

LEFT-HANDEDNESS:

A WRITING HANDICAP?

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ABSTRACT

Left-handedness is often seen as a disadvantage when it comes to writing and left-handers are often seen as 'problem' writers. However, the difficulties many left-handers face do not stem from their left-handedness, but from the left-to-right writing movement of the Western writing culture. This article investigates left-handed writing technique and tries to determine, through both research and direct observation, the extent to which the theory regarding left-handed writing technique corresponds to the techniques used in practice.

The main focus of the investigation is an observational study. Participants were asked to copy out a series of simple sentences while photographs were taken to document their writing technique. The results of this study are then discussed in the context of handwriting manuals and specific left-handed writing guides. The fundamental aspects of writing technique – such as penhold, pengrip and paper position – are all dealt with in turn, together with the effect of the resulting written trace.

It is concluded that despite the range of literature available on left-handed writing, a 'right' and 'wrong' attitude still tends to prevail, which is in contrast to the variety of writing techniques seen in this investigation. Left-handedness is not a writing handicap and it is through more liberal and tolerant attitudes that this notion will be eradicated.

INTRODUCTION

THE ACT OF HANDWRITING, UNLIKE MOST OTHER ACTIVITIES, IS ALMOST entirely focused on one side of the body. While the non-writing side may be involved in subsidiary tasks, such as steadying the paper, the main job of writing is carried out by just one-half of the body, and in particular one arm and hand.

Left-handed writers are often cast in a negative light, as if their left-handedness is some kind of handicap. While the prejudices and discrimination that they faced in the 18th and 19th centuries have long since ended, left-handers are still seen as 'problem' writers in need of special attention, whether it be in the form of classroom layout, specially adapted pens and grips or alternative methods of teaching.

Contrary to popular opinion, the difficulties that many left-handed writers face do not stem from their left-handedness. Instead, these problems arise from the nature of writing and in particular the direction in which we write. In the Western handwriting culture, we write from left-to-right across the page and from top-to-bottom. This left-to-right movement is an 'arbitrary evolution' in our culture, and not necessarily fundamental to the act of writing. A right-to-left movement – which is much more natural for a left-hander – occurs in a number of other alphabets, such as Hebrew and Arabic (Sassoon, 1995:67).

However, it is the left-to-right movement that causes the most problems for left-handers. Not only do they have to try to push the pen across the page, but they have to try to push it across the body midline, which can result in problems with paper position, penguin grip, an inability to see the writing and cramped body postures – all before the resulting written trace has even been considered.

Despite these difficulties, neither the left-hander nor the writing culture is at fault. It is their relative incompatibility that is the problem. The extent to which the theory regarding appropriate left-handed writing techniques corresponds to the techniques used in practice needs to be established, and where necessary, suggestions made for how the theory can be improved.

OBSERVATIONAL STUDY

TO TRY TO BETTER UNDERSTAND SOME OF THE VARIETY OF DIFFERENT techniques used by left-handers when writing, an observational study was undertaken. No specific hypothesis was tested, since the investigation was exploratory and gathered qualitative data. It aimed to survey a range of left-handed writing techniques, without any specific ideas about the outcomes.

Task

PARTICIPANTS WERE ASKED TO COPY OUT A SERIES OF 14 SIMPLE SENTENCES and photographs were taken to document their writing technique. The sentences were presented to participants on an ISO A5 (210 X 148 millimetres) piece of card.

In addition to these 14 sentences, three pangrams (sentences containing every letter of the alphabet) were reproduced on another

piece of card. These pangrams were used to ensure that participants wrote every letter of the alphabet, and at least three versions of every letter were produced.

Since participants' attention would be constantly switching between the printed cards and their own written trace, the sentences were grouped in pairs. The pairing was entirely random and the pairs were presented in no particular order. All text was set in Swift Roman 11 point.

Participants

FIFTEEN PARTICIPANTS WERE TESTED, NINE LEFT-HANDERS AND SIX RIGHT-handers. The right-handed participants were necessary so that a comparison could be made with the left-handers, particularly in terms of patterns of writing technique and in the written trace produced. Seven participants were female, and eight were male. All came from a design/typographic background, and as all participants were over eighteen years of age it was assumed that the written trace they produced was their fully developed adult hand.

Procedure

PARTICIPANTS SAT IN A STANDARD OFFICE-STYLE CHAIR AT A SINGLE DESK. On the desk were the two cards containing the text to be copied and a pad of plain A3 paper. The A3 pad was available for participants to lean on if required. Participants were given a choice of either lined or unlined paper to write on and were given one sheet of the chosen paper on which to copy the text. More paper was available if required. Participants were also given a choice of writing tool. As the investigation was looking at natural handwriting technique, it was necessary to make the situation as normal and relaxed as possible. Participants were therefore given the choice of using either their own writing tool or choosing one from a selection provided. This selection consisted of a fountain pen, a roller-ball, a biro and an HB pencil.

No order was specified, for either of the two different tasks or the order in which the 14 sentences were to be reproduced. Similarly, no presentation style was specified. It was stressed that participants take as much time as was necessary in order to complete the task. During the test, three photographs were taken to document writing technique: one from the front, one from the side and a close-up of the writer's hand.

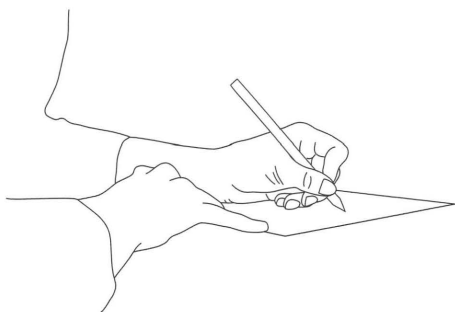


FIGURE 1:

*The dynamic tripod grip
(All illustrations are
drawn from photographic
documentation of the
observation.)*

A brief pilot study was carried out prior to the main study, to ensure that the procedure was clear to participants and the method of recording results was satisfactory. Testing was done on an individual basis and was carried out in a quiet environment away from other aural or visual distractions.

Discussion of results

THE RESULTS OF THE OBSERVATIONAL STUDY NEED TO BE INTERPRETED AND explained in the context of the relevant literature. The study aimed to compare the theory regarding the appropriate writing technique for a left-hander with the techniques used in practice.

PENHOLD

Tripod penhold

FOR MANY YEARS THERE HAS ONLY BEEN ONE ACCEPTED PENHOLD, THE dynamic tripod grip (SEE FIGURE 1). It is achieved by resting the writing tool on the 'distal phalanx' (last bone) of the middle finger and controlling it via the pad of the thumb and forefinger (Alston & Taylor, 1987,29). The tripod grip's evolution as the model penhold for writing seems to have happened without much question. This may be because it is the arrangement of fingers that offers the finest motor control over the writing tool. It may however, have been accepted as the model because it is the most commonly observed penhold.

