



¹¹ Practical measurements are mostly of *derived* nature, involving some mediating steps from the really observed phenomenon to the fundamental definition. For example, we can measure intensity of electric current *via* dilatation of a wire due to thermic effects of the current passing through the wire.

¹² This ascertains a minimal arithmetic structure in the domain of measurement results. The refinement from integer indeces to the field of rationals is the subject of a standard theory (Helmholtz–Hölder).

¹³ We assume for simplicity that angular deviations of light rays deviate only minimally from the view axis, and that the reflection characteristic is uniform within that range.

¹⁴ Psychophysics neither supports nor requires a realism of *qualia* and is, in fact, indifferent to this problem; cf. note 5.

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HEDONIC ASSIMILATION WITH SIMULTANEOUS PRESENTATION

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Abstract

A target painting was rated as less hedonically positive when simultaneously presented with hedonically negative context paintings and subjects were given instructions to view the paintings as a group than when the target was viewed alone (i.e., assimilation occurred). This is unlike what happens with sequential presentation which produces hedonic contrast. The hedonic assimilation was not diminished by having subjects compare the context and target stimuli, contrary to the ideas of Stapel and colleagues.

Judgments of stimuli change with changes in context stimuli. The effect of the context stimuli on the test stimuli can take two different forms. Some studies show contrast -- judgment of the test stimuli moving in the direction away from the context stimuli. Other studies show assimilation -- judgment of the test stimuli moving toward the context stimuli. In our studies of context effects on hedonic judgments we have always found contrast rather than assimilation. That is, the test stimuli are rated as less "good" following very good context stimuli than when presented alone (Rota & Zellner, 2007; Zellner, Rohm, Bassetti, & Parker, 2003) or the test stimuli are rated as "better" following very bad context stimuli than when presented alone (Dolese, Zellner, Vasserman, & Parker, 2005).

However, other studies in which subjects have judged things as varied as the attractiveness of people and the length of lines have found both assimilation (attractiveness – Geiselman, Haight, & Kimata, 1984; line length – Brigell & Uhlarik, 1979; Jordan & Uhlarik, 1985) and contrast effects (attractiveness – Kenrick & Gutierrez, 1980; line length – Brigell & Uhlarik, 1979; Jordan & Uhlarik, 1985) in judgments. One factor that seems to be important in determining whether assimilation or contrast will occur is whether the test stimuli are presented at the same time as the context stimuli (simultaneous presentation) or if the test stimuli are presented after presentation of the context stimuli (sequential presentation) (Wedell, Parducci, & Geiselman, 1987). The differences in effects of context stimuli on test stimuli in the two types of presentations has been proposed to be the result of perceiving the test and context stimuli as a unit or a Gestalt when presented simultaneously and as separate items when presented sequentially (Girgus & Coren, 1982; King, 2001).

In addition to the timing of presentation of the stimuli, the way in which the information about the context stimuli is used in the judgment of the test stimuli can also influence whether hedonic contrast or assimilation occurs. If subjects compare the test stimuli to the context stimuli there is likely to be contrast. However, if the context stimuli are used to interpret the test stimuli, assimilation is more likely to occur (Stapel & Koomen, 2001; Stapel, Koomen & van der Plight, 1997; Stapel & Winkielman, 1998).

We always presented the stimuli sequentially in our studies of hedonic context effects and always found hedonic contrast. We suspect that if we presented the context and test stimuli simultaneously we would be more likely to see assimilation. In addition, according to Wanke, Bless, and Igou (2001), this assimilation should be reduced by priming subjects to compare the test stimuli with the context stimuli rather than seeing the test stimulus as one of a group with the context stimuli; they believe that the assimilative effect of the simultaneous presentation and the contrastive effect of comparison judgments should be additive.



The following experiment investigates whether simultaneous presentation of context and test stimuli produce hedonic contrast or assimilation. In addition, we investigate the effect of priming subjects to perceive the context and test stimuli as a whole versus priming them to compare the context and test stimuli.

Method

Participants

Seventy-seven undergraduate students in psychology classes at Montclair State University participated. All were drawn from the Psychology Department's subject pool.

Materials

Colored photographs of three paintings by Francisco Goya were cut out of books and pasted onto 17.8 X 28 cm white posterboard. The two context paintings were from Goya's Dark Period (*Saturn Devouring His Son* and *The Incantation*). The test painting was *The Swing*.

Procedure

Subjects were randomly assigned to one of three groups: Grouping, Comparing and Control. All subjects were told that the experiment was about art. The Grouping subjects (n=24) viewed all three paintings simultaneously in a horizontal display. Prior to viewing, subjects were told that all three of the paintings they would see were by an artist named Goya. The participants were then asked if they liked or disliked Goya as a painter based on the three paintings they were viewing. They were told that "liking" meant how much they would like to hang the particular painting in their home. They were then asked to rate how much they liked each painting, starting with the center (test painting) followed by the left and right context paintings respectively, using a 201-point bipolar hedonic scale. On the scale, +100 was labeled the "most attractive imaginable", -100 was labeled "the most unattractive imaginable", and 0 was "neither attractive nor unattractive".

The Comparing (n=28) group subjects also viewed all three paintings simultaneously in a horizontal display. They were told that "liking" meant how much they would like to hang the particular painting in their home. They were then asked to rank order the paintings from the one they liked the most to the one they liked the least. They were then asked to rate how much they liked each painting, starting with the center (test) followed by the left and right context paintings respectively, using the 201-point hedonic scale.

The Control (n=25) group subjects viewed only the target painting. The participants were told that the painting they were about to see was by an artist named Goya. They were then told that "liking" meant how much they would like to hang the particular painting in their home. The subjects then rated how much they liked the painting using the 201-point hedonic scale.

