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The Effects of Texture and Temperature on Disgust Ratings for a Common Fruit

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Introduction:

- Research on the topic of disgust is important because it can help shed light on common underlying factors that influence this unpleasant emotion, which may help minimize it. An understanding of disgust in the context of food could be used to provide more palatable, pleasant options.
- Past research has examined how food sensitivity, oral temperature of food, and characteristics of food affect disgust. In a food sensitivity study, researchers found a positive correlation between disgust sensitivity and rejection of food (Egolf et al., 2018). In a study on the temperature of food, researchers found that temperature influences the perception of flavor and texture attributes in semi-solids (Engelen et al., 2003). Finally, in a study on characteristics of food that impact disgust, researchers found that texture and animalness, which was informing the participant that the meat was once an animal that was alive, were found to be the main factors that affect disgust (Martins & Pliner, 2006).
- In previous literature, texture, temperature, and their effects on disgust have been studied separately through the use of scenarios and images rather than actual food consumption. In the present study, the same food product was consumed at different textures and temperatures to examine the impact of both on disgust.
- Hypotheses:
 - In the warm condition, slices would garner the highest disgust rating, while in the cold condition, slices would have the lowest disgust rating.
 - In regard to texture, puree would lead to the highest disgust rating.
 - In regard to temperature, products in the warm condition would have higher disgust ratings.

Results:

- A main effect of texture $F(2,138) = 24.802, p < .001, \eta^2 = .264$. An LSD post hoc test showed a significant difference between puree and slices, with puree being more disgusting than slices. There was also a significant difference between sauce and slices with sauce being more disgusting.
- A main effect of temperature $F(1,69) = 6.444, p = .013, \eta^2 = .085$, with warm products rated as more disgusting.
- A significant interaction between texture and temperature $F(2,138) = 8.203, p < .001, \eta^2 = .106$. Specifically, for both puree and slices, disgust ratings were higher in the warm condition, however, temperature did not significantly impact ratings of the sauce.

References:

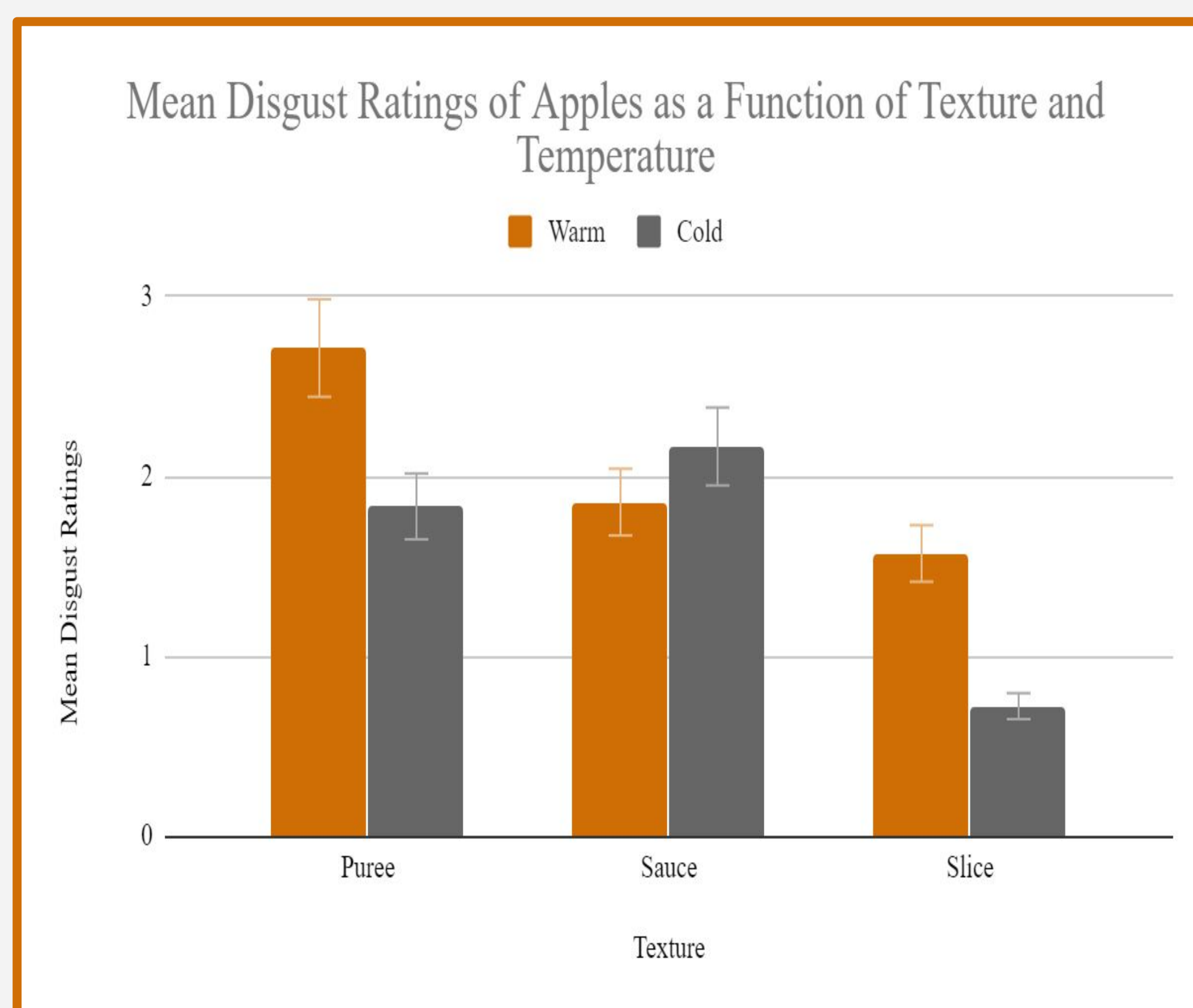
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Table 1

