

Personality, Security, and User Satisfaction in Context-Aware Applications

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Abstract. This study explores how personality traits influence the perception of security and satisfaction of context-aware applications. Through a web-based survey using animated videos, we find that openness and agreeableness influence security perceptions, while satisfaction is more context-dependent. A positive correlation was also found between perceived security and satisfaction.

1. Introduction

Context-aware applications play a critical role across various domains, requiring a careful balance between security and user satisfaction. These applications, which adapt to users' context (e.g., location, behavior, preferences), introduce unique challenges in terms of how security and satisfaction are perceived. Although previous studies have recognized the importance of both attributes, there is a lack of empirical evidence on how personality traits influence user perceptions on these applications. This study extends previous work [Condori-Fernández et al. 2020] by addressing three research questions: how users perceive satisfaction in terms of trust and usefulness (RQ1), the relationship between perceived security and satisfaction (RQ2), and how personality traits influence perceptions of security and satisfaction in context-aware applications (RQ3). The artifacts of this study are available in¹.

2. Study Design, Data analysis and Key findings

Study design: Participants were divided into two groups (engineering and non-engineering) and assessed security, satisfaction, and personality traits after watching two animated videos (see Note ¹): one presenting the core functionality of the app, and another highlighting potential security vulnerabilities.

Data analysis: Descriptive statistics summarized participant demographics and initial responses. Pearson and Spearman correlation tests examined the relationships between perceived security and satisfaction. Regression analysis and non-parametric tests explored the influence of personality traits on these perceptions.

¹https://osf.io/c8mnr/?view_only=381f8fb6916f4783886a548e6f00d480

Key findings: For RQ1, participants with engineering background consistently rated trust and usefulness as highly important, while non-engineering participants tended to perceive their importance with a low intensity and showed more variability influenced by context. Regarding RQ2, strong positive correlations were found between perceived security and satisfaction. In general, it does not depend on the participants' background, however for non-engineering participants this correlation was more evident. For RQ3, openness was associated with higher perceived importance of confidentiality and integrity, while agreeableness showed mixed associations with authentication and accountability. No significant link was found between personality traits and satisfaction. These relationships are visually summarized in Figure 1, which highlights the correlations for RQ2 (green links) and the associations for RQ3 (red links), distinguishing significant and non-significant links.

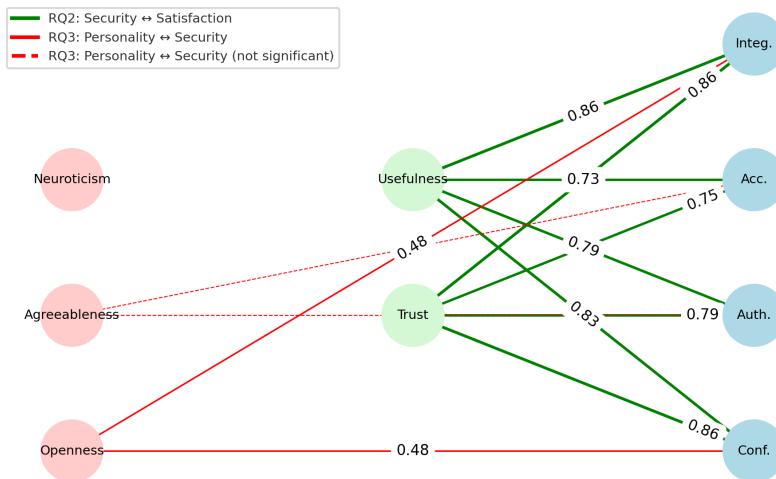


Figura 1. Relationships among personality traits, perceived security, and user satisfaction (not grouped by participant background). Conf. = Confidentiality, Auth. = Authenticity, Acc. = Accountability, Integ. = Integrity.

3. Conclusions

Our findings suggest that user perceptions of security and satisfaction are interdependent, with personality traits influencing security perceptions. This highlights the need for user-centered security design. Threats to validity include the post-hoc formulation of research questions and the use of a partial Big Five Inventory, which may limit the personality analysis. In addition, the representativeness of the sample and interpretation variability between backgrounds may affect generalizability. Further studies should use more diverse samples and explore how contextual and cultural factors shape the role of personality in perceptions of security and satisfaction.

Referências

Condori-Fernández, N., Suni-Lopez, F., Muñante, D., and Daneva, M. (2020). How can personality influence perception on security of context-aware applications? In *Proceedings in 10th International Workshop on Socio-Technical Aspects in Security*, Guildford, United Kingdom. LNCS.