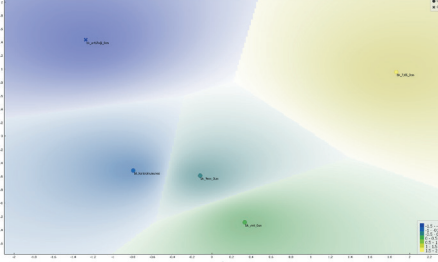
Şekil 31. 7,9 mm. fişek ile yakın atışta meydana gelen atış artığının FTIR spektrumu.



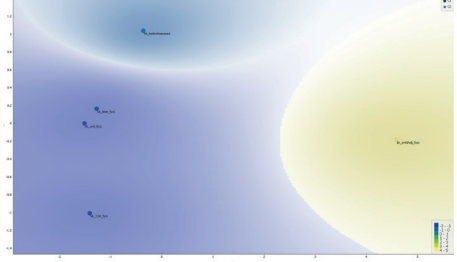
Şekil 32. 7,9 mm. fişek ile uzak atışta meydana gelen atış artığının FTIR spektrumu.

Tartıřma ve Sonu

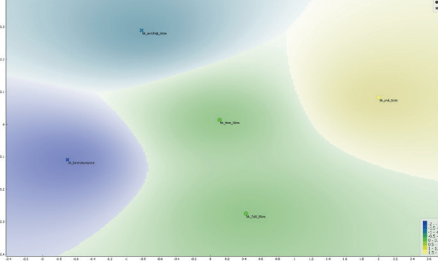
Mühimmat Türlerinin FTIR Spektroskopisi ile Ayırt Edilmesi



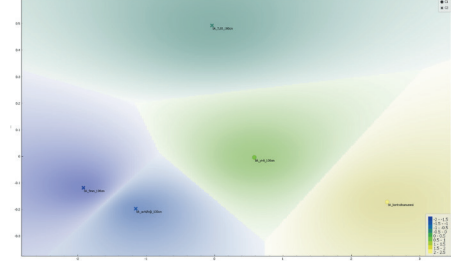
Őekil 33. 0 cm mesafeli atıřların PCA grafiđi.



Őekil 34. 5 cm mesafeli atıřların PCA grafiđi

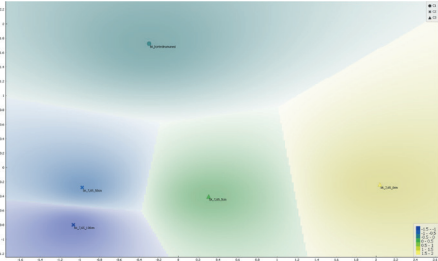


Őekil 35. 50 cm mesafeli atıřların PCA grafiđi.

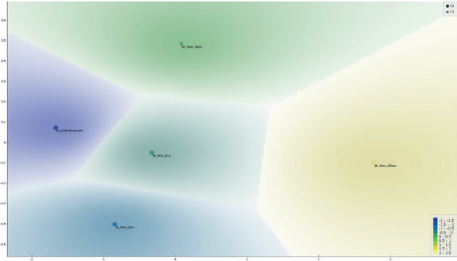


Őekil 36. 100cm mesafeli atıřların PCA grafiđi.

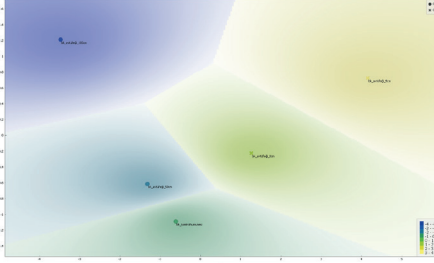
Atıř Mesafesinin FTIR Spektroskopisi ile İncelenmesi



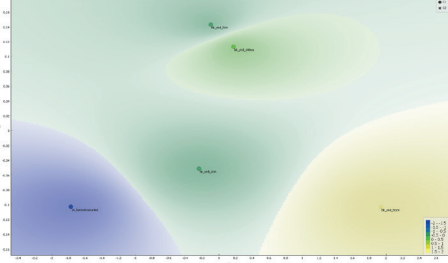
Őekil 37. 7,65 mm. mühimmatın PCA grafiđi.



Őekil 38. 9 mm. mühimmatın PCA grafiđi.

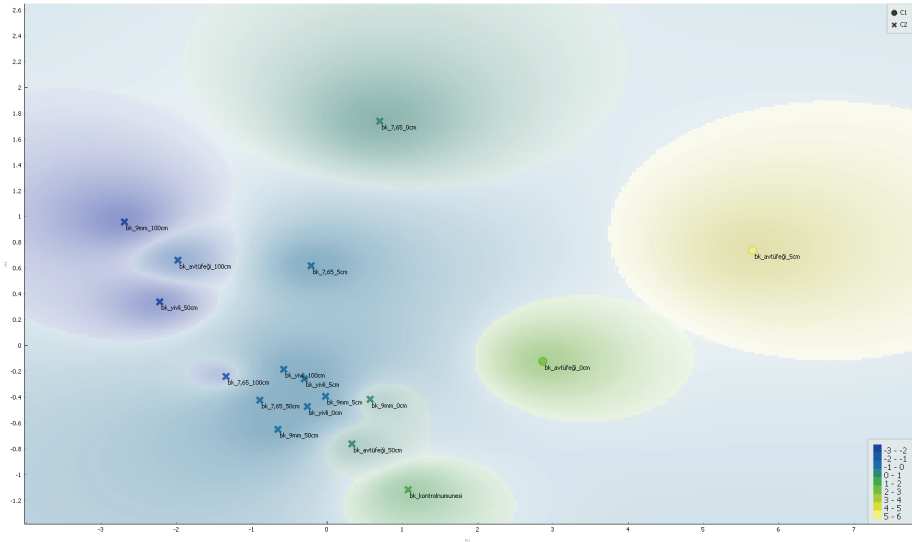


Şekil 39. 12 Kalibre mühimmatın PCA grafiği.



