

MIRROR WRITING

Dr. Tülin TANRIDAĞ*, Dr. Oğuz TANRIDAĞ**, Dr. Onur KARAN***

ÖZET

Doğal ayna yazarlığı fenomeni sergileyen sekiz olgu nedeniyle beyin-davranış ilişkileri açısından önem taşıyan ayna yazarlığı tartışılmıştır.

Anahtar Kelimeler : Ayna yazarlığı, doğal ayna yazarlığı
Klinik Psikofarmakoloji Bülteni, 6:(1-4)(35 - 40), 1996.

SUMMARY

The paper describes mirror writing which is important in brain-behaviour relations along with the eight incidences of natural mirror writing phenomenon.

Key words : Mirror writing, natural mirror writing
Bulletin of Clinical Psychopharmacology, 6: (1-4),(35- 40), 1996.

* Nöroloji Yrd. Doçenti, Marmara Üniversitesi Tıp Fakültesi Nöroloji ABD, İstanbul

** Nöroloji Profesörü, GATA Haydarpaşa Eğitim Hastanesi Nöroloji Servisi, İstanbul.

*** Nöroloji Profesörü, Ankara Üniversitesi Tıp Fakültesi Nöroloji ABD, Ankara.

INTRODUCTION

Mirror writing may be defined as writing to opposite direction to the normal in which individual characteristics are also reversed. The most famous example of mirror writing is Leonardo da Vinci's left hand writing. His notebooks had contained 5000 pages and all pages were written in mirror fashion (1).

It was earlier suggested that mirror writing is as natural phenomenon in lefthanded persons and

several normal and pathological conditions associated with mirror writing have been described later on (2). Among the normal conditions, certain normal children while they are learning to write, some left-handed persons who were shifted to the right hand, and experimental conditions were reported, while it has been observed in certain cases of right hemiplegia, kongenital word blindness and Little's disease (3).

CASES

All subjects were originally left-handed and dextrally switched normal persons. Their ages ranged from 23 to 57 with the mean age of 33.8 years.

Neurological examinations were normal in all subjects.

Case 1.

39 year-old civil checker male who discovered himself as a mirror writer while he was trying to write with the left hand after an accident had affected his right hand. Reportedly he said that his left hand tended to write automatically from right to

left. He left himself freely and saw that the result was a perfect mirror writing. Figure 1 shows his right and left hand writing in the same context. Left hand writing demonstrates a perfect example of mirror writing.

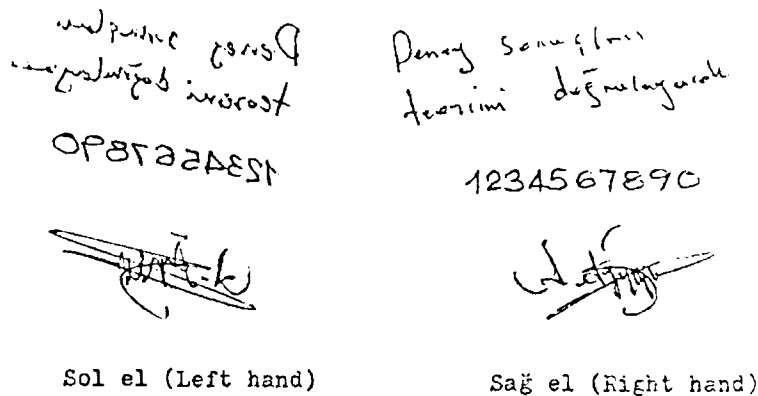


Figure 1

Case 2.

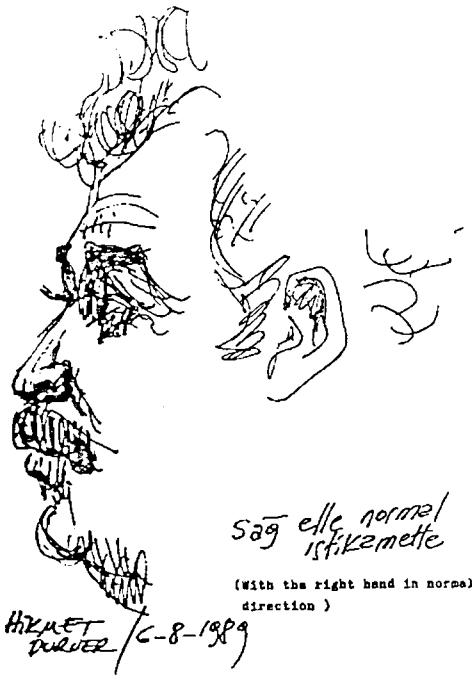
57 year-old retired architect and painter. He knew himself as a mirror writer and painter for years. He used to make mirror drawings and paintings and

some of them were accepted by museums. Figure 2 shows his right and left hand writing. Figure 3 shows normal and mirror selfportraits.

