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## Determining possible differing adverbial placement between the linguistic structures of left- and right-handed writers

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DETERMINING POSSIBLE DIFFERING ADVERBIAL PLACEMENT BETWEEN  
THE LINGUISTIC STRUCTURES OF LEFT- AND RIGHT-HANDED WRITERS

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A Thesis  
Presented to the  
Faculty of  
California State University,  
San Bernardino

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts  
in  
English Composition

---

by  
David Sanford Ramsey

June 1998

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Approved by:

  
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## ABSTRACT

This thesis has attempted to determine if there are differences, concerning adverbial placement, between the sentences of left- and right-handed writers. To make this determination, I have statistically analyzed compositions of eight graduate students (four left-handed and four right-), and two left-handed published authors' (Lewis Carroll's and Mark Twain's) private correspondence. This research is augmented by forty participants' (twenty left-handed and twenty right-) choices of sentence structures, through a questionnaire, concerning differing adverbial placement.

With both of these forms of research, the percentage of difference was quite small regarding the students' data--a four percent difference in the compositions, and a two percent difference concerning the questionnaire. The main explanation I posit regarding this data is that this research seems to further validate theories proposed by other researchers--that the right hemisphere of the brain, the hemisphere by which left-handers are dominated, is unable to create sentences, and is also unable to hear linguistic sounds; hence, even individuals who are not left-hemisphere dominant still utilize this hemisphere concerning these functions.

However, the two published authors had a higher percentage of adverbials occurring after the verb, and I present several explanations for this data. The first is that the linguistic conventions of the time in which the correspondence was written may have reflected such use. Furthermore, because they are published authors, these individuals may exhibit more freedom (and preference) in the placement of adverbials, thereby being able to exhibit left-handed inclinations. However, I also acknowledge that the high percentage of adverbials which occur before the verb may be more indicative of their prowess as writers, and not their left-handedness.

## ACKNOWLEDGMENTS

First and foremost, I would like to thank my mother, Barbara Ramsey, for her help with various aspects of this thesis. Secondly, I am very grateful to the students who allowed me to analyze their compositions, who filled out questionnaires, and who helped me find participants for my study. Finally, each of my readers has been very helpful throughout the writing of this thesis, always giving me insightful comments, beneficial suggestions, and areas for further exploration.

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## INTRODUCTION

In this thesis, I will attempt to determine if structural differences exist between the sentences of left- and right-handed writers. I have noticed a particular quality in my writing the past two years, which I believe exists because I am left-handed. This quality concerns the differing placement of adverbials, which have a less rigid nature than do other sentence units, such as the subject or verb, which, in English, have a fixed placement. For example, in the sentence, "As I am in an English Composition program, my thesis had to somehow focus on that field, which worked well for what I was already interested in." I believe a right-handed writer's inclination would be to reverse the placement of the words "already" and "was." A further example occurs in the sentence, "I liked his deductions very much, and will later get his book," which I suspect would be written by a right-hander as, "I liked his deductions very much, and will get his book later." Another instance is the sentence, "He never has bought a car," which, when written by a right-handed author, I suspect would be written as, "He has never bought a car." This difference may seem trivial and insignificant, but there is in fact a possible indication of a differing thought



process between right- and left-handers, which is manifested through adverbial placement.

In addition, once I became aware of the existence of differing adverbial placement, I have noticed consistent abnormal adverbial positioning in my own writings, as well as instances of similar adverbial placement in other left-hander's works. For example, in his book Lefties: the Origins and Consequences of Being Left-Handed, Jack Fincher writes this sentence on the opening page: "Thanks finally to those too numerous to mention who contributed by word or deed to the genesis of this book, but will, alas, find themselves not in its pages." Written by a right-hander, I suspect the line would be written as, ". . .not find themselves in its pages." Therefore, I am interested in determining if other left-handers consistently have similar kinds of structural differences in their sentences and if these differences are indeed limited to the compositions of left-handed writers (if they, in fact, exist on a consistent basis beyond my own writings).

## CHAPTER DESCRIPTION

This thesis will consist of five sections: the first will examine findings and theories proposed by researchers, both in the fields of psychology and English Composition. While I have not encountered research which deals directly with the topic of possible structural differences between the compositions of left- and right-handed writers, theories do exist which are related to my topic. Many of these theories are in the realm of mirror-writing, such as William deKay's perception that ". . . left-handers come naturally to a very unusual skill: the ability to read and write backwards. . . left-handers have an innate preference for reading right to left. The tendency to read the wrong way accounts for the large number of left-handed dyslexics" (236). Furthermore, Dr. Egbert Spadino, a philosophy professor at Hunter College of the City of New York, asserts that mirror-writing is a natural tendency for left-handed writers: "Mirror writing may be defined as writing that. . . begins at the right side of the page and continues to the left. Each individual letter shows a reversed orientation. . . . Blom reviewed most of the literature on mirror-writing. . . and from it concluded [(in the Psychological Bulletin)] that mirror writing is just as

normal for left-handed people as normal writing is for right-handed people" (Spadino 12, 14). Arthur Linksz, a medical doctor and a clinical professor of ophthalmology, has come to a similar conclusion regarding mirror-writing through studies such as presenting his patients with a cluster of regular and inverted words and asking them to choose the word they think matches a spoken word: "What is mirror writing to us [(the right-hander),] is natural writing to the left-hander" (Linksz 179). My theory concerning the placement of adverbials in left-hander's writing is that, while left-handed students are not given the freedom to write in a "mirrored" style, the inclination for this reversal still pervades in the left-hander's thought processes, thereby manifesting itself, when compared to a right-hander's inclination, in the inverted placement of adverbials in a sentence-level structure.

In the second section, I will develop my own data through statistical analysis, by examining compositions of left- and right-handed student writers from the graduate English program at California State University, San Bernardino, and will determine if my conclusions correlate with, thereby enforcing, those theories proposed by other researchers, and my findings from the published writers' compositions examined in section two. The method used will

be to note the number of each type of adverbial placement (whether the adverbial occurs on the left or right side of the word or clause it modifies) in one composition from each writer, and then to compare those statistics, both from one left- and right-handed writer to another, in addition to the whole sample of left-handed subjects with that of the right-handed sample. I will only note the adverbials which are capable of appearing before or after the verb it modifies, as these are the instances which will indicate a difference, if there is indeed one, between the compositions of left- and right-handed writers.

Furthermore, in an effort to allow the reader a better sense of the situation in which the placements occur and the patterns they create, I will list the adverbials in their order within the composition. In addition to analyzing the number of adverbials occurring before the verb with those which occur after, I will also compare the statistics of particular adverbials. I will analyze the compositions of six left-handed writers and six right-handed writers, as well as differentiating these two groups by equal representations of gender.

The third section will examine the published writings of two left-handed authors, Lewis Carroll and Mark Twain, to determine if the theories proposed by the researchers in

section one, and the findings from my own compositions, confirm the writing techniques exemplified by these authors. In an effort to analyze work which has not been edited or otherwise changed by people other than the author, I will look at the private letters of these authors. Furthermore, I will utilize two sources for each author and will randomly choose (by picking a page number from a cup), the starting points of the analysis.

As with the second section, the technique of statistical analysis with these authors will be to note the number of adverbials in the chosen chapters which occur on either side of the word or clause which it modifies, in addition to listing particular adverbials (and their related word(s)) which occur more than three times in the chapter, and the adverbial location in each instance. In this manner, I can compare the positioning of particular adverbials between the two authors' works. Lewis Carroll is an especially interesting case for my purposes, as he utilizes both mirror-writing (in the first part of "Jabberwocky") and the adverbial placement which I propose is typical for left-handed writers. This differing placement is evident when Humpty Dumpty says to Alice, "with a name like yours, you might be any shape almost" (Carroll 261). I assert that, had the line been written by

a right-handed writer, the sentence would read, "with a name like yours, you might be almost any shape." For my theory to gain validity, there would have to be consistent placement of adverbials in left-handed compositions, a placement which does not appear (for the most part) in the compositions of right-handed writers. In addition, it is important to note that because the sample is so small the conclusions of the study will remain in the realm of speculation.

The fourth section will list the responses to a questionnaire (given in the appendix), which was given to twenty left-handed and twenty right-handed people. For each pair of sentences, the respondents were asked to circle the sentence they liked better, or thought was more appropriate, as each component of the pair positions the adverbial differently. The results of this data will then be used to augment the research of the previous two sections.

In the fifth and sixth sections, I will integrate the knowledge gained in the previous four chapters in an effort to draw some broadly substantiated, if tentative, conclusions. If a consistent placement of adverbials is exhibited in the left-handed students' compositions, the writings of left-handed authors, and the responses to the

questionnaire, such results should provide ample evidence for the validity of my theory. However, if the conclusions don't validate my theory, either because the placement of adverbials is not found consistently in left-handed compositions beyond my own, or the compositions of right-handed writers have similar placement, I will still consider the thesis a valid endeavor because it disproves an interesting hypothesis. Furthermore, there are important implications for my thesis regarding the teaching of writing--namely, to diminish a teacher's possible inclination in thinking that a student's exhibition of the left-handed placement of adverbials necessarily represents a lack of writing skill, therefore attempting to correct what is seen as a "problem". While I do not assume that instructors will necessarily penalize students for unusual adverbial placement, it seems reasonable that this characteristic may indeed be a factor in terms of writing assessment. Certainly at a time when minorities of various types are embraced as enriching the classroom environment, a left-hander's distinguishing qualities, in terms of writing, should be allowed a similar status.