Like any model, there are likely to be exceptions to the use of the dynamic tripod grip. However, a study conducted by Thomas (1997,48) of 218 school children aged between seven and nine found less than fifteen percent of children (fewer than thirty-two) using a tripod grip. This suggests that in the whole spectrum of writing penholds, the tripod grip has less prevalence than was previously

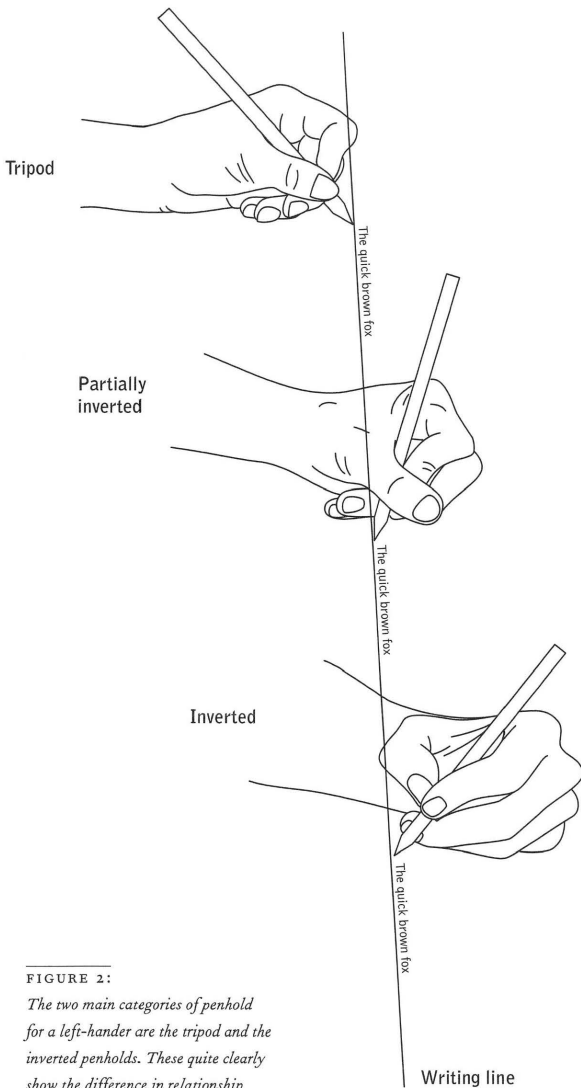


FIGURE 2:

The two main categories of penhold for a left-hander are the tripod and the inverted penholds. These quite clearly show the difference in relationship between the writing hand/tool and the writing line. The partially inverted penhold is somewhat of a hybrid, as it is neither a traditional tripod nor is it fully inverted. Hence writing becomes smudged and the pen tends to dig into the paper when using this penhold.

thought. The results of Thomas' study may reflect the age of the participants, and the fact that many would not have fully developed their adult hand. The question remains as to what factor(s) determine the evolution of a writer's penhold, be they right- or left-handed.

In order to move from left-to-right across the page, the right-hander *pulls* the writing tool – the left-hander has to *push* it. This fundamental difference between right- and left-handed writing demonstrates that handwriting technique is not just a matter of the way the pen is held. Arm posture and the position of the paper relative to the writer are also important. Both of these factors however, are determined by the way the writing tool is held.

Left-handed penholds

ALSTON (1989,15) IDENTIFIES TWO CATEGORIES OF LEFT-HANDER AS:

1. Those who rotate the paper clockwise, hold the pencil pointing towards the top of the paper and generally adopt a position that is the mirror image of right-handed writers.
2. Those who rotate the paper anticlockwise, placing the pencil towards the body and generally adopt a hooked writing position (*Inverted Hand Posture*).

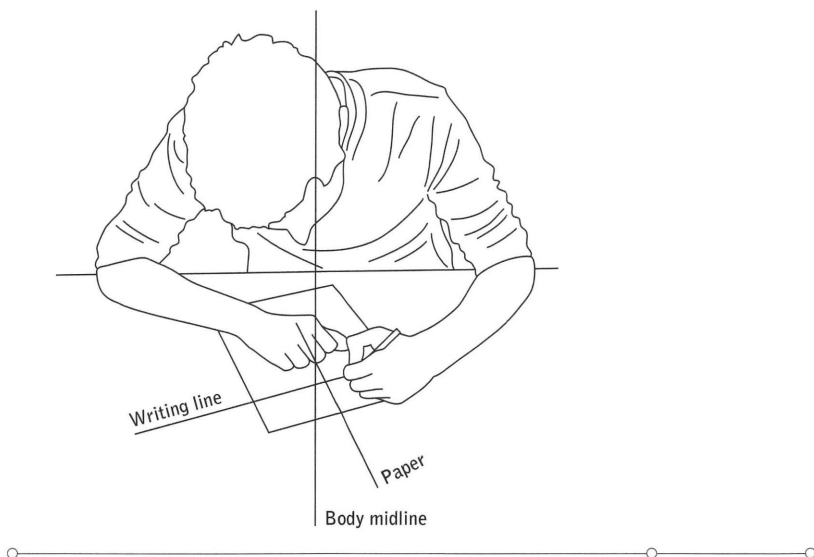


FIGURE 3:

The inverted penhold. The paper is rotated anticlockwise and the writing tool is placed pointing towards the body.

Among the left-handed writers observed in the study, many individual and characteristic writing traits were demonstrated. However, the penholds fell broadly into the two categories described above: those where the pen is held below the line of writing (as in the traditional tripod penhold), and those where the pen is held above the line of writing (an 'inverted' penhold).

In this group, far more fell into the first category than was expected. While it was anticipated that an inverted penhold would be less common, only two of the nine left-handers tested used such a penhold.

However, it must be remembered that only a small number of writers was studied. To reliably estimate the frequency of an inverted penhold among left-handed writers, far greater numbers would need to be tested. In his paper 'The relative efficiency of the various approaches to writing with the left hand,' Enstrom (1962, 573) attempted to do this. Left-handed writers, numbering 1,103, were each classified and evaluated for the efficiency of their writing technique. Although Enstrom identified the two main groups of left-handed writer — those with the hand above the writing line and those with the hand below — he did not provide an exact breakdown of how many fell into each group. Despite this, he concluded that writing techniques that adopted non-inverted penholds were the most desirable.



FIGURE 4A

A difference in pengrip.

Clark (1974,33) argues that ‘there is nothing normal about [the inverted writing] position.’ She claims it develops in left-handed children due to the unsuitable nature of anything demonstrated by schoolteachers or right-handed classmates. In order to write successfully, a left-hander must develop a penhold that gives them sufficient control over the writing tool, yet allows them to see what they are writing. They therefore grip the writing tool at the same distance from the point as does the right-hander, but curve their hand slightly to enable them to see under it (Clark, 1974,33). Hence the penhold can be termed ‘partially inverted,’ as it is neither a traditional tripod nor is it a fully inverted penhold, but somewhere between the two.

This method is convenient while a pencil is being used to write with, but it becomes unsuitable once a pen is used. The nib of a pen does not move across the surface of the paper as easily as a pencil (it may even poke into the paper if an italic nib is used), and the writing is smudged by the writer’s hand. To overcome this, the writer ‘completes the hook, placing his hand above the writing’ (Clark,1974,33) (SEE FIGURE 2).

