# High imagery skills increase the pleasantness of visual textures regardless of valence: a matter of processing fluency ?

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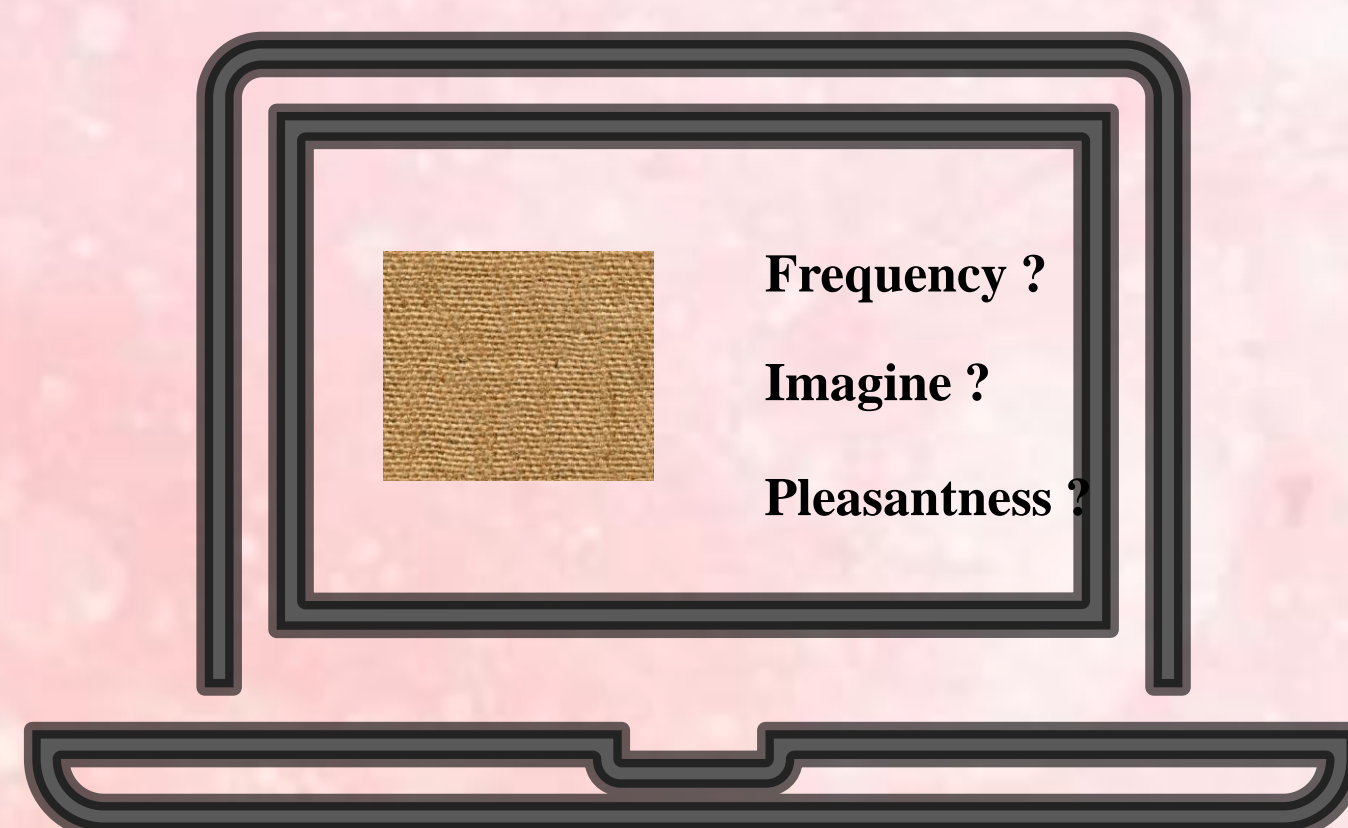
## Introduction

We use touch to discriminate textures. However, sometimes we need to evaluate the textures of objects (for quality or pleasantness judgment) using only vision (e.g., online purchase). Peck and al. (2013) showed that imaging touching an object was similar to physically touch this object. However, it is unknown whether everyone is able to visually evaluate texture accurately?

