

Handedness, Footedness and Familial Sinistrality Among Normal Individuals

Bhagat Singh*

Meerut College, Meerut

Affiliated to Ch.Charan Singh University, Meerut (UP)

Abstract

The objective of the present research was to study the handedness, footedness and familial sinistrality among normal individuals. 700 subjects were selected randomly from the normal population. The mean age of the respondents was 33.98 years with S.D. of being 18.70 years. Steenhuis and Bryden (1989)'s five point scale handedness questionnaire was used to collect the data. Some items were also included like the arm crossing, leg crossing, leg used to kick a ball and eye used to see a far distance object. Each subject was tested individually. Chi-square and Correlation analysis were used to test the different hypothesis. Results showed that out of 700 subjects, only 32 subjects were left handed. There were 668 right hander, out of which 18.3% (122) have either one (16.8%), two (1.2%) or three left handed (0.3%) member in their family, while out of 32 left hander, there were only 6.3% (2) left handers who have one left hander in their family. There was a significant correlation ($r = 0.817$) between handedness and footedness. There was a significant difference ($\chi^2 = 491.365$) between handedness and footedness. On the basis of the results and discussion it can be concluded that there are 4.6% left hander in normal Indian population which is very low in comparison to world left hander's percentage i.e. 8-10%. Handedness is also significantly correlated with other asymmetries like footedness. Left hander uses their left leg to kick a ball and same case is with the right hander. There is no relationship between Handedness and familial sinistrality.

Key Words: Handedness; Footedness; Familial Sinistrality (FS).

References

- Annett, M. (1970). A classification of hand preference by association analysis. *British Journal of Psychology*, 61, 303 – 321.
- Annett, M. (1978). Genetic and Nongenetic Influences on Handedness. *Behavior Genetics*, 8, 227-249.
- Annett, M. (1979). Family handedness in three generations predicated by the Right shifted theory. *Annals of Human Genetics*, 42, 479-491.
- Annett, M. (1981). Familial handedness and sex differences in strength of hand preference. *Cortex*, 17, 141 – 146.
- Annett, M. (1985). *Left – right hand and brain: the right shift theory*. London: Lawrence Erlbaum.
- Annett, M. (1994). Handedness as a continuous variable with dextral shift: Sex, generation and family handedness in subgroups of left and right handers. *Behavioural Genetics*, 24 (1), 51 – 63.
- Annett, M. (1998). Handedness and Cerebral dominance: The right shift theory. *Journal of Neuropsychiatry and Clinical Neuroscience*, 10 (4), 459 – 469.
- Bryden, M.P. (1977). Measuring handedness with questionnaire. *Neuropsychologia*, 15, 617 – 624.
- Bryden, M.P. (1982). *Laterality: functional asymmetry in the intact brain*. New York: Academic Press.
- Chapman, L.J. and Chapman, J.P. (1987). The measurement of handedness. *Brain and Cognition*, 6, 175-183.
- Cobianchi, A.; Giaquinto, S. and Giovanni, B. (1998). Positive potential evoked by First Syllable of spoken words in right and left handers. *Journal of Contemporary Neurology*, 3, 1081-1118.
- Collins, R.L. (1970). The sound of one paw clapping; an inquiry into the origins of left-handedness. In G. Lindzey and D.D. Thiessen (Eds.) *Contribution of Behaviour-Genetics analysis. The mouse as prototype*. New York: Appleton – Century – Crofts.
- Coren, S. (1992). *The Left-Hander Syndrome- The Causes and Consequences of Left- handedness*. New York: Free Press.
- Dargent-Pare, C.; de Agostini, M.; Meshbah, M. and Dallatolas, G. (1992). Foot and eye preferences in adults: relationship with handedness, sex and age. *Cortex*, 28, 343 – 351.
- Dollfus S, Alary M, Razafimandimby A, Prelipceanu D, Rybakowski JK, Davidson M, Galderisi S, Libiger J, Hranov L.G, Hummer M, Boter H, Peuskens J, Kahn R.S, Fleischhacker W.W and EUFEST Group. (2012). Familial sinistrality and handedness in patients with first episode schizophrenia: the EUFEST study. *Laterality*; 17(2):217-24.
- Dawson, J.L.M. (1977). Alaskan Eskimo- hand, eye, auditory dominance and cognitive style. *Psychologia: an International Journal of Psychology in the orient*, 20, 121 – 135.
- Fry, C.J. (1990). Left-handedness: association with college major, familial sinistrality, allergies, and asthma. *Psychological Report*, 67(2), 419-433.
- Geschwind, N and Galaburda, A.M. (1987). *Cerebral lateralization*, Cambridge, M.A. M.I.T. Press.
- Kang, Y. and Harris, L.J. (2000). Handedness and footedness in Korean college students. *Brain and Cognition*, 43(1-3), 268-74.
- Laland, K.N.; Kumm, J.; Van Horn, J.D. and Feldman, M.W. (1995). A gene-culture model of human handedness. *Behavioural Genetics*, 25(5), 433 – 445.
- Levy, J.; and Nagylaki, T. (1972). A model for the genetics of handedness. *Genetics*, 72, 117-128.
- Mandal, M.K.; Pandey, G.; Singh, S.K. and Asthana, H.S. (1993) – Degree of asymmetry in lateral preferences: eye, foot, and ear. *The Journal of Psychology*, 126(2), 155 – 162.