The main reasons for Clark (1974,33) not endorsing an inverted penhold as acceptable for a left-hander seem to be speed and neatness:

It is difficult to achieve neat writing by [the inverted] technique and since it is also a continual strain on the hand anyone adopting it will readily become fatigued if required to do much writing.

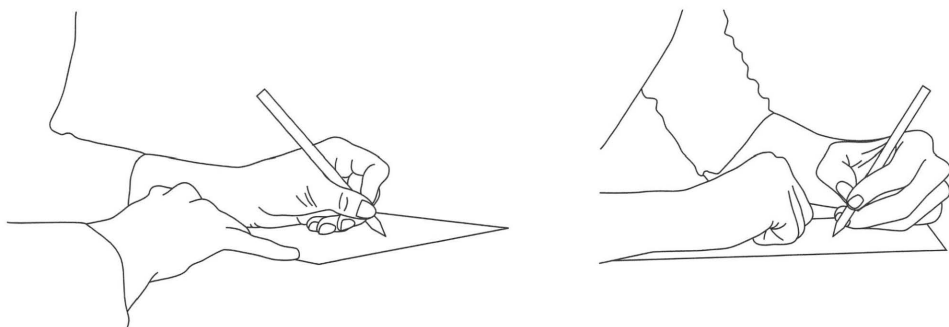


FIGURE 4B

A difference in penhold.

In *Handwriting: theory, research and practice*, Alston and Taylor (1987,58) quote Thurber as advocating the use of an inverted penhold, saying that it should not be corrected. Enstrom (1962,573) went as far as identifying fifteen different techniques that were used by left-handed writers, nine of which used an inverted penhold. Of these nine techniques only one was recommended by Enstrom, and then only with some reservation. Although very aware of the drawbacks, he was conscious of the fact that many left-handers use an inverted penhold, and so rather than dismissing it, he tried to establish some parameters for using it successfully. Enstrom (1962,577) concluded that when using the inverted penhold, the paper should be turned to the left, facilitating a flowing, rhythmic movement. FIGURE 3 shows a participant from the study demonstrating an inverted penhold and using the paper position described by Enstrom.

If the handwriting produced by such a penhold is of a good quality, and can be produced quickly and without excessive fatigue, then perhaps the penhold should not be discouraged. It may not be conventional, but then writing from left-to-right seems to be a conventionally right-sided exercise. When researching penhold, Sassoon (1993,35) emphasized that “different body proportions and personal pressures, when allied to the many differences in size, shape and points of modern writing implements provide such a multiplicity of factors that it is better to suggest a variety of penholds for experimentation.”

PENGRIP

CARE MUST BE TAKEN WHEN DISCUSSING THE WAY A WRITING TOOL IS HELD, in particular in making clear the distinction between a penhold and a pengrip. So far we have looked at the dynamic tripod as a way of gripping the pen, and have seen it working above and below the line of writing. In both of these instances the way the writing tool is held is referred to in the literature studied as a penhold ('non-inverted' when it is below the line of writing, and 'inverted' when it is above the line of writing). However, when the arrangement of fingers used to grasp the writing tool is discussed, the term pengrip is more commonly used (e.g., Sassoone, 1995).

Thus the distinction is clear – penhold is used when talking about the relationship between the writing hand/tool and the writing line, and pengrip is used when discussing the relationship between the writer's hand and the writing tool. One is an internal relationship, concerning how the writing tool relates to the writer's hand, and the other is an external relationship, concerning how the writer's hand relates to the paper (SEE FIGURES 4A AND 4B).

Of the left-handed participants in the study, only one demonstrated a grip that was a complete departure from the dynamic tripod (SEE FIGURE 5A). The most obvious difference between this pengrip and a traditional left-handed tripod grip is that the thumb curves round in front of the writing tool, and tucks in behind the index and middle finger. The fine motor control achieved by the opposing pads of index finger and thumb in the traditional tripod grip (FIGURE 5B) must now be provided from somewhere else.

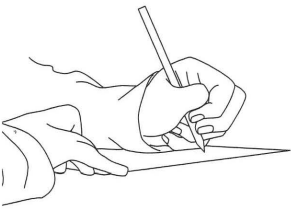


FIGURE 5A
The left-handed pengrip that deviated the most from the tripod model.

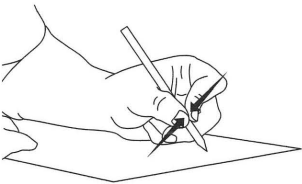
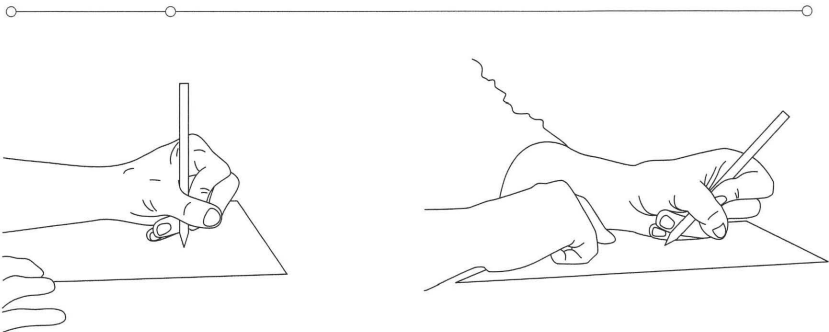


FIGURE 5B
The opposing forces provided by the pads of the index finger and thumb in the traditional tripod pengrip.

FIGURE 6
Two more unconventional left-handed pengrips.



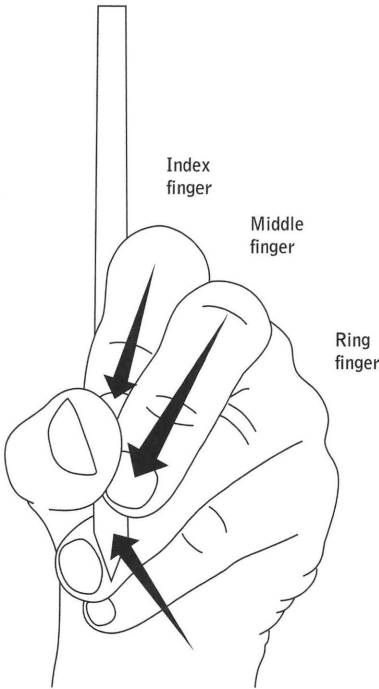


FIGURE 7A

An unconventional left-handed pengrip, viewed from underneath. The forces provided by the index and middle fingers are opposed by that of the ring finger.

Forces in a pengrip

IF TWO SIMILAR KINDS OF PENGRIIP FROM THE STUDY ARE CONSIDERED — both deviating substantially from the dynamic tripod — a common feature emerges. Instead of resting on the distal phalanx of the middle finger, the writing tool rests against the distal phalanx of the ring finger (FIGURE 6). The pads of the index and middle fingers are both placed on top of the writing tool, providing a movement force in one direction, and the top of the ring finger provides a movement force in the opposite direction.