We hypothesized that good imagers should be more accurate to evaluate the texture of visually presented objects compared to poor imagers.
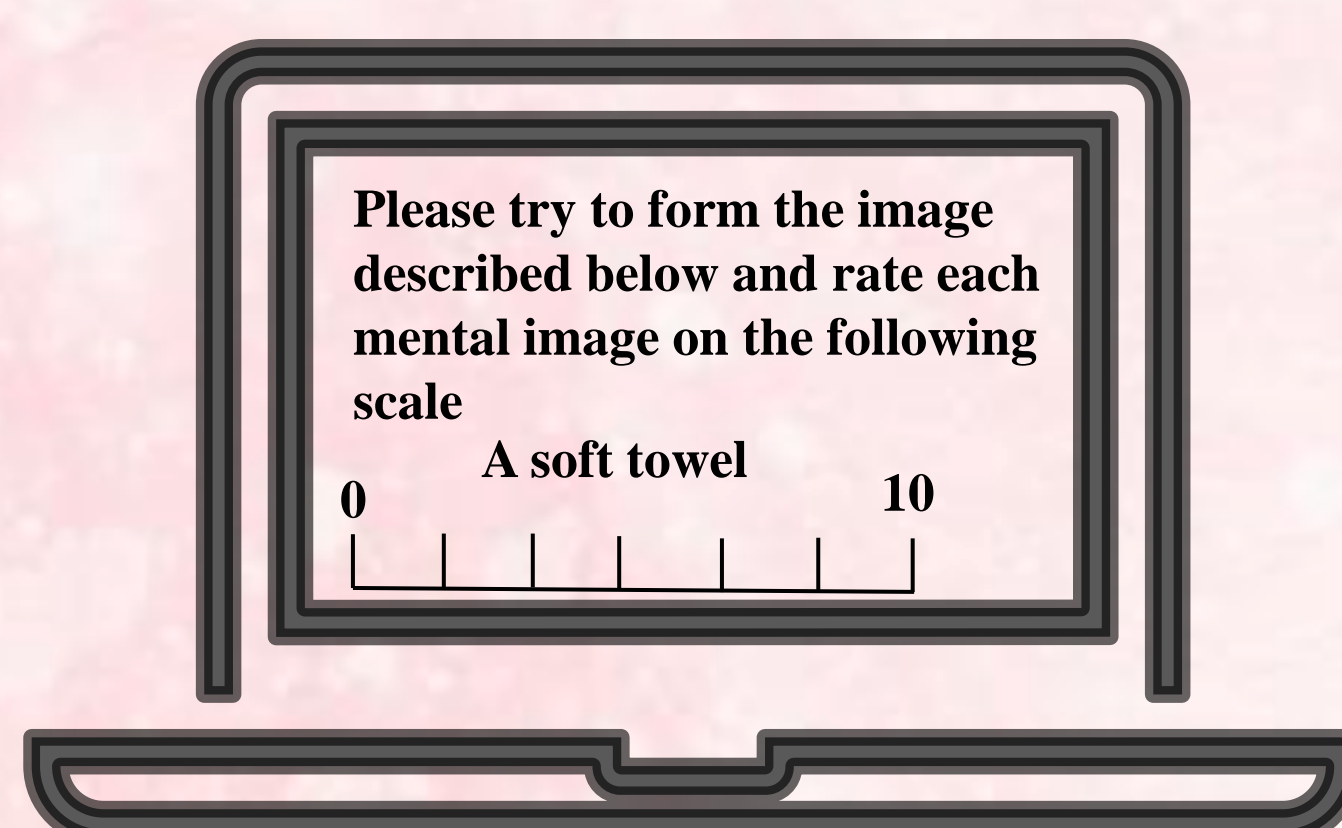
## Method

### Pre-test

19 textures selected out of 58 extracted from the literature

Frequency ?
Imagine ?
Pleasantness ?

N = 44 (MA = 22 ; SD = 4.83 ; 36 women)

| Pleasant | | Neutral | | Unpleasant | |
|---|---|---|---|---|---|
| Silk | Cotton | Rubber | Sponge | Burlap | Styrofoam |
| Plaid | Suede | Plastic | Leather | Scale | Ostrich |
| Velvet | Jean | Tennis ball | Glass | Concrete | leather |
| | | | | Sandpaper | Slate |

### Test

Participants completed surveys on touch attitudes and imagery skills

Please try to form the image described below and rate each mental image on the following scale