Mean Rating and Standard Deviation of Disgust as a Function of Texture and Temperature of Apples

| Temperature | Puree | Sauce | Slice |
|-------------|-------------|-------------|-------------|
| Warm | 2.71 (1.10) | 1.86 (1.22) | 1.57 (1.04) |
| Cold | 1.83 (1.21) | 2.16 (1.28) | .72 (.91) |

Note. Score of zero indicating least disgusting and six being most disgusting.

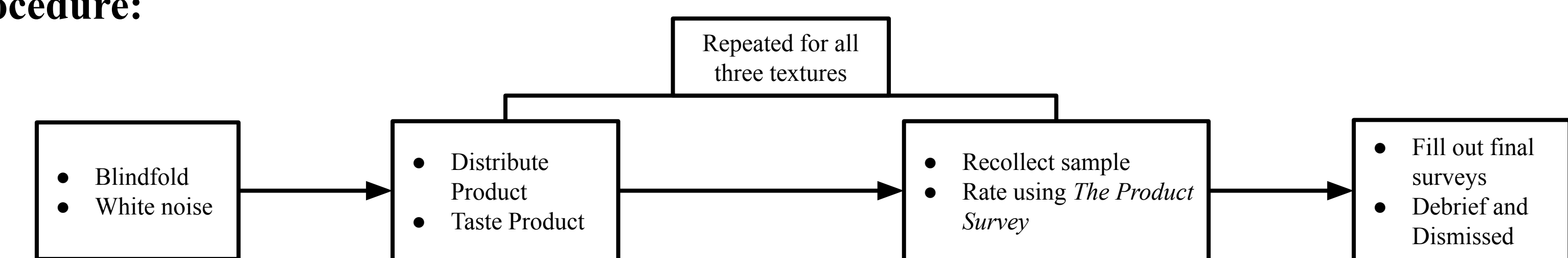


Abstract:

Researchers were interested in whether feelings of disgust towards food were impacted by specific textures and temperatures. Using apple products, participants were given puree, sauce, and slices served at a warm or cold temperature. 73 students (8 males and 65 females) with a mean age of 19 participated. A 3X2 mixed-subjects design was used, with texture as the within-subject factor and temperature as between. Results showed a main effect of texture $F(2,138) = 24.802, p < .001, \eta^2 = .264$. A post hoc test showed a significant difference between puree and slices, with puree being more disgusting, and between sauce and slices, with sauce being more disgusting. Additionally, there was a main effect of temperature $F(1,69) = 6.444, p = .013, \eta^2 = .085$, with warm products rated as more disgusting. Finally, there was a significant interaction between texture and temperature $F(2,138) = 8.203, p < .001, \eta^2 = .106$, such that, for both puree and slices, disgust ratings were higher in the warm condition. However, temperature did not significantly impact ratings of the sauce. Overall, findings show that participants' disgust ratings when consuming foods are impacted by both the texture and the temperature of the food. This knowledge could help individuals incorporate healthier foods into their diets.

Method:

- **Participants:** 73 participants (65 F and 8 M). Mean Age:19 years.
- **Materials:** white noise, blindfolds, apple products, product survey, Disgust Scale Revised, and The Disgust Propensity and Sensitivity Scale Revised
- **Design:** A 3X2 mixed-subjects design with texture of apples (sauce, puree, and slices) as the within-subjects factor and temperature (warm or cold) as the between-subjects factor. The dependent variable was the mean disgust rating which was evaluated through the question, "On a scale of 0-6, how much did you enjoy eating the product?" with 0 being most enjoyable and 6 being most disgusting.
- **Procedure:**



Conclusions:

- The present study found that puree and slices had higher disgust ratings in the warm condition than cold. However, temperature did not impact sauce ratings. It was hypothesized that in the warm condition, slices would garner the highest disgust rating, while in the cold condition, slices would have the lowest disgust rating. These findings were supported by a previous study on temperature which concluded that temperature influences the perception of flavor and texture on a product (Engelen et al., 2003).
- With texture, puree and sauce were more disgusting than slices. This supported the hypothesis that in regard to texture, puree would lead to the highest disgust rating.
- These data show a higher disgust rating in warm conditions overall. The hypothesis was supported in regard to temperature; that products in the warm condition would have higher disgust ratings. These findings were supported by a previous study done on oral temperature of water served with the consumption of chocolate. One part of the study found that the intensity ratings of sweetness and chocolate flavor were significantly lower in the colder conditions (Mony et al., 2013).
- Implications of this study are that specific preparations of the apple products could be applied to other fruits and vegetables to ensure that they are cooked in a way that is preferred by most college students. This information can then be passed along to commercialized settings such as hospitals and cafeterias to be used to determine how to serve their products based on texture/temperature preferences.
- A limitation for this study was that it was done in a very controlled setting with blindfold and white noise whereas, in the real world these would not be used. Thus, it is possible that people's disgust ratings might vary if they are also seeing the food and hearing the reaction of those around them (Barthomeuf et al., 2009).