

NAMES WILL HURT YOU: EFFECT OF LABEL ON LIKING AND PREFERENCE

Debra A. Zellner, Kaila Hoer, and Juliann Feldman

Department of Psychology, Montclair State University, Montclair NJ 07043 USA

zellnerd@mail.montclair.edu, hoerk1@mail.montclair.edu, feldmanj4@mail.montclair.edu

Abstract

When hedonic contrast causes stimuli to become less good it also reduces subjects' preferences between the stimuli (hedonic condensation). Here we investigate whether the reduction in preference is the result of comparing the judged stimuli to the preceding context stimuli or the result of their increased negativity. Two groups smelled and rated their degree of preference between two pairs of cheeses (one group told they were smelling cheeses and the other body odor samples). They then smelled each of the four samples individually and rated the intensity and liking for the samples with the same label. There was no effect of label on intensity ratings. But subjects told that the samples were body odor liked the samples less and showed less of a preference between pairs.

When good stimuli precede hedonically neutral stimuli not only do they make those neutral stimuli less hedonically positive (negative hedonic contrast), but they also reduce the preference between them (hedonic condensation). Zellner, Allen, Henley, & Parker (2006) demonstrated this condensation effect by having subjects rate their degree of preference between paired mediocre test juices either when those juices were preceded by pairs of hedonically positive juices or when they were presented alone. Subjects who first tasted the hedonically positive juices not only reported liking the mediocre juices less than did those subjects who tasted only the mediocre juices (negative hedonic contrast), but they also reported smaller preferences between the mediocre test juices. Similar results were found with subjects evaluating the attractivenesses of pictures of birds (Zellner, Mattingly, & Parker, 2009).

Here we investigate whether the reduction in preference (hedonic condensation) that accompanies negative hedonic contrast is the direct result of comparing the judged stimuli to the preceding context stimuli or the result of their increased negativity. In order to distinguish between these two alternatives we had to have a way to reduce the hedonic value of a set of stimuli in some way other than producing negative hedonic contrast. Previous research has shown that the hedonic evaluation of odors can be reduced by labeling the odors with a label that subjects find unpleasant. For example, in a study by Herz and von Clef (2001) subjects rated a mixture of isovaleric and butyric acid as less pleasant when labeled as "vomit" than when labeled as "parmesan cheese". A similar effect was found when a mixture of isovaleric acid and cheddar cheese smell was labeled as either "cheddar cheese" or "body odor" (de Araujo, Rolls, Velazco, Margot & Cayeux, 2005).

We use this labeling technique ("cheese" vs. "body odor") to alter subjects' hedonic evaluations of a single set of stimuli by means other than hedonic contrast. Since the hedonic values of the stimuli will be shifted without the use of hedonically positive context stimuli (as would be the case in a hedonic contrast study) we will be able to determine if the hedonic condensation that accompanies negative hedonic contrast is a result of the contrast procedure or whether negative shifts in hedonic value that occur for other reasons can also produce hedonic condensation.

Method

Participants. Twenty undergraduate students from Montclair State University (4 males and 16 females) served in the experiment. Their mean age was 20.4 years. Subjects were tested individually.

Stimuli. The four stimuli were 2oz samples of four cheeses. The cheeses were Munster, Provolone, Swiss and Parmesan purchased at a local grocery store deli counter. The cheeses were wrapped in a small piece of cheesecloth secured with a small piece of masking tape. The samples were put into small glass bottles with screwcaps and allowed to reach room temperature before testing began.

Procedure. The 20 subjects were randomly assigned to one of two groups: the Cheese Group or the Body Odor Group. Subjects in the Cheese Group were told that they would be smelling and rating different cheese samples. Subjects in the Body Odor Group were told that they would be smelling and rating different samples of body odor.

The subjects were first given pairs of the cheeses to rate (Provolone paired with Swiss, Munster paired with Parmesan). They were handed two bottles at the same time and were told to smell them both and then indicate if they liked one sample more than the other. If they did they were then asked which one they preferred 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 sample “slightly more”, 4 indicated “somewhat more”, 7 indicated “a lot more”, and 10 indicated “very much more” than the other sample of the pair. If a subject had no preference between a pair of odors the experimenter assigned a rating of 0 for that pair.

Subjects were then given all four samples, one at a time in random order and smelled and rated how much they liked each odor using a 201-point bipolar hedonic scale. A rating of -100 indicated that the subject thought the cheese/body odor sample was the “most unpleasant imaginable”; 0 indicated the subject found it “neither pleasant nor unpleasant”; and +100 meant that the subject found sample the “most pleasant imaginable”.

Subjects were then given the four samples a third time, one at a time in random order. They smelled and rated the intensity of each sample using a 0 (no odor) to 100 (most intense odor imaginable) scale.

Results

Preference. We calculated the average preference rating given to the two pairs of odors for each subject. Subjects in the Cheese group rated the preference for one odor over the other in the pair ($M = 4.20$, $SD = 1.06$) as significantly larger than did the Body Odor group of subjects ($M = 3.05$, $SD = 1.09$), $t(18) = 2.39$, $p = .03$, Cohen’s $d = 1.13$. See Table 1.

Liking. We calculated the average hedonic rating given to the four odors for each subject. The Body Odor subjects rated the odors ($M = -30.75$, $SD = 28.22$) as significantly less pleasant than did the Cheese subjects ($M = -7.02$, $SD = 13.20$), $t(18) = 2.41$, $p = .03$, Cohen’s $d = 1.14$. See Table 1.

Intensity. We calculated the average intensity rating given to the four odors for each subject. There was no significant difference in intensity ratings for the odors between the Body Odor subjects ($M = 51.05$, $SD = 20.12$) and the Cheese subjects ($M = 48.38$, $SD = 8.21$), $t(18) = 0.39$, $p = .70$, Cohen's $d = 0.18$. See Table 1.

