

Original research

## Contents and medico-legal aspects of suicide notes: Turkey sample

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**Abstract:** This research is aimed to examine how mental state of suicide victims effect the handwriting and content of suicide notes. To achieve mentioned objective, 32 notes from confirmed suicide cases and 32 control samples were examined by using Olympus X-Tr stereomicroscope and gained data evaluated statistically. While the number of tapered ends does not significantly differ between suicide notes and controls, the frequency of angularity and tremor is significantly increased in suicide notes. A handwriting examination to confirm that the note is written in the victim's own handwriting is essential to determine the manner of death.

**Keywords:** Suicide Notes; Handwriting Characteristics of Suicide Notes; Content of Suicide Notes; Handwriting Examination; Forensic Sciences; Questioned Documents.

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A total of 3211 people committed suicide in Turkey during the year 2015 by increasing 1.3% according to the previous year. Males were 72.7% of them and females were 27.3%. Their marital status were determined respectively 50.5% married, 37.7% single, 7.2% divorced and 4.6% widowed in 2015. Approximately one fourth of people who committed suicide were graduated from primary school following by 20.9% by high school. The highest suicide rate for females was 18% among persons aged 15-19 years and males was in 20-24 age group with 12.8% (TÜİK statistics, 2016) Depending on the sex, age, cultural diversity and region of Turkey, the method of suicide is changed, but the leading methods of suicide are firearms and hanging for males, posining, hanging for females (Türker, et al., 2000; Arslan, et al., 2008; Ziyalar, et al., 2016). There are three types of unnatural deaths that are investigated by forensic medical examiners: homicides, accidents, and suicides. In deciding the cause and manner of such deaths, medical

examiners use autopsy and other supportive evidence associated with the deceased and found at the death scene. From this point of view suicide notes are of particular forensic interest. An examination which confirms that the messages written on the suicide notes are in the victim's own handwriting is crucial in establishing the manner of death. However, there is also another problem, although rare; all handwriting matches may not always show a genuine suicide. It is essential to consider a suicide note which might be written by a suicide victim under threat (Leenars, 1999).

Up to now most studies on suicide notes have dealt with psychiatric evaluation, considering both sociological and psychological factors at the time of the suicide (Edland, 1973; Chia, 1979; Foster, 2004). In addition, there are descriptive studies e.g. on the sex and age of the suicide note writers and differentiation between suicide notes from completed and attempted suicides [Lester, 1998; Leenars et al., 1992].

The aim of this study is to examine how the psychiatric status of a suicidal person affects the handwriting and contents of notes prior to the fatal act. A systematic study was carried out in order to compare the handwriting of suicide victims with controls.

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## Method

The suicide notes used as the study material were chosen from among the cases that submitted to the author for expert's opinion on authenticity testing between 1995 and 2015. A total of 32 notes, evaluated as authentic handwritings of suicide victims, were analysed. These gathered cases were from a variety of cities located in Turkey, furthermore confirmed as suicides by law enforcement officers.

At first, the cases were examined according to demographic features such as age, education, marital status and sex. Secondly other aspects were assessed, such as the method and place of suicide, toxicological analysis, previous suicide attempts and psychiatric antecedents of the victims, type of paper and writing utensil used for writing the notes, and finally the place in which the notes were found.

All suicide notes were assessed according to the checklist established by using some of the criteria related to the document examination field (Table 1). The notes were not assessed in terms of the writing quality, rhythm, and pen pressure, because of uncontrolled writing conditions such as the paper pad use and types of writing utensils. A total of 32 control samples were chosen from sober, physically and mentally healthy individuals among samples

used in our study published earlier (Aşıcıoğlu, 2003). In choosing the control group, the demographic aspects such as age, sex, marital status, profession, and education were taken into consideration.

The text written by controls in our previously published study had been consist of 261 characters. Because of this limitation, when the number of characters in a given suicide note was larger than 261, tremors, angularity and tapered ends in the first 261 characters was counted, but when there were fewer than 261 characters in a given note, these parameters were counted up to the number of characters in suicide notes.

