

A Study of the Handwriting of Adolescents

REFERENCE: Masson, J. F., "A Study of the Handwriting of Adolescents," *Journal of Forensic Sciences*, JFSCA, Vol. 33, No. 1, Jan. 1988, pp. 167-175.

ABSTRACT: Handwriting of teenagers often presents problems for document examiners because the writing may have less individuality and more variation than the handwriting of an adult. This survey reveals that many unusual characteristics occur with some frequency in the handwriting of adolescents. Two styles of handwriting that were prevalent among the survey participants are described and discussed.

KEYWORDS: questioned documents, handwriting, class characteristics, surveys, adolescents, teenagers

Adolescence is a time of change, a transitional period between childhood and maturity. It is also a time in which there should be change and growing individuality in handwriting. According to Conway, "writing changes are usually numerous and quite pronounced as the student writer progresses through elementary and high schools" [1, p. 37]. He further writes "about the time the average writer graduates from high school, his writing individualities have stabilized to a considerable extent" [1, p. 38]. In *Suspect Documents*, Harrison writes "The handwriting of some adolescents change with bewildering rapidity . . ." and "The protean nature of the handwriting of the average adolescent, in particular the adolescent girl, is one reason why the greatest caution should be exercised in expressing any opinion on the authorship of such handwriting" [2].

In several recent cases involving the handwriting of teenagers, I have been presented with some difficult problems which raised questions such as:

1. Are there styles of writing which are frequently used by teenagers? If so, what are the characteristics of these styles?
2. How frequently do adolescents use certain unusual letter formations such as lower case "i's" dotted with a circle?
3. How much variation is found in the handwriting of the average adolescent?
4. Is the handwriting of the average adolescent similar to the copybook style, or is it clearly individual?
5. What special precautions, if any, should be taken when examining handwriting of an adolescent?

In an attempt to answer these questions, I conducted a survey and made a study of the handwriting of adolescents.

Presented at the 39th Annual Meeting of the American Academy of Forensic Sciences, San Diego, CA, 16-21 Feb. 1987. Received for publication 26 Feb. 1987; accepted for publication 4 May 1987.

¹Forensic document examiner, Houston, TX.

Handwriting Education

In most schools in the United States today, children are first taught manuscript writing, often referred to as handprinting. During the second or third grade—at about the age of eight or nine—they begin to learn script or cursive writing. Some years ago, distinctive systems of cursive writing such as Round Hand and Spencerian were taught, and it was often possible to determine from examination of handwriting which system the writer had learned. However, the currently taught “commercial styles” are all very similar—being an attempt to make the writing simpler and requiring less effort to write [3]. These styles include the Palmer Method and the Zaner-Bloser System, two of the most frequently taught styles of handwriting in recent years.

Survey

Handwriting samples were taken from 171 writers who were between the ages of 13 and 19. Each writer was asked to complete an information sheet, which included his/her age, sex, whether he writes with his right or left hand, the location of elementary school and high school attended, and who taught him to write. Each writer was then asked to write at least 3 pages of handwriting in his normal cursive style, using a ballpoint pen. The forms used for obtaining this handwriting were forms commonly used by document examiners when obtaining request writing.

The majority of the handwriting samples obtained were taken from students at a Houston high school (Northbrook) in the Spring Branch School District. The student body at this school is racially mixed and includes students from a wide range of economic backgrounds. A lesser number of samples were taken at random from friends or children of friends.

The majority of survey participants had received all of their formal education in Houston area schools, particularly in the Spring Branch School District. Between 1975 and 1979 (the years when most of the writers would have been second and third grade students), the Spring Branch Schools used *Writing Our Language* [4] as their handwriting textbook. The style taught in this book is very similar to both the Palmer Method and the Zaner-Bloser System, as can be seen in Fig. 1. The teacher’s manual which accompanies this book emphasizes that the teacher’s goal should be legibility rather than strict adherence to the copybook style.

According to Hilton,

Any particular personal writing habit may be found in some other person’s writing. For example, an intense left-hand slant or very angular connecting strokes may represent rarer personal habits, but each occurs in the writing of more than one individual. This means that the vast majority of personal writing habits must be considered as class characteristics, but class characteristics of widely different recurring frequency. What we need to determine is the frequency of recurrence [5].

