

CHAPTER I: INTRODUCTION

The word "ambidextrous" is derived from the Latin roots ambi-, meaning "both", and dexter, meaning "right" or "favourable". Thus, "ambidextrous" is literally "both right" or "both favourable". The term ambidexterity in English was originally used in a legal sense of jurors who accepted bribes from both parties for their verdict.

Ambidexterity is the ability to use both the right and left hand equally well. When referring to objects, the concept indicates that the object is equally suitable for right-handed and left-handed people. When referring to humans, it indicates that a person has no marked preference for the use of the right or left hand.

Only about one percent of people are naturally ambidextrous, however, it is better to take population proportions as a stochastic process, above of all concerning to hand-laterality or handedness, which could vary with mentality and educational perspective changes, deeply most on writing tasks-handedness. In more modern times, it is common to find some people considered ambidextrous who were originally left-handed and who learned to be ambidextrous, either deliberately or as a result of training in schools or in jobs where right-handed habits are often emphasized or required. Since many everyday devices (such as can openers and scissors) are asymmetrical and designed for right-handed people, many left-handers learn to use them right-handedly due to the rarity or lack of left-handed models. Thus, left-handed people are more likely to develop motor skills in their non-dominant hand than right-handed people.

CHAPTER II: LITERATURE REVIEW

1. James Sawyer, British medical journal 2 (2079), 1302, 1900-----

I desire to join in recommending the general culture and adoption of ambidexterity. I have given some attention to the subject for many years. Each of our hands is capable of all those refinements, and all that precision of movement, which are usually only developed in and exercised by the right hand. Perhaps there is no occupation in which it is not, an advantage to have the full use of the hands, none in which it is not an advantage to be able to use either hand with a power equal to that of its fellow. It is very likely that Sir John Struthers's reason, as quoted by Mr. Noble Smith, for the general use of right handedness may have some validity, namely, that the thoracic and abdominal contents on the right side of the vertical middle plane in the human body are heavier than the contents on the left side, so that "the greater weight on the right side leads to resting most on the right leg, and from the pillar of support we naturally use the right upper limb preferentially." I venture, however, to suggest that the normal position of the heart is the efficient cause, or, at least, a chief cause of the prevalent right handedness. In the earlier days of the human race, when "those may take who have the power, and those may keep who can," we were a fighting people, a people fighting hand to hand. In such fighting a weapon such as a stick or a sword was used. It is an advantage in so fighting to fight with a stick or with a sword which can be used by one arm and hand only; the other arm and hand being used for balance, for defensive covering, or for offensive seizing. The right hand is preferred for the wielding of the stick or sword, so that the heart may be kept away, as far as possible, from the assault of an adversary. So arising, right handedness would thence be transmitted by imitation, and by the hereditary transmission of an acquired peculiarity. It will be found in practice that an excellent way for the acquirement of ambidexterity is in the learning of sinistral handwriting with pen and ink. When a "right handed" man can write comfortably.

2. SHARON SMAGA, M.D., Southern Illinois University School of Medicine, Carbondale, Illinois Am Fam ,Physician. 2003 Oct 1545-1552.-----

Tremor, a rhythmic, involuntary, oscillatory movement of body parts, is the most common movement disorder. Tremors are classified as rest or action tremors. Rest tremor occurs when the affected body part is completely supported against gravity. Action tremors are produced by voluntary muscle contraction and are further divided into postural, isometric, or

kinetic tremors. This article describes clinical signs and symptoms of six tremor syndromes, including physiologic tremor, essential tremor, Parkinson's disease, toxic and drug-induced tremor, cerebellar tremor, and psychogenic tremor, and presents a detailed diagnostic approach to tremor. Although new technologies such as positron emission tomography and single photon emission computed tomography are under investigation for possible use in diagnosing specific tremor syndromes, they have no widespread applicability or use at this time. The history and physical examination remain the most important diagnostic tools available to clinicians in identifying and classifying tremor syndromes.

Tremor—a rhythmic, involuntary, oscillatory movement of body parts¹—is the most common movement disorder. The diagnosis is based on a careful assessment of the history and physical examination, although some tests, including positron emission tomography (PET) and single photon emission computed tomography (SPECT), are being investigated as diagnostic aids.^{2–5} This article reviews the classification and causes of tremor and provides evaluation guidelines.