The assessments of these parameters were repeated one month later, and it was found that the results obtained in the two assessments varied only slightly. However, the results were reassessed, and the controversy disappeared.

Handwriting examinations were performed in a laboratory setting with the assistance of an Olympus X-Tr stereomicroscope (Olympus Optical Co. Ltd., Tokyo, Japan), natural light and direct and oblique angle lighting. All data were entered into a computer in order to form a database. Pearson chi square and Mann Whitney U tests were used for statistical evaluations.

**Table 1**

*Checklist used for the assessment of handwriting on the suicide notes and controls*

1. Variation in spacing between lines (1: none remarkable, 2: moderate, 3: significant)
2. Variation in spacing between words (1: none remarkable, 2: moderate, 3: significant)
3. Variation in spacing between characters (1: none remarkable, 2: moderate, 3: significant)
4. Alignment to margins (1: alignment to left, 2: alignment to right, 3: alignment to both margins, 4: both margins are disordered)
5. Alignment of words to baseline (1: closely adhering, 2: wavy, 3: words slope downwards, 4: words slope upwards, 5: peak or dip, otherwise straight)
6. Number of angularity (n)
7. Number of tremor (n)
8. Number of tapered ends (tapered beginnings and conclusions of strokes) (n)

## Results

Out of 32 suicide notes 59 % (n = 19) were by males and 41 % (n = 13) by females, giving a male to female ratio of 1.46:1. Mean age of the victims was  $36.8 \pm 10.2$ , median being 35 and range from 13 to 65 years. Two individuals had a university degree, eight a high school degree, and 22 had completed primary school. In terms of professions, the victims were employees (n = 7), house wives (n = 7), shopkeepers (n = 4), farmers (n = 4), unemployed (n = 3), students (n = 3), civil servants (n = 2), and managers (n = 2). 16 victims were single, 15 married (11 of them with child), and one divorced with a child. Detailed information on the methods and places of suicide, types of paper and pen, and the places where notes were found are

given in Table 2. Of all victims, 22 % (n = 7) had psychiatric diagnoses and 19 % (n = 6) had previously attempted suicide. In 16 % (n = 5) of the victims alcohol was detected in toxicological analyses.

In 50 % (n = 16) of the cases the suicide note ended with the first name of the victim. Furthermore, 56 % (n = 18) of the victims signed the notes. The percentage of the suicide notes addressing the victim's core family (parents, child, sister, or brother) was 50 %, and these typically began with expressions such as "to my lovely family", or "to my well beloved son". Other persons to whom the victims addressed were state officers (tax officers, police, prosecutors, judges etc. - 9.4 %), darlings (6.3 %), other relatives or friends (6.3 %). 28 % of

the notes did not contain any addressing words, and they typically began with general expressions such as “don’t forget me” and “I have 10.000 liras in debt”.

The longest note had 1872 characters and the shortest one only 29. Some of the victims embellished their notes with well-known poems and psalms or their own poems.

Writing specimens were categorised according to the degree of variation in space between lines, characters, and words by evaluating a 1 to 3 rating, ranging from “none remarkable”, “moderate” to “significant.” Data rated as “moderate” and “significant” were assessed as “variation.” This data is given in Table 3. Statistically significant variations in spaces between characters and words were observed between suicide notes and controls, but no statistically significant variations were observed in spaces between lines.

While the numbers of tapered ends do not show a significant difference between the suicide notes

and controls, those of angularities and tremors are significantly larger in the suicide notes. The data is given in Table 4.

