Preference for Chaudfontaine or bias towards the preferred option?

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Abstract

Although participants' taste scores were influenced by their preferences, they still generally favored Chaudfontaine over tap water, which confirms the original claim.

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Target article

E.-J. Wagenmakers and F. Bartoš, *People prefer the taste of Belgian mineral water Chaudfontaine over Amsterdam tap water*, (PsyArXiv preprint) doi:10.31234/osf.io/2u84v.

1 Goal

This robustness report assesses whether the difference in taste scores found by [1] is driven by participants' expectation of which cup contains Chaudfontaine, and their pre-existing preference for mineral water over tap water.

2 Methods

Our main outcome variable is the difference 'd' in taste scores between Chaudfontaine and Amsterdam tap water. We use the same exclusion criteria as the authors of the empirical article. We fitted a linear regression model (see Equation 1) to predict d while accounting for the difference in expected taste scores (i.e., 'Exp-d') and whether participants correctly identified the tap water (i.e., 'c', which was effect coded). In addition, we incorporated into the model the interaction between Exp-d_i and c_i:

$$d_i = \beta_0 + \beta_1 \cdot \text{Exp-}d_i + \beta_2 \cdot c_i + \beta_3 \cdot (\text{Exp-}d_i \times c_i)\,. \tag{1}$$

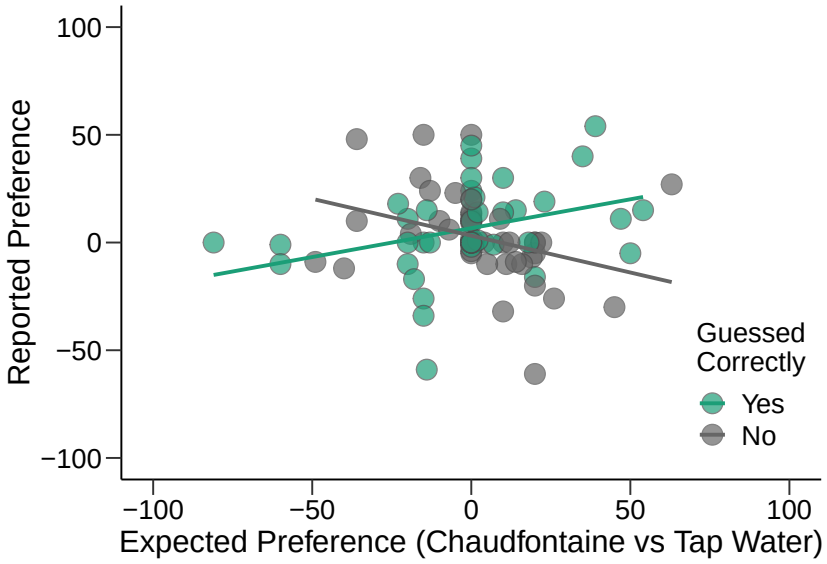

Figure 1: Participants' expected and actual preference for Chaudfontaine over tap water. Positive values indicate a preference for Chaudfontaine, zero indicates no preference, and negative values indicate a preference for tap water. Green dots represent responses from participants who correctly guessed which cup contained the tap water, whereas grey dots represent responses from participants who guessed incorrectly.

3 Results

Figure 1 illustrates the results of our analysis. The model explains a statistically significant but small proportion of variance ($R^2 = .12$, 90% CI $[0.02, 0.22]$, $F(3, 86) = 4.07$, $p = .009$). Participants reported a slight preference for Chaudfontaine over Amsterdam tap water (β_0), with a mean difference of approximately 5 on the taste scale, $b = 4.92$, 95% CI $[0.85, 8.99]$, $t(86) = 2.40$, $p = .018$, $n = 90$. Consequently, we can reject the null hypothesis of no difference in taste scores between Chaudfontaine and Amsterdam tap water.

In addition, the interaction between the anticipated taste difference and guessing (β_3) was statistically significant and positive, $b = 0.30$, 95% CI $[0.12, 0.49]$, $t(86) = 3.33$, $p = .001$. That is, a stronger anticipated preference for Chaudfontaine led to a greater reported preference during the experiment for participants who correctly identified the water cups. However, the effect is reversed for participants who identified the water cups incorrectly. For them, a higher anticipated preference for Chaudfontaine over Amsterdam tap water led to a lower reported preference during the experiment.

Furthermore, the main effect of the anticipated taste difference (β_1) is statistically non-significant, $b = -0.04$, 95% CI $[-0.22, 0.15]$, $t(86) = -0.40$, $p = .688$. This suggests that when considering all participants together, their pre-existing preferences did not significantly influence their reported difference in taste scores. The main effect of guessing (β_2) was also non-significant ($b = 1.74$, 95% CI $[-2.33, 5.81]$, $t(86) = 0.85$, $p = .398$), indicating that participants who identified the water cups correctly and those who did not reported the same difference in taste scores when they anticipated the same taste difference.

4 Conclusion

The interaction between the expected taste difference and guessing suggests that participants' reported scores were influenced by their pre-existing preference. Nevertheless, we also found that participants overall preferred Chaudfontaine over Amsterdam tap water. Therefore, we can confirm the conclusions drawn in [1] at a significance level of $p < 0.05$.

Acknowledgments and disclosures

Reproducibility We were able to computationally reproduce the original analysis and results.

Code and data availability The `R` code for the analysis is publicly available in the OSF repository https://osf.io/b5ndt/.

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Conflicts of interest This Robustness Report accompanies the editorial [2] and is meant to illustrate the format and scope of a typical contribution to the *Journal of Robustness Reports*.

References

[1] E.-J. Wagenmakers and F. Bartoš, *People prefer the taste of Belgian mineral water Chaudfontaine over Amsterdam tap water*, (PsyArXiv preprint) doi:10.31234/osf.io/2u84v.

[2] F. Bartoš, A. Sarafoglou, B. Aczel, S. Hoogeveen, C. D. Chambers and E.-J. Wagenmakers, *Introducing the Journal of Robustness Reports*, J. Robust. Rep. 0-Editorial (2025), doi:10.21468/JRobustRep.0-Editorial.