Dr. HİKMET DURUER
 SOL ELLE AYNA YAZISI (Mirror writing with left hand)
 Bir daha duyamazın ağladığımı
 Gevi dönseniz artık
 Başladığımız yerde değiliz.
 SAĞ ELLE AOKIAT (With the right hand)
 Bir daha duyamazın ağladığımı
 Gevi dönseniz artık
 Başladığımız yerde değiliz.
 İKİ ELLE AYNA (With both hands simultaneously)
 "miyeci" "miyeci"
 "miyeci" "miyeci"

Figure 2

Dr. HİKMET DURUER'in sağ eli ile çizdiği portre
 (With the right hand in normal direction)



Dr. HİKMET DURUER'in ayna resmi
 -Sağın sağa değil, sol tarafına bakıyor.
 (Dr. HİKMET DURUER'S mirror drawing
 -My head is looking to the right,
 in fact it was looking to the left)

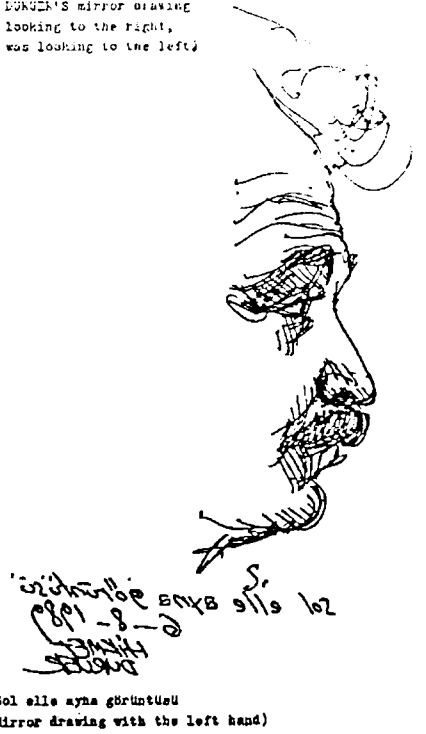


Figure 3

Case 3.

32 year old male. He was discovered as a left hand mirror writer during the investigation. He was originally left-handed but dextrally switched during early school years.

Case 4.

35 year old businesswoman. She discovered her left hand mirror writing 4 years ago when she was holding a pen with her left hand during the phone call. Figure 4 shows her mirror writing and drawing with the left hand.

Case 5.

24 year old instructor. She also incidently discovered her left hand mirror writing years ago.

Case 6.

26 year old female employee. She was making some mistakes on the letters "z" and "d" during her mirror writing with the left hand.

Case 7.

35 year old dentist. He never knew that he was a mirror writer with the left hand before the mirror writing experiments.

Case 8.

23 year old university student. He also never knew that he was a mirror writer until the experiments among originally left-handed people were carried out.

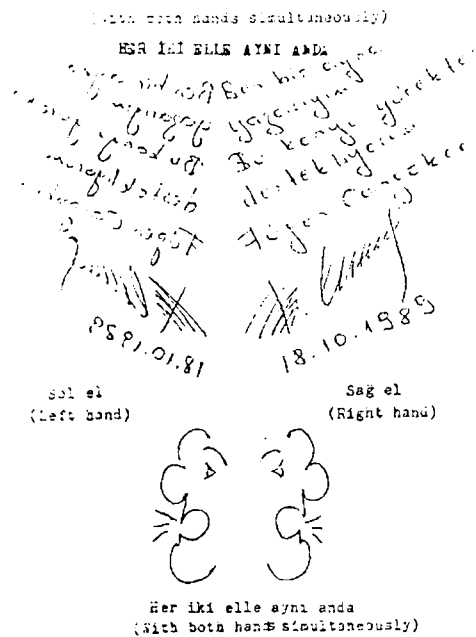


Figure 4

DISCUSSION

The earliest hypothesis on mirror writing was Vogt's speculation that mirror writing is the most natural handwriting of the left-handed persons. Since then, several pathological and normal conditions have

been reported in conjunction with the left-handed mirror writing (2-6). The observations of Leonardo da Vinci's left-handed mirror writing created two speculations. It has been suggested that Leonardo was essentially right-handed and became left-sided mirror writer after an accident crippled his right hand (7). Schott, however, insisted that he was originally

left-handed and his language skills were lateralized to the right hemisphere (1). Nevertheless, both authors did not recognize the effect of stroke causing right hemiparesis which was speculated by the others (2, 8). Critchley's mirror writing cases with right hemiplegia, and that of normal children when they are learning to write, are also interesting (2). Why could certain cases of right hemiplegia produce left hand mirror writing ? The correct answer may arise from two assumptions :

1. Left hemisphere is dominant for language and lesions do not affect areas responsible for writing. Therefore, preserved writing mechanisms in the left hemisphere could produce mirror writing in the left hand.

2. Right hemisphere is dominant for language and left hand performs mirror writing via right hemisphere. However, these assumptions basically deal with the execution of the left hand writing and do not answer why left hand performs writing in mirror fashion? The answer might be related with the hypothesis in which mirror writing is accepted as a natural performance of the left hand (2).

The establishment of the cerebral dominance is a maturational process. It is well known that the crucial element of the development of cerebral dominance between two hemispheres is corpus callosum. Myelination of the corpus callosum during early childhood allows each hemisphere to take a dominant position on other hemisphere for its own capacities. The occurrence of hand dominance during childhood presents an important example of such process. The observation of left or right-handed mirror writing during the childhood can be explained by the normal maturational period in which cerebral dominance for writing may be incompletely established.

Our natural mirror writer cases were originally left-handed and dextrally switched later on. They all discovered their capacity of mirror writing with the left hand years after the right-handed writing had been established. Therefore, their left-sided mirror writing may be reasonably accepted as natural capacity of left hand to write towards its own direction.

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