The data about alignment to margin and to baseline were evaluated according to Table 1. From the articles given in this table, item 1, 2, and 3 in article 4 were accepted as in order, but item 4 as out of order, whereas item 2, 3, 4, and 5 in article 5 were accepted as out of order, but item 1 as in order. The data about alignment to margin and to baseline did not show marked differences between suicide notes and controls (Table 5). The most common content of suicide notes was an explanation about suicide reasons. The other contents were mainly related to exculpation, apologies, farewell, and a general expression of life being too much to bear (Table 6). Since each note contains more than one theme, the total number of the content expressions exceeds 32.

**Table 2**

*Demographic features of cases examined*

Suicide method	n		location	N		Type of paper	N		Type of pen	N		Note found	n	
		%			%			%			%			%
Hanging	13	40.6	Home	23	71.9	Quality paper	13	40.6	Ballpoint (blue)	19	59.3	Nearby decedent	9	28.1
Gunshot wound	10	31.3	Workplace	5	15.6	Blue print paper	5	15.6	Ballpoint (red)	5	15.6	Table	8	25
Drug overdose	6	18.8	Terrain	2	6.3	Small paper	4	12.5	Ballpoint (black)	5	15.6	Night stand	6	18.8
Insecticide poisoning	2	6.3	Shoreline	1	3.1	Blank book	3	9.4	Fountain pen	1	3.1	Dressing table	3	9.4
Drowning	1	3.1	Construction	1	3.1	Laid paper	2	6.3	Fiber pen	1	3.1	TV Work place	3	9.4
						Others	5	15.6	Pencil	1	3.1	Hanging place	2	6.3
	32	100		32	100		32	100		32	100		32	100

**Table 3**

*Variation in spacing between lines, characters and words.*

		Vin SBL		VinSBC		VinSBW	
		+	-	+	-	+	-
Suicide	N	8	24	10	22	7	25
	%	25.0	75.0	31.3	68.8	21.9	78.1
Control	N	4	28	21	11	19	13
	%	12.5	87.5	65.6	34.4	59.4	40.6
$\chi^2$	P	1.64	0.200	7.57	0.006	9.33	0.002

- + variation observed
- - variation not observed
- VinSBL: variation in spacing between lines
- VinSBC: variation in spacing between characters
- VinSBW: variation in spacing between words

**Table 4***Frequency of tremor, angularity and tapered ends*

	Suicide			Control			Z	P
	Mean	SD	Median	Mean	SD	Median		
Frequency of tremor	11.4	11.3	8.5	2.3	1.7	2.0	5.4	0.0005
Frequency of angularity	15.2	21.5	9.0	1.6	1.6	2.0	5.5	0.0005
Number of tapered ends	55.6	46.1	44.0	40.3	24.5	36.5	0.6	0.5550

**Table 5***Alignment to margins and words to baseline*

		Alignment to margins		Alignment of words to baseline	
		In order	Out of order	In order	Out of order
Suicide	n	4	28	1	29
	%	12.5	87.5	3.3	96.6
Control	n	8	24	4	28
	%	25.0	75.0	12.5	87.5
$\chi^2$	p	1.64	0.200	1.75	0.185

**Table 6***Contents of the suicide notes*

Content	N	%
Explanation about suicide reason	18	56.3
Exculpation	12	37.5
Apology	10	31.3
Farewell	10	31.3
Life too much to bear	8	25
Instructions regarding credit and debt	6	18.8
Love and respect for those left behind	5	15.6
Farewell in a religious way	5	15.6
Delegating responsibility for the child's care to the close relatives	4	12.5
Advice for those left behind	3	9.4
Hatred	3	9.4
Concern for their bodies	3	9.4
Gratitude	2	6.3
Revenge	1	3.1

**Discussion**

A variety of ways to commit suicide have been reported. Although the rates of these vary depending on parameters such as sex, age, and cultural background, gunshot wounds are usually ranked first, followed by hanging (Shields, 2005; Gowitt, 1986; Bennett, 2001; CDCP, 2004). In this study the leading rate of 41 % (n = 13) is with hanging. A similar result was found with suicides among elderly people (> 65 yrs) in an earlier report (Byard, 2000).

