Handedness and Age of Death: New Evidence on a Puzzling Relationship

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Abstract

Based on 5743 deaths in the United States and Canada. the present study was undertaken to verify and extend results suggesting that left handers have a shorter life expectancy than right handers. Unlike previous studies, which have merely dichotomized handedness, this study used a 5point scale to measure handedness (extremely right handed, generally right handed, ambidextrous, generally left handed and extremely left handed). We found a significant tendency for one of the five handedness categories—those classified as generally left handers-to die at a significantly younger age than was true for the other four handedness groups. Our findings add to the controversy over links between handedness and age of death by suggesting that only a portion of left handers are at risk of premature death.

Keywords

handedness, mortality

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A FEW YEARS AGO, a research report stunned the medical and scientific community with evidence that the average age of death for left handers was nine years earlierer than for right handers (Coren & Halpern, 1991). Several other studies have also found significant, although less extreme, tendencies for left handers to die at significantly earlier ages than right handers (Coren & Porac, 1979; Fleminger, Dalton, & Standage, 1977; Halpern & Coren, 1991; Porac & Coren, 1981, p. 40; Porac, Coren, & Duncan, 1980; Rogersson, 1993; Smart, Jeffery, & Richards, 1980). Nevertheless, some studies have found no significant differences between right and left handers in age of death, although the differences that have been reported in these studies have consistently favored right handers (Aggleton, Bland, Kentridge, & Neave, 1994; Brackenridge, 1981; Ellis, Marshall, Windridge, Jones, & Ellis, 1998; Kuhlemeier 1991; Rothman, 1991; Strang, 1991).

If it were true that left handers die nine years sooner than right handers, handedness would be the strongest non-disease predictors of mortality yet identified, surpassing the four or five years normally separating social classes (reviewed by Ellis, 1994) and racial groups (Angel, 1993; Fingerhut & Makuc, 1992; Kochanek, Maurer, & Rosenberg 1994; Pappas, Queen, Hadden, & Fisher, 1993), and even exceeding the seven years separating males and females living in most western societies (Carter & Lee, 1992, p. 395; United Nations, 1988; Waldron, 1983; Wingard, 1982, 1984).

Even if the differences in average age of death associated with handedness were in the three- to five-year range identified in most studies, the relationship would remain an important and theoretically intriguing phenomenon. Why would such a seemingly trivial trait as the hand humans use to perform most fine motor skills have anything to do with how long they live?

The purpose of the present study was to verify the existence of a relationship between handedness and life expectancy, and refine it by measuring handedness more precisely than has been done in earlier studies.

Methods

Data for this study were obtained as part of a larger investigation beginning in 1988 and

ending in 1997. The persons who provided the data used in the present analysis consisted of 2091 mothers, whose average age was 48.01 years (SD = 3.21) at the time they provided the information. Of the 85.3 percent reporting their ethnicity, 93.5 percent classified themselves as being of European descent (white), with the remainder being Native American (1.6 percent), Hispanic (1.5 percent), Asian/Pacific Islander (1.2 percent), African American (1.2 percent), and other (1.0 percent).

The mothers were recruited as part of a twostage study that began by asking students attending 20 United States and two Canadian colleges and universities to complete a questionnaire, and then to give an anonymous companion questionnaire to their mothers. This procedure yielded completed questionnaires from 55 percent of the mothers of the offspring who completed questionnaires. It was these mothers' questionnaires that provided the data used in the present study.

The mothers were asked specific information about five people: their own parents; the father of the child who completed the offspring questionnaire; and the father's parents. The items of information requested for these five persons were their handedness (based on a 5-point scale); their current age if they are still living, and the age at which they died (if they were no longer living). The exact structure of these questions is shown in Table 1.

Results

The main results of this study are based on 5743 reported deaths among the grandparents and fathers of the offspring as reported by the offsprings' mothers. The average age of death for these 5743 persons was 68.63 years.

We first grouped our sample of deaths into two categories: right handers and all others. Specifically, right handers (consisting of those classified as extremely right and generally right) had an average age at death of 68.71 years, whereas all non-right handers (consisting of those classified as ambidextrous, generally left, and extremely left) had an average age at death of 67.35 years. This difference of approximately one-half of a year was not statistically significant (t = .38, p = .29).

