

At Least Some Errors are Randomly Generated
(Freud was Wrong)

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An experiment was carried out to expose something about human error generating mechanisms. In the context of the experiment, an error was made when a subject pressed the wrong key on a computer keyboard or pressed no key at all in the time allotted. These might be considered, respectively, errors of substitution and errors of omission.

Each of seven subjects saw a sequence of three digit numbers, made an easily learned binary judgement about each, and was to press the appropriate one of two keys. Each session consisted of 1000 presentations of randomly permuted, fixed numbers broken into 10 blocks of 100. One of two keys should have been pressed within one second of the onset of each stimulus.

These data were subjected to statistical analyses in order to probe the nature of the error generating mechanisms. Goodness of fit tests for a Poisson distribution for the number of errors per 50 trial interval and for an exponential distribution of the length of the intervals between errors were carried out. Given the resulting Chi-square values, we cannot reject the hypothesis that a constant probability generator is operating. Thus, there is evidence for an endogenous mechanism that may best be described as a random error generator. Furthermore, an item analysis of the number of errors produced per stimulus suggests the existence of a second mechanism operating on task-driven factors producing exogenous errors. Some errors, at least, are the result of constant probability generating mechanisms with error rate idiosyncratically determined for each subject.