

Comforting touch in human-robot interaction

Factors influencing pleasantness and trust

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Background

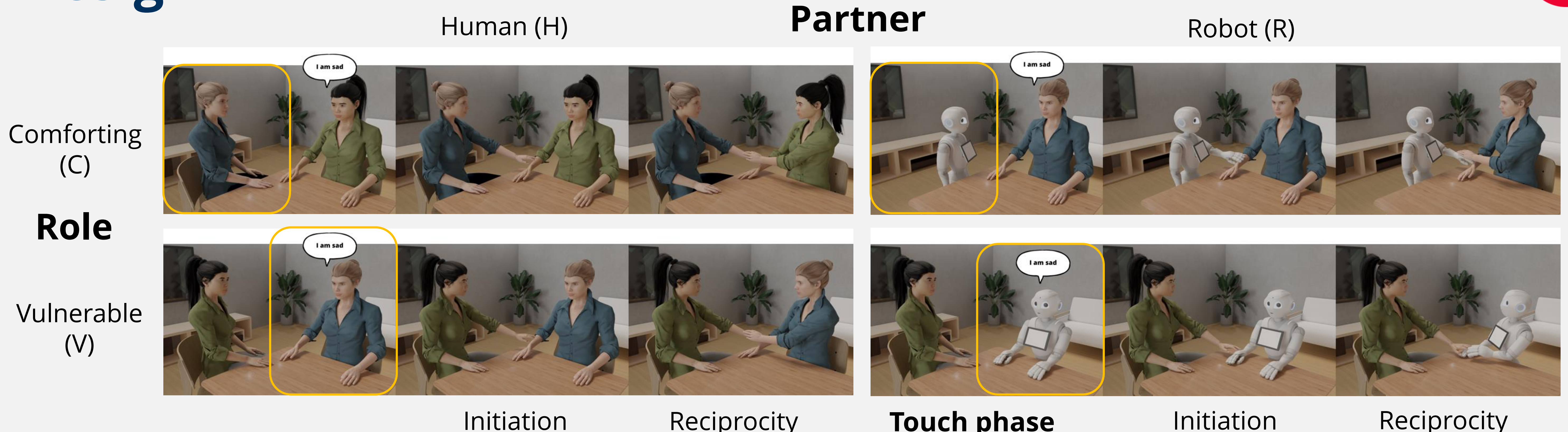
Companion robots are not only functional tools but also social partners designed to communicate and bond with humans. We may want the robot's hands to be not only capable, but also caring. Robots that engage in **social touch** can be perceived as more trustworthy, provided the bodily contact is perceived as appropriate (1). Yet, touch from a robot is not as **pleasant** as human touch, and sometimes fail to activate the same neurophysiological responses (2).

Research Questions

- 1) In human-robot interaction, how is a non-functional but affective body contact, such as a comforting touch, perceived?
- 2) What aspects of the interaction influence the perception of comforting touch as pleasant and the other as trustworthy?
- 3) What individual factors modulate people's perceptions?