A soft towel

0        10

N = 245 (MA = 22,98 ; SD = 9,53 ; 222 women)
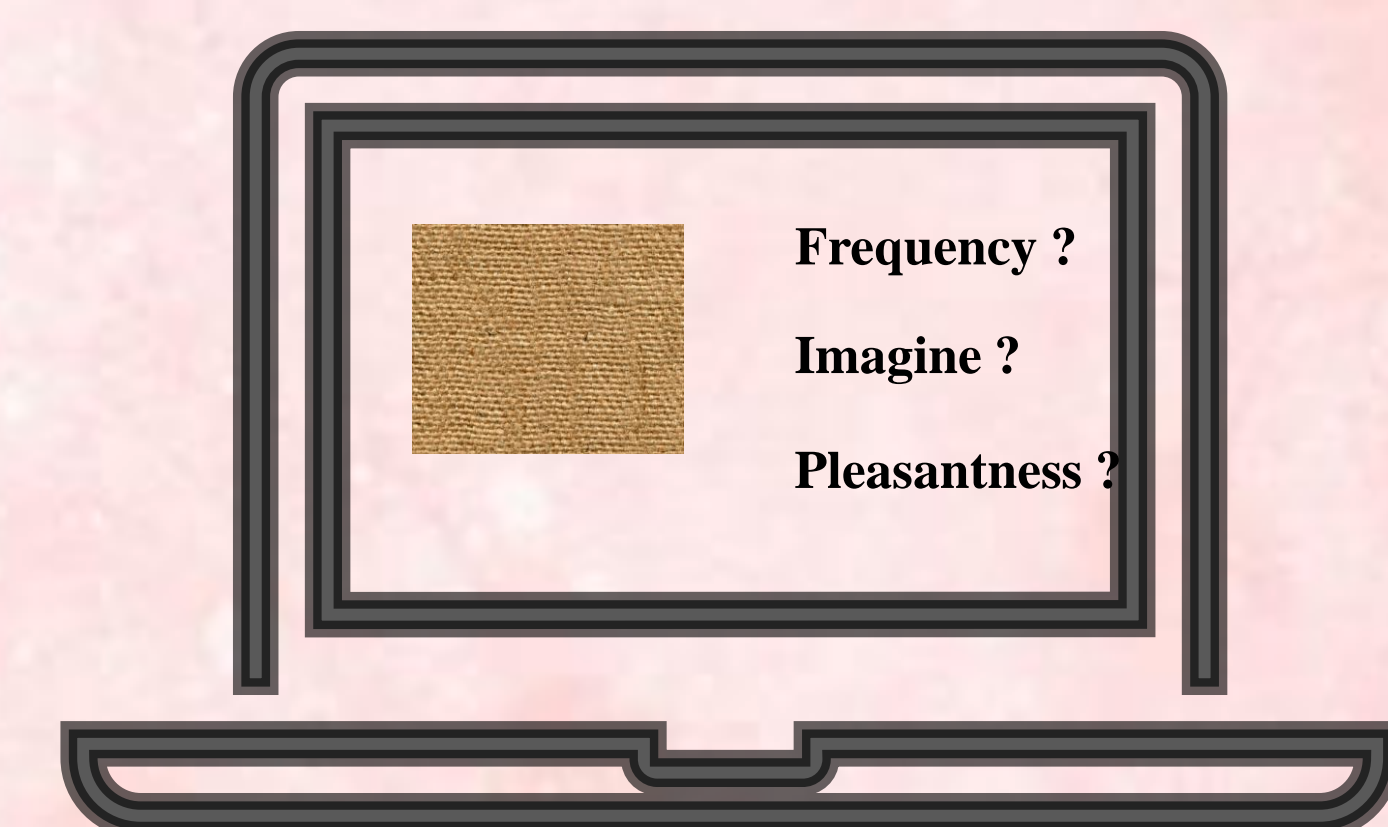
Good imagers (N = 40)

$t(78) = 23.6, p < .001$

Poor imagers (N = 40)

Participants imagined touching visual textures then rated their pleasantness

Frequency ?
Imagine ?
Pleasantness ?

| Good imagers | Poor imagers |
|---|---|
| 9.37 (0.50) | 4.22 (1.29) |

Mean imagery skills. Standard deviation in bracket.

## Main Results

### Repeated Measures ANOVA

Valence $F(2,156) = 388.72, p < .001, \eta^2_p = 0.833$

Pleasant textures (M = 3.41, SD = 0.374) were rated as more pleasant than neutral textures (M = 2.56, SD = 0.411, t = 15.2, p < .001), which were in turn rated as more pleasant than unpleasant textures (M = 2.03, SD = 0.418, t = 26, p < .001).

Group $F(1,78) = 13.7, p < .001, \eta^2_p = 0.149$

Good imagers rated textures overall more pleasant (M = 2.78, SD = 0.35) than poor imagers (M = 2.55, SD = 0.20).

Results did not reveal an interaction between Valence and Groups $(F(2,156) = 0.05, p = .956, \eta^2_p = 0.001)$.

### Hierarchical regression analyses

Frequency and imaging are two predictors of pleasantness judgements. The ability to imagine pleasantness materials predicts 18% of the variance (R² = .183, p <.001, AIC = 145) and a further 4% when frequency of encounter of these textures is added (R² = .227, R² modified = .044, p <.001, AIC = 133).