## DEFINITION OF TERMS

For the purposes of the statistical study, a subject will be placed in the left- or right-handed categories of writers, strictly based on their hand preference when writing. The data will be examined to see if consistent differences exist between the two categories, as determined through this sole criteria. Furthermore, degrees of sidedness will be taken into account, and the data between writers of varying degrees of sidedness will be examined to determine whether differences exist, regarding the placement of adverbials, between writers with varying degrees of sidedness. Ascertaining the degree of sidedness of the subjects is particularly important when analyzing left-handers' work, as left-handers vary considerably in their degree of left-sidedness. For example, a left-hander may write with his/her left hand, but throw a ball, or do other tasks with the right. In particular, being left-eyed is the rarest characteristic of otherwise left-handed, right-hemisphere dominant individuals. To determine the degree of sidedness of the subjects, they will be asked questions which have been used previously by researchers in a questionnaire, such as: With which hand do you throw a ball? With which hand do you brush your teeth? With which



foot do you kick a ball? With which eye do you sight a gun or periscope? These questions will be asked of all subjects, and the exact questions and range of answers will be presented.

When the word "sinistral" is used in this thesis, it refers to individuals who are left-handed when writing, and, therefore, are placed in the left-handed category, regardless of any degree of left-sidedness beyond this foremost distinguishing criteria. The word "sinistral" derives from the ancient definition for "left," which literally was "sinister." Conversely, right-handers will sometimes be referred to in this thesis as "dextrals;" the term also deriving from the ancient definition for "right," which is "dexterity."

An adverbial is defined by Tom McArthur as, "a word, phrase, or clause that modifies a verb or a verb plus other words. . . . Unlike subjects, verbs, and objects, most adverbials are optional and may be omitted without making a sentence ungrammatical" (15-16). Michael Newby further describes the less restricted nature of adverbials: "In some cases...[adverbials] are obligatory. In most, cases, however, they are optional elements (unlike the [other syntactical elements]). They are also the most mobile of the clause elements. Generally, they express more about the

event in the clause or comment on the clause itself. They can also link one clause to another in sequence or logically" (91-2). Because adverbials are capable of being in more than one position in a sentence, it is possible that left-handers could place them in a different position than right-handers (for example, either to the right or left of the word it modifies), and all writers' sentences would still be syntactically correct and make sense.

## CHAPTER ONE

### ANALYSIS OF THEORIES RELATED TO LEFT-HANDED COMPOSITIONS

#### Left-Handed Difficulties With Reading

Just as the reading and writing practices of right-handers are inextricably related, so, too, are the reading and composition practices of left-handers. Furthermore, the problems which left-handers consistently encounter while reading appear to shed light upon explanations for the type of writing characteristics I suspect are typical of the left-handed writer. It seems that, as a result of the dominance by the right hemisphere of the brain, left-handed people usually not only prefer to read right to left, but, according to Evelyn Kelly, are read in an inverted fashion by juxtaposing particular letters and words:

Enstrom and Enstrom (1971) believe that too often children who have initial reading problems are lefties, though there are no significant intelligence differences between right-handed and left-handed learners. They contend that how we read was probably developed by right-handed people. Thus, English text reads from left to right because the natural progression of the hands and eyes is from the middle of the body outward. Right-sided individuals naturally look and move to the right; the left-handed to the left. . . Enstrom and Enstrom also point out that printed letters tend to 'read right.' Most letters 'open' to the right; examples include L, F, E, C, and so on. The body of the letter is

seen first, and the open right side of the letter leads the reader to the next letter. Left-handers must read counter to the natural inclination of their eye movement. Thus it is hardly surprising that many lefties experience difficulty learning to read, often with the specific problem of letter and word reversals. (Kelly 22, 23)

Given such inclinations for left-handed readers to read in a reversed fashion, as manifested both through the preferred direction and the inversion of letters and words, it is not hard to imagine, rather, in fact, is logical, that these tendencies would likewise appear when the left-handed individual proceeds to write--also resulting from the natural inclination of their dominant hemisphere's thought processes which result in inverted manifestations--whether it is the processes themselves that are inverted, or only appear inverted when brought to fruition in a right-hander's context. In addition, it is inevitable that the tendency to invert words and letters is evident in left-handers at this very early stage. While the inversionist tendency does correct itself, or is corrected, in most left-handers to allow them to read accurately, the inclination nevertheless persists in the left-handers' thought processes, thereby accounting for the odd (in view of the right-handers' placement) adverbial placement.

However, if no significant differences are found between the compositions of sinistrals and dextrals in this

study, it may indeed be because eighty percent of the participants are graduate students, and have therefore gained the linguistic conventions of the dextral world in which they live. Through this situation, I assert that certain adverbial placement has been encountered consistently in discourse, and this information has been retained and emulated, rather than right hemisphere dominant individuals generating such placement inherently. The acquisition of such conventions is especially imperative when, as I have mentioned previously, the compositions will likely be evaluated by dextrals. As the adverbial placement questionnaire was given to individuals with varying levels of education, this data will help determine the likelihood of sinistals utilizing acquired linguistic conventions, or if in fact they are gained in contexts beyond the academic realm.

Corresponding with the theory concerning the acquisition of linguistic conventions by the graduate students in this study because of the evaluative situation in which they are placed, if significant differences are found between the graduate students and the published writers for this study, a possible explanation is that the published writers, because of their status, do not need to follow the linguistic conventions of their time, and

therefore are able to manifest the placement typical of sinistrals. If published authors do exhibit placement differences from the graduate students in this study, however, this may indeed derive from their acquisition of differing linguistic conventions--those of the latter half of the nineteenth century. However, further analysis of writers from this time period would be necessary to establish the linguistic conventions of this moment in history.

Furthermore, adverbial placement changes the meaning of the sentence; it is used to create an effect, and the published writers may be using this linguistic structure to rebel against the very linguistic conventions the graduate students may find advantageous, in terms of assessment, to have acquired. For example, Carroll uses adverbial placement to illustrate the unusualness of Wonderland in Alice in Wonderland (which will be discussed further in that section), and its non-adherence to "normal" structures of every kind, linguistic and otherwise. It will therefore be interesting to determine whether these usual adverbial placements persist in his private correspondence, situations where they seemingly aren't consciously (or as consciously) used to achieve a rhetorical effect. Moreover, this abnormal adverbial placement would seemingly

complement the outsider status that left-handers are afforded. Therefore, sinistrals who can afford to manifest unusual adverbial placements in their compositions, such as published authors, may indeed embrace this type of linguistic structure for these external, as well as internal (in the form of their hemisphere dominance) factors.

Georg Deutsch and Sally Springer also describe differences in the acquisition of linguistic knowledge between the two hemispheres of the brain:

[A] study that highlights [the] information-processing approach to brain asymmetry was one that took advantage of the fact that there are alternate ways for subjects to remember pairs of words. One is to rehearse the words by repeating them out loud or subvocally; a second is to form an image of the items interacting in some way . . . . They proposed that this difference would be tapped by having subjects indicate whether a picture flashed to the right or left visual field [(associated with the left and right hemispheres of the brain, respectively)] corresponded to one of the words previously presented. Results showed that when subjects were told to remember the words paired by subvocal rehearsal, response time was faster for probes to the right visual field. When subjects were asked to form images of the to-be-remembered pairs, response time was faster for the left visual field. These findings were in keeping with the predictions. (Springer, Deutsch 73-74)

As this passage exemplifies, both hemispheres of the brain serve decidedly different functions in the acquisition of linguistic knowledge--the ability of individuals to make

sense of what they read. Furthermore, when students are given one type of instruction, as is most often the case with subvocal instruction for this knowledge (stating the words out loud to see how they sound--how the letters transform to sounds), a person who processes language visually will be at a definite disadvantage. In such a situation, right-hemisphere dominated individuals have to either solely utilize their non-dominant hemisphere, or transfer knowledge gained from the right to the left hemisphere. Therefore, I contend that both this differing processing of linguistic information between the hemispheres and the instruction students receive, which almost invariably favors the left hemisphere mode of processing, substantially contributes to the difficulty sinistrals often have when reading.

However, it must be noted that not all theorists are convinced that left-handers' reading problems occur because of their dominance by the right hemisphere. While Linksz does acknowledge that there is are more left-handed people with reading problems than their right-handed counterparts, he wonders whether the problems stem from external, not internal, factors: "From my own experience I must confirm the generally held opinion that there is a greater percentage of poor readers among left-handers than right-



handers. Is the poor ability to read really caused by the same twist in hemispheric dominance that caused the left-handedness? Or is it not just a secondary outcome of the way we handle or mishandle the left-hander?" (184). I do not agree with Linkszt for the primary reason that inversionist tendencies of the left-handed individual are evident in other facets of life besides that of reading--composition, for example, as mirror-writing is performed almost solely by left-handers. Also, as is discussed in a following section, left-handers are particularly prone to dyslexia--a problem associated with the inversion of letters and words. If the reading problems left-handers have occur because of external, and not internal, factors, it seems logical that there would be a relatively equal number of dyslexics among both right- and left-handers. However, this difference of opinion among theorists that Dr. Linkszt presents is an indication of things to come--it is interesting that there is a peculiar lack of consensus in every aspect of left-handed theories which are discussed in this chapter. I do, in fact, consider it beneficial that there are competing theories for various characteristics of left-handers, or at least someone to challenge the theories as they have been presented, as does Linkszt.

## Left-Handedness and Dyslexia

As mentioned in the previous section, there are more left-handed dyslexics than right-handed; therefore, some researchers have viewed dyslexia as being linked to the thought processes of the left-hander. These theories are exemplified by Kelly in the following passage: "Some researchers are inclined to believe that left-handedness and dyslexia, in which many words and letters are seen as reversed, are connected. For example, Nelson Rockefeller, a left-hander, often read words backwards and sometimes wrote letters and words reversed. His father tried hard to change his handedness but with no success. Rockefeller was later diagnosed as dyslexic" (Kelly 23). Furthermore, as dyslexia is the problem of reversing letters and words, left-handers' tendency to have this problem can be interpreted as yet another indication that sinistrals do indeed think in an inverted fashion--the trait being a manifestation of left-handers' dominance of the right hemisphere of the brain.

