B95 The Forensic Implications of Shoelaces: Can Handedness be Determined by Shoe-Tying Method?

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The goal of this presentation is to present to the forensic community the notion that there is no statistical significance between handedness and the methods used to tie one's shoelaces.

While the act of tying one's shoes stirs neither controversy nor excitement, the question has been posited as to whether the handedness of an individual can be determined, or at least seriously suggested, by the appearance of an individual's tied shoelaces. This presentation, information that may be helpful in a forensic setting, features the results of a study aimed at evaluating the correlation between handedness and the specific technique employed in tying shoelaces.

An extensive survey was undertaken (n=1000), in which participants were asked their age, sex, and handedness. Each was then asked to demonstrate the technique used to tie his/her shoelaces. The authors approached a random sample of males and females representing all ages over the course of several weeks on various days of the week. All sampled individuals were approached at various locations within the same community of over 60,000 residents. Participation in the survey was voluntary, with participants receiving no rewards or considerations.

It is noted that the proportion of the world population represented by left-handed individuals has been reported to be between 10% and 13%. In this study it was determined that left-handed individuals were represented by 11% of the total participants. The authors equally polled males and females; 50.4% of the participants were female and 49.6% were male. While specific age was recorded for each participant, ages were later grouped into ten-year ranges for the statistical analyses. Because the study was limited to observations only upon adults, 18 and 19 year-olds were lumped in the youngest age category; 20-29 year-olds, the next; 30-39 year-olds, the next; and so on, to include an 80-89-yearold group. Age distribution followed a relatively normal curve. The largest group was composed of 20 to 29 year-olds, (n=366).

Twelve methods of tying shoelaces were noted and labeled 1-12. Each of the 12 methods was further noted to be composed of three tying stages. Stage one began by first crossing the left lace over the right (exhibited in methods 1-6), or the right lace over the left (exhibited in methods 7-12). These data were referred to as "tie-style." Stage two was determined by the loop being created either on the right or left side. Stage three of the process was determined by whether the right or left loop is set on top of the other loop, when the tie was completed. The result knot was designated as method 1-12. For each participant the three stages were documented on a form and completed by the authors in the field.

A statistical analysis of the data was conducted using SPSS. Initially, it appeared that there was a difference in the way left-handed individuals tied their shoes. However, such was not the case. As an example, method #1 (a left-over-right tie-style) was used by 38.9% (n=337) of all right-handed individuals, and only 10.6% (n=11) of all left-handed individuals. Conversely, 31.7% (n=33) of all left-handed individuals used method #9 (a right-over-left tie-style), while only 6.8% (n=59) of right-handed individuals used this method. This initially appeared important, although it was later determined to be statistically insignificant. While left-handed individuals chose this method most frequently, a greater number of right-handed individuals also chose it, thereby creating the inability to distinguish handedness. It was determined that tie-style is a more accurate indicator of left versus righthandedness.

In conclusion, because both an overwhelming proportion of the general population is right-handed, and there is greater variation in the way right-handed individuals tie their shoelaces, it is inappropriate to infer handedness from tied shoelaces. We could not reject the null hypothesis that there is no difference between left and right-handed individuals and the way they tie their shoelaces.

Handedness, Shoelaces, Criminalistics

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