FIGURE 7A shows the first of the two pengriips from FIGURE 6, but viewed from underneath. The pen can be clearly seen resting against the distal phalanx of the ring finger, with the index and middle fingers positioned on top. The opposing forces supplied by these three digits provide the writer with most of the control they need, but the thumb is still required to complete the grip. This is because the index/middle fingers and the ring finger do not work directly against each other, but rather at a slight angle to one another. This

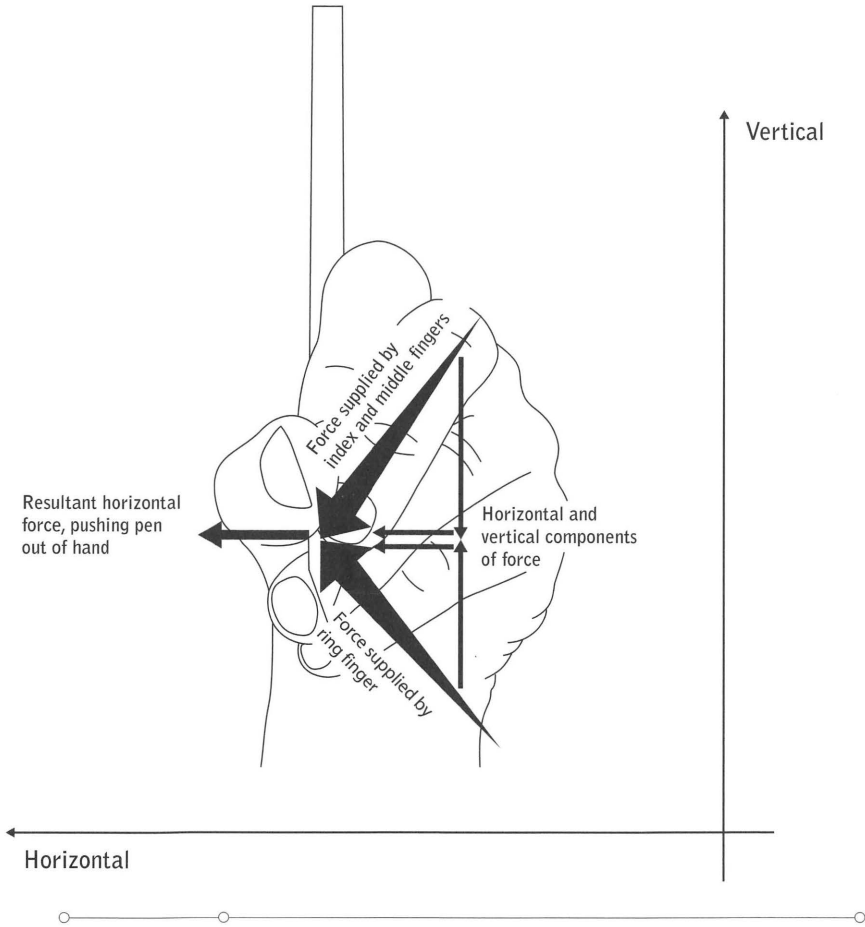


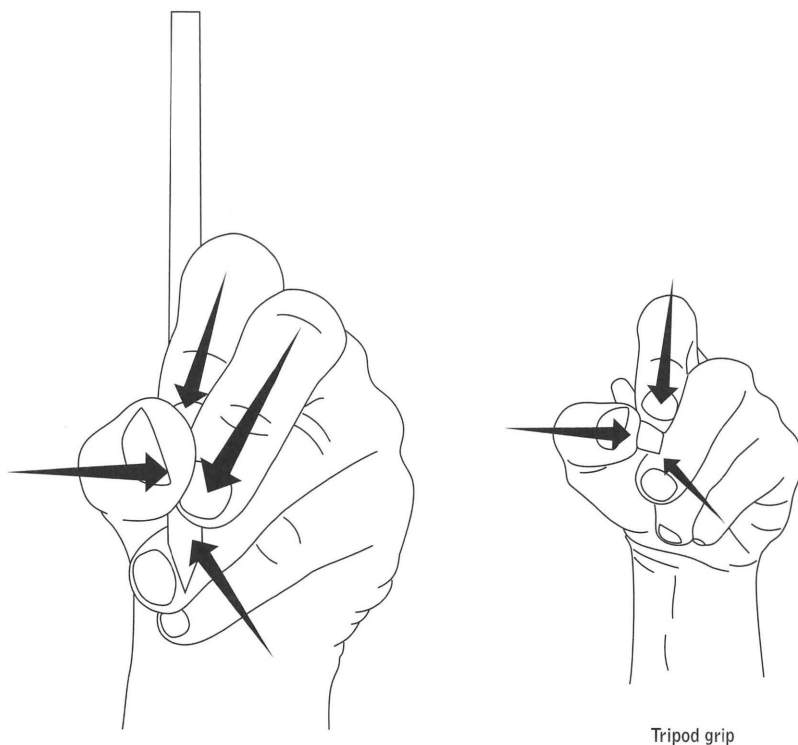
FIGURE 7B

The forces applied by the fingers of the writing hand can be broken down into their horizontal and vertical components. The vertical components work directly against each other, but the horizontal components are all in one direction. They have no opposition and the resultant force pushes the pen out of the writer's grasp.

creates a small resultant force in a direction perpendicular to the pen, forcing it slightly out of the writer's hand (SEE FIGURE 7B).

To overcome this, the thumb is curved around in front of the pen and across the index finger, providing a counter force. Used in this way, the thumb provides the same function as the distal phalanx of the middle finger in the tripod grip – that of keeping the pen within the grasp of the digits providing the movement forces (SEE FIGURE 7C).

This analysis of the forces in a writer's pengrip is based entirely upon observation of participants within the study and personal experience of writing left-handed. Nothing in the literature studied discusses in any length the forces connected with a writer's pengrip. Although it is difficult to draw any solid conclusions from observation alone,



Tripod grip

FIGURE 7C

The additional force supplied when the thumb is curled round in front of the index finger keeps the pen within the writer's grasp. In comparison with the same view of a left-handed tripod grip, the overall force directions are quite similar. The main difference is that four fingers are directly involved in controlling the pen, rather than three.

consideration of the forces involved offers another explanation for the occurrence of unconventional pengrips, and why some left-handers find them more comfortable than the traditional tripod grip.

Relationship between pengrip and penhold

IF WE CONSIDER THE PENHOLDS IN FIGURES 5A AND 6 AGAIN, IT IS WORTH noting that one is non-inverted, one is partially inverted and one is fully inverted. For both the partially inverted and fully inverted penholds the thumb comes across the top of the index finger. Yet for the non-inverted penhold it is tucked underneath the index finger. This may be coincidental, or it may be an indication of how the relationship between pengrip and penhold works.