Classification

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Tremors are classified as rest or action tremors. Rest tremor occurs when the affected body part is completely supported against gravity (e.g., hands resting in the lap). Amplitude increases during mental stress (e.g., counting backwards) or with general movement (e.g., walking) and diminishes with target-directed movement (e.g., finger-to-nose test).

Action tremors are produced by voluntary muscle contraction. They are further divided into postural, isometric, or kinetic tremors. Postural tremor occurs when the affected body part maintains position against gravity (e.g., extending arms in front of body). Isometric tremor results from muscle contraction against stationary objects (e.g., squeezing the examiner's fingers). Kinetic tremor, which occurs with voluntary movement, is either simple kinetic tremor or intention tremor. Simple kinetic tremor is associated with movement of extremities (e.g., pronation-supination or flexion-extension wrist movements). Intention tremor occurs during visually guided movement toward a target (e.g., finger-to-nose or finger-to-finger testing), with significant amplitude fluctuation on approaching the target²

3. "Handwriting changes due to aging and Parkinson's syndrome" by Judie Walton-----

it shows that some of the handwriting changes which occur in these populations tend to resemble forgery indicia although upon close inspection they are distinguishable from them. Thus document examiners are urged to exercise caution in assessing purported forgeries on wills and other documents signed or written during old age or by a writer suffering from neurological disease.

CHAPTER III: AIM and OBJECTIVES

Aim

To study and observe the similarities in the handwriting of ambidextrous people comparing their both left and right handwritings.

Objectives

- To collect the handwritings of ambidextrous people
- To identify the similarities between the left hand writing and right handwriting of ambidextrous people.

CHAPTER IV: MATERIALS AND METHODOLOGY

Materials Required:

Apparatus:

1. Pen
2. Standard A4 sheets
3. Magnifying lens
4. Marking pen
5. Keen sense of vision

Chemical Required:

NIL

Instrument required:

1. Magnifying lens
2. Microscope

Method:

The handwritings of the ambidextrous people are collected . And in this case both the handwritings of the person should be taken (one written with left hand and other with right hand). The collected samples are then to be made copies for the experimenting.

The copied samples are then observed under a clear microscope for minute similarities that can occur in a person's handwriting willingly or not willingly by that person. A keen sense of vision and a presence of mind is the important factor which will help us for the analysis of handwritings.

The observed similarities are then marked with marking pen, and cross examined with each other for the confirmation.

The handwritings are compared with parameters such as:-

Letter spacing: is the amount of space put between letters. The letters could all be connected or spaced drastically.

Height, width, and size: of the Letters is very self-explanatory; this simply analyzes the proportions of the handwriting. Is one letter unusually tall or short?

Slant: looks at which way the letters tend to slant, either to the left, right, or no slant at all. The most average slant is to the right.

Baseline Habits: is where the writer tends to write. It could be above the line, below the line, or on the line.

Rhythm: it is the amount of arm movement done by an individual to produce a letter or a word.

Alignment: it is the arrangement of the letters in a paragraph or a sentence, that is the side of the provided space to which the writer tends to write.

CHAPTER V: OBSERVATIONS

The collected samples are then compared with each other on the basis of the common parameter used for the handwriting analysis.

SAMPLE NO: 1-RIGHT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro, Macedonia and Albania all lie in Southeast Europe. Ruled by Turkey for nearly 500 years, all the countries except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tension. War broke out lasting until 1995. Since then, fresh conflicts have occurred and religion is still struggling to recover from war.

SAMPLE NO: 1-LEFT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro, Macedonia and Albania all lie in Southeast Europe. Ruled by Turkey for nearly 500 years all the countries except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tension. War broke out lasting until 1995. Since then, fresh conflicts have occurred and religion is still struggling to recover from war.

SL N O	CHARECTERISTIC S	SUB- CHARECTERISTIC S	RIGHTHAN D	LEFTHAN D
1	SIZE(mm)	UPPER ZONE	5mm	6mm
		MIDDLE ZONE	2mm	2mm
		LOWER ZONE	3mm	2mm
2	LETTER SPACING(mm)	WORD	8mm	5mm
		LETTER	0.5mm	0.5mm
		LINE	9mm	4mm
3	SLANT		right	vertical
4	BASELINE		straight	Straight
5	RHYTHM		uniform	Uniform
6	ALIGNMENT		centre	centre

As we examine the handwriting sample no: 1 we have observed that both the handwritings show a great variations in their base lines and a slant is observed when the individual wrote it with the left hand, even though the beginning and the tail show some similarities and the diacritic placements show some common characteristics

SAMPLE NO: 2-RIGHT

Slovenia, Croatia, Bosnia and Herzegovina and Montenegro Macedonia and Albania all lie in Southeast Europe ruled by Turkey for nearly 500 years all the countries except Albania were united as Yugoslavia in 1918, Yugoslavia split up as a result of rival ethnic and religious tension was broke out lasting until 1995 since then, fresh conflicts have occurred and the region is still struggling to recover from war.