Şekil 40. 7,9 mm. mühimmatın PCA grafiği.

Atış Mesafesinin FTIR Spektroskopisi ile İncelenmesi



Şekil 41. Tüm mühimmatlarla tüm mesafelerle yapılan atışların PCA grafiği.

Atışlarda hedefte en büyük tahribatı yaratan mesafe bitişik atıştır. Ateşlenmenin gerçekleşmesiyle mermi çekirdeği namlu içerisinde ilerlemeye başlar ve onunla beraber yanan ya da yanmamış olan barutta namlu içerisinde ilerleyerek namluyu terk eder. Hedefe girerek hedefi tahrip eden mermi çekirdeğinin ya bu yanmakta olan parçacıklar namlu ağzı basıncının da etkisiyle bitişik atışta yoğun olarak hedef yüzeye aktarılır. Bu nedenle bitişik atış mesafesinde yapılan atışlarda hedef yüzey üzerinde belirgin izler ve tahribatlar bulunur.

5cm atışlarda atış artığı diğer mesafelere göre daha çok gözle görülür seviyededir. Atış artığı namludan çıktıktan sonra etrafa dağılmaya başlar dolayısı ile aldığı yol oldukça azdır. Bu faktörü etkileyen bir kaç durum söz konusudur. Bu faktörlerden birisi barut miktarıdır. Barut miktarı arttıkça arttıkça atış artığı da

artacağı için alacağı mesafe değişecektir. Diğer bir faktör de namlunun uzunluğudur. Fişeklerdeki barut miktarında bununla ilgilidir. Mermi çekirdeği namludan çıkarken maksimum hızda namluyu terk etmesi için tasarlanmıştır. Uzun namlulu ateşli silahlarda atış yapıldığında daha çok mesafe almasının sebebi budur. Namluda ilerleyen atış artığının namludaki yolculuğu boyunca itici bir güç tarafından sürekli itilmesi sonucu hızlanır ve namluyu terk ettiğinde bu gücün etkisi biraz daha devam eder. Av tüfeğindeki atış artığının piyade tüfeğindekiinden daha fazla olmasının sebebi içerisindeki barut miktarının farklılığıdır.

50cm ve 100cm atışlarında ise atış artığı az miktardadır. Namludan çıktıktan sonra değişken mesafelerde ilerleyen atış artıkları belli bir süre sonra havada dağılır. Yapılan atışlarda tabancaların her ikisinde de atış artığı gözle fark edilememektedir. Tüfeklerde ise giriş deliklerinin etrafında atış artığı gözlemlenmiştir.

Fişek türüne bağlı olarak yapılan değerlendirmelerde, fişek türü namlu çapına göre değişiklik göstermektedir. Fişegin içindeki barut, mermi çekirdeğinin namlu içindeki yolculuğu boyunca maksimum hıza ulaşarak, namluyu bu hızla terk etmesi için gereken miktar hesaplanarak kullanılmaktadır. Ayrıca namlunun uzunluğu mermi çekirdeğinin hızını ve menziline de etkiler.

Beretta marka 7,65 mm. çapında tabanca bitişik atışta hedefte belirgin bir tahribat yapabilirken 5cm ve sonraki mesafelerde hedefe zarar oranı giderek azalmış ve hedefte yarattığı tahribatın görünürlüğü zorlaşmıştır. Artış artıklarının ise her mesafede gözle görünürlüğü yok denecek kadar azdır.

Sarsılmaz marka, 9 mm. çapında, Kılıç 2000 Light tabanca bitişik atışta diğer mesafelere göre daha büyük tahribata uğramış olsa da 5cm mesafeli atışta atış artığı varlığı daha fazla gözükmektedir. Bitişik (0cm) atıştan sonraki mesafelerde tahribat azalırken, 5cm den sonra da atış artığının gözle görülmesi zorlaşmaya başlamıştır.

Bahadır marka, 12 kalibre, av tüfeği her mesafede hedefte gözle görülür tahribat bırakmıştır. Atış artığının maksimum görüldüğü mesafe 5cm iken en fazla tahribat olduğu mesafe bitişik atıştadır. Ayrıca av tüfeğinin fişegi diğer fişeklerden daha büyük olduğu için hedefteki tahribat diğer ateşli silahlarda daha fazladır.

Lee-Enfield marka 7,9 mm. çapında piyade tüfeği bitişik atışta hedefe en büyük tahribatı verirken diğer mühimmatlar gibi 5cm de en fazla atış artığı gözükmektedir.

Bu çalışmada 4 farklı mühimmata sahip ateşli silahlar (Türkiye yapısı, Sarsılmaz marka, 9 mm. çapında, Kılıç 2000 Light tabanca, İtalya yapısı, Beretta marka 7,65 mm. çapında tabanca, Bahadır marka, 12 kalibre, av tüfeği ve İngiliz yapısı 7,9 mm. çapında Lee-Enfield marka tüfek) ile mobilya yüzeylerinde kullanılan dokuma kumaşına 4 farklı mesafeden (0cm, 5cm, 50cm, 100cm) atış yapılmıştır. Bu atışlar sonrası hedefteki atış artıkları FTIR ile incelenerek mühimmat ve mesafe tayini tespiti araştırması yapılmıştır. Toplam 17 adet kumaş FT-IR spektroskopisiyle incelenmiştir. Agilent Cary 360 FT-IR cihazı kullanılarak 4000-650 cm⁻¹ orta kızılötesi frekans aralığında çalışılmıştır.

