A few recent studies have reported an increased incidence of left- and mixed-handedness (i.e., non-right-handedness) in individuals with a diagnosis of infantile autism (Campbell, 1978; Colby & Parkison, 1977; Hauser, DeLong, & Rosman, 1975; Tsai & Stewart, 1982). These studies, however, fail to examine the possibility of genetic influence toward non-right-handedness in the autistic population. The present study was undertaken to investigate the incidence of handedness in a group of autistic patients and their families, and to examine the question of inheritance of handedness in the autistic subjects.

Two sets of handedness questionnaires with a cover letter outlining the purpose of the inquiry were sent directly by mail to the parents of 132 autistic patients previously admitted to the Iowa Autism Program. Questionnaire A was designed to be used on the autistic patients and their siblings. This questionnaire asked the parents to indicate which hand was used by each of their children in performing the following five tasks: pointing to indicate choice responses, drawing, throwing a ball, cutting with a scissors, and unscrewing the lid of a jar. Questionnaire B was designed to be used on the parents of autistic subjects. This questionnaire asked the parents which hand they used to perform the following five activities: writing, throwing a ball a long distance, cutting with a scissors, using a toothbrush, and holding a hammer. Individuals were classified into three groups as follows: (1) right-handers (R) who did not use the left hand for any of the activities, (2) left-handers (L) who did not use the right hand for...
any of the activities, and (3) mixed-handers (M) who did not use the right or left hand alone for all the activities.

Of the 132 families, 83 (63%) completed and returned the questionnaires. Of the 83 families, 68 met the present study criteria, i.e., the autistic patient was 4 years or older and lived with both biological parents on the survey census day. The former criterion was required because the adult pattern on handedness has been known to be established at about 4 years of age (Annett, 1970).

The age of the 68 autistic patients (52 males and 16 females) ranged from 5 years to 23 years, with a mean age of 10.2 years and a standard deviation of 4.1 years. Males outnumbered females in a ratio of 3.25 to 1. Eighteen (27%) autistic patients had an IQ of 70 or more, 13 (19%) had IQs between 50 and 70, and the rest (54%) had IQs below 50. The sex ratio and distribution of intelligence of the present autism sample resembles the original total group of 132 autistic patients and those of other well-known investigators (DeMyer, Barton, Allen, & Steele, 1973; Rutter & Lockyer, 1967; Schopler, Andrews, & Strupp, 1979), suggesting that the present autism sample is representative of the whole population of autistic patients.

There were 104 biological siblings (59 males and 45 females) who were 4 years or older. The siblings' age ranged from 4 years to 30 years; the mean was 14.1 years, with a standard deviation of 6.5.

The incidences of handedness were compared between the autistic patients (R = 29 or 42.6%, L = 7 or 10.3%, M = 32 or 47.1%) and their families (siblings: R = 93 or 89.4%, L = 7 or 6.7%, M = 4 or 3.9%; Parents: R = 115 or 84.5%, L = 8 or 5.9%, M = 13 or 9.6%). Significantly more autistic patients were nonright-handers than their siblings (χ² = 43.63, p < .001) and their parents (χ² = 38.36, p < .001).

Hudson's (1975) data were used to calculate the expected incidence of handedness in autistic subjects and their siblings. The handedness used for parental matings (i.e., right × right, right × left, left × left) was based on the writing hand. In the autistic group there were significantly more observed non-right-handers than the expected cases (parental mating of R × R: 26 vs. 4.7, χ² = 21.32, p < .001; R × L: 13 vs. 4.5, χ² = 8.03, p < .01). The difference between the observed and the expected incidence of handedness in the siblings group was not significant (parental mating of R × R: 8 vs. 7.7, χ² = .01; R × L: 3 vs. 5.5, χ² = .91).

In the present study the hand preference of the autistic subjects and their siblings could have been determined by the parents according to their preconceived notion of their observation of handedness in their children, as some parents tend to just enter a tick throughout the column indicating for that hand. Thus, there could be the possibility of an underestimation of the incidence of mixed-handedness in the siblings group. However, if this were