

CATEGORIZATION CUTS CONDENSATION

Debra A. Zellner, Megan C. Mattingly,
*Montclair State University, Montclair, NJ 07043 USA, zellnerd@mail.montclair.edu,
mattinglym1@mail.montclair.edu*
and Scott Parker
American University, Washington, DC 20016 USA, sparker@american.edu

Abstract

Test stimuli are rated as both less good (hedonic contrast) and less different (hedonic condensation) following very good context stimuli than when presented alone. Hedonic contrast is attenuated if context and test stimuli are perceived as being in different categories. The present research shows that hedonic condensation is also attenuated when subjects perceive the context and test stimuli as being in different categories. This provides further evidence that hedonic contrast and condensation are related phenomena.

Previous research found evidence for a relationship between hedonic contrast and hedonic condensation (Zellner, Allen, Henley, and Parker, in press). Hedonic contrast is the phenomenon in which test stimuli are rated as less “good” following very good context stimuli than when presented alone. Hedonic condensation is the diminution of a preference between two test stimuli following very good context stimuli. Using commercial beverages, Zellner et al. (in press) found that when hedonically positive context stimuli preceded less good test stimuli those test stimuli were rated as less hedonically positive (hedonic contrast) and subjects also reported less of a preference between them (hedonic condensation).

Hedonic contrast can be attenuated (Dolese, Zellner, Vasserman, & Parker, 2005; Zellner, Rohm, Bassetti, & Parker, 2003) or eliminated (Rota & Zellner, 2005) when subjects consider the test and context stimuli as being in different categories. This categorization effect was first described by Fechner (according to Beebe-Center, 1932/1965, p. 222-223) who said that “the two factors had to bear a certain resemblance to each other”. That is, the test stimulus(i) and the context stimulus(i) had to resemble one another or be from the same category in order for contrast to occur. So, for example, Zellner et al. (2003) found that a set of pictures of North American birds following a set of pictures of brightly colored Tropical birds was rated as less attractive by subjects who were told that they were rating “birds” than by subjects who were told that they were first rating “Tropical birds” and then rating “North American birds”. Thus categorization can diminish contrast.

The following experiments investigate whether categorization affects hedonic condensation as well as hedonic contrast. The first experiment is an attempt to replicate the finding of hedonic condensation of Zellner et al. (in press) using pictures of birds as in Zellner et al. (2003) rather than beverages. The second experiment determines if categorization can attenuate that condensation much as it does contrast.

Method

Participants

Sixty-four undergraduate students in psychology classes at Montclair State University participated (45 females and 19 males; mean age = 20.8 years). All were drawn from the Psychology Department's subject pool.

Materials

Colored photographs of birds were cut out of books and pasted onto 17.8 X 28 cm white posterboard. The eight stimulus pictures were two pairs of attractive Tropical *context* birds and two pairs of less attractive North American *test* birds, chosen from the pictures used in Zellner et al. (2003). They were selected so that the differences in attractiveness ratings for the pictures within a pair were roughly equal. So our objective was to create four pairs of birds whose attractivenesses differed by a constant amount.

Procedure

Phase I (Hedonic Condensation) - Thirty-two subjects were randomly assigned to one of two groups: Context and Control^{birds}. All subjects were told that they would be rating "pictures of birds". People in Group Context were shown two pairs of Tropical birds (context birds) followed by two pairs of North American birds (test birds). People in Group Control^{birds} were only shown the two pairs of North American birds (test birds).

All participants were tested individually. The participants in both groups were asked to indicate if they liked one of the birds in each pair more than the other. If they did they were then asked which one they liked more and how much more they liked it than the other. They indicated their degree of preference using a 10-point rating scale on which 1 indicated liking the preferred bird "slightly more", 4 indicated "somewhat more", 7 indicated "a lot more", and 10 indicated "very much more". If a subject had no preference between a pair of birds the experimenter assigned a rating of 0 for that pair.

Phase II (Categorization) - Thirty-two subjects were randomly assigned to one of two groups: Context_{Cat} and Control^{NAbirds}. People in Group Context_{Cat} were shown two pairs of Tropical birds (context birds) followed by two pairs of North American birds (test birds), but now in Phase II they were told that the birds were in different categories. These subjects were first told that they would be rating "Tropical birds". After rating the two pairs of tropical birds they were then asked if they would mind rating another set of pictures and that this set would be of "North American birds". All subjects obliged. People in Group Control^{NAbirds} were shown only the two pairs of North American birds (test birds) and were told that they would be rating "North American birds." Otherwise, the procedure of this phase was identical to that of Phase I.