However, a different picture emerges when

Table 1. The structure of the questions presented to the respondents of the present study

Please indicate the current age (or the age at death) of the following persons. Also indicate the handedness of these persons using the following five codes (leave blank if you are unsure):

ER—extremely right-handed GL—generally left-handed

GR—generally right-handed EL—extremely left-handed A-ambidextrous

	The child's gra your	andparents on side	The father of the child	The child's grandparents on the father's side			
	Grandmother	Grandfather		Grandmother	Grandfather		
Handedness code							
Current age if still living							
Age of death if no longer living							

average age of death is analyzed in terms of the five separate handedness categories specifically used in this study. As shown in Table 2, the average age of death ranged from 65.01 for generally left handers to 69.66 for those classified as ambidextrous. These differences are significantly different ($F_4 = 3.172$, p = .013). That such a significant difference would emerge between persons classified as ambidextrous and those who are considered generally left handed is surprising in part because these two groups would usually be considered indistinguishable.

We performed separate analyses of the data by gender and generation, but these failed to yield any statistically significant findings, although in each of these separate analyses one can see a tendency toward earlier age of death for left handers (excluding those classified as ambidextrous). In the case of women, the average life expectancy for the 'generally left handed' group was nearly five years lower than for the other four groups of women. However, due to a small sample size of women in the generally left category, this difference fell short of statistical significance ($F_4 = 1.584$, p = .176).

Among men in the grandparent generation, the average age of death was about three years earlier for generally left handers than for men in the other handedness categories. However, it too fell considerably short of statistical significance ($F_4 = 1.384$, p = .237).

Turning to the men of the parent generation, the shortest life expectancy occurred in the case of males who were extremely left handed, followed by those who were generally left handed. Again, however, due to small numbers of deceased individuals in this subsample, the differences failed to be statistically significant ($F_4 = 1.780$, p = .134).

Discussion

This study brings additional evidence to bear on the controversy surrounding the possible relationship between handedness and life expectancy. While most studies have found significant tendencies for left handers to die earlier than right handers, a few have not. The nonconfirming evidence led the authors of at least two articles to argue that evidence for a premature age of death for left handers remains questionable (Ellis et al., 1998; Harris, 1993). Most controversial of all has been the study by Coren and Halpern (1991), which found left handers.

The present study is based on the largest sample to be brought to bear on the handedness-life expectancy relationship. It is unique in measuring handedness not as simply a dichotomous variable, but as one that varies on a 5point scale ranging from extremely right to extremely left. Only when these five categories

Handedness		Grandparent generation							Parent generation				Total sample			
	Females				Males			Males								
	% who have died	Mean age of death	SD	Number of deaths	· % who have died	Mean age of death	SD	Number of deaths	• % who have died	Mean age of death	SD	Number of deaths	° % who have died	Mean age of death	SD	Number of deaths
Extremely right	34.55	69.97	13.78	1193	72.80	69.02	12.75	1895	8.80	50.00	12.39	106	43.99	68.74	13.02	3194
Generally right	38.47	69.92	14.77	804	73.89	68.96	12.97	1296	10.40	53.03	12.48	88	46.72	68.67	13.31	2188
Ambidextrous	33.96	69.39	13.22	36	64.41	70.08	12.87	76	4.41	62.33	9.07	3	39.38	69.66	11.74	115
Generally left	31.96	65.39	15.51	31	71.55	65.98	13.52	83	4.51	49.67	3.88	6	34.68	65.01	11.05	120
Extremely left	36.89	70.44	12.25	45	71.43	67.24	14.31	75	5.66	46.00	8.37	6	37.84	67.37	11.82	126
Overall average	35.94	69.89	14.15	2109	72.93	68.91	12.89	3425	8.89	51.33	12.26	209	44.47	68.63	12.98	5743

were specified did we find a statistically significant difference in life expectancy, with persons who are generally left handed reportedly dying nearly four years earlier than the four remaining handedness groups combined. Surprisingly, the longest living group were those classified as ambidextrous, although they did not differ significantly from either group of right handers.

Basically, the present study provides qualified support for the findings that left handers have an unusually high rate of early death. However, the differences appear to be considerably less than the nine-year difference reported by Coren and Halpern (1991), and for some reason seem to be largely confined to persons classified as generally left handed, not those who are considered either extremely left handed or ambidextrous.

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