

The influence of the Big Five personality traits on disruptive product adoption

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Background

Through the study of human behavior, psychologists have recognized that individuals process emotions in distinct ways, which in turn influence their decision making. To better understand these differences, they developed standardized models for examining consistent behaviors, such as the Big Five personality traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism (OCEAN).

Research in psychology and behavioral economics led to Prospect Theory, which explains how individuals evaluate potential gains and losses and highlights the framing effect, where identical information can lead to different responses depending on how it is presented (Nickerson, 2023). This project aimed to examine whether certain personality traits make individuals more susceptible to framing effects, increasing their likelihood of adopting disruptive products, defined as unfamiliar innovations that challenge norms.

Methods and Materials

Participants in this study were 202 student volunteers from Aberdeen High School, where all participants were required to fill out an informed consent form prior to the beginning of the study. Each participant completed a 20-item Portuguese Mini-IPIP test, which included four items per Big Five trait and was scored using a 7-point Likert scale. To reduce response fatigue and maintain data quality, the assessment was administered across multiple pages within Microsoft Forms. In addition, item order was randomized to improve response reliability.

Participants were classified into a specific personality trait by averaging the four items for each trait and assigning them to the trait that they received highest mean score in. After classification, two additional questionnaires, a baseline version presented in a neutral format (Figure 1) and a framed version designed to introduce the contextual influence of the framing effect (Figure 2) were completed. Both used a 7-point Likert scale response format and contained 10 questions. After data collection, responses were converted into binary form and recorded in Excel. The data for the framed tests were organized by trait groups.

How likely are you to enroll in a monthly health-monitoring subscription?

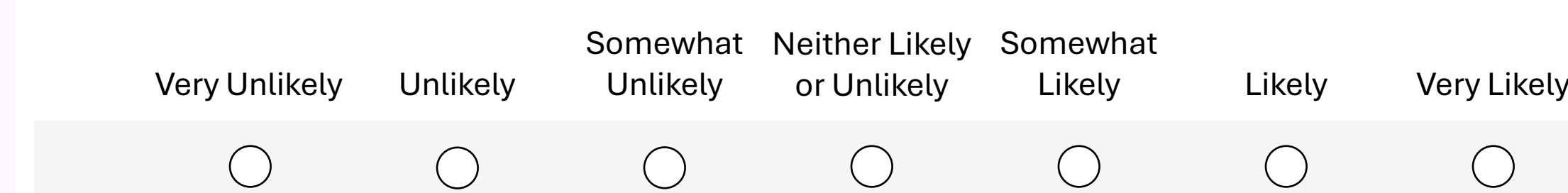


Figure 1 (above): This figure shows an example of how one of the baseline questions appears in the baseline questionnaire.

Methods and Materials (continued)

How likely are you to enroll in a health-monitoring subscription knowing it can help you stay on track and catch risky diseases early?

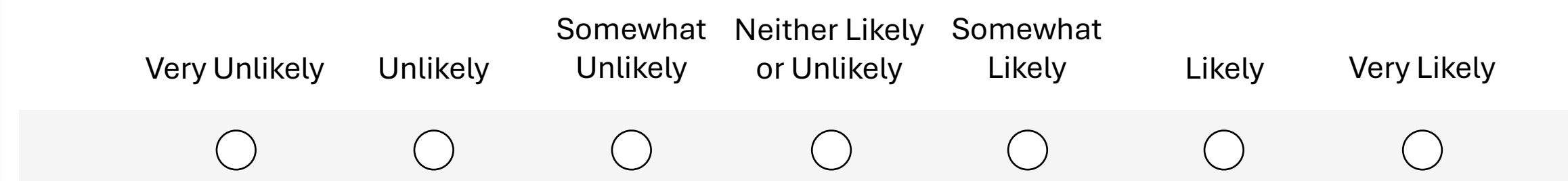


Figure 2 (above): This figure shows an example of how one of the framed questions appears in the framed questionnaire.

It was expected that traits associated with strong social and communicative tendencies—such as agreeableness, extraversion, and openness—would demonstrate greater sensitivity to the framing effect. In contrast, traits characterized by deeper, strong analytical thinking and complex emotional processing (Aquino & Lins, 2023), including conscientiousness and neuroticism, were anticipated to be less susceptible because they rely more heavily on deliberate reasoning.