Atışlar mesafe ve mühimmat açısından gruplara ayrılmış ve PCA üzerinde ayırt edicilik oranları hesaplanmıştır:

- Mesafe de en farklı ayırım %99 ayırt edicilik oranıyla uzak atış olmuştur. Bitişik atış ve bitişğe yakın atışlarda %98 oranında ayırt edicilik olurken %97 ayırt edicilik oranıyla yakın atış en benzer mesafe oranı olmuştur.
- Mühimmat da en farklı ayırım %99 ayırt edicilik oranıyla 7,9 mm. mühimmatlı ve 12 kalibre mühimmatlı atışlarda olmuştur. 9mm. mühimmatlı atışlar da %97 oranında ayırım olurken %94 ayırt edicilik oranıyla 7,65 mm. mühimmatlı atışlar en benzer mesafe oranı olmuştur.
- Tüm mesafe ve mühimmatların kendi arasında PCA yapılması sonucunda ise %94 oranında bir ayırım gerçekleşmiştir.

Sonuç olarak:

Bitişik (0 cm) atışlarda tüm mühimmat türlerinde ayırım sağlamıştır. Sonuç olarak bitişik atış tespit edildiğinde, atışın farklı tür mühimmat ile gerçekleştiği anlaşılabilir. 5 cm mesafeli atışlarda benzer mühimmatlar kontrol numunesi ile ayırım sağlarken av tüfeği diğer mühimmat türlerinden belirgin ayırım göstererek kendi grubunu oluşturmuştur. 50 cm mesafeli atışlarda tabanca ile atış yapılmış numuneler aynı gruba girerken kontrol numunesi, av tüfeği ve piyade tüfeği kendi gruplarını oluşturmuştur. Dolayısı ile av tüfeği ve piyade tüfeği ayırımı anlaşılmaktadır. 100 cm mesafeli atışlarda tüm mühimmat türleri ayırım sağlamıştır. Sonuç olarak 100 cm mesafeli atış tespit edildiğinde atışın farklı tür mühimmat ile gerçekleştiği anlaşılabilir. Beretta marka 7,65 mm. çapında tabanca ve Sarsılmaz marka, 9 mm. çapında, Kılıç 2000 Light tabanca ile yapılan atışlarda tüm mesafelerde ayırım sağlamıştır. Bahadır marka, 12 kalibre, av tüfeği ile yapılan atışlarda ve Lee-Enfield marka 7,9 mm. çapında piyade tüfeği ile yapılan atışlarda tüm mesafeler kontrol numunesinden ayrılmıştır. 0 cm ve 5 cm mesafeli atışlar aynı grupta yer alırken 50 ve 100 cm mesafeli atışlar farklı gruplara ayrılmıştır. Farklı gruplarda yer alan 50 cm ve 100 cm mesafeli atışların farklı mesafe olduğu anlaşılabilir.

Kumaş hedef yüzeyindeki atış artıklarının incelenmesi için Fourier Dönüşümlü Kızılötesi Spektroskopisi (FTIR)'nin tahribatsız ve elverişli bir yöntem olduğu, aynı mesafeden yapılan atışlarda farklı mühimmat türlerinin PCA analiz ile gruplanabildiği tespit edilmiştir.

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Derginin Amacı ve Kapsamı

Adli bilimler suçun aydınlatılması ve suçlunun belirlenmesi konularında yürütülen adli soruşturmalarda elde edilen delillerin incelenmesi ve değerlendirilmesi esasına dayanan multi-disipliner bir bilim dalıdır. Bu bilim dalının gelişebilmesi ve amacına uygun uygulanabilmesi için birlikte çalıştığı diğer alanlardaki bilimsel gelişme ve araştırmaları takip edebilmek oldukça önemlidir. Disiplinler arası esasa dayalı olarak adli bilimler; tıp, biyoloji, kimya, fizik, istatistik, psikoloji, sosyoloji, hukuk, antropoloji ve ekonomi gibi alanlar ve bu alanların alt dallarını da içeren bilimsel ve akademik çalışma alanına sahiptir. Dolayısıyla bu alandaki tüm gelişmeleri, doğru ve bilimsel kriterlere uygun şekilde çalışmak, bu çalışmaları doğru kaynaklar aracılığıyla yayınlatabilmek çok önemlidir. Adli Bilimler ve Suç Araştırmaları Dergisinin (ABSAD) birçok disiplini bir araya getirip araştırmacılara ve akademisyenlere sunabileceği ve bu alanda referans bir dergi özelliği kazanabileceği düşünülmektedir.

ABSAD amaç bakımından “Adli Bilimler” odaklı olup, ulusal ve uluslararası düzeyde Adli Bilimler ve ilişkili alt disiplinlere dair problemleri belli bir disiplin veya disiplinler arası açıdan ele alarak kuramsal ve uygulamalı özgün çalışmalar yayınlamayı kendisine ilke edinmiştir. Bu çerçevede hazırlanan tüm çalışmalara da açıktır.

Danışma kurulunda farklı ülkelerden yerli ve yabancı akademisyenlerin yer aldığı ABSAD Haziran ve Aralık aylarında olmak üzere, yılda iki kez Türkçe veya İngilizce olarak yayımlanır. Dergide yayımlanan yazıların daha önce hiçbir yayın organında yayımlanmamış olması gerekmektedir. Daha önce bilimsel bir toplantıda sunulmuş olan bildiriler, bu durumun belirtilmesi şartıyla kabul edilebilir.

İlk yayımlandığı tarihten itibaren asgari 25 yıl geçmiş olan; önem ve etki bakımından klasik metin olarak değerlendirilebilecek yazı ve çeviriler, *daha önce yayımlanmamış olma* kuralının istisnasını oluşturur. Bu tür metinlere daha önce yayımlanıp yayımlanmamış olmalarına bakılmaksızın dergide yer verilebilir.

Metin Yapısı ve Yazım Kuralları

ABSAD yazım dili Türkçe ve İngilizcedir. Türkçe makalelerin yazım ve noktalamasında ve kısaltmalarda Türk Dil Kurumu internet sitesindeki Güncel Sözlük ve Yazım Kuralları esas alınır. Gönderilen yazılar dil ve anlatım açısından bilimsel ölçülere uygun, açık ve anlaşılır olmalıdır.

