

The watched pot still won't boil: Expectancy as a variable in estimating the passage of time

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The proverbial watched-pot phenomenon was literally produced by exposing two groups of subjects to a pot of water on a hot plate. The experimental subjects were requested to signal when the water began to boil; the control group was given no such instructions. All subjects were then asked to estimate the length of a 240-sec interval; the experimental group gave significantly longer time estimates than did the control group. The results are interpreted as supporting an expectancy interpretation of the watched-pot effect.

The watched-pot phenomenon has proven to be relatively complex for an effect so commonly recognized. While it is generally agreed that the perceived passage of time appears to vary with level of anticipation, there is less agreement as to why this should be so. Fraisse (1963) maintains that perceived time passage is increased by the number and uniformity of events occurring during an interval. In a similar vein, Ornstein (1969) suggests that the estimation of time is influenced by the number of stimulus events noted and stored in memory during the interval. As the number or complexity of these events increases, storage also increases, leading to an increment in perceived duration.

In contrast to the "filled-interval" theories, common belief tends to support an expectancy interpretation as the basis for time estimation. It is expectancy, in fact, that is implied by the folk saying that "a watched pot never boils." In a study supporting this conclusion, Filer and Meals (1949) examined level of motivation and perceived duration. Subjects who anticipated a desirable goal tended to overestimate the passage of time relative to a less highly motivated control condition. Of course, these results might also be interpreted in terms of increased sensory input due to heightened attention and awareness.

Lordahl and Berkowitz (1975) conducted an experiment in which an expectancy condition was compared with a condition in which the duration of time was simply monitored. Subjects were exposed to successive conditions in which they were asked either to silently count off the number of seconds during an interval or to wait for a signal to roll a die from a glass. The latter condition was defined as representing expectancy, in that the subject had the opportunity to win 25 cents from the experimenter. Both conditions were conducted with time intervals of 15, 40, and 240 sec. No significant difference was found between duration counting and expectancy, which was interpreted as indicating that expectancy per se does not influence time estimation. However, the study was flawed by the subjects' successive exposure to experimental and control conditions.

While subjects were specifically asked not to time the interval under the expectancy condition, they were, nonetheless, presumably aware that a time estimation would later be requested. Further, the request to not count may have encouraged precisely that behavior. In addition, the control subjects counting the interval presumably knew after the first trial that at some point they would be asked for a response, thereby creating an expectancy set. The authors' interpretation of counting as representative of an unfilled interval might also be questioned.

The purpose of the present experiment was to assess the watched-pot phenomenon under conditions defined as expectancy and nonexpectancy with independent groups and with a task directly reflecting the colloquial watched-pot phenomenon.

METHOD

Subjects

Twenty male undergraduates enrolled in two psychology courses at Augusta College were randomly assigned to the experimental and control groups. All students had agreed to participate in an experiment of an undisclosed nature.

Procedure

After reporting to the psychology laboratory at a scheduled time, each student was escorted into a small waiting room containing a glass coffee pot and a hot plate, ostensibly to wait until the "experiment" was ready to begin. The student was seated, given a sheet of paper, and divested of all metal objects in order to ensure that a watch would not be available. The coffee pot had been filled with cold tap water just before the subject was admitted to the room. The student was then given one of two sets of instructions, depending upon whether he had been assigned to the experimental or control group. The 10 experimental subjects were instructed as follows: "There will be a delay in starting the experiment. I will return for you when we are ready. Would you mind calling me in the other room when the water starts boiling? Thanks." The comments to the students in the control group were the same, except that reference to the water was omitted. Thus a literal watched-pot situation was created for the experimental group but not specifically for the control group. The experimenter then left the room for 240 sec. At the end of that interval, the experimenter returned and asked the subject to record on the paper previously provided an

estimate of the elapsed time in minutes and seconds. The experiment was then explained in general terms, and the student was dismissed.

RESULTS AND DISCUSSION

Using the time differences between the actual time and the estimated times as the dependent variable, the experimental group tended to overestimate the time relative to the control group [$t(18) = 3.86, p < .01$]. This finding supports the conclusion that time duration is overestimated (time passes more slowly) under expectancy conditions. In this respect, the study is consistent with the report by Filer and Meals (1949), in which level of motivation was found to be related to accuracy of estimation. Of course, the results are also consistent with an interpretation based upon the number of events occurring during an interval if expectancy is defined in terms of an increase in a succession of cognitive events. Viewed in this way, the experiment also supports the positions of Fraisse (1963) and Ornstein (1969). It should be noted that the method of verbal estimation used in this study has been found to lead to larger time estimates than either the method of production or the method of reproduction (Hornstein

& Rotter, 1969). The significance of these results, therefore, may be related in part to the specific method used to measure the dependent variable. While the conclusions do not support those of Lordahl and Berkowitz (1975), their study involved several methodological flaws, as noted above. In short, under conditions identical to those of the proverbial watched pot, the phenomenon seems to occur as a function of expectancy.

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