Samuel Orton believed that a person read and wrote in an inverted fashion because of the absence of dominance by the left hemisphere, thereby resulting in dominance by the right:

[Samuel Orton] believed that a person who wrote and read backwards did so because the dominance of the left hemisphere had not been established. However, Orton also believed that the suppression of left-handed activities would eliminate the reversals. Today. . .many of his theories are no longer believed. Teachers currently realize that both hemispheres contribute to the learning process and that suppression of left-handedness is often counter-productive. (Kelly 23-4)

This passage touches on an interesting point: Orton believed that the suppression of left-handed activities would "eliminate the reversals" of dyslexia. However, while it is not explicitly stated, it may be inferred that left-handers still exhibited dyslexic traits even when the use of their left hand was suppressed--one of the reasons which contributes to the current lack of belief in his theories. Furthermore, while I acknowledge that both hemispheres have a role in an individual's learning process, as Kelly states, all people are nonetheless dominated by one hemisphere of the brain or the other. It is this dominance which I suspect accounts for many of the left-handers' characteristics, such as dyslexia, and which remain prevalent even when an individual consciously suppresses the activities associated with their dominant hemisphere.

Furthermore, Kelly also posits that there may be external factors which contribute to writing problems many left-handers have:

There is . . . a popular belief that left-handers have inferior writing skills—composing, not penmanship—but that belief has yet to be demonstrated. However, the manual act of writing may be difficult for left-handed students to master in a right-oriented classroom. Thus, poor legibility and lack of writing fluency may be factors that keep some lefties from being as successful as their right-handed peers. (Kelly 24)

Kelly's assertions again illustrate the need for left-handed students' situations to be accounted for, and accommodated, in the classroom setting. Although Kelly is not contending that the features of a "right-oriented classroom" will create dyslexic features, the situations that such a context presents may exacerbate, or, even worse, mask (because of illegibility of the writing) the linguistic problems sinistrals may indeed be having. Therefore, I view the internal characteristics of sinistrals, and the external factors which they encounter, as serving complimentary roles in contributing to the difficulty left-handed students are confronted with when reading.

### Mirror Writing

While I have been unable to find percentages of sinistrals who produce mirror-writing, all the theorists I

have examined agree it is an act which is decidedly more common among sinistrals than dextrals. Regarding explanations for mirror-writing, and its tendency to be performed by left-handed individuals, theorists have derived some particularly pertinent ideas for this thesis. For example, Ireland posed the following line of thought from the case, reported by Buchwald, of an aphasic man with right-sided hemiplegia who wrote "skillfully" from left to right in mirror-script. The man's aphasia disappeared over the following months; however, the man's mirror-writing persisted:

. . .if a double image is formed in the visual center, one in the right hemisphere of the brain and the other in the left, do the images lie to each other in opposite directions. . .? We can thus conceive that the image on the left side of the brain being effaced through disease, the inverse image would remain in the right hemisphere, which would render the patient apt to trace the letters from right to left, the execution of which would be rendered all the more natural from the greater facility of the left hand to work in the centrifugal direction. Moreover, when one used the left hand to write, there would probably be a tendency to copy the inverse impression or image on the right side of the brain [Ireland, 1881, p. 367]. (Harris 62)

Twenty years later, Lombroso expressed a similar explanation, when intrigued by the mirror-writing of madmen:

There is a contradiction between the two lobes of the brain, as in the case of a pair of horses, one wishing to go in one direction and the other in another, so that the great effort to act is

frustrated by a complete inertia, when an extraneous influence does not intervene to re-establish order. In the same way I try to explain another and more curious fact, which occurs in certain old lunatics, that of writing backwards as is done in lithographs. We, from children, imagine and probably acquire the forms of letters correctly in the left lobe, and backwards in the right, and so we reproduce them according as the left or right lobe predominates [Lombroso, 1903, p. 443]. (Harris 62)

Ireland's and Lombroso's theories of how the two halves of the brain differ, and work in conjunction with one another, certainly seems like a logical line of thought, and adequately explains the mirror-writing which is dominated by left-handed individuals.

At this point, it should be noted that I have found the tendency to consistently juxtapose letters of words when typing on a typewriter--a situation where the process of composing is more quickly from thought to paper, as opposed to handwriting, where the individual must consciously think about what he is doing while he is creating the words. Therefore, because of this extremely slowed down composing process, I do not invert letters while hand-writing. I submit this conclusion not as a detractor from the current conversation, but as evidence for it: the consistent juxtaposing of letters while composing on a typewriter would seem to suggest that a left-hander's brain is thinking in an inverted letter

fashion, and must correct this inclination, either before the words reach the paper or after they have been recognized on the sheet. However, on the basis of my own composing process as has been outlined here, I must disagree with Ireland on one point: when hand-writing, left-handed individuals with no brain injury will not necessarily write the inverse impression of the word because, for, even though I suspect this is the left-handers' inclination, I also contend the left hemisphere of the brain will correct this inversion before the individual actually creates the letters. However, as I have mentioned throughout this thesis, these inversionist tendencies still persist in the left-hander; thereby manifesting itself in the differing placement of adverbials from that of the right-hander--an occasion where the unusual placement is seen as syntactically correct, and therefore satisfies both the right and left hemispheres of the individual. Also, I do not necessarily disagree with Lombroso's theory that all individuals acquire the "backwards" forms of letters in the right hemisphere of the brain; however, it is the placement of words that I am concerned with in this thesis, and it is in this realm I suspect that inversionist tendencies are also evident in sinistrals.

Furthermore, Linksz states that left-handers naturally

tend to read from right to left and write in mirror-script, and that these inclinations derive from internal, brain-hemisphere characteristics:

[In cases where] the reading goes from right to left, [such examples are] best suited to a left-hander's manual kinetics and kinetic memory . . . [Mirror script] is the way every left-hander would write if he had the choice, he himself being the mirror image of the right-hander in terms of right and left. . . [The left- and right-hander] are each other's mirror images in terms of a perpendicular mirror facing either of them. (Linksz 189)

As exemplified in the above passage, the natural tendency for left-handers is to invert various facets of their composition and reading process. The theory of this thesis is that even though left-handers are well aware that they must exist in a right hander's written world these inversionist tendencies manifest themselves in distinct differences from their right-handed counterparts--i.e., the complete squelching of such tendencies--thereby absence of such differences--are beyond the left-hander's conscious control. Therefore, it is my suspicion that given both these situations--natural inclination toward inversion by the left-hander, and the non-inverted world in which the left-hander finds himself--causes the left-handers' writings to manifest these inversionist tendencies in characteristics such as the abnormal placement of



adverbials; opportunities where the left-hander can illustrate his/her characteristics, but still have the sentence make complete sense, thereby figuratively surviving in a right-handed world. This placement allows the left-hander to satisfy both his or her inclinations and necessities.

However, as I mentioned in the section on dyslexia, there is a peculiar lack of consensus among theorists about the explanations for certain characteristics of sinistrals. For example, Lauren Harris does not view mirror writing as being a natural inclination for sinistrals, but rather is achieved through conscious effort:

Mirror writers [Leonardo and Carroll] were, but there is no evidence that Leonardo or Lewis Carroll were ever confused about spatial direction, or that their practice of mirror writing was anything but strictly controlled. However, the same phenomenon, when found to be commoner in left-handed, ambidextrous, or retarded children and adults, was widely held to be evidence of just such a [cognitive deficiency] disability, and by the 1920's, a huge literature had developed. . . (Harris, 61)

I disagree with Harris' assertion that left-handers write in a mirror style with "strict control." Such an assertion would suggest that mirror-writing requires special concentration by sinistrals and is not an act which comes naturally to them, more so than regular, left-to-right writing. If this were the case, the implied assertion is

that sinistrals have no particular skill for mirror-writing; hence, there would be relatively equal cases of mirror-writing among both left- and right-handers--which is certainly not the case. Furthermore, I highly doubt that left-handed children (as being a population with a high ratio of mirror-writers) would perform an act which requires "strict control." Rather, as Michael Barsley states, there are more incidences of mirror-writing among left-handed children than adults, thereby suggesting exactly the opposite of what Harris asserts: that mirror-writing is a natural inclination for sinistrals--an inclination in which left-handed children freely indulge, but when, as adults, they learn to conform and adapt to the ways of right-handers, the incidences of mirror-writing are decreased.

Barsley, in his book, Some of My Best Friends are Left-Handed People: An Investigation into the History of Left-Handedness, mentions the fact that mirror-writing is more common in children than adults; however, the act of mirror-writing, whether performed by children or adults, is dominated by sinistrals:

. . .the main source [of mirror-writing] seems to lie with children, and their earliest efforts to form letters. Sir Cyril Burt declares that, although mirror-writing is found especially among backward left-handed children, it is by no means

always a subnormal trait. . . Certain letters are often reversed. The 'lower case' b and d and p and q are mirror images of each other. S and n are also frequently written the wrong way round. If children get accustomed to letters being reversed, why not whole sentences? The most frequent age for mirror-writers, in Burt's opinion, is between 5 and 9, and is certainly more common among the left-handed. . . (Barsley 186)

This passage exemplifies the fact that left-handers have the tendency to mirror-write; however, the act of inverting words and letters is more prone to be performed by children, who are less constrained by conventions of writing. As left-handers become older, they learn through ritualized instruction in school to diminish this tendency on a conscious level, and write in a right-handed fashion. However, I suspect that the tendency to invert words does persist on a subconscious level as a result of left-handers' right-hemisphere dominance, thereby manifesting itself in the differing placement of adverbials. As was mentioned in the dyslexia section, left-handers could not prevent their dyslexic tendencies by simply subverting actions with their left hand; similarly, I do not believe that, while left-handers can learn to write in a right-handed fashion (i.e., non mirror-writing) through ritualized instruction, they can completely avoid the inverted thought process of their dominant hemisphere.