**Figure 1**. Mean ratings of pleasantness for textures as a function of valence (Pleasant, Neutral, Unpleasant) and imagery skills (Good vs. Poor imagers). * $p < .01$

## Discussion

The main result was that imagery skills predicted the pleasantness of textures when vision but not touch is permitted. Good imagers rated the textures they had to imagine to touch more pleasant whatever the valence category to which the textures belonged.
One explanation is that processing fluency had mediated the influence of imagery skills on pleasantness judgment, in the way that the easiness/difficulty to imagine touching textures was attributed to intrinsic dimension (pleasant/unpleasant) of the textures the participants had to evaluate. This finding is in line with previous results showing that perceptual fluency or response inhibition associated with stimuli influenced their pleasantness ratings in an opposite way (McKean et al., 2020).
Further studies are needed to investigate whether manipulating fluency could also influence the perceived pleasantness of textures during haptic exploration.
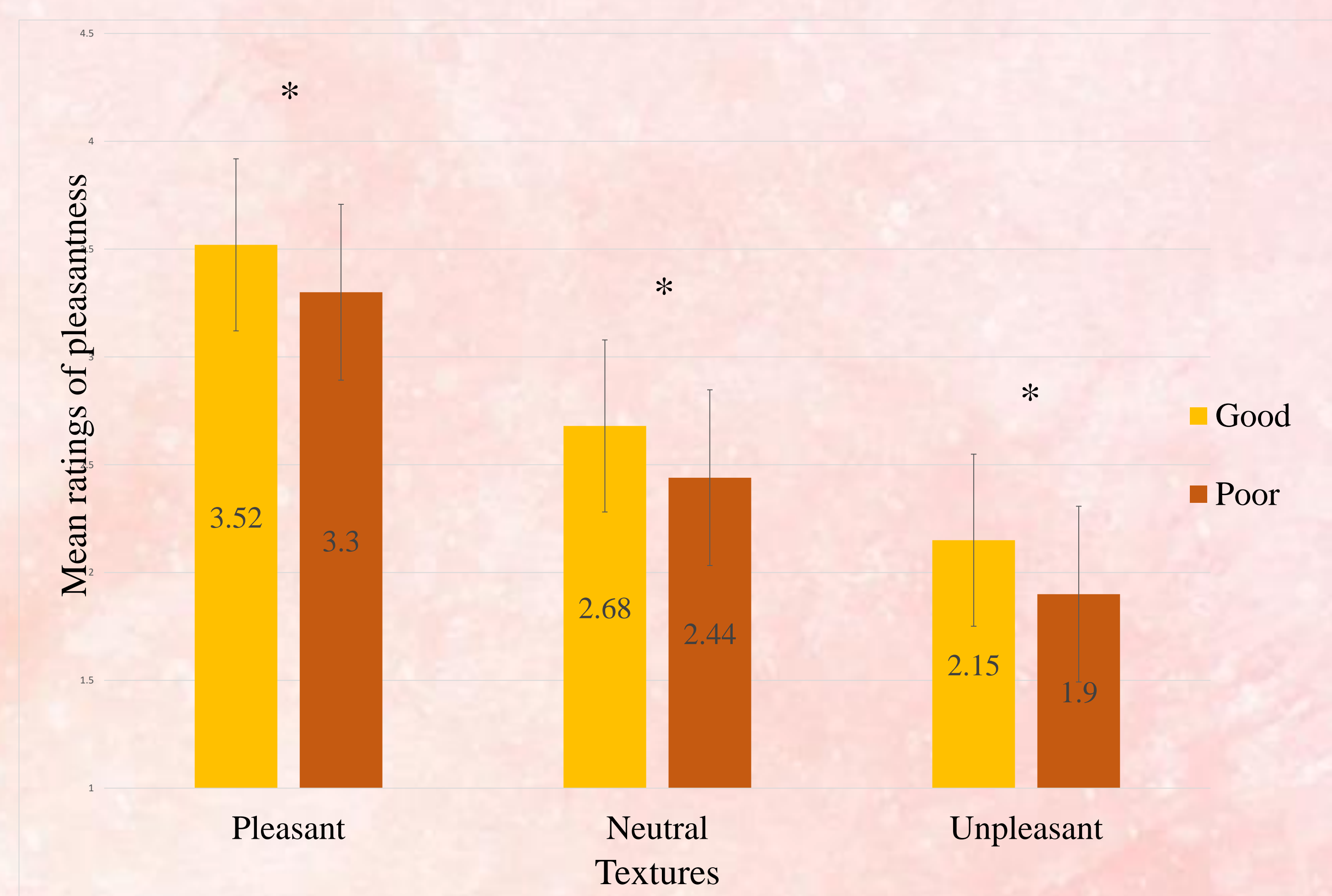
VS        VS

## References

McKean B, Flavell JC, Over H, Tipper SP. 2020 Three minutes to change preferences: perceptual fluency and response inhibition. R. Soc. Open Sci. 7: 200766.
Peck, J., Barger, V. A., & Webb, A. (2013). In search of a surrogate for touch: The effect of haptic imagery on perceived ownership. *Journal of Consumer Psychology*, 23(2), 189-196.