

ON THE INABILITY OF INTERVAL TIME
SAMPLING TO REFLECT FREQUENCY OF
OCCURRENCE DATA¹

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Interval time sampling yields the result, percentage of intervals scored. It is rudimentary to note that this measure *per se* does not constitute a response dimension. It is a useful behavioral measure, therefore, only to the extent that it accurately reflects the nature and degree of the fundamental dimensions from which it is drawn *i.e.*, frequency and duration. The correspondence between scored intervals and response duration is fairly well understood (*Journal of Applied Behavior Analysis*, 1975, 8, 463-469; 1977, 10, 325-332). This study determined the correspondence between scored intervals and response frequency. Eleven, 30-minute experimental sessions that differed along the variables of frequency of occurrence and time per response (the average length of a response per session) were computer simulated. In the first group of four sessions, the frequencies were 45, 100, 150, and 300; in these sessions, all responses ranged from one to three seconds. In the second group of four sessions, the frequencies were 31, 61, 101, and 152; in these sessions, all responses ranged from three to nine seconds. In the last group of three sessions, the frequencies were 25, 34, and 50; here, all responses ranged from nine to 27 seconds. The response distribution within the above ranges was rectangular, with each whole second represented once. The responses were selected by a random number generator, and on each trial every number in the distribution had an equal probability of occurrence. These provisions produced a linear pattern of responding. The time per response in the three groups of sessions were 2, 6, and 18 seconds. For all sessions, event recordings were made and analyzed. The analysis consisted of using partial interval time sampling to determine the percentage of intervals scored; this total was subdivided into intervals containing (1) single responses, (2) multiple responses, (3) continuing responses, and (4) response initiations or terminations. The analysis was performed when the length of the observation interval was 5, 10, 20, 30, 60, and 120 seconds. An additional session drawn from a study that contained real-life data was subjected to this same analysis. The most significant results were derived by finding the ratio of scored intervals containing single responses to the total intervals scored. If every scored interval contained a single response, this ratio would equal 1.0; if no scored interval contained a single response, the ratio would be 0.0. It can be seen that this ratio is an objective expression of the validity of interval time sampling as a measure of response frequency. Of 66 data points (11 sessions \times six observation lengths per session), only five were equal to or greater than 0.80. These five points were all found in just two sessions ($f = 45, 100$). A validity index of less than 0.50 was observed in 49 of the 66 points. Also, the validity index increased, peaked, and then decreased

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within sessions as the length of the observation interval was increased. The results from the real-life session were in close agreement with those obtained from the simulations. The importance of these and previous findings lies in the demonstration that changes in scored intervals need not represent true behavior change. The data indicate that there are many combinations of behavioral frequency and duration where interval time sampling cannot produce valid measurement results.

DESCRIPTORS: time sampling, partial interval, validity

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