SAMPLE NO: 2-LEFT

Slovenia, Croatia, Bosnia and Herzegovina Serbia and Montenegro Macedonia and Albania all lie in Southeast Europe ruled by Turkey for nearly 500 years all the countries, except Albania were united as Yugoslavia in 1918, Yugoslavia split up as a result of rival ethnic and religious tension was broke out lasting until 1995 since then, fresh conflicts have occurred and the region is still struggling to recover from war.



SL N O	CHARECTERISTIC S	SUB- CHARECTERISTIC S	RIGHTHAN D	LEFTHAN D
1	SIZE(mm)	UPPER ZONE	4mm	2mm
		MIDDLE ZONE	2mm	2mm
		LOWER ZONE	0.5mm	2mm
2	LETTER SPACING(mm)	WORD	5mm	8mm
		LETTER	0.5mm	0.7mm
		LINE	2mm	4mm
3	SLANT		Right	vertical
4	BASELINE		Non-uniform	Straight
5	RHYTHM		Non-uniform	Uniform
6	ALIGNMENT		centre	centre

As we observe the sample no: 2 we can see that when the individual wrote it with the right hand he losses his base line completely and the letter spacing also changed . We can also observe that the pen lifts in this sample are matching each other, that is the individual tents to show similar way to stat and finish a letter.

SAMPLE NO: 3-RIGHT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro Macedonia, and Albania all lie in Southeast Europe. Ruled by Turkey for nearly 500 years, all the countries, except Albania, were united as Yugoslavia. In 1918, Yugoslavia split up as a result of rival ethnic and religious tensions. War broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SAMPLE NO: 3-LEFT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro Macedonia and Albania all lie in Southeast Europe ruled by Turkey for nearly 500 years all the countries, except Albania were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tension was broken out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SL N O	CHARECTERISTIC S	SUB- CHARECTERISTIC S	RIGHTHAN D	LEFTHAN D
1	SIZE(mm)	UPPER ZONE	5mm	4mm
		MIDDLE ZONE	2.5mm	2mm
		LOWER ZONE	3mm	2mm
2	LETTER SPACING(mm)	WORD	3mm	4mm
		LETTER	3mm	2mm
		LINE	3mm	2mm
3	SLANT		Right	Vertical
4	BASELINE		Straight	Straight
5	RHYTHM		Non-uniform	Uniform
6	ALIGNMENT		Left	Centre

As we observe the sample no :3, we could see that when he write with his right hand it becomes too choppy that is the level of tremor in his hand writing is a bit high ,it may be because of the reason that he is habituated and comfortable to write with left more than in right . That is even though he can write with right he is more habituated to the left . But as we compare the features of his handwriting it shows a great difference in the diacritic placements, connecting strokes and the pattern of the letter formations are of a bit difference.

SAMPLE NO : 4-RIGHT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Macedonia and Albania all lie in Southeast Europe. Ruled by Turkey for nearly 500 years, all the countries, except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tensions. War broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SAMPLE NO : 4-LEFT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro Macedonia, and Albania all lie in Southeast Europe. Ruled by Turkey for nearly 500 years, all the countries except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tensions war broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SL N O	CHARECTERISTIC S	SUB- CHARECTERISTIC S	RIGHTHAN D	LEFTHAN D
1	SIZE(mm)	UPPER ZONE	3mm	5mm
		MIDDLE ZONE	2mm	2mm
		LOWER ZONE	2mm	3mm
2	LETTER SPACING(mm)	WORD	5mm	5.5mm
		LETTER	0.5mm	0.5mm
		LINE	4mm	3.5mm
3	SLANT		Vertical	vertical
4	BASELINE		straight	Straight
5	RHYTHM		uniform	Uniform
6	ALIGNMENT		centre	left

As we observe the sample no :4 we could observe that right handwriting is small when compared with his left handwriting and the mainlines in the right hand always have a bend but his left hand does not show such characteristics both the handwritings does not share much resemblance to each other.