## The Right-Hemisphere of the Brain

As in the other areas which I have examined in this section, there is also disagreement among theorists concerning the role of the right hemisphere in language. Most of the theorists seem to diminish the importance of the right hemisphere's role in language, if they even acknowledge that the hemisphere does serve a function. For example, Mark Brown states that even left-handed people, whose overall functioning is dominated by their right hemisphere, are usually similar to right-handers in their brain functioning, when it concerns language:

Whereas nearly all right-handers will process language in the left brain, probably only about sixty-percent of left-handers process it in the left. . . . A left-hander with a history of left-handedness in the family may have speech and visual abilities present in both hemispheres. On the other hand, left-handers without any history of left-handedness in the family tend to have the same brain organization as right-handers—that is, with speech in the left hemisphere. (Brown 75, 81)

Linksz goes even further than Brown to assert the limitations of the right hemisphere in relation to language functions:

. . . when it comes to expressive language, then, according to the statistics of Goodglass and Quadfasel (1954), even left-handers are left-brained: left-handers too become aphasic following injury to the left brain in the overwhelming

majority of cases. . . Visual images from the left field of vision fall upon the right visual brain cortex . . . But . . . when it comes to "seen" language (written or printed matter) then, via a special radiation of nerve fibers, these visual impressions arriving in the right brain must be channeled to a "visual language interpretation area" (the angular gyrus) on the left side. . . . And in view of the statistics by Goodglass and Quadfasel, we can with similar confidence assume that the visual language interpretation area even of left-handers will be preferably localized in the left brain. (Linksz 183)

These author's assertions are interesting, especially as I have attributed language factors, such as mirror-writing, the commonality of dyslexia among left-handers, and the adverbial placement which I propose is typical of sinistrals, to the differing thought processes of the sinistrals' different dominant brain hemisphere, the right hemisphere. Therefore, I disagree with the theory that the right hemisphere plays no role, or a diminished role, concerning language in left-handed people. First, it is clear that left-handed individuals are dominated, as a whole, by their right hemisphere. Consequently, I find it very hard to entertain the notion that the right hemisphere would relinquish power to the left hemisphere in this one area. Furthermore, if language was processed in most individuals, left- and right-handed, through the left hemisphere of the brain, there should be less drastic differences concerning the manifestations of language

processing between the two factions of individuals, such as left-handers' propensity for dyslexia, and mirror-writing.

However, not all theorists agree that the right hemisphere of the brain is virtually insignificant when processing linguistic information. For example, John Bradshaw states that the right brain does indeed serve a valuable, and complimentary, role in the processing of this type of information:

We certainly cannot conclude that all speech and language functions are limited to the L[eft] H[emisphere], with a mute aphasic R[ight] H[emisphere] playing no role at all. In fact, Van Lancker (1987) sees a continuum between a LH which via a generative grammar can synthesize new propositions according to combinatorial or syntactical rules at the level of phoneme, morpheme, word and phrase, and, on the other side, a RH which processed more at the level of complex integrative patterns. Thus, information on sex, age, mood, personality, personal identity and dialect origin which is conveyed across the whole utterance, is not analyzable into subunits and is independent of propositional content. Automatic phrases, cliches, formulaic utterances, metaphors, expletives, idioms, greetings, proverbs, rhymes, conventional and overlearned expressions, serial lists (numbers, days of the week, months. . .), quotations all fall into this potential RH category. . .It is unclear whether the actual articulation of such RH material must necessarily occur through LH mechanisms; however, there is evidence of considerable RH powers of articulation. (Bradshaw 144)

Bradshaw's assertions are in accordance with views posited by other researchers in previous sections of this chapter-- that each hemisphere of the brain serves different, and

compatible, functions. Therefore, according to these theorists, the right hemisphere is imperative for full linguistic functioning and processing by an individual. Furthermore, only the acknowledgment that each hemisphere does serve different linguistic functions allows for explanations concerning the differences in both processing and the manifestation of linguistic knowledge by individuals who are dominated by either hemisphere.

Still another objection to Linksz' (and others') views that the right hemisphere contributes very little, if anything, to the processing of linguistic information by an individual, is Thomas Blakeslee's assertions that:

. . .the difference between the left and right hemisphere scores [from picture vocabulary tests] remained about the same for obscure words as it did for very common words. This is a very significant finding because it shows that the right brain's vocabulary is not just something left over from childhood. . .It appears that the vocabulary of the right brain continues to grow in adulthood. (Blakeslee 133)

If the right hemisphere of the brain was as limited as to be virtually useless in processing linguistic information, as Linksz and others contend, there would be no need for this linguistic 'growth.' Hence, by the existence of this linguistic 'growth,' it is apparent that the right hemisphere does indeed serve a valuable function in regards to linguistic knowledge, and, furthermore, that these

functions often differ from those of the left hemisphere. These differing functions allow for, and set off, the differences between individuals who are dominated by these hemispheres, such as sinistrals' propensity for mirror-writing, dyslexia, and, I posit, adverbial placement.

Moreover, theorists differ concerning the linguistic components they posit are recognizable by the right hemisphere. For example, Brown asserts that this hemisphere, in later years, only recognizes specific linguistic components: "It appears that for the first six or more years of a child's life both the left and right brains are involved in language. The taking on of speech by the left brain takes place later on in a child's life. The adult right brain can respond to printed or spoken nouns, but has difficulty with verbs. It's syntax is weak" (Brown 69). Such a situation that Brown espouses would seem to severely limit linguistic function of the right hemisphere, for it lacks the necessary components to create sentences, or indeed, even to recognize complete sentences.

However, Blakeslee cites an experiment which refutes Brown's theories concerning the limitation of the right hemisphere in regards to the linguistic components it recognizes:

One of the surprising results of the Zaidel



experiments is that the [split-brain] subjects' right brains understood verbs just as well as they did nouns. Earlier experiments by Gazzaniga and Sperry found that subjects were unable to follow printed commands like 'laugh,' 'smile,' 'tap,' or 'hit' when they were flashed to the left visual field. It is conceivable that the language ability of the right brain is a passive one whose function is primarily to make use of verbal information for clarifying the context of other sensations. (Blakeslee 132)

Blakeslee's comments do seem to indicate that, even with the ability to create sentences through the recognition of the necessary components, the right brain still does not create sentences, but, rather, plays a "passive" role.

These theories are extremely interesting for this thesis, as I am positing that the right brain does indeed create the adverbial placement in sentences; hence, the differing placement between the compositions of left- and right-handed writers.

Blakeslee further establishes this recognition/creation distinction of words by the right hemisphere in the following passage:

The ability to understand words and simple sentences does not necessarily imply that the right brain can create sentences. Expressive language is a much more complex process in that words must be assembled into a meaningful order . . . The left brain's monopoly on expressive language is so strong that most of the split-brain patients are unable to demonstrate any right-brain expressive language . . . (Blakeslee 133)

If no differences are found concerning adverbial placement, between the left- and right-handed participants' compositions and answers on the adverbial questionnaire, the theory that the right brain is incapable of creating such placement would appear to be a well-founded explanation. However, if differences in adverbial placement are found between the left- and right-handed participants of this study, this would seem to indicate that the right brain does indeed serve a function in the creation of sentences.

Alan Beaton also describes the function of the right hemisphere in recognizing words, and posits that this hemisphere is therefore not "inferior" to the left hemisphere:

Although Moscovitch argued that the right hemisphere showed little or no language ability, other workers have since been less dismissive . . . .An interesting finding was reported by Bradshaw, Hicks, and Rose (1979). These workers presented letter strings to the left or right visual field for different durations. At the shortest duration (20 msec) subjects were unable to identify any words, but lexical decisions were more accurate in the left than the right visual field. As the exposure duration was increased to the level at which words could be positively identified a RVE [(right visual field)] superiority emerged. The LVE advantage at the shortest duration implies that the right hemisphere may recognize genuine words when it sees them, even though it cannot necessarily identify them, which suggests that in this respect the right half of the brain is not

inferior to the left. This would be consistent with other findings. (Beaton 139)

Again, the focus in this passage concerns the ability of the right hemisphere to recognize both words in general, and types of words in particular. However, if this is in fact the primary function of the right hemisphere, and it is not able to manifest this recognition in the creation of sentences, it would seem to indicate that there would be no adverbial placement differences among the compositions of sinistrals and dextrals. Indeed, if the right brain can recognize words, I would agree with Beaton that this hemisphere is not "inferior" to the left in regards to this ability; if, however, this is its primary linguistic function, which, by the theorist's accounts, it seems to be, it could very well be considered inferior in terms of overall linguistic ability.

Blakeslee describes the right brain's linguistic processing ability in the following passage, and illustrates that it is more holistic than its left hemisphere counterpart. Again, the functions of the two hemispheres can be seen as complimentary:

Though the right brain cannot express itself in words, it understands a surprisingly large number of words. E. Zaidel. . . developed an optical device that blocks half of the visual field no matter how the subject moves his eyes. This makes it possible to give standardized picture

vocabulary tests to each hemisphere of a split-brain patient separately. . . Though both [patients'] right brains were fairly good at recognizing single words, their performance fell to below the five-year-old level on another test called the Token test. . . A typical Token test is 'Touch the small blue circle and the large green circle.' It thus appears that the right brain is poorly equipped to analyze long sequences. This is consistent with other evidence that the right brain solves problems 'in parallel' by analyzing the entire stimulus and coming up with the answer at one stroke. Words are simply recognized as sound or visual images, without phonetic analysis. The left brain, on the other hand, tends to analyze one step at a time and deduce an answer. (Blakeslee 131-32)

Several aspects of this passage seem interesting for my theories. First, Blakeslee again describes the right brain's inability to create sentences. However, the linguistic functions of the right brain, as they have been espoused here, seem to, at least partly, explain the unusual placement I suspect is typical of sinistrals. Because of the right brain's inability to analyze long linguistic sequences, and the "one stroke" response, one mode of adverbial placement may seem to be as good as any other to the right hemisphere; furthermore, these holistic qualities of the right hemisphere may contribute to a failure to recognize conventional patterns concerning adverbial placement. One point of this section of the thesis seems clear: whether or not consistent differences are found between the adverbial placement of the sinistral

and dextral participants of this study, hemisphericity theory appears to be integral to any explanations which are presented.