Makaleler aşağıdaki kısımları içermelidir:

- Başlık: Türkçe ve İngilizce
- Özet: Türkçe ve İngilizce (her biri 200-300 kelime)
- Anahtar Kelimeler: Türkçe ve İngilizce (her biri 3-8 kelime)
- Metin: Giriş, bölüm başlıkları ve sonuç: Türkçe veya İngilizce
- Kaynakça

Metinlerde yukarıda sayılan tüm unsurlar, kaynakça hariç aşağıdaki şekilde olmalıdır:

- Adli bilimlerle ilişkili kimya, fizik, biyoloji, matematik, istatistik, mühendislik ile sağlık temel alanına giren tüm fen bilim dalları için 1500-5000 kelime arasında

- Adli bilimlerle iliřkili psikoloji, dilbilim, sosyoloji, hukuk gibi sosyal bilim dalları için 4000 ile 8000 kelime arasında olmalıdır.

Metin APA (6th ed.) formatına uygun olmalıdır. Yazar adı makale bařlığının alt satırının sađ köşesine italik koyu, 11 punto olarak yazılmalı; yazarın unvanı, görev yeri ve elektronik posta adresi dipnotta (*) iřareti ile 9 punto yazılarak belirtilmelidir.

Makale Gönderme ve Deđerlendirme Süreçleri

Dergiye gönderilen makaleler derginin internet sayfasında yer alan Makale Yönetim Sistemi'ne (MYS) yüklenecektir. Yazılar, bilgisayar ortamında ve dizgi programlarında kullanılabilen şekilde Word formatında gönderilmelidir.

Dergiye gönderilen makaleler editör ve/veya editörler tarafından öncelikle řekil incelemesinden geçirilir. řekil şartlarını sađlamayan çalışmalar hakem deđerlendirilmesine alınmamakta, yazar(lar)dan řekil şartlarını sađlamaları istenmektedir. řekil şartlarına iliřkin doküman derginin internet sitesinden indirilebilir. řekil şartlarını sađlayan makaleler ilgili alan editörleri tarafından incelenerek uygun bulunduđu takdirde hakem deđerlendirme sürecine alınır. Dergiye yayımlanmak üzere yollanan makaleler, "kör hakem" yöntemiyle deđerlendirilmektedir. Editör, editör yardımcısı veya alan editörleri tarafından makaleler, alanında uzman en az iki hakeme gönderilmektedir. İki hakemin görüş ayrılıđı durumunda, üçüncü bir hakemin görüşüne başvurulmaktadır. Editörler hakemlerden gelen eleřtiri ve önerileri kendi deđerlendirmeleri ile birlikte yazar veya yazarlara iletmektedir. Deđerlendirme sonuçları en fazla 90 gün içinde yazara bildirilir. Üçüncü bir hakeme gönderilen eserlerde bu süre 120 güne çıkabilmektedir. Düzeltme talep edilen eserler, editör tarafından yazara gönderilir ve düzeltme için yazara 30 güne kadar ek süre verilir. Hakemlerden gelen raporlar dođrultusunda, makalenin yayımlanmasına, yazardan hakem raporuna göre düzeltme istenmesine ya da yazının reddedilmesine karar verilmekte ve karar yazara iletilmektedir. Basımı uygun bulunan yazıların, yayımlanıp yayımlanmayacađına ya da derginin hangi sayısında yayımlanacađına editörler ve/veya yayın kurulu karar verir. Yazar, süreç konusunda Makale Yönetim Sistemi veya E-posta yoluyla bilgilendirilmektedir.

Makale deđerlendirme süreç akıřı řu řekildedir:

- Yazar tarafından makalenin Makale Yönetim Sistemine yüklenmesi.
- Editör incelemesi süreci (makalenin řekil yönünden incelenmesi). Editör veya editör yardımcıları gerek gördüklerinde yazarlardan makale yapısı veya formatında düzeltmeler talep edebilirler.
- řekil incelemesinden geçen makaleler kör hakem deđerlendirme sürecine alınır ve yazarlar süreç ile ilgili bilgilendirilirler.
- Makaleler çalışma konusunda uzman 2 hakeme gönderilir. İki hakem arasında görüş farklılıkları olduđu durumlarda makale 3. hakeme deđerlendirme için gönderilir.
- Hakem deđerlendirme sonuçları yazarlara bildirilir. Gerekli görüldüđu durumlarda yazarlardan düzeltme yapmaları talep edilir.
- Hakem görüşleri dođrultusunda yazarlar en son düzeltmelerini yapar ve makaleler kabul veya reddedilir.

- Yayınlanmasına karar verilen makalenin dizgi ve tasarımı yapılır.
- Dizgisi ve tasarımı yapılmış makalenin yazara son kontrol için gönderilir.
- Makalenin yayınlanması.

Etik Kurallar

Yayınlanmak üzere dergiye gönderilen çalışmalarda bilimsel atıf kurallarına azami özen gösterilmesi gerekmektedir. Adli Bilimler ve Suç Araştırmaları Dergisinde yayımlanan yazıların fikri sorumluluğu yazarlara aittir. Dergiye gönderilen çalışmalarda, etik kurul kararı gerektiren klinik ve deneysel insan ve hayvanlar üzerindeki çalışmalar için ayrı ayrı etik kurul onayı alınmış olmalı, bu onay makalede belirtilmeli ve belgelendirilmelidir.

Gönderilen makalenin bir kısmı ya da tamamı başka bir yerde yayınlanmamış, yayınlanmak üzere başka bir yere yollanmamış olmalıdır. Tüm yazarlar ilgili makaleyi okumuş, onaylamış ve dergiye yayınlanmak üzere gönderildiğinden haberdar olmalıdır.