With this in mind, a preliminary examination was made to determine what unusual handwriting characteristics were present, and to rate the samples according to size, slant, and angularity. The samples were then reexamined, noting the presence or absence of the following characteristics:

1. use of 8 which is made with two separate circles 8 ,
2. use of a circle for an i dot *i* ,
3. use of circles for punctuation—periods or colons *;* *:* ,
4. formation of an “n” or “m” with an extra beginning stroke *news* or *many* ,
5. unusually short staff to the letter “d” *and* ,
6. making lowercase letters such as “a,” “c,” “e,” and so forth almost as tall as uppercase letters *thomas* ,

A B C D E F G H I
 J K L M N O P Q R
 S T U V W X Y Z
 a b c d e f g h i j
 k l m n o p q r s
 t u v w x y z
 1 2 3 4 5 6 7 8 9 0

THE ZANER-BLOSER SYSTEM

A B C D E F G H I
 J K L M N O P Q R
 S T U V W X Y Z
 a b c d e f g h i j k
 l m n o p q r r s t t u
 v w x y z 1 2 3 4 5 6 7 8 9 0

THE PALMER METHOD

A B C D E F G H I
 a b c d e f g h i
 J K L M N O P Q R
 j k l m n o p q r
 S T U V W X Y Z
 s t u v w x y z
 1 2 3 4 5 6 7 8 9 0 . ? ! ' " "

HANDWRITING SYSTEM TAUGHT IN LEARNING OUR LANGUAGE
 by Marion Monroe

FIG. 1—Similarities among the Zaner-Bloser System, the Palmer Method, and the handwriting system taught in Learning Our Language by Marion Moore.

7. use of a printed form of the "b" within words where the remaining letters are cursive forms *about*,
8. use of many printed forms along with cursive forms,
9. use of all printed or manuscript forms rather than cursive forms, and
10. unusually great amount of variation in the writing.

Those handwriting samples that had a strong pictorial resemblance to one another were then grouped and examined to determine what characteristics each group had in common.

Results

The 171 writers consisted of 83 males (71 right-handed and 12 left-handed) and 88 females (77 right-handed and 11 left-handed). Of the writers, 129 had received all of their formal education in the Houston area, while 36 had attended at least 1 year of school elsewhere in the United States, and the remaining 7 had attended school outside of the United States at some time.

I found that none of the writers adhered strictly to either the Palmer or Zaner-Bloser systems, or to any similar system. However, a minority of the writers did maintain a style of handwriting which is somewhat similar to these styles. A majority of the writers have clearly learned to deviate from these handwriting systems. Because each writing sample was completed at one sitting, it was not possible to determine from the survey how much any one writer varies from day to day or year to year.

With regard to the characteristics listed above, the results are as follows:

1. Forty-four writers, or twenty-six percent, used the two-circle (8) form of the numeral 8 at least one time. This group consisted of 11 males and 33 females.
2. Twenty-nine writers, or seventeen percent, used a circle as an i dot. This group consisted of 12 males and 17 females. Few of these writers used the circle i dot consistently, but rather mixed circle i dots with the more conventional form of dots.
3. Forty-seven writers, or twenty-seven percent, used a circle for punctuation either as a period or a colon. This group was fairly evenly divided, with 22 males and 25 females. Writers were not counted in this group unless the mark was clearly a circle rather than simply a curved mark. In addition, each writer in this group made the circle form of punctuation mark at least two times in the sample. As is the case with the circle i dots, few of these writers used the circle periods exclusively. Only 17 writers used a circle for both an i dot and a punctuation mark.
4. Eight writers, or five percent, used an extra beginning stroke on the letter "n" or "m." Four of these writers were male and four were female.
5. Fifty-two writers, or thirty percent, had an unusually short staff on the letter "d," often resulting in a letter which looked more like an "a" than a "d." Of these writers, 9 were male and 43 were female. This, of course, means that 50% of the female writers in this survey used this form of "d."
6. Eleven writers, or six percent, made lowercase letters which were almost as tall as the uppercase letters. All of these writers were female.
7. Sixty-six writers, or thirty-nine percent, used a printed form of the letter "b" within words where the remaining letters were cursive. This group includes 17 males and 49 females. To be included in this group, the writer had to use this printed form consistently rather than occasionally.
8. Thirty-five writers, or twenty percent, consistently used printed or manuscript forms of letters mixed with the cursive forms. Eleven of these writers were male, and twenty-four were female. To be included in this group, the writer had to include a great number of printed forms, both uppercase and lowercase, in the sample.
9. Thirteen writers, or eight percent, handprinted the sample even though they were

asked to write in a cursive form. This group consisted of ten males and three females. At least one of these writers stated that he no longer remembers how to write in a cursive style.