Furthermore, the inverted placement of adverbials seem related to the auditory functions of the brain, and the right hemisphere does indeed control these functions in reference to music, but not verbal sounds: ". . . the left-handed brain handles music effortlessly but is apt to have some difficulty with language. . . . [the right hemisphere] understand three dimensional space, music, tone of voice (but not words). . . . [the right hemisphere] understands pitch and rhythm, the principal components of music" (DeKay 230, 354, 358). Sid Segalowitz concurs with DeKay that the right hemisphere processes the sounds associated with music, but not those which occur in a verbal context:

. . . there seems to be a right hemisphere bias for processing music, in terms of hemisphere participation, dominance, and competence . . . For example, there is a greater relative increase in blood flow in the right hemisphere when patients listen to music . . . compared with when they listen to speech. . . . A left hemisphere advantage in making fine temporal distinctions [in sound] is suggestive: speech requires many, many extremely rapid discriminations. . . . fine time discriminations may be one of the contributing factors to a left hemisphere basis for language skills. . . . Pure tones . . . are rather unreliable in producing a right hemisphere advantage. The complexity of the harmonic

structure seems important. The more harmonic overtones embedded in the sound, the greater the left ear (right hemisphere) advantage in a dichotic listening paradigm. Speech, of course, does not use steady state sounds as does music, and has no harmonic overtones as do musical instruments. So here is another possible basis for discriminating speech from music. (Segalowitz 98, 100)

As these passages suggest, in the realm of auditory functions, as with the realm of linguistic functions of the differing hemispheres, the theories indicate that there will indeed be no adverbial in reference to adverbial placement between the sinistral and dextral participants in this study. If the right hemisphere does not discern speech related sounds, then it appears that even individuals who are otherwise dominated by this hemisphere will utilize their non-dominant hemisphere to create linguistic structures through sound. Therefore, as with the linguistic function theory of the two hemispheres, the auditory functions would, at least partly, explain the lack of significant adverbial placement between the sinistral and dextral participants; however, if these linguistic differences are found, it would appear to question this data.

CHAPTER TWO  
STATISTICAL ANALYSIS OF ADVERBIAL PLACEMENT  
IN GRADUATE STUDENTS' COMPOSITIONS

For this analysis, I have not included quotes or cited research within the compositions, as this material is not the authors'. Furthermore, the listing of the adverbials has remained in the order in which they appeared in the composition, in an effort to give a better indication of the patterns of fluctuation between adverbials which occur before and after the verb. In addition, the students' answers to the questionnaire are presented, in the order they were asked, before each student's composition. The questionnaire, itself, is given in the appendix.

Left-Handed Student #1

1. Gender: Male.
2. Age: 27.
3. Ethnicity: Caucasian.
4. Non ESL/EFL speaker.
5. No left-handed parent, siblings, or children.
6. Telescope: Left eye. Wink: Left eye.
7. Writing: Left hand.
8. Throw: Right hand.

9. Kick: Left foot.

<u>Adverbial/ Placement/ Verb</u>	<u>Adverbial/ Placement/ Verb</u>
Immediately Before Spoke	As the term Before Noticed
Excitedly After Broke	began
Also Before Gives	Most often After De-
Also Before Takes	scribed
In the Before Gave	Then Before Looked
session	Instead Before Men-
Then Before Asked	tioned
Then Before Compare	Also Before Discuss
To some Before Repre-	Usually Before Found
degree sent	Often Before Have
Many times Before Found	Orally After Giving
Here After Refer-	As the Before Began
	ring quarter
Safely Before Assume	progressed
Often Before Hidden	Again After Asked
Theoreti- Before Achieve	Further Before Fills
cally	Also Before Assumes
Then Before Contex-	Often Before Seen
	Also Before Assumes
Somewhat After Dis-	Simultane- Before Assumed
agreed	ously



<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
Further	After	Con-	to a close		
		structs	Normally	Before	Consi-
In one	Before	Used			dered
sense			Overtly	After	Enter
Recently	Before	Inter-	Implicitly	After	Enter
		rogate	Then	Before	Had
In this	Before	Brought	Accordingly	After	Sets
instance			Toward the	Before	Saw
Also	Before	Knew	end of the		
Then	Before	Argues	semester		
Even more	After	Saw	At that	After	Struck
vividly			time		
Then	Before	Asked	In that	Before	Used
Somewhat	After	Modify-	case		
		ing	Then	Before	Inter-
Perhaps	Before	Is			rogated
In this	Before	Used	In a way	After	Are
case			Consider-	After	Bright-
In the	Before	Used	ably		ened
prior case			Similarly	After	Con-
Primarily	After	Used			struct
As the	Before	Saw	After	Before	Explain
quarter drew			In his	Before	Took

Adverbial/ Placement/ Verb

essay  
Then Before Take  
Similarly After Explain  
Thus After Is  
Right away After Noticed  
In par- After Saw  
ticular

Adverbial/ Placement/ Verb

Also After Was  
Extensively After Sourced  
Markedly After Con-  
trasts  
Slowly Before Intro-  
ducing  
Still Before Per-  
plexed

Left-Handed Student #2

1. Gender: Male.
2. Age: 27.
3. Ethnicity: Asian-American.
4. Non ESL/EFL speaker.
5. Left-handed brother.
6. Telescope: Right eye. Wink: Left eye.
7. Writing: Left hand.
8. Throw: Right hand.
9. Kick: Right foot.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
First	Before	Under-stand	Instead	Before	Using
More	Before	In-volved	Also	Before	Felt
Here	Before	Is	In strate- gic order	After	Ar- ranged
Basically	After	Are	Not only	Before	Sepa- rated
However	After	In	Last	Before	Synch- ronized
Later	After	Dis-cussed	Further	Before	Drama- tize
Once again	Before	Include	Further	Before	Ponder
Here	Before	Takes place	As we	Before	Use

Adverbial/ Placement/ Verb

Adverbial/ Placement/ Verb

have seen

Effectively After Attack

Here Before Left

Subcon- After An-

Also Before Jour-  
neys

sciously swered

In any way Before Linked

Also After Is

Finally Before Shed

Ironically Before Is

On this Before Exist

Not only After Assume

planet

Also After Assumes

Through Before Born

Also Before Adopt

this mutation

As a child Before Role-

Just Before Sees

played

Now Before Poses

One time Before Re-

Always Before Have

enacted

Once Before Said

Left-Handed Student #3

1. Gender: Female.
2. Age: 47.
3. Ethnicity: Caucasian.
4. Non ESL/EFL speaker.
5. No left-handed parent, siblings, or children.
6. Telescope: Right eye. Wink: Left eye.
7. Writing: Left hand.
8. Throw: Left hand.
9. Kick: Left foot.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
Usually	Before	Put	First	Before	Orient-
First	After	Put			ed
Better	Before	Under-	Therefore	Before	Quali-
		stand			fies
First	After	Pro-	In this	Before	Alert
		vided	case		
Basically	After	Is	Once again	Before	Begins
Fully	After	Apply	Also	Before	Adds
Definitely	After	Are	Therefore	Before	Becomes
Logically	After	Flows	Therefore	Before	Follows
Once again	Before	used	Closely	Before	Follows
First	After	Used	Also	After	Is

Adverbial/ Placement/ Verb

Perhaps Before Prepare

Also Before Considered

Also Before Links

Effectively Before Changed

Adverbial/ Placement/ Verb

Then Before Read

Then Before Use

For example Before Begins

Then Before Means

Certainly After Is

Also Before Include

Left-Handed Student #4

1. Gender: Female.
2. Age: 40+.
3. Ethnicity: Caucasian.
4. Non ESL/EFL speaker.
5. Left-handed relatives: Mother, Son, Great-Grandmother (maternal)
6. Telescope: Right eye. Wink: Right eye.
7. Writing: Left hand.
8. Throw: Left hand.
9. Kick: Left foot.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
Always	After	Has	Under Eliz-	After	Grew
Probably	Before	Be	abeth		
Nearly	After	Is	During the	After	Charged
Always	After	Is	last two decades		
Typically	Before	Seen	However	After	Control
However	After	Warns	Over drama	After	Influ-
Only	After	Focuses			ence
Therefore	After	Found	By 1586	Before	Control
To this end	Before	Deals	Further	Before	Cement-
Primarily	After	Deals			ed
Initially	Before	Created	Also	Before	Faced

Adverbial/ Placement/ Verb

First Before Allowed

However Before Trod

Only so far After Couch

Casually Before Over-  
looked

Using Pat- Before See

terson's model

Instead After Is

Correctly Before Argues

Only After Served

Starting in Before Ordered

1857

Along with Before Includ-  
edOnly After Pub-  
lished

Broadly Before Hinted

Finally Before Resolv-  
edFive years Before Appear-  
ed

Perhaps Before Refused

Himself Before Wrote

Adverbial/ Placement/ Verb

At last Before Brought

In the After Brought  
summer

Though Before Was

With this Before Was

accusation

Until his After Contin-  
ued

Again Before Have

Of course Before Is

With this Before Are

chorus

In this Before Invite  
chorusBy popular After Take  
mandate

Simply After Was

Adequately Before Account

Himself Before Claims

More close- After Con-  
ly forms

Adequately Before Explain

Adequately Before Explain



Adverbial/ Placement/ Verb

Onto a play After Project  
Simply Before Attempting

Adverbial/ Placement/ Verb

Also Before Supports  
Rather After States  
Only Before Served

Right-Handed Student #1

1. Gender: Male.
2. Age: 67.
3. Ethnicity: Caucasian.
4. Non ESL/EFL speaker.
5. Left-handed female child.
6. Telescope: Right eye. Wink: Left eye.
7. Writing: Right hand.
8. Throw: Right hand.
9. Kick: Right foot.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
At Some level	Before	Attain- ed	Over a per- iod of years	Before	Inter- viewed
More effectively	After	Teach	On a con- tinuum	After	Devel- oped
Thus	Before	Assist- ed	For brevity	Before	Consid- er
Later	After	Dis- cussed	Somewhere	After	Exist
First	Before	Con- sider	Reasonably	Before	Dis- agree
Briefly	After	Con- sider	Also	Before	Notes
			Reasonably	Before	Approx- imate