Table 1. Mean preference, hedonic, and intensity ratings (and standard deviations) for the odors by the Cheese and Body Odor groups.

Group	Preference	Hedonic	Intensity
Cheese	4.20 (1.06)	- 7.02 (13.20)	48.38 (8.21)
Body Odor	3.05 (1.09)	-30.75 (28.22)	51.05 (20.12)

Discussion

This is the first demonstration that odor labels can affect the size of preference judgments. The shift in the size of the preference judgments co-occurred with a shift in the hedonic ratings. So, a reduction in hedonic rating whether it is a result of negative hedonic contrast (Zellner et al., 2006; Zellner et al., 2009), or a result of labeling, affects preference judgments in the same way, reducing them. Condensation does not just accompany negative hedonic contrast, it seems to occur whenever there is a reduction in hedonic value, whatever the cause. Stimuli that are less liked are also judged as less hedonically different.

Although both the hedonic ratings and the preference ratings of the cheese odors were reduced when the cheese odors were labeled as body odor, the intensity judgments were not affected. This suggests that the affective evaluation of the stimulus is the only thing that changes. This finding is consistent with the findings of de Araujo et al. (2005) where labeling an isoaleric acid/cheddar cheese flavor odor as “body odor” resulted in a lower hedonic rating than when the same odor was labeled as “cheddar cheese” but no effect of intensity ratings was caused by the same labeling. In addition, that study, using an event-related fMRI design, found that the rostral anterior cingulate cortex (ACC)/medial orbitofrontal cortex (OFC) was significantly more activated when the subjects thought they were rating “cheddar cheese” than when they thought they were rating “body odor”. The degree of activation of these areas was correlated with hedonic ratings. These areas are different from the areas of the brain that appear to be correlated with differences in perceived intensity (piriform cortex, Rolls, Kringelbach, & de Araujo, 2003).

This suggests that the hedonic condensation effect is not the result of the same mechanism that produces hedonic contrast. One mechanism that has been posited as producing both hedonic contrast and hedonic condensation is the increase in the size of the hedonic range (Parducci, 1995). The introduction of the hedonically positive context stimuli preceding the more hedonically neutral target stimuli which occurs in studies of negative hedonic contrast increases the range of stimuli the subject experiences. It has been suggested that that increase in range might produce negative hedonic contrast and hedonic condensation (Zellner et al., 2009). In the present study there is no shift in the size of the hedonic range. The stimuli presented are always the same. Therefore, some other mechanism must explain hedonic condensation.

One possibility is that the effects on size of preference have something to do with the structure of the hedonic scale (Parker & Zellner, 1988). When hedonically good stimuli precede mediocre stimuli, the hedonic ratings of those stimuli are often pushed from slightly above to slightly below hedonic neutrality (e.g., Zellner et al., 2003). In this study, the mediocre test stimuli are moved from slightly to moderately below hedonic neutrality. It could be that people just don't put a lot of effort into discriminating between two stimuli which are hedonically negative. If the stimuli are clearly not good, people might not care which of the two is slightly better. People might not have a preference between two stimuli that they find unpleasant. The more pleasant they become, the more valuable it might be to discriminate between them and choose the best one of the pair. This possibility is roughly consistent with Wedell, Hicklin, and Smarandescu's (2007) view that attentional mechanisms govern discrimination. It requires the additional assumption that for hedonic judgments, attention is not spread evenly over the stimulus range nor governed by stimulus density but rather that particular regions of the hedonic scale are more attention-grabbing than others.

This explanation also suggests that contrast-induced shifts in hedonic evaluation of stimuli are not due simply to changes in the use of the rating scale. Instead, hedonic contrast must cause an actual shift in the perceived hedonic value of the target stimuli which results in hedonic condensation.

References

- De Araujo, I.E., Rolls, E.T., Velazco, M.I., Margot, C., & Cayeux, I. (2005). Cognitive modulation of olfactory processing. *Neuron*, *46*, 671-679.
- Herz, R.S. & von Clef, J. (2001). The influence of verbal labeling on the perception of odors: Evidence for olfactory illusions? *Perception*, *30*, 381-391.
- Parker, S. & Zellner, D.A. (1988). The difference between goodness and badness. In H. Ross (Ed.), *Fechner Day 88. Proceedings of the Fourth Annual Meeting of the international Society for Psychophysics* (pp. 107-108). Stirling, Scotland: Department of Psychology, University of Stirling.
- Parducci, A. (1995). *Happiness, pleasure, and judgment*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Rolls, E.T., Kringelbach, M.L., & de Araujo, I.E.T. (2003). Different representations of pleasant and unpleasant odors in the human brain. *European Journal of Neuroscience*, *18*, 695-703.
- Wedell, D.H., Hicklin, S.K., & Smarandescu, L.O. (2007). Contrasting models of assimilation and contrast. In D.A. Stapel & J. Suls (Eds), *Assimilation and contrast in social psychology* (pp. 45-74). New York: Psychological Press.
- Zellner, D. A., Allen, D., Henley, M., & Parker, S. (2006). Hedonic contrast and condensation: Good stimuli make mediocre stimuli less good and less different. *Psychonomic Bulletin & Review*, *13*, 235 – 239.
- Zellner, D.A., Mattingly, M.C., & Parker, S. (2009). Categorization reduces the effect of context on hedonic preference. *Attention, Perception, & Psychophysics*, *71*, 1228-1232.
- Zellner, D. A., Rohm, E. A., Bassetti, T. L., & Parker, S. (2003). Compared to what? Effects of categorization on hedonic contrast. *Psychonomic Bulletin & Review*, *10*, 468 – 473.