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Much has been written on the topic of structured programming. but little consensus exists on a precise definition of the term, nor have many properly designed experiments been undertaken to test the hypothesis that structured programming is in fact preferable to non-structured programming. This paper describes one reasonable experiment completed to investigate this basic hypothesis.

Because of the lack of consensus on the topic, each writer tends to redefine what is meant by the term "structured programming". Such is the case here, where Love has chosen to define a structured program as "a program composed of only three program control structures--sequence, selection, and repetition", which is a somewhat narrower (but not inconsistent) viewpoint than those put forth by such other proponents of structured programming such as Dijkstra. The hypothesis to be tested, too, is somewhat simpler: the experiment was designed to "test the assertion that programs with a simplified flow of control are easier to understand than ones with more complex control flow".

A major difficulty for any experiment of this type is the choice of a measure of understanding for a computer program. The one used here was based on the theory that people tend to remember that which they understand better than that which they do not understand. Hence, the experiment consisted of presenting various chunks of code to the subjects for controlled time periods, and measuring the number of lines of code recalled correctly and in the original sequence.

The exact mechanics of the experiment, and even the results, are perhaps not the most important part of this paper (Love's results were rather inconclusive, which is hardly surprising given the limited number of subjects tested). What is more significant to the design of programming languages is contained in the section of the paper labelled "Discussion".

Love concludes that many proposed new software production techniques are accepted, and consequently built into new languages, without proper research and evaluation. The experiment described in the paper tends to illustrate that, while such research is quite difficult, it is not impossible (although one should be careful about assigning too much significance to the results of a single, small-scale experiment). From Love's description of the problems encountered in the design of the experiment, it appears that more work is required in the area (although, of course, it is a moot point whether computer scientists or psychologists should spearhead the research).