- McKeever W.F. and Van Deventer A.D. (1977). Familial sinistrality and degree of left-handedness. *British Journal of Psychology*, 68 (4), 469-471.
- McKeever, W.F.; Cerone, L.J. and Cheryl Chase-Carmichael. (2000). Laterality: Asymmetries of Body. *Brain and Cognition*, 5(2), 99-110.
- McManus, I.C. (1985). Handedness, language dominance and aphasia: a genetic model. *Psychological Medicine, Monograph, Supplement 8*, Cambridge: Cambridge University Press.
- McManus, I.C. (1985b). Right and left hand skill: Failure of the right shift model. *British Journal of Psychology*, 76, 1 – 16.
- McManus, I.C. (1985c). On testing the right shift theory: a reply to Annett. *British Journal of Psychology*, 76, 31 – 34.
- McManus, I.C. (1991). The inheritance of left-handedness. *Ciba Foundation Symposium*, 162, 251-67; discussion 267-81.
- McManus, I.C. (1998). Handedness, cerebral lateralization and the evolution of language. *British Journal of Psychology*, 12, 71-73.
- McManus, I.C.; Amir, T.; Singh, M. and Ida, Y. (1999). Cultural and historical differences in the incidence of left handedness are due to the differences in gene frequency not direct social pressure. *Paper presented in Annual conference of International Neuropsychological Society. Denvour, U.S.A.*
- Oldfield, R.C. (1971). The assessment and analysis of handedness: the Edinburgh inventory. *Neuropsychologia*, 9, 97-113.
- Porac, C.; Coren, S. and Searleman, A. (1986). Environmental factors in hand preference formation: Evidence from attempts to switch the preferred hand. *Behavioural Genetics*, 16, 251-261.
- Porac, C.; Izaak, M. and Rees, L. (1990). Age trends in handedness: an environmental approach. *Paper presented at the meeting of the Canadian Psychological Association, Ottawa.*
- Raczkowski, D.; Kalat, J.W. and Nebes, R. (1974). Reliability and validity of some handedness questionnaire items. *Neuropsychologia*, 12, 43-47.
- Reiss, M. and Reiss, G. (1999). Current aspects of handedness. *Wien Klin Wochenschr*, 111(24), 1009-18.
- Reiss, M. and Reiss, G. (2002). Medical problems of handedness. *Wien Medical Wochenschr*, 152(5-6), 148-152.
- Salmaso, D. and Longoni, M.A. (1983). Hand preference in an Italian sample. *Perceptual and Motor Skills*, 57, 1039-1042.
- Satz, P. (1972). Pathological left- handedness: an explanatory model. *Cortex*, 8, 121-135.
- Satz, P. (1973). Left handedness and early brain insult: an explanation. *Neuropsychologia*, 11, 115-117.
- Seddon, B. and McManus, I.C. (1993). *The incidence of left handedness: A Meta analysis*. Unpublished manuscript, University College, London, U.K.
- Singh, B. (2006). A study of relationship between sex, handedness and health problems among normal individuals. *Readings in Applied Psychology*, 253-259.
- Singh, B. (2011). The incidences of handedness and health problems between illiterates male and female of rural areas. *Shodh Prerak*, 1 (3), 138-144.
- Singh, B. (2012). Incidences of Handedness and Footedness in Hindu and Muslim community. *Indian Journal of Psychological Science*, 3(1), 1-7.
- Singh, B & Qureshi, A.N. (2011). The many sides of laterality: Do they correlate to each other – A survey on Muslim undergraduates. *Journal of Humanities & Social Sciences*, 3(1), 56-58.
- Singh, M. and Bryden, M.P. (1994). The factor structure of handedness in India. *International Journal of Neuroscience*, 74, 33-34.
- Singh, M. and Manjary, M. (1995). Observed hand preference among elementary school children. *Journal of the International Neuropsychological Society*, 1, 179.
- Singh M, Manjary M, Dellatolas G. (2001). Lateral preferences among Indian school children. *Cortex*, 37(2): 231-41.
- Steenhuis, R.E. and Bryden, M. P. (1989). Different dimensions of hand preference that relate to skilled and unskilled activities. *Cortex*, 25, 289—304. Szaflarski, J.P.; Binder, J.R.; Possing, E.T.; McKiernan, K.A.; Ward, B.D. and Hammeke, T.A. (2002). Language lateralization in left-handed and ambidextrous people: fMRI data. *Neurology*, 59(2), 238-244.
- Teng, E.L.; Lee, P.; Yang, K. and Chang, P.C. (1976). Handedness in a Chinese population: biological, social and pathological factors. *Science*, 193, 1148-1150.
- Yetkin, Y. (2001). Do environmental and hereditary factors affect the psychophysiology and left-right shift in left-handers? *International Journal of Neuroscience*, 110(3-4), 109-134.