Tucking the thumb underneath the index finger forces the pen back into the web between thumb and index finger. Thus the angle of the pen, and the way it points away from the writers' body, classify the penhold as being non-inverted. Placing the thumb in front of

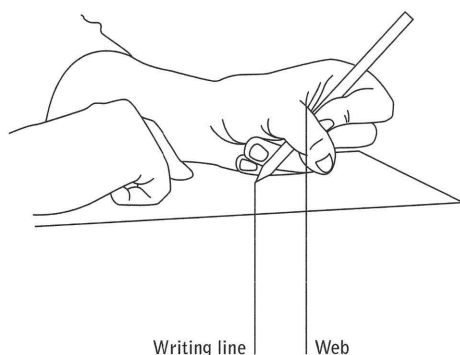
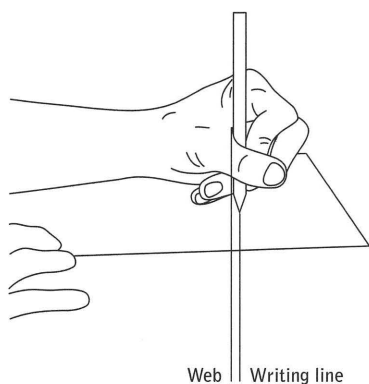
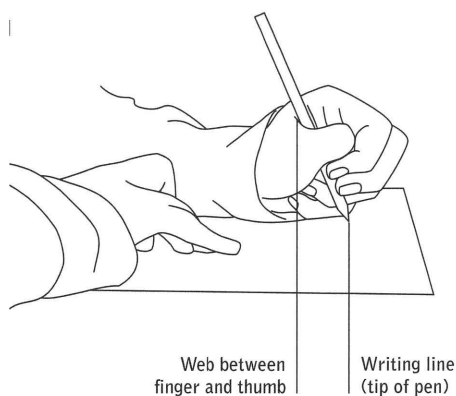


FIGURE 8

How the penhold changes as the pengrip changes. As the thumb moves from being underneath the index finger to being in front of, and then across the index finger, the penhold becomes inverted.

the index finger brings the web between index finger and thumb forward, so that it is almost directly above the tip of the pen. The penhold then develops into one that is partially inverted. If the thumb is brought further round in front of the index finger, so that it is almost touching the middle finger, the web between finger and thumb is brought even further forward, so that it is in front of the tip of the pen. The penhold is then fully inverted (SEE FIGURE 8).

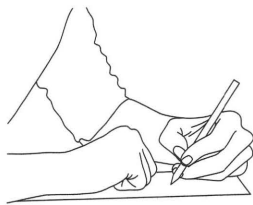
This pattern may not be typical, but it provides more examples of the variety of writing techniques employed by left-handers, and emphasizes the impracticality of trying to impose a model writing technique.

Relationship between pengrip and written trace

BACKWARD SLANTING HANDWRITING IS OFTEN linked with left-handedness, usually in the context of describing a left-hander's writing as messy and untidy. However, a backward slant may be the result of the nature of left-handed writing. Sassoon (1986,9) recognizes the link between the way the writing tool is held and the resulting slant of the written trace:

When you alter your hand or finger position the slant of your writing can change. Alternatively, if you want to change the slant of your writing play around with your penhold.

The two left-handed writers in the study who used similar inverted penholds held their writing tool in different ways. The first used a traditional tripod grip, and the second used an unconventional pengrip,



The troops marched through the ford.
The queen asked a question.

FIGURE 9A

The tripod grip with an inverted penhold and the written trace it produced.

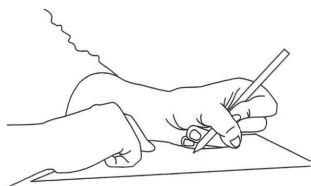
where the thumb comes across in front of the index finger and the writing tool is controlled via the first three fingers of the left hand.

Both of the written traces produced by these penholds had a slant to them. The writer who used a tripod grip had a slight forward slope to their writing (FIGURE 9A), and the writer who used the unconventional pengrip produced the handwriting with a backward slope to it (FIGURE 9B).

The variation in pengrip may account for the difference in writing slant. The handwriting, in FIGURE 9A, was produced by a writer who had a 'textbook' inverted penhold and tripod pengrip. The wrist twists round so that the pen comes down from above the line of writing, allowing a forward letter slant to be made easily. The writing hand turns into the body slightly, so that it is at an angle to the forearm (FIGURE 10A). The writer of the handwriting in FIGURE 9B, which had a backward slant, theoretically does use an inverted penhold, since the hand sits above the writing line and the pen points back towards the body. However, the nature of the pengrip is such that the writing hand turns away from the body, so that it is parallel

FIGURE 9B

An unconventional grip with inverted penhold and the resulting written trace.



The troops marched through the ford.
The queen asked a question.

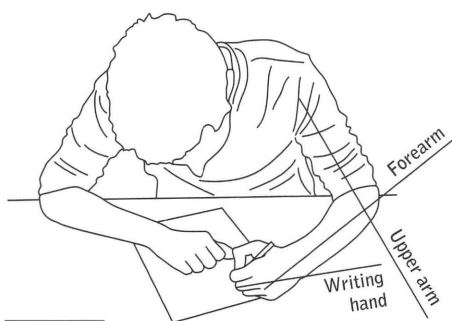


FIGURE 10A

With the traditional inverted penhold and tripod pengrip, the writing hand is at an angle to the forearm.

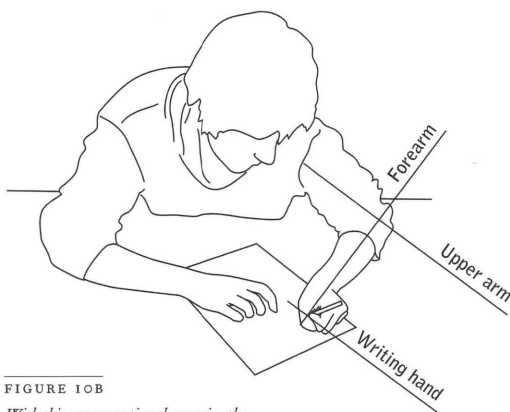


FIGURE 10B

With this unconventional pengrip, the writing hand turns away from the body so that it becomes parallel with the upper arm.

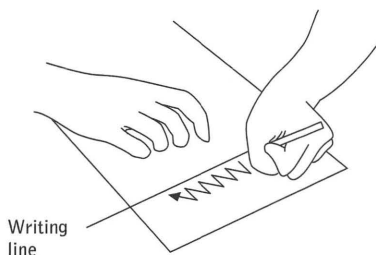


FIGURE 10C

The up and down movement of writing is at a slight angle to the paper.

with the upper arm (FIGURE 10B). With the wrist now parallel to the upper arm, the up and down movement of writing is at a slight angle to the paper, and causes the backward slant evident in the written trace (FIGURES 10C–E).

PAPER POSITION

LEFT-HANDERS ARE OFTEN TOLD THAT THEY need to rotate their paper clockwise – the opposite of what is recommended for a right-hander. This suggestion is made by, among others, a fact sheet on writing provided by the Left-Handed Club.¹ It advises writers to rotate the paper clockwise ‘up to a maximum of 45 degrees.’ However, as has been seen, this is unsuitable for the left-hander who adopts the inverted penhold. If forced to rotate their paper clockwise, they will have to arch their arm even more to enable them to reach the top of the paper (FIGURE 11).