10. Six writers, or four percent, wrote with an unusual amount of variation. These writers, three males and three females, produced samples which varied greatly in size, slant, and to some extent, letter formation. In five of these samples, the writing became increasingly illegible toward the end of the sample.

I expected that among the 171 samples of handwriting, there would be a wide variety of handwriting styles, along with some samples which are very similar. In trying to determine whether any particular styles were present in the samples, I decided that at least 10% of the samples should be considered very similar before this similarity would be considered significant. In addition, the similarities should be strong enough that they would present problems for the document examiner who is trying to differentiate between the writers. Using these guidelines, I found 2 separate styles of handwriting which were each used by over 10% of the writers who participated in this survey. I will refer to them as the angular style and the rounded style.

The Angular Style

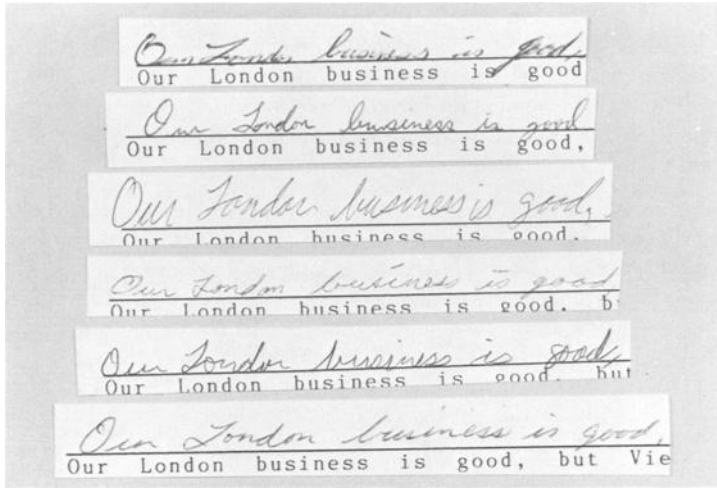
The angular style of handwriting was used by 21 writers—19 males and 2 females. This style of handwriting is, as the name implies, angular. In general, it is also small, with a definite slant to the right. The words are often written with compactness—having short, angular connecting strokes. Although five of these writers occasionally used circles for punctuation marks, only one ever used a circle for an *i* dot. Two of the writers occasionally used the two-circle form of making the numeral eight, while the other nineteen made the conventional one stroke 8. These writers did not often mix printed letter forms in with their cursive forms, but rather maintained a totally cursive style of writing. Only one of the writers sometimes used printed lowercase letters, while eight occasionally used printed forms of capital letters. Nineteen of the writers wrote almost all words continuously from beginning to end, that is, each word was written without lifting the pen from the paper until that word was finished. Eighteen of the writers made “ts” which were retraced rather than looped (see Fig. 2).

The letter formations themselves are often very useful when trying to differentiate between two writings of this style. Certainly the combination of letter formations used by each writer is always important in identifying his writing and differentiating it from that of another writer. In this style, variation among the writers was particularly found in the formation of letters such as T, F, K, J, and in the proportions within letters such as the b, j, f, g, d, and h. Even though the majority of these writings were small, the writers usually maintained a consistent size throughout the three pages of writing. Therefore, the size of the writing might be some indication of identity. In addition, writers who used this style displayed a wide variety of writing skill, making skill level of importance in differentiating these writings.

Rounded Writing

The “classic” rounded writing was used by 21 of the participants in this survey. Note, however, that an additional 18 writers either used this style part of the time or used a style which came very close to fitting in this group. All of the 21 “classic” writers who wrote their entire sample in this style were female. Of the 18 parttime or borderline users, 15 were female and 3 were male. This style is clearly significant since over 40% of the female survey participants use either the classic rounded writing style, or a slightly modified version of this style.