Adverbial/ Placement/ Verb

Adverbial/ Placement/ Verb

Then Before Devel-  
oped

However After Reason-  
ed

In the same After Uncov-  
manner ered

Therefore Before Chose  
For a time After Fixates

However After Points

Only After Focuses

In this way Before Read

In differ- After Make  
ent ways

As a result Before Antici-  
pate

As a teach- After Speak-  
er ing

Further Before Impede  
Inadvert Before Dis-

In passing After Men-  
tions

ently  
However Before Per-

Regularly Before Choose

formed

However Before Proves

Holistic- After Rated

Specifi- Before Ad-  
cally dressed

ally  
In effect Before Became

However Before Offer

In a pro- After Trav-

Then Before Reeval-  
uated

gressive manner ersed  
Informally Before Assess-

ing

Right-Handed Student #2

1. Gender: Male.
2. Age: 29.
3. Ethnicity: African-American.
4. Non ESL/EFL speaker.
5. No left-handed parents, siblings, or children.
6. Telescope: Right eye. Wink: Left eye.
7. Writing: Right hand.
8. Throw: Right hand.
9. Kick: Right foot.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
Often	Before	Repre-	In this	Before	Receiv-
		sent	instance		ed
Within a	After	Negoti-	Fully	Before	Grasp
color conscious		ate	Eventually	Before	Lead
society			Diligently	Before	Pursu-
Sparingly	After	Present			ing
In the	Before	Recit-	Miserably	After	Fail
first chapter		ed	As a chauff-	Before	Accom-
Within the	Before	Used	feur		modate
speech			Carefully	After	Follow
Quickly	Before	Re-	Also	Before	Learns
		tracted	Intensely	After	Reacts

Adverbial/ Placement/ Verb

In this case Before Acquired

Fully Before Understand

After the episode Before Travelled

First Before Appeared

Afterward Before Explained

Also Before Reminded

Closely Before Resembles

Also Before Believed

Adverbial/ Placement/ Verb

Often Before Conceal

Eventually Before Evolves

In the epilogue Before Mirror

Clearly Before Recognizes

Specifically After Speaks

With this in mind Before Examine

Eventually Before Led

Now Before Understands

In fact Before Believed

Only Before Attempted

Right-Handed Student #3

1. Gender: Female.
2. Age: 41.
3. Ethnicity: Caucasian.
4. Non ESL/EFL speaker.
5. No left-handed parents, siblings, or children.
6. Telescope: Right eye. Wink: Left eye.
7. Writing: Right hand.
8. Throw: Right hand.
9. Kick: Right foot.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
Finally	Before	Arrives	As they	Before	Follow
Hastily	After	Leave	seek the		
In the dark	After	Leave	better life		
Again	Before	Erupts	Wherever	After	Follow
Essentially	Before	Is	they go		
Also	After	Is	For years	After	Follow-
Also	Before	Deal			ed
At odd	After	See	With that	Before	Erupted
angles			final calamity		
In the end	Before	Says	Often	Before	Began
On a whim	After	Moved	Then	Before	Coursed
Dearly	After	Clings	Briefly	Before	Shun

Adverbial/ Placement/ Verb

Quite il- Before Shun  
legally  
Continually Before Shown  
First Before Organ-  
ized  
Then Before Formed  
Alone After Stood  
After fif- Before Needed  
teen days

Adverbial/ Placement/ Verb

Directly After Used  
Typically After Was  
Also Before Claimed  
Squarely After Put  
Peacefully Before Moved  
Today After Seen  
Apparently Before Appeas-  
ed  
Currently Before Being

Right-Handed Student #4

1. Gender: Female.
2. Age: 38.
3. Ethnicity: Spanish American.
4. Non ESL/EFL speaker.
5. Left-handed relatives: Two Brothers, One Son.
6. Telescope: Right eye. Wink: Left eye.
7. Writing: Right hand.
8. Throw: Right hand.
9. Kick: Both feet.

<u>Adverbial/ Placement/ Verb</u>			<u>Adverbial/ Placement/ Verb</u>		
Unknowingly	Before	Provide	In his ar-	Before	De-
Directly	After	Focus	ticle		scribes
Effectively	After	Commun-	Unrealist-	After	Concen-
		icate	ically		trate
Mutually	Before	Agree	In the Kno-	Before	Gave
Also	Before	Suggest	blauch study		
Accurately	After	Read	Then	Before	Pro-
Specifi-	After	Arcti-			ceeded
cally		culated	Too often	Before	Ignore
By the end	Before	Declin-	Therefore	After	Has
of the term		ed	In a 1981	Before	Found
Then	Before	Grades	study		



Adverbial/ Placement/ Verb

Also Before Deter-  
mined  
In some of Before Appear  
these cases  
Uninten- Before Mislead  
tionally  
Strongly Before Believe  
Universally Before Accept-  
ed  
Otherwise Before Appear  
In the Before Sup-  
study plied  
Then Before Provid-  
ed  
In his After In-  
statement clude  
Then Before Demands  
Also Before Use  
Sometimes Before Re-  
quires  
Explicitly After State  
Frequently After Change  
Directly After Address

Adverbial/ Placement/ Verb

Also Before Believe  
Easily Before Re-  
ferred  
Then Before Assigns  
Therefore Before Were  
Usually Before Dis-  
courage  
Definitely Before Does  
Ironically Before Dealt  
Critically After Think  
Fully Before Engage  
For in- Before Said  
stance  
Then Before Offers  
Really Before Means  
Usually Before Open  
Critically After Think  
With re- Before Says  
gards to draft  
writing  
Clearly Before Marked  
Actually Before Is  
Widely Before Used

Adverbial/ Placement/ Verb

Also Before Com-  
mented  
Honestly Before Conveys  
Also Before Repre-  
sents

Adverbial/ Placement/ Verb

Effectively Before Conveys  
Also Before Demon-  
strates  
Still Before Believe  
Effectively After Respond  
As a result Before Aware

CHAPTER THREE  
STATISTICAL ANALYSIS OF ADVERBIAL PLACEMENT  
IN PUBLISHED AUTHORS' CORRESPONDENCE

Lewis Carroll

As I mentioned in the introduction, Carroll is a prime candidate for this type of statistical analysis. However, some researchers contend that he remained a sinistral, while others, like Barsley, assert that he changed his writing hand, probably early in his life, which, in turn, contributed to well-documented cases of stuttering and shyness--two characteristics of sinistrals who are forced to write with the right hand: ". . .in Lewis Carroll's case, despite the lack of proof, there exists a very strong supposition that the author of Alice was originally a Sinistral" (190-91). However, I assert that regardless of whether Carroll did, in fact, change his writing hand, he was not able to change his brain dominance--that of the right hemisphere--and the subsequent differences in the processing and manifestation of linguistic information. Since I contend that sinistrals have differing adverbial placement because of their differing hemisphere dominance than those of dextrals, this trait should remain in his

texts, regardless of the hand he utilized to produce them.

Whether Carroll remained a sinistral or changed his writing hand, he is probably the published author most attributed to sinistral tendencies in writing, as a result of his fiction which emphasizes such traits. These linguistic traits, such as the inversionist tendencies, are representative of Carroll perceiving the world in a different way from that of right-handers. Barsley mentions these characteristics of his work in the following passage: ". . .in Through the Looking Glass everything is inversion: Alice walks backward to meet the Red Queen; she travels the wrong way in the train; the Queen screams before she pricks her finger, and promises jam every other day; the story of Jabberwocky begins with the first verse in mirror-writing; Tweedledum and Tweedledee are mirror images, and so on" (Barsley 189). Clearly, Carroll had a fascination with left-handed characteristics such as mirror-writing, and used these devices to derive much of the humor and uniqueness in his fiction. However, Lauren Harris asserts that these tendencies pervaded in his non-fiction as well: ". . .[Lewis Carroll's] mirror-writing figured prominently in the Alice books. . .as well as in his private correspondence" (61). This assertion is important for my thesis, because, as I have said in the introduction, I will

analyze the letters of Carroll and Mark Twain in order to avoid possible changes in sentence structure that may have been made by editors.

While Carroll's sinistrality was likely the predominant reason for these characteristics in his writing, Brown posits other, external, reasons for his fascination with these matters: "Lewis Carroll 'was handsome and asymmetric--two facts that may have contributed to his interest in mirror reflections. One shoulder was higher than the other, his smile was slightly askew, and the level of his blue eyes was not quite the same'" [Gardner, Martin] (Brown 27). Brown's contentions are interesting, for it is my hypothesis that differing adverbial placement occurs in sinistrals' writing because of the right-hemisphere brain dominance. However, while I do not discount Brown's contentions, I posit that these factors alone would not have created the pervasiveness of sinistral features in his text. While professional writers are likely to be conscious of adverbial placement in their published writings especially, I contend that in situations such as those I will be examining, which focus on private correspondence, these decisions will be less conscious than they might be otherwise.