As discussed earlier, Enstrom (1962,577) concluded that when using an inverted penhold the paper should be rotated anticlockwise. This re-emphasizes the point that penhold and paper position are not independent of one another, and need to work together in order to establish a comfortable writing technique.

A better recommendation for paper position is made by Sassoon (1990,14), who advocates placement of the paper in relation to the body midline. Regardless of whether a left-hander rotates their paper clockwise or anticlockwise, the paper should be positioned to the left of the body midline. If it is central to the writer, or positioned

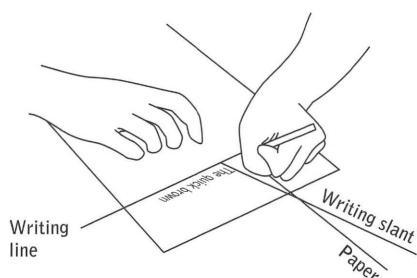


FIGURE 10D

Letterforms are thus created at this angle.

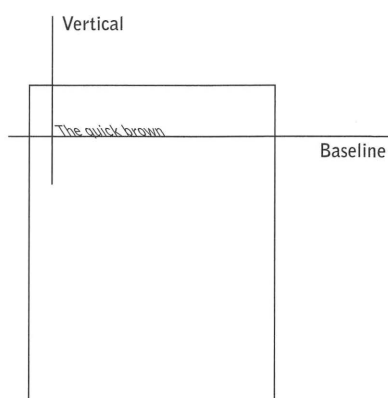


FIGURE 10E

The resulting written trace.

to the right of the body midline, then the writing arm is forced across the body, which “causes a cramped writing position and obscures the writer’s view of the point of the implement.” Sassoon (1990,14) concludes that for those who hold the pen above the line of writing, adopting an inverted penhold, the paper should be rotated anticlockwise, as for a right-hander. For those who hold the pen below the line of writing, the paper should be rotated clockwise.

Clark (1974,33) recognizes another method of writing adopted by the left-hander, where the paper is positioned to the left of the body midline, but is rotated clockwise to the extent that it is almost at a right angle to the body of the writer. The left-hander then writes “down towards the body in an attempt to acquire a comfortable position.” FIGURES 12A AND 12B show a participant from the study using this writing technique.

The pushing action associated with left-handed writing seems to be the main problem in trying to find a comfortable writing technique. Sassoon (1990,80) comments that “the left-handed action often involves more pushing than is desirable for a relaxed handwriting.” The solution shown in FIGURES 12A&B – of rotating the paper to such an extent that the movement pattern of the writing arm is more similar to that of a right-hander – is only viable for some left-

1 Left-Handers Club factsheet: handwriting.

URL: http://www.anythingleft-handed.co.uk/library/ALH_handwritingfactsheet.pdf
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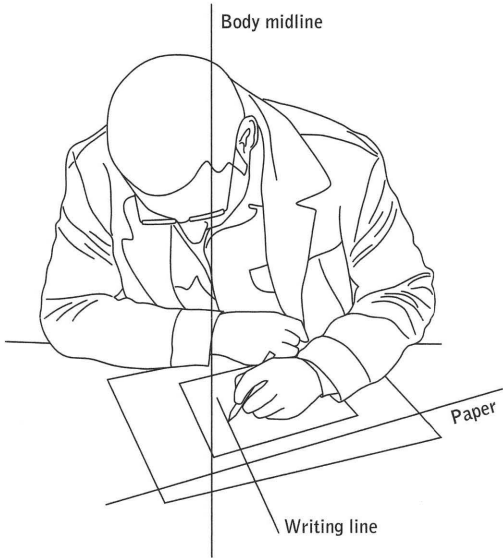
FIGURE 11

A left-hander, who uses an inverted penhold, trying to write with the paper rotated clockwise.



FIGURE 12A

The paper is rotated clockwise so that it is almost at a right angle to the body midline. The writer then adopts a tripod grip, holding their hand below the line of writing.



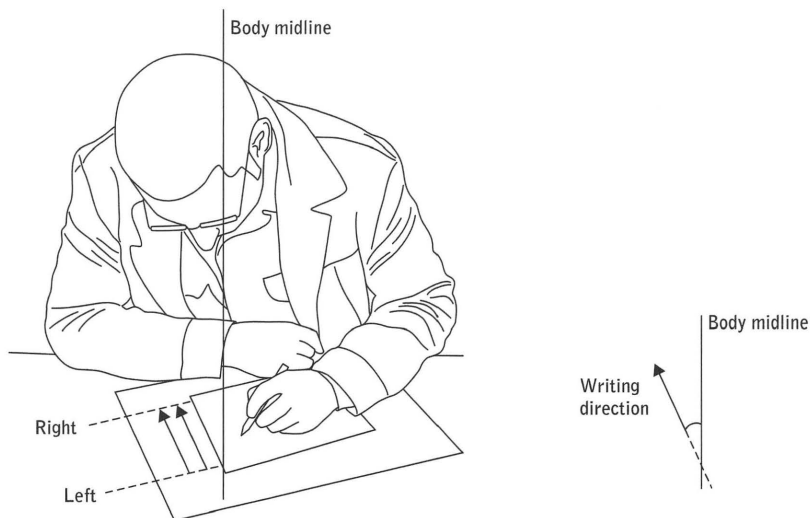


FIGURE 12B

handlers. Those who use an inverted penhold or unconventional pengrip may find such a paper position very awkward and uncomfortable (FIGURE 12C).

Paper position relative to body midline

ALL OF THE WRITERS STUDIED PLACED THE PAPER TO THE LEFT OF THEIR body midline, but to varying extents. FIGURE 13 shows the participant who placed their paper the furthest from their body midline.

The extent to which the paper is to the left of the body midline can be approximated by looking at the nearest and furthest the writing hand gets to the body midline. In FIGURE 13, the writer is using a non-inverted penhold. The closest the writing hand gets to the body midline is still clearly on the left side of the writer's body. By comparison, in FIGURE 14 – where the same penhold and paper rotation are used – the writing arm is much closer to the side of the body, and the writing hand is slightly to the right of the body midline when it is at the end of a line. This is because the paper is positioned almost centrally to the body midline. The writing arm thus begins to get cramped into the side of the body.

When the paper is rotated to such an extent, it could be argued that the hand is no longer below the line of writing, but alongside it. The writing direction is almost parallel to the body midline, so in order to write from left to right across the page, the writer moves their arm up and down relative to the body midline. This avoids the need to push the pen across the paper and stops the writing arm from becoming cramped into the side of the body. The left-hander writes by pulling their left hand towards them, then pushing it away from them when the end of a line is reached. This pattern of pulling and pushing is similar to a right-hander – pulling the pen when writing, and pushing it when returning to the beginning of a new line.