In this study, approximately 72 % (n = 23) of suicides were found to occur at home. Bennett (Bennett, 2001) has earlier reported this proportion was 85 %. Lee and Collins (Lee, 1999). indicated that home was the most common place for paediatric suicides.

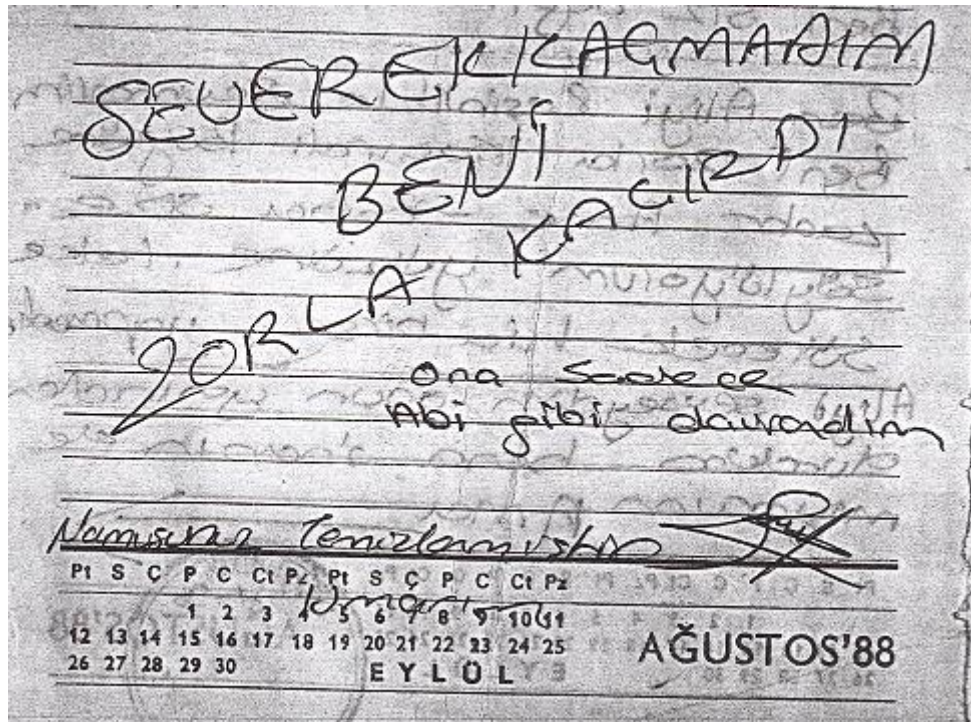
While the notes are mostly written on paper, there are some unusual suicide notes such as written on the body of the deceased person (Taylor, 1991). As illustrated in Table 2, it was observed that the suicide notes were written with various types and colours of pen mostly on a quality paper, and on

any kind of materials such as a blue print paper, a small paper, a page from a blank book, and some

other types of papers (a cardboard, an envelope, a prescription, and an invoice) (see Fig. 1).

### Figure 1

*Woman, 19 years old, single, high school degree, industrial worker, committed suicide by hanging. She left two notes written on the pages of agenda paper. The shorter of them contained 118 characters, the longer 1070.*



This variety is considered not to be based on the victim's unelaborated behaviour but on his/her fixation, impatience, and desperation. It was also observed that a lot of notes are written in a good layout, indicating the importance to the notes given by the victims before the final act. It was determined that seven suicide victims (22 %) were diagnosed with depression, commonly known to be a significant factor in suicides. A similar rate (26 %) was earlier reported by Bennett (Bennett, 2001). It is believed that suicidal people try to find relief from alcohol before committing suicide (Roslow, 1996). Because of this toxicological examination is useful in suicide investigations. In this study 16 % (n = 5) of the victims were under the influence of alcohol. Bennett earlier reported a rate of 38 % in the 678 suicide victims of all ages examined (Bennett, 2000), whereas this ratio was 24 % in elderly suicides (Heim, 1990).