Analysis of Selections from the Letters of Lewis

Carroll (beginning on page 55):

<u>Adverbial/ Placement/ Verb</u>	<u>Adverbial/ Placement/ Verb</u>
Among After Choose	Sensibly Before Said
In such a way After Laughed	In a cross tone After Said
Easily After Comes	At once After Guessed
In a sort of pattern After Marked	Please Before Think
Myself After Insert	Even Before Tell
Really After Am	Next time Before See
Carefully After Look	Also After See
Perhaps Before Found	No doubt Before Has
Probably Before Has	Carefully Before Avoid
As soon as it's settled After Tell	Inadvert- ently Before Escaped
Kindly Before Try	Respect- fully After Remain
Only Before Forgot	Faithfully After Remain
Somehow Before Found	Only Before Occur
Of course Before Knew	Only After Occur
Again After Came	Probably Before Give
Again After Grinned	Consequent- ly Before Trust
At last Before Crossed	
At least Before Said	

Analysis of The Letters of Lewis Carroll--Book I

(beginning on page 270):

<u>Adverbial/</u>	<u>Placement/</u>	<u>Verb</u>	<u>Adverbial/</u>	<u>Placement/</u>	<u>Verb</u>
Gradually	Before	Making	Otherwise	Before	Expect
Really	Before	Think	Always	After	Is
Then	Before	Show	Perhaps	After	Remem-
Very much	Before	Like			ber
Reasonably	Before	Take	Perhaps	Before	Remem-
Simply	Before	Ask			ber
Easily	Before	Negoti-	Then	After	Know
		ate	Again	After	See
Now	Before	Think	Perhaps	Before	Met
Several	Before	Started	Then	After	Met
times			Only	After	Had
Then	Before	Arrange	Even	Before	Finish-
Again	Before	Thank			ed
Usually	After	Think	Always	After	Were
Then	Before	Prepar-	Then	After	Called
		ed	Now	Before	Occurs
Now	After	Secure	Now	Before	Know
Only	Before	Remem-	Equally	After	Divide
		ber	However	Before	Is
			Very much	Before	Like

## Mark Twain

Twain's sinistrality is not nearly as well-known or researched as Carroll's, probably because he did not present these characteristics so overtly in his writing as did Carroll. Therefore, the two published authors present an interesting comparison, for one consciously utilized sinistral characteristics in his writing (though I do not suspect that Carroll's adverbial placement was always a conscious decision), and, the other author, Twain, did not. However, as I consider adverbial placement to be largely a subconscious act, a result of the author's brain hemisphere dominance, this differing placement should be present in sinistrals' works, such as Twain, who do not seem to be conscious of their sinistrality when writing.

### Analysis of The Selected Letters of Mark Twain

(beginning on page 210):

<u>Adverbial/</u>	<u>Placement/</u>	<u>Verb</u>	<u>Adverbial/</u>	<u>Placement/</u>	<u>Verb</u>
Anyway	After	Is	Always	After	Are
Anyway	After	Had	Yesterday	After	Caught
Once	After	Made	This morn-	Before	Break-
Again	After	Worked	ing		fasted



Adverbial/ Placement/ VerbAdverbial/ Placement/ Verb

An hour ago Before Saw

Already After Are

Heretofore After Rained

Please Before Tell

Now Before Sails

Yesterday Before Shot

Indeed After Was

Also After Note

Finally Before Noticed

Yesterday After Got

However Before Found

Here After Took

Soon Before Were

Now Before Per-

Please Before Send

vades

Strangely Before Per-

Always After Is

suade

Once Before Reveal-

Never Before Was

ed

An hour ago After Woke

Then Before Recog-

At once After Landed

nized

In an hour After Came

Sometimes Before Ceases

Again After Take

Admirably After Pro-

Now Before Lay

gressed

Today After Had

Terribly After Confuse

At last Before Knew

Only Before Wants

Then Before Saw

Annually After Renew

At some Before Drifted

Semi- After Pay

time or other

annually

There Before Bid

Please Before Advise

Analysis of Selected Mark Twain's--Howell's Letters

(beginning on page 354):

<u>Adverbial/</u>	<u>Placement/</u>	<u>Verb</u>	<u>Adverbial/</u>	<u>Placement/</u>	<u>Verb</u>
Then	Before	Say	Suddenly	After	Became
Now	After	Give	Possibly	Before	Knows
Now	Before	Talk	Now	Before	Vanish-
Seldom	After	Is			ed
Everyday	Before	Write	Coldly	After	Said
Always	Before	Wait-	After	After	Got
		ing	breakfast		
Frankly	Before	Makes	Altogether	After	Makes
Publicly	Before	Makes	Coldly	After	Said
Thus	Before	Repeats	Five days	Before	Wrote
Also	After	Is	ago		
Still	Before	Keep	Together	After	Read
Twice	After	Ran	Together	After	Belong-
Promptly	After	Squish			ed
A few min-	After	Reached	Immensely	Before	Like
utes ago			Still	Before	Confin-
Long ago	Before	Lost			ed
Carefully	Before	Keep-	Indefi-	After	Confin-
		ing	nitely		ed

CHAPTER FOUR

RESPONSES TO ADVERBIAL PLACEMENT QUESTIONNAIRE

Right-Handed Participant #1

Age: 36

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. A 7. B 8. A  
9. A 10. B

Right-Handed Participant #2

Age: 21

Gender: Female

1. B 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. A

Right-Handed Participant #3

Age: 33

Gender: Female

1. A 2. A 3. A 4. B 5. A 6. A 7. B 8. B  
9. A 10. A

Right-Handed Participant #4

Age: 22

Gender: Female

1. A 2. A 3. A 4. A 5. B 6. B 7. B 8. B  
9. B 10. B

Right-Handed Participant #5

Age: 20

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. A 7. B 8. A  
9. B 10. B

Right-Handed Participant #6

Age: 39

Gender: Female

1. A 2. A 3. A 4. B 5. B 6. A 7. B 8. A  
9. A 10. A

Right-Handed Participant #7

Age: 25

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. A

Right-Handed Participant #8

Age: 39

Gender: Female

1. A 2. A 3. B 4. B 5. B 6. A 7. B 8. A  
9. B 10. B

Right-Handed Participant #9

Age: 29

Gender: Female

1. A 2. B 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. B

Right-Handed Participant #10

Age: 41

Gender: Female

1. B 2. A 3. A 4. A 5. B 6. B 7. B 8. A  
9. A 10. B

Right-handed Participant #11

Age: 37

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. B

Right-Handed Participant #12

Age: 32

Gender: Female

1. A 2. A 3. A 4. A 5. B 6. B 7. B 8. A  
9. A 10. B

Right-Handed Participant #13

Age: 39

Gender: Male

1. A 2. A 3. B 4. B 5. B 6. B 7. B 8. B  
9. B 10. B

Right-Handed Participant #14

Age: 26

Gender: Male

1. A 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. B 10. B

Right-Handed Participant #15

Age: 16

Gender: Male

1. A 2. A 3. B 4. B 5. B 6. B 7. A 8. A  
9. B 10. A

Right-Handed Participants #16

Age: 40

Gender: Male

1. B 2. B 3. B 4. B 5. B 6. B 7. B 8. B  
9. B 10. B

Right-Handed Participant #17

Age: 41

Gender: Male

1. A 2. A 3. A 4. B 5. B 6. A 7. B 8. B  
9. A 10. B

Right-Handed Participant #18

Age: 22

Gender: Male

1. B 2. A 3. B 4. A 5. B 6. B 7. B 8. B  
9. B 10. B

Right-Handed Participant #19

Age: 29

Gender: Male

1. A 2. A 3. A 4. A 5. A 6. A 7. A 8. A  
9. A 10. B

Right-Handed Participant #20

Age: 35

Gender: Male

1. B 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. B 10. B

Left-Handed Participant #1

Age: 37

Gender: Female

1. B 2. B 3. B 4. A 5. B 6. B 7. B 8. B  
9. B 10. B

Left-Handed Participant #2

Age: 39

Gender: Female

1. A 2. A 3. A 4. A 5. A 6. B 7. B 8. A  
9. A 10. A

Left-Handed Participant #3

Age: 27

Gender: Female

1. B 2. A 3. A 4. B 5. B 6. B 7. B 8. B  
9. B 10. B

Left-handed Participant #4

Age: 24

Gender: Female



1. A 2. B 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. A

Left-Handed Participant #5

Age: 28

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. A 7. B 8. A  
9. A 10. B

Left-Handed Participant #6

Age: 28

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. B

Left-Handed Participant #7

Age: 47

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. A 10. B

Left-Handed Participant #8

Age: 32

Gender: Female

1. A 2. A 3. A 4. A 5. A 6. B 7. B 8. B  
9. A 10. A

Left-Handed Participant #9

Age: 20

Gender: Female

1. B 2. A 3. B 4. A 5. A 6. B 7. B 8. B  
9. A 10. A

Left-Handed Participant #10

Age: 21

Gender: Female

1. A 2. A 3. A 4. A 5. B 6. A 7. B 8. B  
9. A 10. B

Left-Handed Participant #11

Age: 19

Gender: Female

1. A 2. A 3. B 4. A 5. B 6. B 7. B 8. A  
9. B 10. B

Left-Handed Participant #12

Age: 18

Gender: Female

1. B 2. A 3. A 4. B 5. B 6. B 7. A 8. A  
9. A 10. B

Left-Handed Participant #13

Age: 25

Gender: Male

1. B 2. A 3. A 4. B 5. A 6. A 7. B 8. A  
9. B 10. A

Left-Handed Participant #14

Age: 20

Gender: Male

1. A 2. A 3. A 4. A 5. B 6. A 7. A 8. B  
9. B 10. B

Left-Handed Participant #15

Age: 29

Gender: Male

1. B 2. B 3. B 4. B 5. B 6. B 7. B 8. B  
9. B 10. B

Left-Handed Participant #16

Age: 22

Gender: Male

1. B 2. A 3. B 4. B 5. B 6. B 7. B 8. A  
9. A 10. B

Left-Handed Participants #17

Age: 19

Gender: Male

1. B 2. A 3. B 4. A 5. B 6. B 7. A 8. B  
9. B 10. B

Left-Handed Participant #18

Age: 28

Gender: Male

1. A 2. A 3. A 4. B 5. B 6. A 7. A 8. A  
9. B 10. B

Left-Handed Participant #19

Age: 18

Gender: Male

1. A 2. A 3. A 4. B 5. B 6. A 7. A 8. B  
9. B 10. A

Left-Handed Participant #20

Age: 18

Gender: Male

1. B 2. A 3. A 4. A 5. B 6. A 7. B 8. A  
9. A 10. B

CHAPTER FIVE  
STATISTICAL STUDY RESULTS REGARDING  
ADVERBIAL PLACEMENT

Graduate Student Compositions

Left-handed Student #1

Total: 71      Before--46      After--25  
Also: Before--6      Then: Before--9      Only: Before--0  
          After--0                    After--0                    After--0  
Percentage of total: Before--65%      After--35%