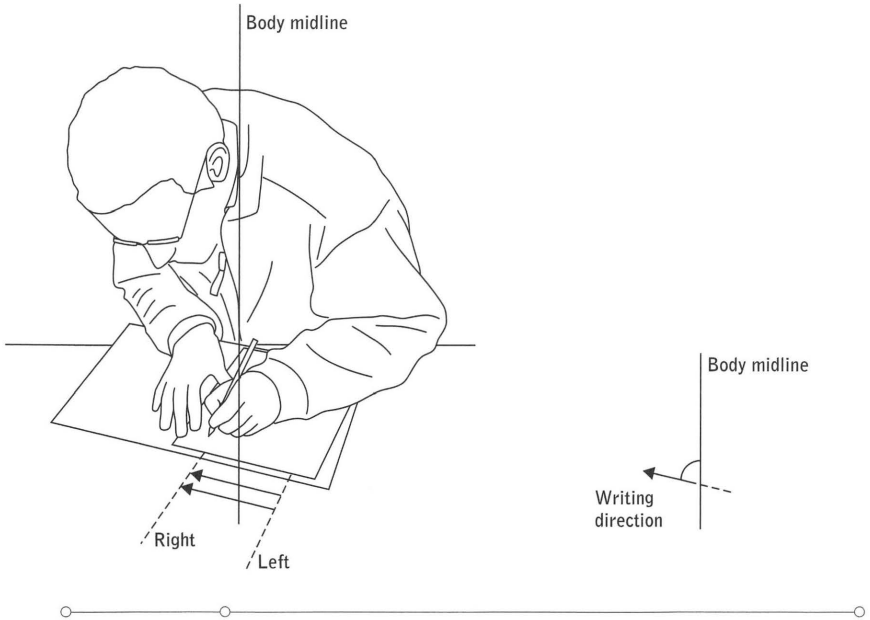


FIGURE 12C

By contrast, for a left-hander who rotates their paper to a far lesser degree, the writing direction and body midline are almost perpendicular. Thus the writing arm moves from left to right, relative to the body midline, and can become cramped into the side of the body.

Paper position relative to writing slant

WHEN THE WRITING TECHNIQUE USED IN FIGURE 13 IS STUDIED IN conjunction with the written trace it produces, a reasonable argument can be made for why there is a large distance between paper and body midline.

If the paper position is studied in more detail, it becomes clear that the writing hand is not only below the writing line, but in front of the writing as well (FIGURE 15A). The writer still uses a tripod pengrip and a non-inverted penhold, but through a combination of paper position/rotation and hand position, they imitate the writing movement of a right-hander, where the hand is below and in front of the writing.

This imitation of a right-hander's posture can lead to the left-hander's writing becoming cramped into the side of the body (Alston & Taylor, 1987, 85). The writer in FIGURE 15A however, has overcome this problem by positioning the paper a sufficient distance away from the body midline so that the writing arm only comes into the side of the body when it is at the end of a line.

The angle at which the paper has been rotated, no more than forty-five degrees clockwise, is conventional for a left-hander with a non-inverted penhold. This angle, together with the distance between writing hand and body midline are the primary reasons for the letter

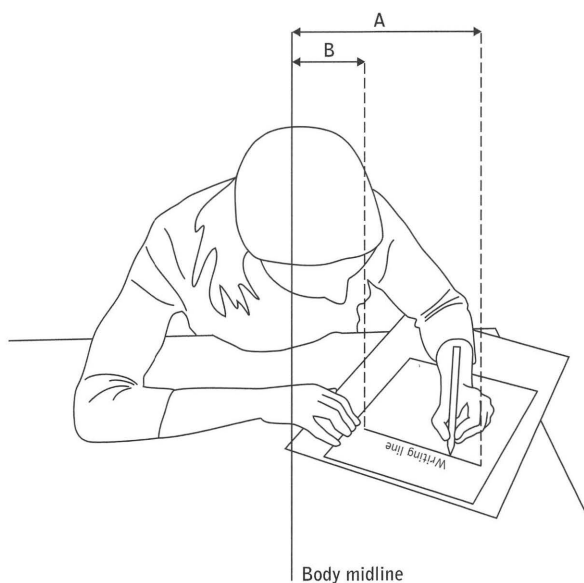


FIGURE 13

The left-handed participant who placed their paper the furthest from their body midline. As the hand moves along the writing line, and moves from the furthest point from the body midline (A), to the closest (B), the writing arm gradually moves up to the side of the body.

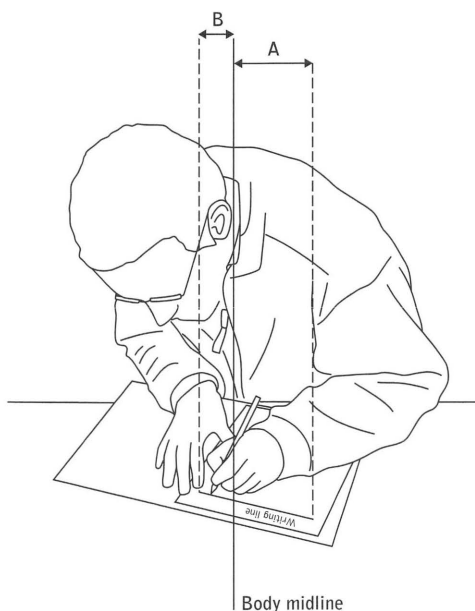


FIGURE 14

The left-handed participant who placed the paper the closest to their body midline. As the hand moves along the writing line, it crosses the body midline. Hence the distance between the midline and the hand at the start of a line (A) is measured in the opposite direction to the distance between midline and hand at the end of a line (B). The writing arm thus remains close to the side of the body throughout.

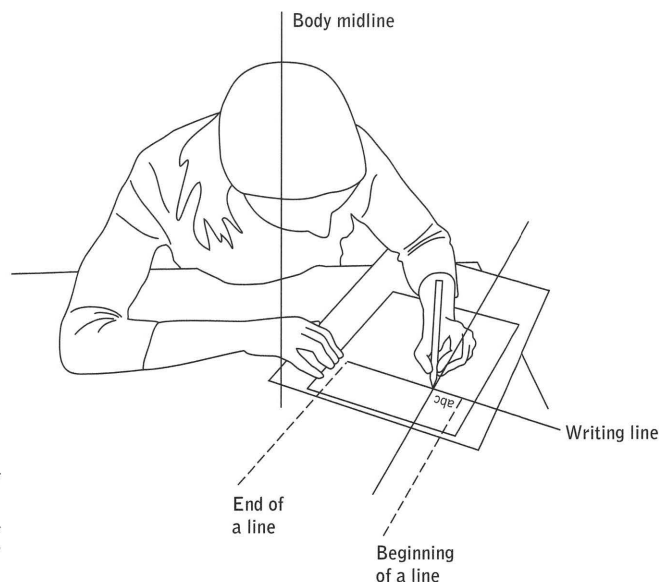


FIGURE 15A

The writing hand is below and in front of the writing, and the paper is a sufficient distance from the body midline so that the writing arm does not become cramped into the side of the body.

The quick brown fox jumps over the lazy dog.

FIGURE 15B

The resulting slant in the written trace.

slant found in the written trace (FIGURE 15B). With the paper at this distance, the writing hand and forearm can remain aligned, and with the paper at that angle, the up and down movement of writing can be made by moving the writing hand from left-to-right (relative to the forearm — SEE FIGURE 15C).