Leenaars has defined the notes written by completers as "suicide notes" and similar notes written by attempters as "parasuicide notes". Leenaars reported that only about 2 % of attempters left a note, but pointed out that it is impossible to be conclusive because most of the notes were destroyed or hidden by the attempters or their family (Leenaars, 1992).

There is some controversy among authors concerning the incidence of leaving suicide notes. The percentage of suicide cases where the victim has left notes has been reported as 23 %, 30 % and 30.1 %, in three comprehensive studies with 1418, 3127 and 5161 suicide cases, respectively [Edland,1973; Heim,1990; Hideki, 2006]. In other reports, suicide notes were found in 14 % to 43 % of the cases examined (Shneidmann, 1957; Leenaars, 1988, Ho, 1998; Salib, 2002). Some authors indicate that the incidence of suicide notes varies between age groups. Bennett reported the mean percentage to be 22 %, but only 11 % for victims under eighteen (Bennett, 2000).

Some studies report that women have a greater tendency for leaving suicide notes (Heim, 1990; Hideki, 2006; Ho, 1998), whereas others indicate that men leave notes predominantly (Chia, 1979; Salib, 2002). In this study men had left notes more commonly (59 %) than women (41 %).

Contrary to certain perceptions, e.g. that suicidal people do not leave a will in their last letter, do not sign the note, do not write dates or times, and are not concerned about survivors, all of these do occur in the notes (Leenaars, 1991). In concordance with this data, it was observed in this study that 50 % of the suicide notes ended with the first name of

the victim and 56 % were signed. Furthermore, five victims dated, two with accurate time, their notes, and many of them were concerned with their families and relatives and showed their feelings with the words such as "please look after my daughter," "nobody is responsible for my death," and "please don't send my son to orphanage". We have considered that the signing of the note is an indicator of the great importance given to this writing action.

A total of four notes written by the victims aged between 16 and 40 (mean: 27.3) contained less than 100 characters, and consist of words such as "please forgive me," "nobody is responsible for my death," and "adios." In contrast, five notes by victims aged between 20 and 39 (mean: 27.4) consist of more than 1000 characters and are enriched with poems, songs, and psalms. According to Leenars, suicide notes written by young people were typically longer, rich in emotions, and often begging for forgiveness. Suicide notes written by elderly victims were shorter, contained specific instructions, and were less emotional (Leenars, 1988). In terms of the relation between the ages of the victims and the longevity of the notes, our results are not parallel with the findings mentioned above by Leenars. Some victims left two or more notes, one of which contains only brief messages such as exculpation,

apology, farewell, and expressions of love. In many cases, the victims make an attempt to indicate the scene of suicide in their brief notes with expressions such as "you find me in the basement" and "Look at the attic, I'll be there." It can be concluded that, as Hock mentions (Chia, 1979), the victims are concerned with their bodies, and by giving this information, they try to prevent the probability of not being found.

Interestingly, in some notes all blanks of the paper were completely filled, perhaps for concern of not being able to fit all their feelings on the message. At the same time, the gap between the lines was increasingly narrower towards the end of the page (see Fig. 2). It may be named "filled-in phenomenon".

The great majority of the suicide notes had underlined or capitalized words or sentences such as "GOODBYE" or "I DEBT IN 5 MILLION LIRAS TO ALI" in order to highlight the victim's important messages (see Fig. 3).

Taking into consideration variations in spaces between characters and words, statistically significant differentiation between suicide notes and controls is observed. This parameter may show that the suicide notes are more regular than controls (Table 3). These signs may indicate that the victims give importance and care for their final act.