For simplicity’s sake, the description of the style will refer to the classic version—and to



the 21 writers who used this classic style. Writing in this style is large, upright (perpendicular to the baseline), and very rounded (see Fig. 3). The words are written compactly, with letters often touching or overlapping. Surprisingly, only 4 of these writers ever used a circle i dot, although 10 used circles for punctuation occasionally. Fourteen writers occasionally made a two-circle 8. Twenty of the writers had breaks in their words, regularly lifting the pen at least once between letters of a word. Twenty of the writers wrote with very short staffs on the letter "d," as well as in some cases on letters such as "h" and "k." Ten writers made upcase

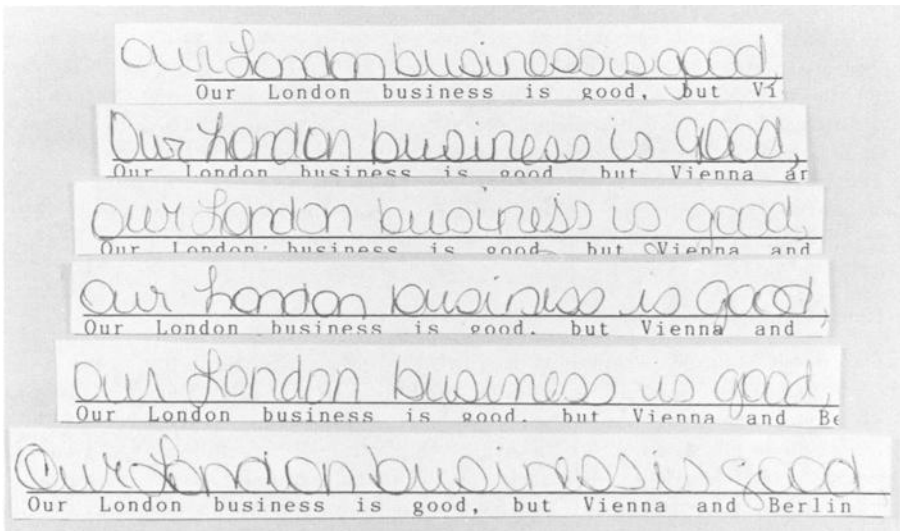


FIG. 3—Examples of handwriting of six classic rounded style writers.

and lowercase letters which are close to the same height. This writing style has rounded connecting strokes, rounded tops to letters such as "n" and "m," and rounded "o's" and "a's." However, all 21 writers regularly made a retraced "t" rather than a looped "t."

The modified rounded style which was used by 18 writers was actually quite similar to the classic rounded style. However, this modified style was generally slightly closer to the commonly taught handwriting systems. In addition, the samples in this category did not resemble each other as much as they in some way resembled the classic rounded style. The modified rounded style is usually of average size and contains uppercase letters which are close to twice as tall as the lowercase letters such as a, c, e, and so forth, as taught in the writing systems. Most of the writings in this group contained very rounded "a's" and "o's," but had more angularity in other areas, such as connecting strokes or the tops of letters such as "n" and "m." In addition, several writers would complete several sentences or phrases with a classic rounded style, then change to a more modified form, then use the classic style again (see Fig. 4).

In observing several writers who were using the classic rounded style, I found that extra time, effort, and attention were usually required to complete several pages of writing in this style. In addition, the fact that many of the writers already slip into and out of the classic style leads me to believe that as these writers mature, they may gradually make their own individual modifications to this style—and eventually use a modified rounded style.

When trying to differentiate between the handwriting of two persons who use a classic rounded style, the examiner must have many samples of genuine handwriting since some of these writings have tremendous similarity. I found that, once again, the letter formations themselves can be of assistance in making this differentiation, particularly the letters f, g, k, r, F, G, J, K, M, N, and T. Writing skill level, size, and the use of printed forms may also be helpful.

If the handwriting in question is very limited, it may be impossible to make a definite identification of the writer. In Fig. 5 are four samples of the word "and," each written by a different writer. As can be seen, if the writing is fairly limited and does not include any highly distinctive letters, making an identification of the writer can be ill-advised.

