

Time Estimation: Effect of Depression and Pleasantness or Unpleasantness of an Experience

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Sixty college students were classified as depressed or nondepressed on the basis of scores on a depression inventory and were asked to write short essays about pleasant, unpleasant, or neutral experiences. They then were instructed to estimate how much time had elapsed while writing the essays. No support was found for hypotheses that depressed individuals give longer estimates than nondepressed individuals and that time spent writing about unpleasant experiences appears to be longer than when describing pleasant experiences. The findings prove that time estimation is unaffected by affective states.

Psychologists have long been interested in how people experience the passage of time (Kluger, 1979). Unlike physical objects, time is an intangible that is not perceived through the usual senses. In ancient cultures, time was associated with observable events such as the rising and setting of the sun, the phases of the moon, and the seasons of the year. Recognizing the advantage of fashioning their own markers, ingenious ancestors invented sand clocks, sun dials, and water clocks. Arriving much later in the history of civilization, mechanical clocks were devised with energy stored in a wind-up spring. An escapement device released the energy, bit by bit, so as to move the hands in measurable units. This enabled people to "tell" time accurately in small units. Until clocks were miniaturized and made portable, town dwellers were dependent on the tower clock, church bells, and town criers who periodically announced the time. Pocket watches and wristwatches enabled people to make appointments, to follow schedules, to be more acutely aware

of the passage of time, and to be more accurate in their ability to estimate it.

Psychologists have been intrigued by time perception because it is something that is sensed and experienced even though it cannot be touched, lifted, seen, heard, or smelled. According to Kolodny (1974), the realization that this perception could be subject to the influence of the state of the perceiver is something that has sparked inquiry in many quarters.

The observation that "Time flies when you are having fun" has been argued persuasively by Folsom (1959), Yardley and Toll (1962), and Caldarone and Bliss (1988). They maintained that time does seem to pass more rapidly during pleasant experiences and appears to be interminable during unpleasant ones. Experimental studies by Cargill (1969), Ripley and Winkle (1972), and Zimmer (1981) tend to support this view. On the other hand, some have asserted that people defensively block out unpleasant experiences, so that they therefore seem to have passed rapidly (at least in memory). They maintain that individuals tend to linger and to savor pleasant experiences, which consequently seem prolonged. Research by Gladbach (1967) and Latke (1989) provided some support for this point of view.

According to Wallis (1977), time sense seems to be affected by depression. Time seems to

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NOTE: This is a fictional article to be used only for purposes of research education.

“drag on” and to “hang heavy” for depressed individuals (Toliver, 1982). The mechanism for this alteration in time perception is not fully known but has been the subject of much speculation (Archer & Horowitz, 1991). It is consistent, however, with such standard characteristics of depressed individuals as low energy level, a decrease in concentration and attention, diminished involvement in pleasurable activities, and a feeling of being slowed down.

Based on the belief that the person as well as the event are part of the equation, the aim of this research is to determine whether pleasant, unpleasant, and neutral experiences yield different time estimations and whether they are related to depression in the perceiver. The following hypotheses were tested:

1. There will be a significant variation in time estimation of pleasant, unpleasant, and neutral time experiences. The shortest estimates are predicted for pleasant experiences, followed by neutral ones, and the longest estimates are for unpleasant experiences.
2. Depressed individuals will perceive time as passing more slowly.
3. Depressed individuals will give longer estimates than will nondepressed individuals.
4. The longest estimates will be given for unpleasant experiences by depressed individuals and the shortest by nondepressed individuals to pleasant experiences.

Method

Participants

Sixty college students volunteered to participate in return for free movie tickets. Half were male and half were female. They were given information about the study and then were asked to sign a consent form; those who agreed to participate were administered the Hilger Depression Inventory. They were then given an appointment for the experimental session.

Procedure

Participants were first divided into depressed and nondepressed groups. Scores on the Hilger Depression Inventory were used for classification. All those above the median of the total sample (20.63) were placed in the depressed group, and those who scored below the median were assigned to the nondepressed group. All participants in both groups were first exposed to a neutral experience as a baseline condition. Half of the participants, randomly assigned from each of the depressed and nondepressed groups, then received an unpleasant condition, whereas the remaining half were exposed to a pleasant condition. These conditions are described below.