Results

For each subject in Group Grouping and Group Comparing we calculated the average liking rating for the two hedonically negative context pictures. Group Grouping (M= -78.2, SD= 22.4) rated the context paintings as more hedonically negative than did Group Comparing (M= -60.1, SD= 28.2), $t(50)=2.53$, $p=.015$.

In order to determine if simultaneous presentation of context and test paintings resulted in assimilation when subjects viewed the group of three paintings as a whole (after rating how much they like Goya as a painter) the mean rating of the test painting by the Grouping group (M= 22.4, SD= 41.4) and the Control group (M= 45.1, SD= 28.0) were compared. A t-test showed that the Grouping group rated the test painting as significantly less hedonically positive than the Control group, indicating assimilation, $t(47)=2.26$, $p<0.03$.

However, a t-test showed that the Comparing group's (M= 35.5, SD= 40.7) and the Control group's mean ratings of the test painting were not significantly different, $t(51)=0.99$, $p>0.30$. In addition, a t-test comparing the mean ratings of the Grouping group and the Control group did not show a significant difference, $t(50)=1.15$, $p=.26$.

Because there was a significant difference in the mean hedonic ratings of the context stimuli by Groups Grouping and Comparing we calculated the difference in hedonic ratings between each subject's hedonic rating of the test painting and mean hedonic rating of the context paintings. A t-test found no significant difference between Group Grouping (M =100.6, SD=49.4) and Group Comparing (M = 95.6, SD=45.3), $t(50)=0.38$, $p>.70$.

Discussion

These results lend further support to the idea that hedonic assimilation is more likely to occur when context and test stimuli are presented simultaneously than when presented sequentially (which tends to result in hedonic contrast). This simultaneous presentation of the stimuli most likely results in the subject viewing the context and test stimuli as a unit or whole and some of the hedonic quality of the surrounding context stimuli is incorporated into the evaluation of the test stimuli. We enhanced viewing of the context and test stimuli as a unit by having subjects rate the artist of the paintings. In order to do that they had to integrate their view of the paintings.

According to Stapel and colleagues that conception of the context and test paintings as being a unit should be changed by having subjects treat the context and test stimuli as objects to be compared. This comparison view usually results in hedonic contrast (Stapel et al., 1997; Stapel & Koomen, 2001; Stapel & Winkielman, 1998). However, it did not do so in the present study. In fact, the mean rating of the Comparing group showed no hint of contrast but instead was in the direction of assimilation (e.g., more hedonically negative, but not significantly so). In addition when we took into account the fact that the context stimuli were rated significantly differently by the Grouping and Comparing groups we found that instructing the subjects to compare the paintings had no influence on the context effect.

Although Wanke, Bless, and Igou (2001) suggest that contrast and assimilation can occur at the same time and may have additive effects on hedonic ratings when factors causing assimilation and contrast are simultaneously present, we did not find such an additive effect in this study. Instead, it appears that only the effect of the simultaneous presentation of the test and context stimuli (assimilation) occurred. There was no countervailing contrast effect seen as a result of instruction to compare the stimuli.

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REMEMBERING RETROSPECTIVELY THE DURATION OF JOYFUL AND SAD MUSICAL EXCERPTS: COMPARISON OF THREE ESTIMATION METHODS

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Abstract

Sixty participants were asked to listen to two musical excerpts, one expected to generate joy and the other to generate sadness, and to complete a cognitive task between the musical excerpts. The task and excerpts lasted 180, 300, or 420 seconds. After listening to the excerpts and completing the cognitive task, the participants were asked to estimate retrospectively the duration of each excerpt and the cognitive task on the basis of three methods: verbal estimates (chronometric units), relative estimates of the three tasks based on the segmentation of a line, and estimates with line drawing in comparison with a standard line. Participants judged the duration of the joyful musical excerpt as longer than that of the cognitive task and systematically underestimated the duration of the cognitive task, i.e., judged it to be much briefer than it really was. This basic finding was consistent over the three methods. The sadness excerpt led to longer perceived duration than the cognitive condition only with the verbal and relative estimates methods. Also, there were systematic underestimations of long intervals and overestimations of short intervals in all conditions, except with the method involving a standard in the specific case of sadness. In general, there was more consistency between the verbal and relative methods than between the verbal method and the one based on the comparison with a standard.

In spite of the ecological relevance of research on *retrospective timing*, this field has been neglected considerably in comparison with research on *prospective timing*. Retrospective timing refers to conditions where participants do not know in advance, i.e., before a period filled with various activities, that the duration of the period will have to be estimated (see for instance Brown & Stubbs, 1988; Eisler, Eisler & Montgomery, 2004; Zakay & Block, 2004). In most time perception research, participants are placed in conditions where they know in advance (prospective condition) that they will have to estimate intervals, which are usually very brief—from ms to a few seconds. However, in everyday life, people are often in situations where they try to estimate, from memory, the duration of certain past events. In the present study, we propose to assess the consistency of different methods for studying the retrospective timing of long intervals.

In addition to verbal estimates based on conventional chronometric units—a method limited by the tendency of participants to use rough approximations—the durations of the past periods to be estimated will be compared directly by dividing a line into three segments representing each of the three periods' length and will be estimated by drawing lines to contrast their length with a line segment representing a given time interval. It is important to test the appropriateness of different methods when studies involve a certain range of durations. When intervals are very short (say < 1 minute), it is reasonable to rely on the reproduction method, but with longer ones—especially when multiple durations are to be remembered—it easily becomes a boring task. As well, with very long intervals (say > 30 minutes), it is reasonable to rely on verbal estimates, i.e., on the use of chronometric units if intervals are long, but if they are short, the tendency of participants to round up to the nearest