Results

Phase I (Hedonic Condensation)

For each subject in Group Context we calculated the average preference rating for the two pairs of Tropical context birds (M=4.3, SD=1.5). For each subject in both Group Context and Group Control^{birds} we calculated the average preference rating for the two pairs of North

American test birds ($M=2.0$, $SD=1.6$ and $M=4.3$, $SD=1.3$, respectively for the two Groups). A Mann-Whitney test showed that Group Context gave significantly smaller preference ratings for the test birds than did Group Control^{“birds”} ($n_1=n_2=16$; $U=36, 220$; $p<.001$.)

Phase II (Categorization)

For each subject in Group Context_{Cat} we calculated the average preference rating for the two pairs of Tropical context birds ($M=3.8$, $SD=1.5$). For each subject in both Group Context_{Cat} and Group Control^{“Nabirds”} we calculated the average preference rating for the two pairs of North American test birds ($M=3.8$, $SD=2.0$ and $M=4.8$, $SD=1.6$, respectively for the two Groups). A Mann-Whitney test found no significant difference between Groups Context_{Cat} and Control^{“Nabirds”} in their preference ratings of the test birds ($n_1=n_2=16$; $U=98, 158$; $p=.27$.)

Comparisons Across Phases

While it is clear that significant condensation occurred in Phase I and not in Phase II when instructions led to categorization we do not have a direct assay of the degree of attenuation of the condensation due to categorization. We therefore compared the degree of preference for both the context stimuli (Tropical birds) and the test stimuli (North American birds) for subjects in Groups Context and Context_{Cat}. While there was no difference between these groups in their degree of preference for the Tropical context birds ($n_1=n_2=16$; Mann-Whitney $U=104.5, 151.5$; $p=.38$) there was a significant difference between these groups in their degree of preference for the North American test birds ($n_1=n_2=16$; $U=67, 189$; $p=.02$). The preference ratings were smaller for Group Context_{Cat}, the subjects told that the Tropical and North American birds came from different categories.

Discussion

These results lend further support to the idea that hedonic contrast and hedonic condensation are related phenomena. Not only do both hedonic contrast and condensation occur when mediocre test stimuli are preceded by good context stimuli but they are also reduced when subjects think about the context and test stimuli as being from different categories.

It is interesting that contrast and condensation also occur in sensory intensive dimensions such as loudness (see, e.g., Marks [1992] for contrast and Parker, Murphy & Schneider [2002] for condensation.) Contrast and condensation in loudness are attenuated when the louder and softer stimuli have frequencies in separate critical bands, much as contrast and condensation in hedonics are attenuated when the better and lesser stimuli are in separate categories. The parallels are striking.

There are natural parts of the auditory system to suspect as contributors to contrast and condensation in loudness, in particular the auditory efferent system (see, e.g., Guinan [1996]) which is capable of damping activity in the inner ear. But there are no natural suspects in the hedonic case; indeed it is not clear that there is a hedonic “system”. This difference makes the parallels between the loudness and hedonic phenomena of contrast and condensation particularly puzzling.

References

Beebe-Center, J. G. (1965). *The psychology of pleasantness and unpleasantness*. New York: Russell & Russell. (Original work published 1932.)

- Dolese, M., Zellner, D., Vasserman, M., & Parker, S. (2005). Categorization affects hedonic contrast in the visual arts. *Bulletin of Psychology and the Arts*, 5, 21 – 25.
- Fechner, G. (1898). *Vorschule der Aesthetik II* (2nd. ed.). Leipzig: Breitkopf & Hartel.
- Guinan, J. J. (1996). Physiology of olivocochlear efferents. In P. Dallos, A. N Popper, & R. R. Fay (Eds.), *The Cochlea*. New York: Springer-Verlag; pp. 435-502.
- Marks, L. (1992). The contingency of perceptual processing: Context modifies equal-loudness relations. *Psychological Science*, 3, 285 – 291.
- Parker, S., Murphy, D., & Schneider, B. (2002). Top-down gain control in the auditory system: Evidence from identification and discrimination experiments. *Perception & Psychophysics*, 64, 598 – 615.
- Rota, L. & Zellner, D. (2005). Hedonic contrast in experts and non-experts: Categorization revisited. In J.S. Monahan, S.M. Sheffert, and J.T. Townsend (Eds.), *Fechner Day 2005: Proceedings of the 21st Annual Meeting of the International Society for Psychophysics*. Mt. Pleasant, MI: Central Michigan University Printing Services; pp. 291-296.
- Zellner, D.A., Allen, D., Henley, M., & Parker, S. (in press). Contrast makes little difference: Good stimuli make mediocre stimuli less good and less different. *Psychonomic Bulletin & Review*.
- Zellner, D., Rohm, E., Bassetti, T., & Parker, S. (2003). Compared to what? Effects of categorization on hedonic contrast. *Psychonomic Bulletin & Review*, 10, 468 – 473.