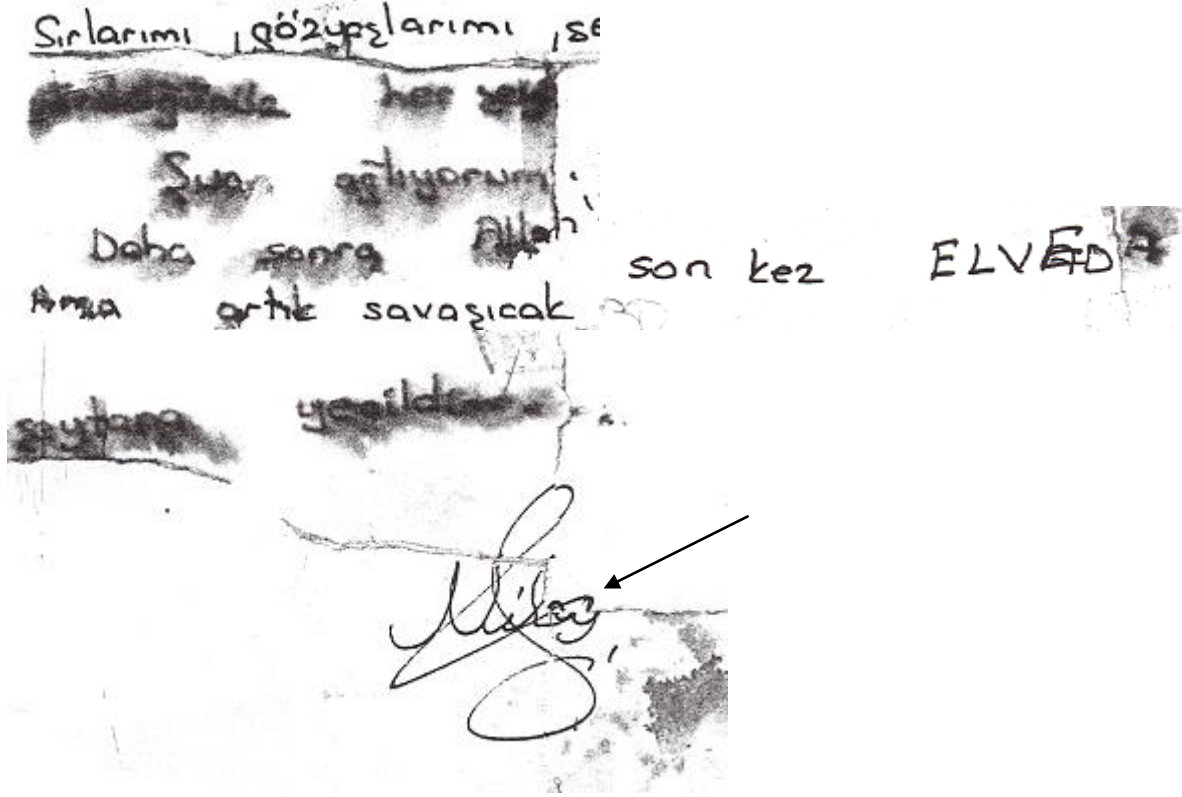
## Figure 2

*Woman, 20 years old, single, five years school education, committed suicide by insecticides. The arrow shows the name of the victim. It is noteworthy that all blanks of the paper were completely filled and the gap between the lines became narrower towards the end of the page ("filled-in phenomenon").*

şunu bilinki ben ~~on~~ ondan vaz geçemedim  
adım çıktı bir kere ne laflar duydum ben  
onunla oynadı, kendini başkasına bastı  
dedirtmem ben kararımı verdim kendi yolumu  
kendim çiziyorum Alihsan abim bana  
kaçarsan seni vururum diyordu isterse  
gelsin yinede vursun böyle olmasın ben iste  
medim ki yapayım kaderim böyleymiş  
ben düşünüyordum ki birtak alihsan abim  
beni anlar çünkü oda çok acı ~~ç~~ etti ama  
anlamadı ne yapayım çok vaz geçmek  
istedim ama olmadı nolur beni anlayın belki  
olur mutlu olurum hoşça kalın kadersiz bacınız *neşrin*