The fingers of the writing hand can remain almost static, since a lot of the writing movement is made by the whole hand, without disrupting the left-to-right flow of the arm moving along the writing line. The pattern of moving from left-to-right to form the main strokes of letters means that the writing hand and the written trace are at right angles to each other (FIGURE 15D), and the written trace is at an angle of forty-five degrees to the paper (FIGURE 15E).

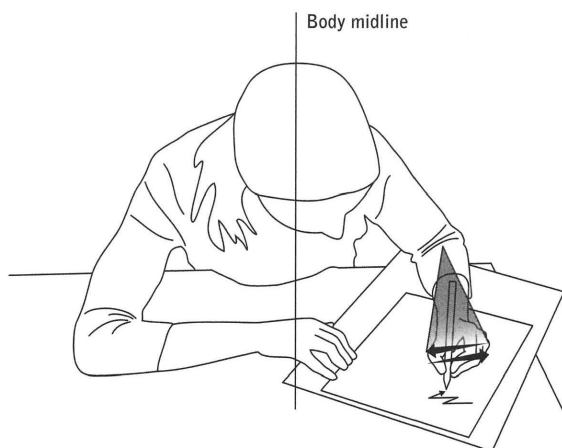


FIGURE 15C

The up and down movement of writing is made by moving the writing hand from left to right (relative to the forearm).

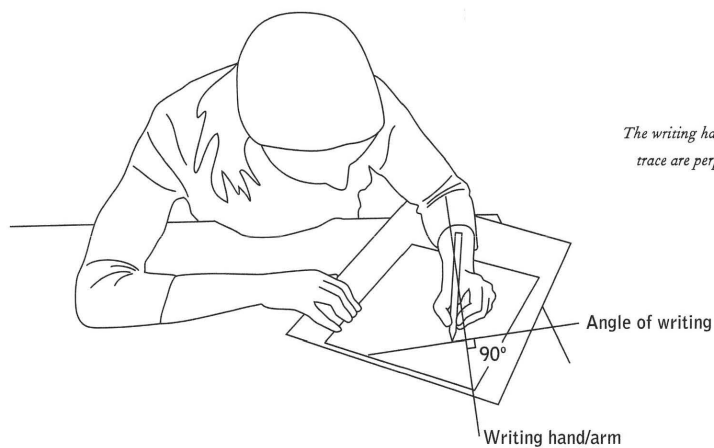


FIGURE 15D

The writing hand/arm and the written trace are perpendicular to each other.

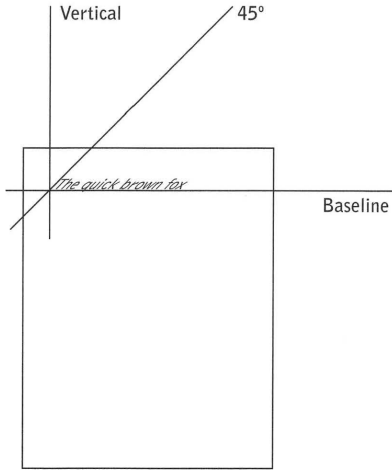


FIGURE 15E
The written trace is at an angle of 45 degrees to the paper.

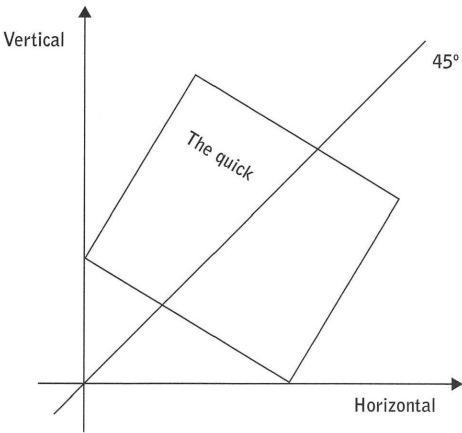


FIGURE 15F
The reverse of a standard right-handed writing technique. Based on an illustration in Enstrom (1962:574).

The technique used by the writer in FIGURES 15A–E is an amalgamation of two different techniques recognized by Enstrom (1962,575) as being used by left-handers who adopt a non-inverted penhold. The first of these two techniques (FIGURE 15F) is the reverse of a standard right-handed writing technique, in that the paper is rotated no more than forty-five degrees clockwise and the hand is below and in front of the writing (AS IN FIGURE 15A). The second of

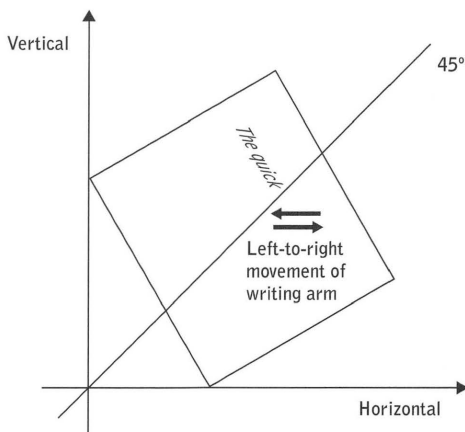


FIGURE 15G

The paper is rotated more than 45 degrees, so that the letter slant is created by a left to right movement. Based on an illustration in Enstrom (1962:574).

these techniques (FIGURE 15G) has the paper rotated more than 45 degrees, so that the forward slant of the written trace is created by a left-to-right movement of the writing arm (AS IN FIGURE 15C).

The writer in FIGURES 15A–E uses a mixture of these two techniques because of the distance between paper and body midline. With the paper that far to the left of the midline, it only has to be rotated to the extent of FIGURE 15F to allow the writer to use the writing movement of FIGURE 15G.

CONCLUSION

ENSTROM (1962) AND CLARK (1974) SUGGEST THAT THERE IS VERY MUCH a 'right' and 'wrong' technique for writing, particularly where the 'problem' of left-handedness is concerned. This attitude is inflexible, since it is impossible to expect everyone to write in exactly the same way. Left-handedness is not a writing handicap, but a factor that needs to be considered when learning to write, alongside paper position, chair height and choice of writing tool. Writers, in particular left-handed writers, are very resourceful, and where a handwriting model does not allow them enough flexibility, they will rely on their own ingenuity. This attitude was evident among much of Rosemary Sassoon's writing, (e.g. Sassoon, 1993), and among the small number of left-handed writers studied, where a variety of writing technique was observed.

Penhold, pengrip and paper position/rotation are all inter-related, and are all determinants of the resulting written trace. The examples illustrate this relationship, as the effect on writing slant was discussed first in the context of pengrip and then in the context of paper position. More research of this nature, together with a willingness to accept and consider a much wider range of possible writing techniques and approaches, will hopefully eradicate the outdated notion that left-handedness is a writing impediment.

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AUTHOR NOTE

IAN PEACHEY obtained a first class BA (Hons) in Typography & Graphic Communication from the University of Reading in July 2003. Within his course he focused upon the handling of complex information, the placement of images relative to text, and designing to form part of a series. This article is an edited extract from 'Left-handedness: a writing handicap?' the dissertation submitted by Ian in partial fulfilment of his degree