Makale yazar/lar tarafından yazılmış, özgün bir çalışma olması gerekmektedir. Dergiye gönderilen çeviri makale çalışmalarında orijinal makalenin yazarından ve yayıncı kuruluşundan izin alındığını gösteren belgenin sunulması gerekmektedir.

Yazar/lar makalenin telif hakkını, makalenin Adli Bilimler ve Suç Araştırmaları Dergisinde yayınlanmasına karar verildiğinden itibaren dergiye devretmiş sayılır. Yazar/yazarlar derginin yazı işlerinden izin almadan makaleyi başka bir platformda (dergi, editoryal kitap, internet sitesi, blog vb.) yayınlamaz.

Yazar/lar bilimsel etiğin bütün unsurlarını yerine getirmek üzere makale ile birlikte **İntihal Denetim Raporu**'nu ve **Makale Telif ve Etik Sözleşmesi**'ni mutlaka doldurarak sistem üzerinden dergiye ulaştırmalıdır.

Etik kuralları ile ilgili herhangi bir sorunuz varsa, lütfen bizimle iletişime geçiniz.

ADLI BİLİMLER VE SUÇ ARAŐTIRMALARI DERGİŐİ

Turkish Journal of Forensic Sciences and Crime Studies

Yazarlara Notlar

Yayın İlkeleri

Adli Bilimler ve Suç Arařtırmaları Dergisi, Polis Akademisi Adli Bilimleri Enstitüsü tarafından yılda iki defa basılı ve e-dergi formatında adli bilimleri kapsayan disiplinlerde yayın yapan akademik ve bilimsel bir dergidir.

Adli Bilimler ve Suç Arařtırmaları Dergisi'nde ulusal ve uluslararası alanda kabul görmüş kriterler doğrultusunda hazırlanan özgün arařtırma, derleme, inceleme, çeviri (yazarından ve yayıncı kuruluřtan izin almak kořuluyla), edisyon kritik, kitap-sempozyum deęerlendirmeleri vb. çalıřmalar yayınlanır.

Adli Bilimler ve Suç Arařtırmaları Dergisi'nin amacı ve kapsamı, etik kuralları yayın ilkeleri ve yazım kuralları ařaęıda belirtilen Őekilde düzenlenmiřtir.

Derginin Amacı ve Kapsamı

Adli bilimler, günümüzde suç ve suçlunun saptanması ve suçun ve suçluluęun kanıtlanması ařamasında yürütölen, adli ve idari soruřtırmalar sırasında elde edilen maddi delillerin incelenmesi ve deęerlendirilmesi esasına dayalı olarak birçok disiplinden destek alan bir bilim dalıdır. Bu bilim dalının geliřebilmesi ve doęru Őekilde uygulanabilmesi için, yardım aldıęı disiplinleri ve bu alanlardaki bilimsel geliřmeleri ve arařtırmaları takip edebilmek oldukça önemlidir. Multidisipliner bir esasla geliřen adli bilimler, tıp, biyoloji, kimya, antropoloji, istatistik, psikoloji, sosyoloji, hukuk ve ekonomi gibi alanlar ve bu alanların alt dallarını kapsayacak büyüklükte bir inceleme alanına sahiptir. Dolayısıyla bu alandaki tüm geliřmeleri, doęru ve bilimsel kriterlere uygun Őekilde çalıřmak, bu çalıřmaları doęru kaynaklar aracılıęıyla yayınlayabilmenin önemi tartışmasızdır. Adli Bilimler ve Suç Arařtırmaları dergisinin birçok disiplini bir araya getirip arařtırmacılar ve akademisyenlere sunabileceęi ve bu alanda referans bir dergi özellięi kazanabileceęi düşünölmektedir.

Adli Bilimler ve Suç Arařtırmaları Dergisi amaç bakımından "Adli Bilimler" odaklı olup, ulusal ve uluslararası düzeyde Adli Bilimler ve iliřkili alt disiplinlere dair problemleri disiplinler veya disiplinlerarası açıdan ele alarak kuramsal ve uygulamalı özgün çalıřmalar yayınlamayı kendisine ilke edinmiřtir. Bu çerçevede hazırlanan tüm çalıřmalara da açıktır.

Danıřma kurulunda farklı ölkelerden yerli ve yabancı akademisyenlerin yer aldıęı Dergi Mart ve Eylül aylarında olmak üzere, yılda iki kez yayımlanır. Adli Bilimler ve Suç Arařtırmaları Dergisinde Türkçe ve İngilizce dilindeki makaleler yayınlanır. Dergide yayımlanan yazıların daha önce hiçbir yayın organında yayımlanmamıř olması gerekmektedir. Daha önce bilimsel bir toplantıda sunulmuş olan bildirimler, bu durumun belirtilmesi Őartıyla kabul edilebilir.

İlk yayımlandıęı tarihten itibaren asgari 25 yıl geçmiş olan; önem ve etki bakımından klasik metin olarak deęerlendirilebilecek yazı ve çeviriler, *daha önce yayımlanmamıř olma* kuralının istisnasını oluřturur. Bu tür metinlere daha önce yayımlanıp yayımlanmamıř olmalarına bakılmaksızın dergide yer verilebilir.

Makale Değerlendirme Süreçleri

Dergiye gönderilen makaleler derginin internet sayfasında yer alan Makale Yönetim Sistemi (MYS) üzerinden sisteme yüklenecektir. Yazılar, bilgisayar ortamında ve dizgi programlarında kullanılabilir şekilde Word formatında gönderilmelidir.