Results

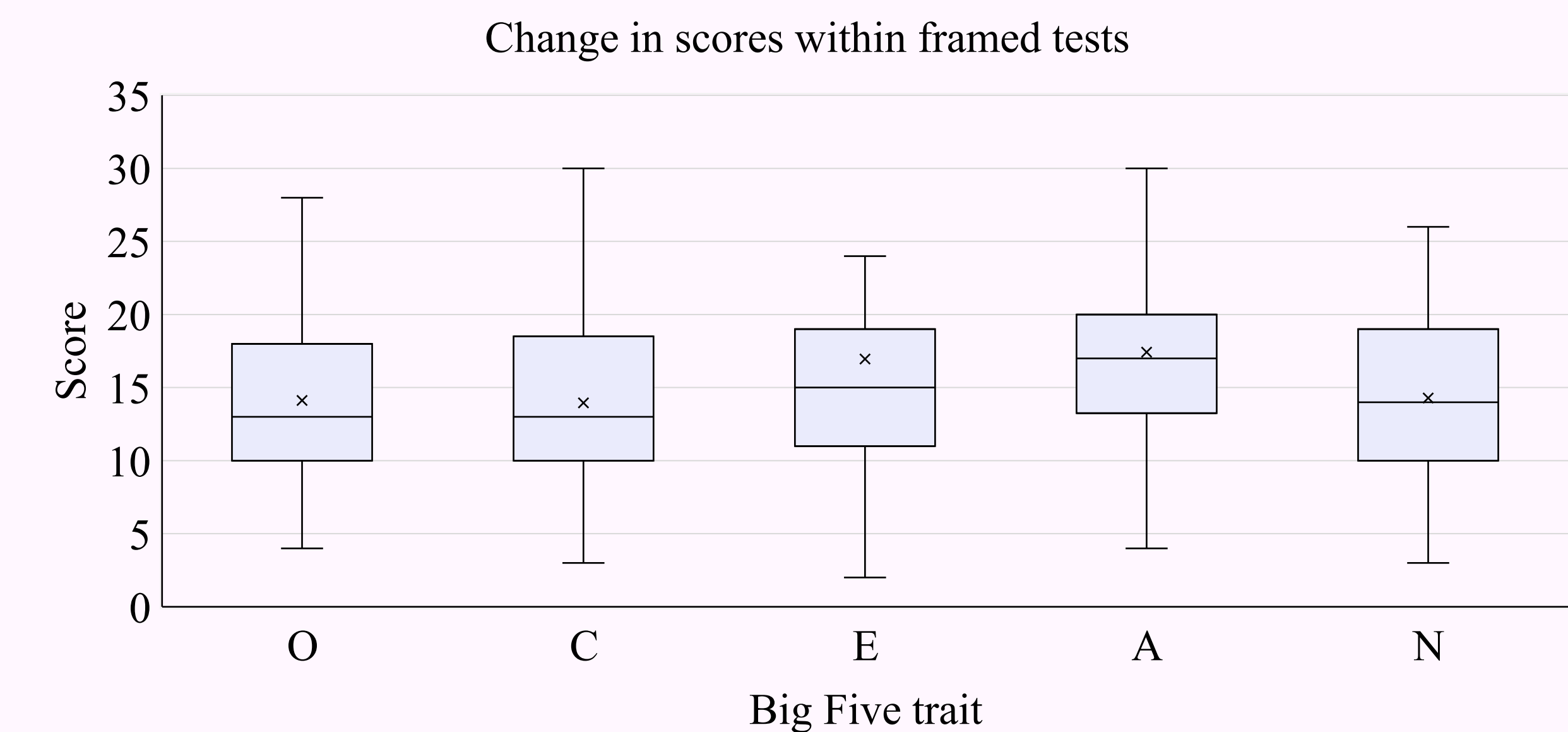
A one-way ANOVA was conducted to compare the change in scores between the baseline and framed questionnaires across the five Big Five personality traits (Table 1).

Big Five trait	Mean (score change)	SD
O	14	5.8
C	14	6.4
E	17	11
A	17	6.8
N	14	6.4

Table 1 (above): The ANOVA results data table displays the mean score changes and standard deviations for each Big Five personality trait group.

The results indicated a statistically significant effect of personality trait on score change, [$F(4, 198) = 2.46, p = .042$]. This suggests that mean score changes between the baseline and framed tests differed across personality trait groups overall (Graph 1). However, Games–Howell post hoc comparisons did not reveal any statistically significant pairwise differences between individual traits.

Results (continued)



Graph 1 (above): The box and whisker plot displays the mean change in scores between the baseline and framed questionnaires across the five personality traits.

Conclusion

The results supported the hypothesis that certain personality traits increase individuals' susceptibility to framing effects, thereby influencing their likelihood of adopting disruptive products. Agreeableness and extraversion showed the greatest score changes, suggesting that individuals high in these traits may be more likely to adopt such products. To determine specific pairwise differences across the Big Five traits, an increase in sample size in future tests could lead to a significant post hoc comparison that may provide such conclusion.

Several methodological improvements could strengthen the reliability of these findings as well. One key change would be administering an expanded version of the Mini-IPIP test, using 60 items instead of 20. In this design, each trait would be measured with 12 items rather than 4, increasing precision. A larger item set would also allow for more reliable trait classifications and comparisons across the Big Five traits.

References

- Aquino, S. D., & Lins, S. (2023). The personality puzzle: A comprehensive analysis of its impact on three buying behaviors. *Frontiers in Psychiatry, 14*, 1179257. <https://doi.org/10.3389/fpsy.2023.1179257>
- Nickerson, C. (2023). Prospect theory in psychology: Loss aversion bias. *Simply Psychology*. <https://www.simplypsychology.org/prospect-theory.html>