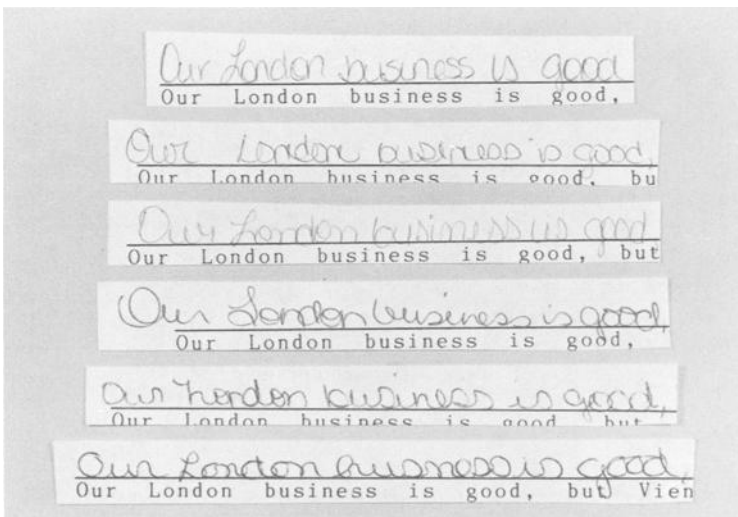


FIG. 4—Examples of handwriting of six modified rounded style writers.

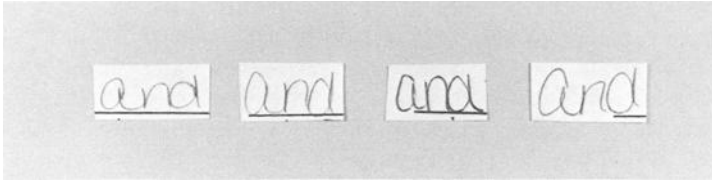


FIG. 5—Four samples of the word "and" written by different people.

General Observations

When examining the 171 samples of writing in this survey, I found that many of the writers occasionally misspelled words, even though they were copying words that were correctly spelled just below the printed line on which they were writing. It was particularly interesting that many of them misspelled the same words in the same manner. For instance, the name "Col. Parry" was misspelled 13 times—12 times as "Col. Party" and once as "Col. Perry." In addition, the word "business" was misspelled 8 times—5 times as "buisness," and once each as "buiness," "businness," and "bussiness."

A great deal of variety was found in the handwriting samples obtained, both in skill level and style. However, I also found that almost every unusual letter formation found in the writing of one person was also found in the writing of at least one other person. Therefore, even though a questioned writing may contain one or two unusual letter formations, the examiner must not place too much importance on these formations, but must consider them in combination with all of the other handwriting characteristics.

Conclusion

This survey of the handwriting of 171 teenagers reveals that there are writing styles which are used by some adolescents, although use of these styles is certainly not restricted to teenagers. Examination of the writing samples also showed that some handwriting characteristics and letter formations which might be considered highly unusual by the document examiner are in fact not quite so unusual among teenage writers. The survey especially reveals the importance of having an abundance of genuine handwriting and an abundance of caution when attempting to identify the handwriting of an adolescent.

Acknowledgments

I am grateful to Mr. Bill McGlaun, Principal at Northbrook High School, who allowed his teachers to obtain so many handwriting samples and who coordinated their efforts, and to Dr. Cherie Vermaelen, Director of Program Evaluation at Spring Branch School District, who approved the school's participation in the program and who steered me to the right people for information on several occasions.

I would also like to thank the following people who so generously obtained additional handwriting samples: Diane Fraser, Ralph Masson, Kathleen Montier, and Gene Webb.

I am especially grateful to all of the writers who participated.

References

- [1] Conway, J. V. P., *Evidential Documents*, Charles C Thomas, Springfield, IL, 1959, p. 37, 38.
- [2] Harrison, W. R., *Suspect Documents, Their Scientific Examination*, Nelson-Hall, Inc., Chicago, 1981, p. 297.

- [3] Miller, J. T., "Departure from Handwriting System," *Journal of Forensic Sciences*. Vol. 16, No. 1, Jan. 1972, pp. 107-123.
- [4] Monroe, M., *Writing Our Language*. Scott, Foresman & Company, Glenview, IL, 1976.
- [5] Hilton, O., "How Individual are Personal Writing Habits?," *Journal of Forensic Sciences*. Vol. 28, No. 3, July 1983, pp. 683-685.

Address requests for reprints or additional information to
Janet F. Masson
Forensic Document Examiner
5900 Memorial Dr., Suite 304
Houston, TX 77007