Dergiye gönderilen makaleler şekil incelemesinden geçerek hakem değerlendirme sürecine alınmaktadır. Şekil şartlarını sağlamayan çalışmalar hakem değerlendirilmesine alınmamakta, yazar(lar)dan şekil şartlarını sağlamaları istenmektedir. Şekil şartlarına ilişkin doküman internet sitesinden indirilebilir. Şekil şartları açısından eksiksiz olan makaleler ilgili alan editörleri tarafından incelenerek uygun bulunduğu takdirde hakem değerlendirme sürecine alınır. Dergiye yayımlanmak üzere yollanan makaleler, “kör hakem” yöntemiyle değerlendirilmektedir. Editör, editör yardımcısı veya alan editörleri tarafından makaleler, alanında uzman en az iki hakeme gönderilmektedir. İki hakemin görüş ayrılığı durumunda, üçüncü bir hakemin görüşüne başvurulmaktadır. Editörler hakemlerden gelen eleştiri ve önerileri kendi değerlendirmeleri ile birlikte yazar/lara iletmektedir. Değerlendirme sonuçları en fazla 90 gün içinde yazara bildirilir. Üçüncü bir hakeme gönderilen eserlerde bu süre 120 güne çıkabilmektedir. Düzeltme talep edilen eserler, editör tarafından yazara gönderilir ve düzeltme için gerekli ek süre yazara verilir. Hakemlerden gelen raporlar doğrultusunda, makalenin yayımlanmasına, yazardan hakem raporuna göre düzeltme istenmesine ya da yazının reddedilmesine karar verilmekte ve karar yazara iletilmektedir. Basımı uygun bulunan yazıların, yayımlanıp yayımlanmayacağına ya da derginin hangi sayısında yayımlanacağına editörler ve/veya yayın kurulu karar verir. Yazar, süreç konusunda Makale Yönetim Sistemi veya E-posta yoluyla bilgilendirilmektedir.

Makale derginin yazım kurallarına uygun olarak hazırlanmalıdır (Kelime aralıklarından atf ve kaynakça yazımına kadar bütün detaylar yazım kurallarına uygun olmalıdır).

Makale süreç akışı şu şekildedir:

- Yazar tarafından makalenin Makale Yönetim Sistemine yüklenmesi
- Makalenin şekil açısından incelenmesi
- Şekil incelemesinden geçen makalelerin hakem değerlendirme sürecine alınması
- Editör incelemesi ve gerektiğinde yazardan ek talepler
- Çalışma konusunda uzman 2 hakeme makalenin gönderilmesi (gerekli görülmesi durumunda 3. hakem değerlendirmesine gönderilmesi)
- Hakem görüşleri doğrultusunda makalenin kabulü veya reddine karar verilmesi
- Yayınlanmasına karar verilen makalenin dizgi ve tasarımının yapılması
- Dizgisi ve tasarımı yapılmış makalenin yazara son kontrol için gönderilmesi
- Makalenin yayınlanması

Etik Kurallar

Yayınlanmak üzere dergiye gönderilen çalışmalarda bilimsel atf kurallarına azami özen gösterilmesi gerekmektedir.

Adli Bilimler ve Suç Araştırmaları Dergisinde yayımlanan yazıların fikri sorumluluğu yazarlara aittir. Dergiye gönderilen çalışmalarda, etik kurul kararı gerektiren klinik ve deneysel insan ve hayvanlar üzerindeki çalışmalar için ayrı ayrı etik kurul onayı alınmış olmalı, bu onay makalede belirtilmeli ve belgelendirilmelidir.

Gönderilen makalenin bir kısmı ya da tamamı başka bir yerde yayınlanmamıř, yayınlanmak üzere başka bir yere yollanmamıř olmalıdır.

Tüm yazarlar ilgili makaleyi okumuř, onaylamıř ve dergiye yayınlanmak üzere gönderildiğinden haberdar olmalıdır.

Makale yazar/lar tarafından yazılmıř, özgün bir çalıřma olması gerekmektedir. Dergiye gönderilen çeviri makale çalıřmalarında orijinal makalenin yazarından ve yayıncı kuruluşundan izin alındığını gösteren belgenin sunulması gerekmektedir.

Yazar/lar makalenin telif hakkını, makalenin Adli Bilimler ve Suç Arařtırmaları Dergisinde yayınlanmasına karar verildiğinden itibaren dergiye devretmiř sayılır. Yazar/yazarlar derginin yazı işlerinden izin almadan makaleyi başka bir platformda (dergi, editoryal kitap, internet sitesi, blog vb.) yayınlamayamaz.

Yazar/lar bilimsel etiğın bütün unsurlarını yerine getirmek üzere makale ile birlikte “İntihal Denetim Raporu”nu ve “**Etik ve Telif Hakkı Devir Formu**”nu mutlaka doldurarak sistem üzerinden dergiye ulařtırmalıdır.

Yazım Kuralları

Yazım dili Türkçe ve İngilizcedir. Türkçe makalelerin yazım ve noktalamasında ve kısaltmalarda Türk Dil Kurumu internet sitesindeki Güncel Sözlük ve Yazım Kuralları esas alınır. Gönderilen yazılar dil ve anlatım açısından bilimsel ölçülere uygun, açık ve anlaşılır olmalıdır.

Makaleler ařağıdaki kısımları içermelidir:

- Başlık: Türkçe ve İngilizce
- Özet: Türkçe ve İngilizce (her biri 200-300 kelime)
- Anahtar Kelimeler: Türkçe ve İngilizce (her biri 3-8 kelime)
- Metin: Giriř, bölüm başlıkları ve sonuç: Türkçe veya İngilizce

• Kaynakça

Metinlerde yukarıda sayılan tüm unsurlar, kaynakça hariç ařağıdaki şekilde olmalıdır:

- Adli bilimlerle iliřkili kimya, fizik, biyoloji, matematik, istatistik, mühendislik ile sağık temel alanına giren tüm fen bilim dalları için 1500-5000 kelime arasında
- Adli bilimlerle iliřkili psikoloji, dilbilim, sosyoloji, hukuk gibi sosyal bilim dalları için 4000 ile 8000 kelime arasında olmalıdır. Yazar adı makale başlığının alt satırının sağı köşesine italik koyu, 11 punto olarak yazılmalı; yazarın unvanı, görev yeri ve elektronik posta adresi dipnotta (*) iřareti ile 9 punto yazılarak belirtilmelidir. Diğeri açıklamalar için yapılan dipnotlar metin içinde veya sayfa altında numaralandırılarak verilmelidir.