Stimulus Conditions and Time Estimations

Neutral. Participants were seen individually and were asked to remove their watches and to place them inside a brown envelope that was on the table. There were no clocks in the room. They were then given a pencil and lined paper and were asked to write a description of their living room at home. They were instructed to continue writing until told to stop. When 5 min and 32 s had elapsed, they were asked to stop and to estimate how much time had passed. They had known in advance that they were going to be asked to make a time estimation; that had been the reason given for the removal of their watches.

Pleasant. After completing the neutral task and time estimation, those who were assigned to the pleasant condition were then asked to write a description of a pleasant experience that they had had last summer. This was followed by an estimation of the time spent writing that description.

Unpleasant. After completing the neutral task, those who were assigned to the unpleasant condition were asked to write a description of an unpleasant experience that they had had last summer and then to estimate the time spent on that task.

Measure of Depression

The Hilger Depression Inventory (Hilger, 1989) is a measure of depression that is specifically normed for young adults and was therefore thought to be most appropriate for use in this research. It has good convergent validity, correlating $r = .75$ with the Beck Depression Inventory, $r = .69$ with the Hamilton, and $r = .62$ with the Depression Scale of the MMPI. It has a split-half reliability of $r = .85$. Scores on the inventory can range up to 100, and individuals who score 50 or more are considered to be clinically depressed.

Results

Data were tested for normality of distributions and homogeneity of variance. On both of these counts, the data were determined to meet the assumptions of analysis of variance. Means of time estimates under three conditions by the two groups are shown in Table 1. The obtained mean time estimation for the depressed group was 20.6 s longer than the mean of the nondepressed group. This difference, however, was not statistically significant (see Table 2), $F(1, 84) = 1.287, ns$. The respective means (in seconds) for the pleasant, neutral, and unpleasant conditions were 330.67, 342.3, and 377.43. These, too, although in the predicted direction, did not vary significantly, $F(2, 84) = 2.413, ns$. There was no significant interaction between the two independent variables, $F(2, 84) = 1.166 ns$.

Table 1
Means (in Seconds) of Time Estimations for Depressed and Nondepressed Participants Under Neutral, Pleasant, and Unpleasant Conditions

| Condition | Depressed ($n = 15$) | Nondepressed ($n = 15$) | Total |
|------------|---------------------------|------------------------------|------------------------|
| Neutral | 370.33 | 314.27 | 342.30 |
| Pleasant | 325.00 | 336.33 | 360.67 |
| Unpleasant | 385.87 | 369.00 | 377.43 |
| Totals | 360.40 ($n = 45$) | 339.87 ($n = 45$) | 350.13 ($n = 90$) |

Table 2
Analysis of Variance of Time Estimates for Two Groups Under Three Conditions

| Source | Sum of Squares | df | Mean Square | F |
|-----------------------|----------------|----|-------------|-------|
| Condition | 35,568.067 | 2 | 17,784.033 | 2.413 |
| Diagnosis | 9,486.4 | 1 | 9,486.4 | 1.287 |
| Condition × Diagnosis | 17,186.6 | 2 | 8,593.3 | 1.166 |
| Error | 619,047.333 | 84 | 7,369.611 | |

Discussion

None of the hypotheses was supported. Time estimates were not shown to be a function of depression, and they were not affected by the pleasantness, unpleasantness, or neutrality of the experience. These findings challenge earlier theoretical formulations and research findings that suggested that the perception of the passage of time is dependent on what is going on in the phenomenal world of the perceiver, particularly in terms of its pleasantness or unpleasantness. These data prove that one's intangible time sense, like the physical senses, is relatively unaffected by internal states. It places time as a true "sense" that is right in line with the tangible physical senses.

To solidify this conclusion, further research is suggested with other affective states and with other stimulus conditions. In the interest of greater generalizability, it would also be illuminating to replicate the study on broader samples with a greater range of age, education, IQ, and other demographic variables than were present in our relatively restricted and homogeneous college student sample.

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