SAMPLE NO :5-RIGHT

Slovena, Croatia, Bosnia and Herzegovina, Serbia and Montenegro, Macedonia, and Albania all lie in South east Europe. Ruled by Turkey for nearly 600 years, all the countries except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tensions were broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SAMPLE NO :5-LEFT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro, Macedonia, and Albania all lie in south east Europe. Ruled by Turkey for nearly 600 years, all the countries except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of rival ethnic and religious tensions were broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SL N O	CHARECTERISTIC S	SUB- CHARECTERISTIC S	RIGHTHAN D	LEFTHAN D
1	SIZE(mm)	UPPER ZONE	7mm	5mm
		MIDDLE ZONE	2mm	2mm
		LOWER ZONE	4mm	2mm
2	LETTER SPACING(mm)	WORD	8mm	17mm
		LETTER	3mm	2mm
		LINE	4mm	8mm
3	SLANT		Right	vertical
4	BASELINE		Non-uniform	Straight
5	RHYTHM		Uniform	Non- uniform
6	ALIGNMENT		Centre	Right

As we observe the sample no :5, we could notice that the right handwriting of the person is pretty much large in the size ratio when compared to his left handwriting. In the right handwriting we can observe a right slant for the handwriting, but in case of the left handwriting it seems pretty much vertical.

SAMPLE NO :6-RIGHT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro Macedonia, and Albania all lie in south east Europe. Ruled by Turkey for nearly 500 years, all the countries except Albania, were united as Yugoslavia in 1918. Yugoslavia split up as a result of great ethnic and religious tensions. War broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SAMLE NO :6-LEFT

Slovenia, Croatia, Bosnia and Herzegovina, Serbia and Montenegro Macedonia and Albania all lie in Southeast Europe. Ruled by Turkey for nearly 500 years, all the countries, except Albania were united as Yugoslavia in 1918. Yugoslavia split up as a result of great ethnic and religious tensions. War broke out, lasting until 1995. Since then, fresh conflicts have occurred and the region is still struggling to recover from war.

SL N O	CHARECTERISTIC S	SUB- CHARECTERISTIC S	RIGHTHAN D	LEFTHAN D
1	SIZE(mm)	UPPER ZONE	5mm	6mm
		MIDDLE ZONE	2mm	2mm
		LOWER ZONE	3mm	2mm
2	LETTER SPACING(mm)	WORD	8mm	5mm
		LETTER	0.5mm	0.5mm
		LINE	9mm	4mm
3	SLANT		Right	Vertical
4	BASELINE		Straight	Non- uniform
5	RHYTHM		Uniform	Non- uniform
6	ALIGNMENT		Centre	Left

As we observe the sample no :6, we c0ould see that when he wrote with his left hand it becomes too choppy that is the level of tremor in his hand writing is a bit high, it may be because of the reason that he is habituated and comfortable to write with right more than in left hand. It is also noticeable that the line quality of the left handwriting is so poor. The pattern of the letter formation also differs a lot to each other.

CHAPTER VI: RESULT AND CONCLUSION

Result

As we observe the samples that we have collected it provides us a conclusion that it is difficult for an ordinary man to analyse an ambidextrous handwriting since they usually show very less common feature .

The charecteristics like the connecting strokes, starting and ending strokes , letter formation ,slant , base line are the some of the common things that we can observe in the collected samples .

As we know that the human eye has its limits fixed so there is a limit for us to search for the minute feature, it require more accurate and sophisticated analysis to reveal more information . More over the difference can generate easily for an ambidextrous person as the control and coordination of both hands will be different and they provide different way of action favourable to them . As this will result in the handwriting to get a some what disguised.

Conclusion

From this project we can see that ambidextrous people usually tents to show different features to their handwritings (both left and right). It is too difficult for an ordinary person to see them as similar .on the first basic features they show large variations in them , but on analysing the sample with more than one parameter they seems to show some connections. That is , it proves that it is possible to identify the handwritings of an ambidextrous person even though he wrote it with the different hand but it will be more difficult than analysing a common people's handwriting.

Also since it is not that much simple and accurate to verify with the basic classification method we insist more intense research on this topic with much sophisticated instruments for further

CHAPTER VII: REFERENCE

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