Yazı karakteri Times New Roman, 11 punto, satırlar bir buçuk aralıklı, açıklamalara iliřkin dipnotlar 9 punto ve tek aralıklı yazılmalıdır.

Kitap incelemelerinde ařağıdaki hususlara ayrıca dikkat edilmelidir;

Kitap inceleme metinleri 1000 ile 1500 kelime arasında olmalıdır.

Başlık bilgilerinde tanıtım veya incelemesi yapılan eserin adı, yazarı, yayımlandığı şehir ve yayınevi, yayım yılı ve ISBN numarası yazılmalıdır.

Kitap inceleme veya tanıtımı yapan yazarın adı makale başlığının alt satırının sağı köşesine italik koyu, 11 punto olarak yazılmalı; unvanı, görev yeri ve elektronik posta adresi dipnotta (*) iřareti ile 9 punto yazılarak belirtilmelidir.

Kitap tanıtımı bir eserin sırf özeti değil, eleştirel olarak değerlendirmesi olmalıdır. Kitap tanıtımı yapan yazar kitapla aynı fikirde olabilir veya kitabın fikirlerine karşı çıkabilir veya kitabın sunduğu bilgilerde, yargılarda veya yapıda örnek teşkil eden veya eksik kalan yönleri belirtebilir. Kitap tanıtımı yapan yazar ayrıca kitapla ilgili düşüncelerini de açık bir şekilde ifade etmelidir.

Kitap incelemesi, bir kitaptan ortaya konulan en önemli noktalara ışık tutularak bunların eleştirel olarak tartışılmasıdır. Kitap incelemesi giriş, kitabın özeti, eleştirel tartışma ve sonuç gibi genel bir yapıyı takip etmelidir.

Sayfa Düzeni

Metin içinde yazı tipi 11 punto Times New Roman yazı karakteri kullanılmalıdır. Sayfa Yapısı A4 boyutlarındaki kâğıdın üst, alt, sağ ve sol boşlukları 2,5 cm (0.98 inç) bırakılarak, iki yana dayalı, satır sonu tirelemesiz şekilde olmalıdır. Paragraf arası, ilk satır 1.25, paragraflar arası önceki 3 nk, sonra 3 nk, iki yana dayalı, satır aralığı bir buçuk olmalıdır. Sayfa numaraları alt sağda verilmelidir.

Temel Başlıklar (Birinci Düzey) ortalı ve bold yazılmalıdır. Kendisinden önce ve sonra bir satır boşluk bırakılmalıdır.

İkinci Düzey Başlıklar, sola dayalı ve bold yazılmalıdır. Kendisinden önce ve sonra bir satır boşluk bırakılmalıdır.

Üçüncü Düzey Başlıklar, Sola dayalı bold yazılmalıdır. Kendisinden önce bir satır boşluk bırakılmalıdır.

Dördüncü Düzey Başlıklar, Sola dayalı, bold ve italik yazılmalıdır. Kendisinden önce bir satır boşluk bırakılmalıdır.

Beşinci Düzey Başlıklar, Sola dayalı ve italik yazılmalıdır. Kendisinden önce bir satır boşluk bırakılmalıdır.

Beş düzeyden daha fazla başlık oluşturulması önerilmemektedir.

Atıf ve Kaynakça Yazımı

Atıf

Metin içi yöntemde parantez içinde kaynak gösterimi yapılır. Atıflar makalede kullanılan punto ile yazılır. Bu yöntemde, metin içinde alıntı sonrasında (Yazarın Soyadı, Basım Yılı, Sayfa Numarası) parantez içinde verilir. Bir eserden veya mülakattan doğrudan alıntı yapılması durumunda alıntı 3 satırdan az ise cümle içerisinde kullanılır; 3 satır ve daha fazla ise ayrı bir paragrafta belirtilir. Bu paragraf tek aralıklı, 9 punto ve her iki taraftan 1.25 cm içeriden hizalı yazılır.

Atıf Örnekleri

Tek yazar	(Aras, 2011, s. 236)
İki yazarlı	(Kazgan ve Ülçekno, 2003, s. 32)
Üç ile beş yazar arası	İlk sefer atıf yaparken tüm yazarların adı listelenir; (Kernis, Cornell, Sun, Berry, ve Harlow, 1993). Sonraki atıflarda ise sadece ilk yazarın adı belirtilip “vd.” ifadesi kullanılır. (Kernis vd., 1993, s. 42)
Altı ve daha fazla yazarlı metinler	Altı ve daha fazla yazarlı metinlerde, sadece ilk yazarın adı kullanılıp sonrasında “vd.” ifadesi kullanılır: (Harris vd., 2001, s. 112)
Yazar olarak bir kurum	İlk atıfta kurumun tam adı açık bir şekilde belirtilerek yazılır: (Avrupa Komisyonu Türkiye Temsilciliđi, 2000, s. 3), sonraki atıflarda ise kısaltması (AKTT, 2000, s.) yazılır. Kurum literatürde kısaltılmış ismiyle biliyorsa ilk atıfta da kısaltma ile kullanılabilir. (EGM, 2000, s. 12)
Editörlü kitaptan bölüm (Bölüm yazarı dikkate alınır)	(Karaişik, 2008, s. 40)
Yazarsız çalışma	(Bilimsel Makaleler Hazırlama, 2000, s. 45)
Standartlar	(TS-40561, 1985, s. 6)
Resmi Gazete	(Başlık, Yıl)
Yazarı olmayan internet dokümanı	(www.hurriyet.com.tr, 2012)
Aynı yazarın farklı yıl birden çok çalışması	(Tekin, 2011, s. 220; 2013, s. 30)
Aynı yazarın aynı yıla ait birden fazla eseri	(Heper, 1999a, s. 165) ve (Heper, 1999b, s. 140)
Aynı soyadlı iki yazar	(Ö. Aslan, 2000, s. 6; M. Aslan, 2010, s. 71)
Birden fazla kaynaktan yararlanma	(Aytekin, 2004, s. 71; Küçük, 2008, s. 87)
Orijinal kaynađa ulařılamaması durumunda	(Metin içinde bahsedilirse) İnalıcık’a göre (akt. Hanioglu, 2012, s. 40) (Metin içinde bahsedilmezse) (İnalıcık’tan akt. Hanođlu, 2006, s. 40)
Kişisel iletiřim vasıtasıyla ulařılan mülakatlar, mektuplar, e-mailler	Kişisel iletiřim vasıtasıyla ulařılan mülakatlar, mektuplar, e-maillerde, kişisel iletiřim kurulan kişinin adı ve görüřmenin tarihi belirtilmelidir. Ancak, kişisel iletiřim yoluyla elde edilmiş veriler kaynakçaya eklenmemelidir: (N. ALSayyad, kişisel iletiřim, 25 Mart 2018)
Dipnotlar ve sonnotlar	APA yazım stilinde, dipnot ve sonnot kullanımı pek tercih edilmemektedir. Bundan dolayı mümkün olduđu kadar az dipnot kullanılmalıdır. Yalnızca çok elzem bir açıklayıcı not gerektiğinde dipnot kullanılmalıdır.