Left-handed Student #2

Total: 35      Before--26      After--9  
Also: Before--3      Then: Before--0      Only: Before--0  
          After--2                    After--0                    After--0  
Percentage of total: Before--74%      After--26%

Left-handed Student #3

Total: 29      Before--20      After--9  
Also: Before--4      Then: Before--3      Only: Before--0  
          After--1                    After--0                    After--0  
Percentage of total: Before--69%      After--31%

Left-handed Student #4

Total: 54      Before--33      After--21  
Also: Before--2      Then: Before--0      Only: Before--1  
          After--0                    After--0                    After--3  
Percentage of total: Before--61%      After--39%

Right-handed Student #1

Total: 37      Before--21      After--16  
Also: Before--1      Then: Before--2      Only: Before--0  
          After--0                    After--0                    After--2  
Percentage of total: Before--57%      After--43%

Right-handed Student #2

Total: 33      Before--27      After--6  
Also: Before--3      Then: Before--0      Only: Before--1  
          After--0                    After--0                    After--0  
Percentage of total: Before--82%      After--18%

Right-handed Student #3

Total: 32      Before--19      After--13  
Also: Before--2      Then: Before--2      Only: Before--0  
          After--1                    After--0                    After--0  
Percentage of total: Before--59%      After--41%

Right-handed Student #4

Total: 57      Before--44      After--13  
Also: Before--7      Then: Before--6      Only: Before--0  
          After--0                      After--0                      After--0  
Percentage of total: Before--77%      After--23%

Total of the Left-Handed Sample

Total: 189      Before--125      After--64  
Percentages:      Before--66%      After--34%

Total of the Right-Handed Sample

Total: 159      Before--111      After--48  
Percentages:      Before--70%      After--30%

Published Authors' Correspondence

Lewis Carroll

Total: 66      Before--39      After--27  
Also: Before--0      Then: Before--3      Only: Before--2  
          After--1                      After--3                      After--2  
Percentage of total: Before--59%      After--41%

Mark Twain

Total: 73      Before--37      After--36



Also: Before--0      Then: Before--3      Only: Before--1  
          After--2                      After--0                      After--0  
Percentage of total: Before--51%      After--49%

### Adverbial Placement Questionnaire

#### Right-handed Participants

Question #1: 15 A's, 5 B's  
Question #2: 18 A's, 2 B's  
Question #3: 7 A's, 13 B's  
Question #4: 12 A's, 8 B's  
Question #5: 2 A's, 18 B's  
Question #6: 7 A's, 13 B's  
Question #7: 2 A's, 18 B's  
Question #8: 14 A's, 6 B's  
Question #9: 11 A's, 9 B's  
Question #10: 5 A's, 15 B's

#### Left-Handed Participants

Question #1: 11 A's, 9 B's  
Question #2: 17 A's, 3 B's  
Question #3: 10 A's, 10 B's  
Question #4: 13 A's, 7 B's  
Question #5: 4 A's, 16 B's

Question #6: 7 A's, 13 B's

Question #7: 5 A's, 15 B's

Question #8: 11 A's, 9 B's

Question #9: 11 A's, 9 B's

Question #10: 6 A's, 14 B's

Right-handed Participant's Totals

200: 92 A's, 108 B's

46% A's, 54% B's

Left-handed Participant's Totals

200: 95 A's, 105 B's

48% A's, 52% B's

CHAPTER SIX  
FINAL CONCLUSIONS

This statistical analysis did, indeed, present some interesting findings. First, and perhaps foremost, I was surprised by the percentages of adverbials which occurred before and after the verb, when the left- and right-handed samples were taken as a whole. Especially as I was looking for differences between these two samples, I find the fact that their percentages are very similar, with a four percent difference, very intriguing.

Comparing the results of adverbial placement in rough and final drafts of compositions might have possibly shown some difference between the drafts, as sinistrals' initial inclination is perhaps for a placement which differs from the conventional forms of discourse; however, these placements may be changed, because they are evaluated in a dextral dominated society. However, I did not analyze rough and final drafts of students composition because, as the work is written on computer, the subsequent drafts are often saved over previous drafts; hence, many of the students who participated in this study did not have rough drafts available for analysis.

An explanation for the conclusions of the graduate

student's data, which would appear to explain the questionnaire data equally as well, is also discussed in the theoretical section of this thesis, and concerns the linguistic and auditory functions of the right hemisphere. It may indeed be that the right hemisphere is incapable of creating sentences, although it recognizes linguistic structures; therefore, regardless of handedness, the left hemisphere is creating, or choosing, the linguistic structures. Also, if the right hemisphere does not process linguistic sounds, and this data is therefore processed similarly by both sinistrals and dextrals in the left hemisphere as has been posited by the researchers examined in this study, this factor would also seem to contribute to the lack of difference, concerning adverbial placement, between the compositions of sinistrals and dextrals. The data of the participants of this study does indeed seem to further validate these theories concerning the linguistic limitations of the right hemisphere.

However, the second facet of the findings which surprised me was the high incidence of adverbials occurring after the verb in the published authors' compositions, in comparison to the graduate students work and questionnaire responses. I have two explanations for these characteristics, as both authors are similar in their percentages.

The first, as I mentioned in chapter one, concerns the time in which the compositions were written--all of the material was written in the latter half of the nineteenth century. Just as I suspect the sinistrals in the student study are guided by the discourse conventions of their time, it would seem reasonable that the published authors would possibly be in similar situations. However, if this is the case, and adverbials were placed more often before the verb during the time this correspondence was written than they are currently, this characteristic would owe decidedly less to the hemisphere dominance than the linguistic conventions. Although, as no right-handed authors from this time period were analyzed, it would be impossible to determine whether this was the situation. It may indeed be that these authors are exhibiting this characteristic because of their right hemisphere dominance.

The second explanation for the high percentage of Carroll's and Twain's adverbials occurring before the verb does, in fact, attribute this characteristic to their hemisphere dominance. It might be, as discussed previously, both because this was private correspondence and because the authors had achieved their own linguistic style, that they felt more free with linguistic structures than they would have otherwise. Therefore, in such a situation, these

authors would be more apt to allow their dominant hemisphere to construct their sentences--to not transform these formations to a different, left hemisphere construction.

Furthermore, the adverbial placement of these published authors may indeed be earmarks of their prowess as professional writers, and not as sinistrals. In order to test this hypothesis, however, it would be necessary to analyze both sinistrals' and dextrals' work, written during similar times in history. I do indeed think that adverbial placement contributes to accomplished authors' abilities. The data of this study does seem to indicate that consistent abnormal adverbial placement will not necessarily occur solely because one is left-handed. Moreover, I have previously mentioned that adverbial placement affects the meaning of the sentence, and is used to create a rhetorical effect. Given the student participants' and published authors' differing situations in terms of evaluation, it would seem much more likely that the published authors would embrace rebelling against these conventions, and examining the world in a different way.

Finally, regardless of the conclusions of the data, I call for broader samples than were possible for this endeavor. It would be extremely interesting to see if the

percentages of adverbial placement between sinistrals and dextrals would be as similar as they have been in this study with larger samples of participants. Just as my conclusions would have remained in the realm of speculation had there, indeed, been differences between the two groups of participants, so, too, must this be the case with the current data: we cannot conclude that there is indeed no adverbial differences between sinistrals and dextrals without further studies.

Moreover, if further studies are to be conducted, in addition to those studies already espoused in this section, I assert we should analyze participants with various amounts of education, in an effort to more fully determine the effect that linguistic conventions may have on individuals. In addition, I contend that it will be valuable to conduct studies which analyze other possible differences between the compositions of left- and right-handed writers, for, just as with dyslexia and mirror-writing, I am confident that such differences do indeed exist, whether or not adverbial placement, or other structural features, are part of the characteristics.

## APPENDIX A: Questionnaire One

### Questionnaire to Determine Degree of Sidedness and General Characteristics for Participants of David Ramsey's Study

Your answers to these questions will appear in the introduction to the analysis of your work to help determine the conclusions of, and give context for, the statistical analysis of the compositions; however, your name or other identifying characteristics will not be included in the thesis. This questionnaire and its related research has been approved by the Institutional Review Board of California State University, San Bernardino.

Name:

Date:

1. What is your gender?
2. What is your age?
3. What is your ethnicity?
4. Do you have, to the best of your knowledge, left-handed parents, siblings, or children?
5. With which eye would you look through a telescope, or, if you can wink, with which eye do you wink?
6. With which hand do you write?
7. With which hand do you throw a ball?
8. With which foot do you kick a ball?



APPENDIX B: Questionnaire Two

Your name or other identifying characteristics will  
not be included in the thesis

Name:

Age:

Gender (please circle one category):      Male      Female

With which hand do you write? (please circle one category):

Left      Right

For the following pairs of sentences, please circle  
either part A or B for the corresponding sentence you  
believe sounds better or more appropriate. There are no  
right or wrong answers.

1.    A.    I recently saw the instructor.  
      B.    I saw the instructor recently.
2.    A.    Lunch was finally served.  
      B.    Lunch was served finally.
3.    A.    He first became angry.  
      B.    He became angry first.
4.    A.    She follows them closely.  
      B.    She closely follows them.
5.    A.    Also, Jim is hungry.

- B. Jim is also hungry.
- 6. A. That letter has not yet been read.  
B. That letter has not been read yet.
- 7. A. This paper should logically flow.  
B. This paper should flow logically.
- 8. A. He deals primarily with young adults.  
B. He primarily deals with young adults.
- 9. A. She argued correctly for the settlement.  
B. She correctly argued for the settlement.
- 10. A. Rachel has been assisted thus.  
B. Rachel has been thus assisted.

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