**Figure 3**

*Woman, 20 years old, single, high school degree, student, committed suicide by drug overdose. The arrow shows the signature of the victim. The word "goodbye" (ELVEDA in Turkish) is capitalized. Blurring is marked because of tear. Chosen letters from the text are shown below.*



a) Angulation

k e g m S e n A g n s

b) Tapered ends

k 2 n k + k a a h e t

As illustrated in Table 4, while the number of tapered ends does not show a significant difference between the suicide notes and controls, those of angularities and tremors are significantly higher in the suicide notes (Figs. 3 and 4). It is thought that these augmentations are based on the irremediable psychological state of the victim which gives rise to neuromuscular spasm. As known, an increase in tapered ends gives clues

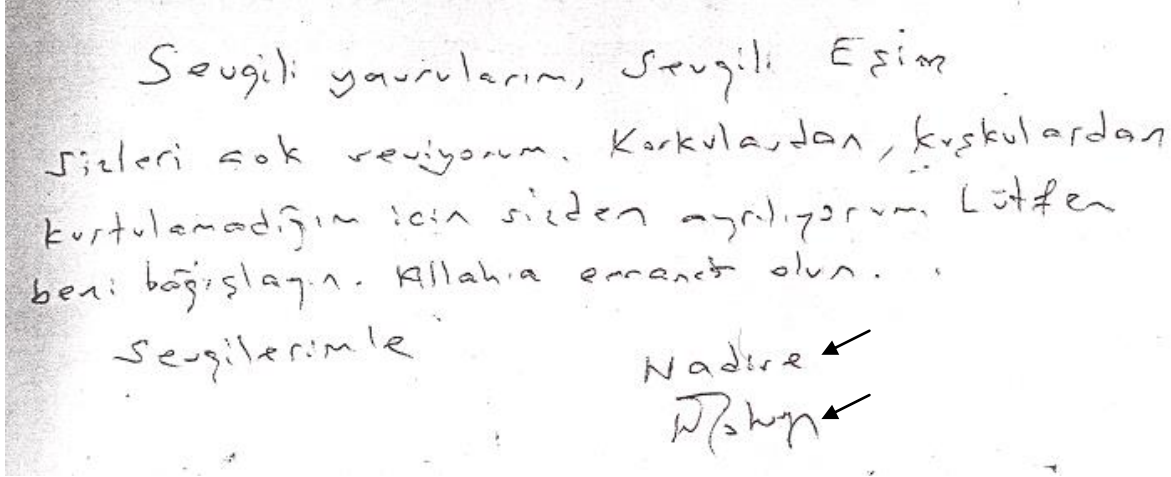
about the writing speed of a person. The similarities in terms of tapered end counts can be based on decisiveness of victim. These results are also thought that the notes are written under psychological stress, but without any hesitation. In earlier studies on suicide notes, the protocol sentences were published and the contents of the notes were categorized into different groups (Leenars, 1992; Shields, 2005). Suicide notes may

serve some explanatory purpose and may have a therapeutic role in helping the surviving relatives to understand the suicide. While these explanations were made clearly by 12 of 18 victims

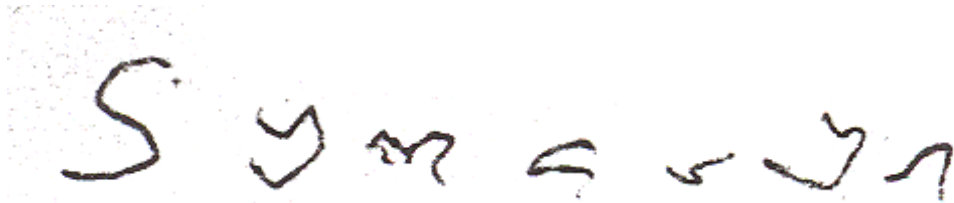
(Table 6), remaining 6 victims explained indirectly by mentioning about their hopelessness, loneliness and pain (psychache).