Önemli not: APA atf ve kaynakçada “and” yerine “&” kullanılmasını önermektedir. Ancak Türkçede “&” sembolü “ve” yerine kullanılmadığından, Türkçe olarak yazılan metinlerde atf yaparken ve kaynakça yazarken “&” sembolü kullanılmamalıdır.

Ayrıca, üç kişiden çok yazarlı metinlere atf yaparken APA “et al.” (Kernis et al., 1993, s.65) kullanılmasını önermektedir. Ancak Türkçe’de “et al.” yerine “vd.” (Kernis vd., 1993, s. 65) kullanılmalıdır.

Bununla birlikte, eğer değerlendirilmek üzere Adli Bilimler ve Suç Araştırmaları Dergisi’ne gönderilen çalışma İngilizce hazırlanmışsa, bu metinlerde atf ve kaynakçada APA standartlarına uygun olarak “and” yerine “&” sembolü ve “et al.” kullanılmalıdır.

Kaynakça

Kaynak bilgileri verilirken yazar(lar)ın önce soyadı sonra adı yer alır. İki yazarlı bir kaynaktan yazarlar arasına “ve” bağlacı konur. İkiyden fazla yazarlı eserlerde ise yazarların arasına noktalı virgül (;) konulup son yazardan önce “ve” bağlacı konulur.

Yazarlar soy ismine göre alfabetik olarak sıralanır. Yazarların soyadları ve adlarının ilk harfi büyük yazılır. Kullanılan kaynağın künye bilgileri açık olmalıdır. Çok basımlı kitaplarda baskı sayısı yazılır. Yabancı kaynaklarda, künye bilgilerinin tamamı kaynağın yazım dili ile yazılır, Türkçeleştirme yapılmaz.

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Tablolar

Tablo numarası ve başlığı, tablonun bir aralık üstünde yer alır. Başlıkla tablo arasında ayrıca boşluk olmaz. Tablo numaraları (**Tablo 1.**, **Tablo 2.** vd.) şeklinde verilir. Tablo kelimesi, numarası ve nokta koyu (bold) yazılır. Tablolarda kullanılan verilerin kaynağı, tablonun sol alt köşesinde belirtilir ve koyu olarak "**Kaynak:**" şeklinde yazılır. Tablonun başlığı ve kaynağı yazılırken sadece ilk kelimenin ilk harfi büyük yazılır, diğer kelimeler küçük harfle yazılır ve koyu (bold) olmadan yazılır.

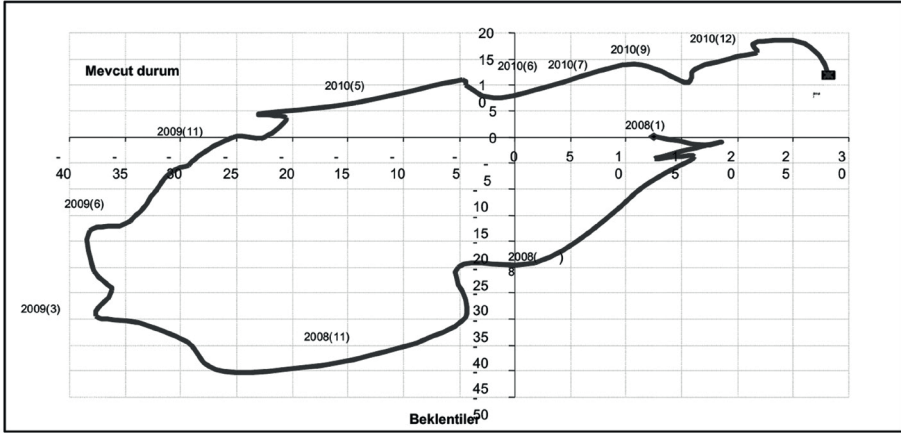
Örnek Tablo:**Tablo 1.** Kara para aklamada kullanılan sektörler

	Yerleřtirme	Ayrıřtırma	Bütünleřtirme
Bankacılık	x	x	x
Döviz Büroları	x		
Para Transferleri	x		
Menkul Kıymet	x	x	x
Sigortacılık	x	x	x

Kaynak: Aydın, (2010, s.42).

Şekiller

Şekil numarası ve başlığı, şeklin altında yer alır. Şeklin kaynağı şekilden sonra parantez içinde verilebilir.

Örnek şekil:

Şekil 1. Almanya, reel kesimde mevcut durum ve beklentiler, (Kaynak: Gürsel ve Balcı, 2011, s.5)

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