A SIMPLE METHOD FOR THE DESCRIPTION OF INTER-RESPONSE TIME DISTRIBUTIONS

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The distribution of relative frequencies of inter-response times (IRT) has become one of the more commonly used methods for the description of the temporal distribution of responses. When many distributions must be presented in order to describe behavior over the course of a number of sessions, this method can prove cumbersome. A more convenient method, which characterizes an IRT distribution in terms of its peak or modal value and the variability around this value, is described in this paper.

IRT distributions are most often used in the analysis of behavior when low rates of responding are selectively reinforced. For example, consider a situation in which a cat is reinforced with ground fish each time it presses a lever, provided that at least 21 sec have elapsed since the preceding response. In most cases, a clear-cut clustering of IRT's around 21 sec can eventually be observed. Moreover, a second peak usually appears in the first class interval of IRT's. This peak represents "bursts" of responding; *i.e.*, responses with very short IRT's. However, since bursting probably represents a different phenomenon than temporally spaced responding it should be treated separately from the remainder of the IRT distribution.

The mode (or peak) may be located simply by visual inspection. Then the variability of responses around the peak may be quantified by computing the semi-interquartile range of IRT's exclusive of "bursts". The computation consists of subtracting the number of responses in the first class interval of the distribution from the total number of responses and then calculating the range of IRT's which includes the middle 50% of the remainder.

Section A of Fig. 1 shows the distribution of IRT's obtained during the cat's first 40-min session of temporally spaced responding. Section B shows the IRT distribution ob-

tained during session 47. In Section C, bottom, the modes and semi-interquartile ranges have been plotted for each of the 47 sessions. The upper half of Section C represents the "burst" responses which were omitted from the computation of the semi-interquartile range. Note the convenient way in which the course of events in a large number of sessions has been compressed into a single figure.

Fig. 1. A. IRT distribution of the first session of temporally spaced responding. IRT's to the left of the broken line are not reinforced; those to the right are. The stippled area represents the "burst" responses. The shaded area represents the semi-interquartile range exclusive of "bursts". B. IRT's of the 47th session. C. Bottom: Modes and semi-interquartile ranges for 47 sessions. The mode is indicated by a dot in the appropriate class interval. Tied modes are both represented by dots. Top: "Burst" responses.