#### Figure 4

Woman, 42 years old, married and a mother of two, physician, committed suicide by drug overdose. Arrows show both name and signature of the victim. Chosen letters from the text shown below.



a) Angulation



b) Tremor



c) Tapered ends

In 12 of the examined suicide notes the victim makes an effort to eliminate the possibility of relatives becoming suspected of homicide or instigation to commit suicide by explaining that the act was performed by his/her own will and action. In contrast, three victims accuse one or more identified individuals of forcing him/her to suicide, and demand investigation on the incident (help

and instigation to suicide is charged with at least 2 years imprisonment in the Turkish Penal Code).

In 10 suicide notes the victim apologizes from their relatives for the fatal act. In some cases the apology is directed to God and the act is considered a sin. Mystic farewell messages were found in five notes, with phrases like "absolve me and release all your rights on me", "thanks for your



guidance". There is an Islamic ritual which contains a similar iterative dialogue between believers whenever they leave each other even for short periods of time. This ritual comprises an expression of gratefulness to a person or a group for their previous willing service, care and help and a request to give up their rights religiously. It is concluded that these expressions contain renunciation, release, and altruism.

Four victims express intense and hectic feelings mixed with worry for relatives. While three of them conferred the legal custody of their children

to close relatives, one specifically entrusted his son to God. In addition, three victims give praise to their relatives and four victims provide detailed information about revenues from their debtor. In contrast to the former, two victims left a list of debts to be paid in their suicide notes.

Three victims were concerned with their body after death and gave instructions such as "bury me in the grave near my uncle's," "keep my ring and necklace in which the name of my darling is engraved," "I am going to donate my organs" (see Fig. 5).

### Figure 5

Man, 40 years old, married and a father of three, university degree in engineering, committed suicide by shooting. The arrow shows the signature of the victim and the underlined sentence specifies his will of organ donation. General order and regularity are observed with no significant variation in spacing between characters and words, but moderate variation in spacing between lines.

Ölümünden hiç kimse sorumlu değil yapmış  
olduğum işte başarı olamadım yaşamayı seviyordum  
hırsızlık yapmadım kadında satmadım dürüst  
olmak için çok uğraş verdim birilerine göre dürüst  
olmadım onurum ve manâniyetim kırılmadı Ticaretle  
bu tür eksikliklerin olduğunu bilmeme rağmen  
yaşam gücüm kalmadı diyorum ki Doğrular her  
yerde doğru Fakat Doğruyu her yerde söyleyemiyorsunuz  
yinede insanları seviyorum Yaşama İhtuada derken  
Organlarımı bağışlıyorum

Suicide notes are the last communications the suicide victims leave. The psychological evaluation of the content of suicide notes may be used as a strong investigational tool to address the question

of intent. Leenars points out that note writers may have been forced to write the note. Therefore a suicide note is not always proof of a suicide (Leenars, 1999).

Neuromuscular spasm manifestations such as increase of tremors and angulations may be seen on texts written both under threat and before committing suicide. The count of tapered ends may be used to differentiate between the two situations, because text written under threat shows absence of fluency in writing, and this is caused by the writer elevating the hand from the paper in moments of hesitation. Rhythm and flow of writing is deteriorated with overwritten and superfluous words. The decrease of tapered ends and blunt-edged writing style are indicators of slow writing. A determined person who commits suicide, on the other hand, writes quickly and fluently and shows a high rate of tapered ends (Table 4).

Evidence from the crime scene and forensic autopsy are extremely important for determining the manner of death. The examination of the hands of the victim of a suspected suicide are important to assess the presence of supportive evidence that the decedent has written a suicide note. If there are smeared or unsmeared ink marks on the palm surfaces and fingers of the victim, comparative ink examination by thin layer chromatography may be performed between the ink from the hand and suicide notes (Taylor, 1991; Hanzlick, 1987). A handwriting examination to confirm that the note is written in the victim's own handwriting is essential to determine the manner of death.

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