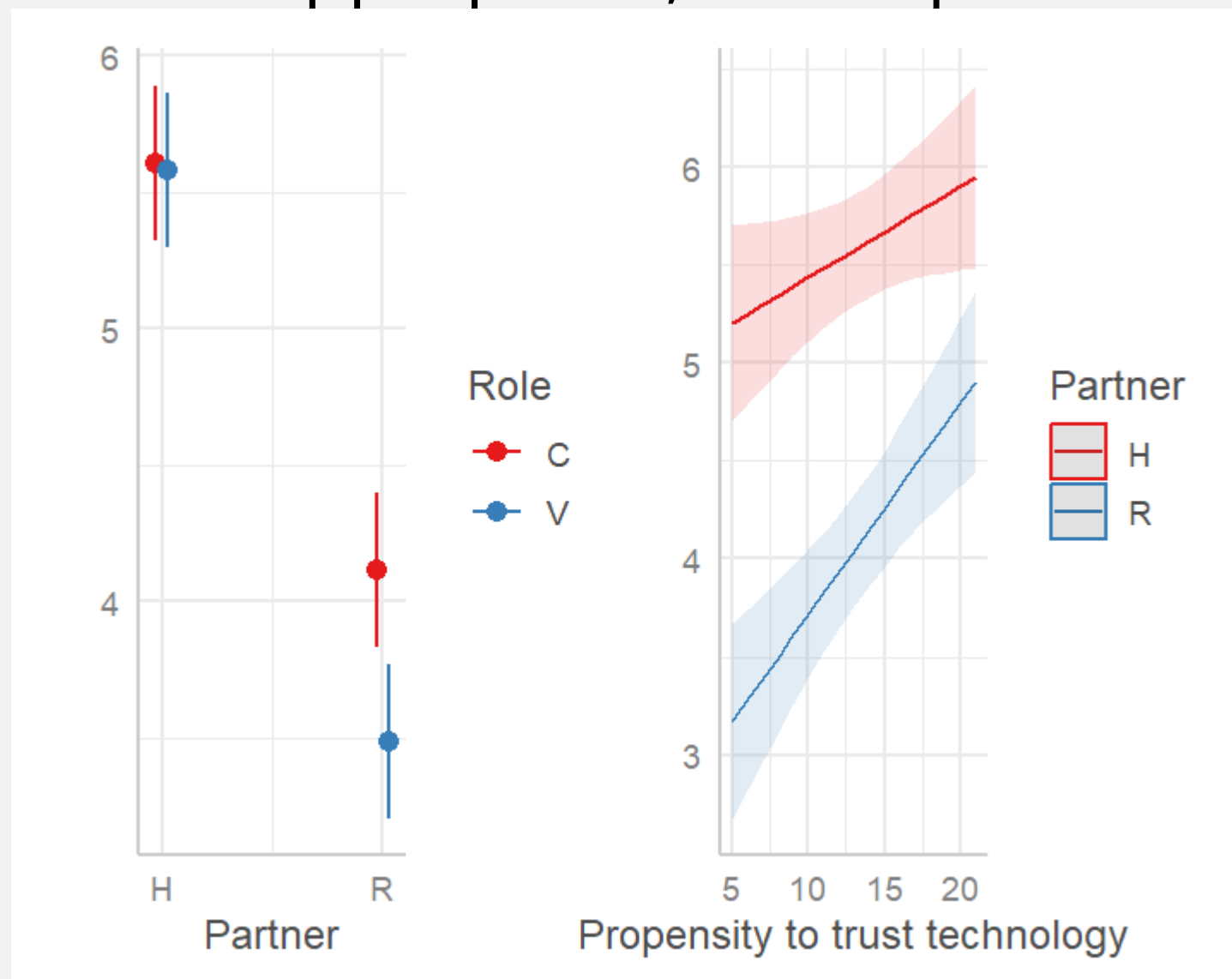
Design

Observational online experiment;
within-subjects; n=153; age (18:70)

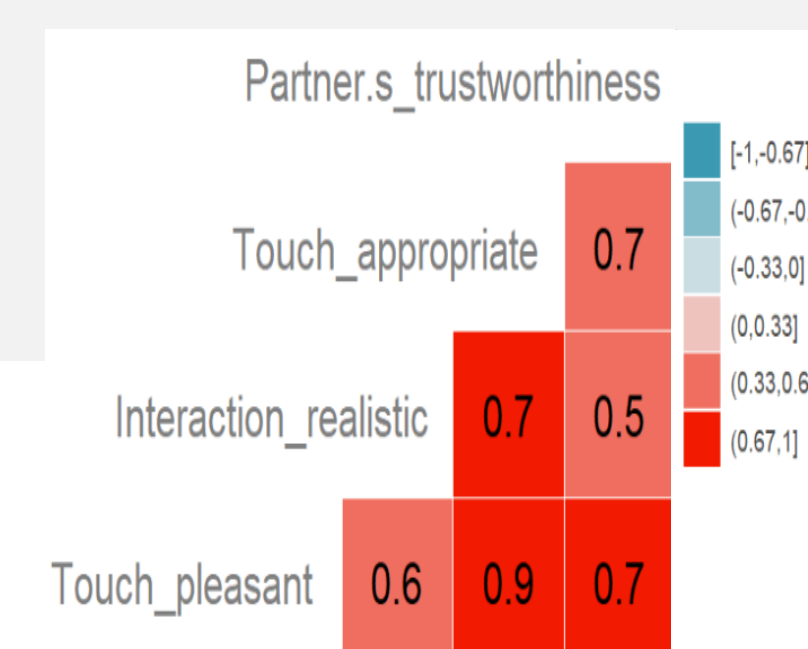
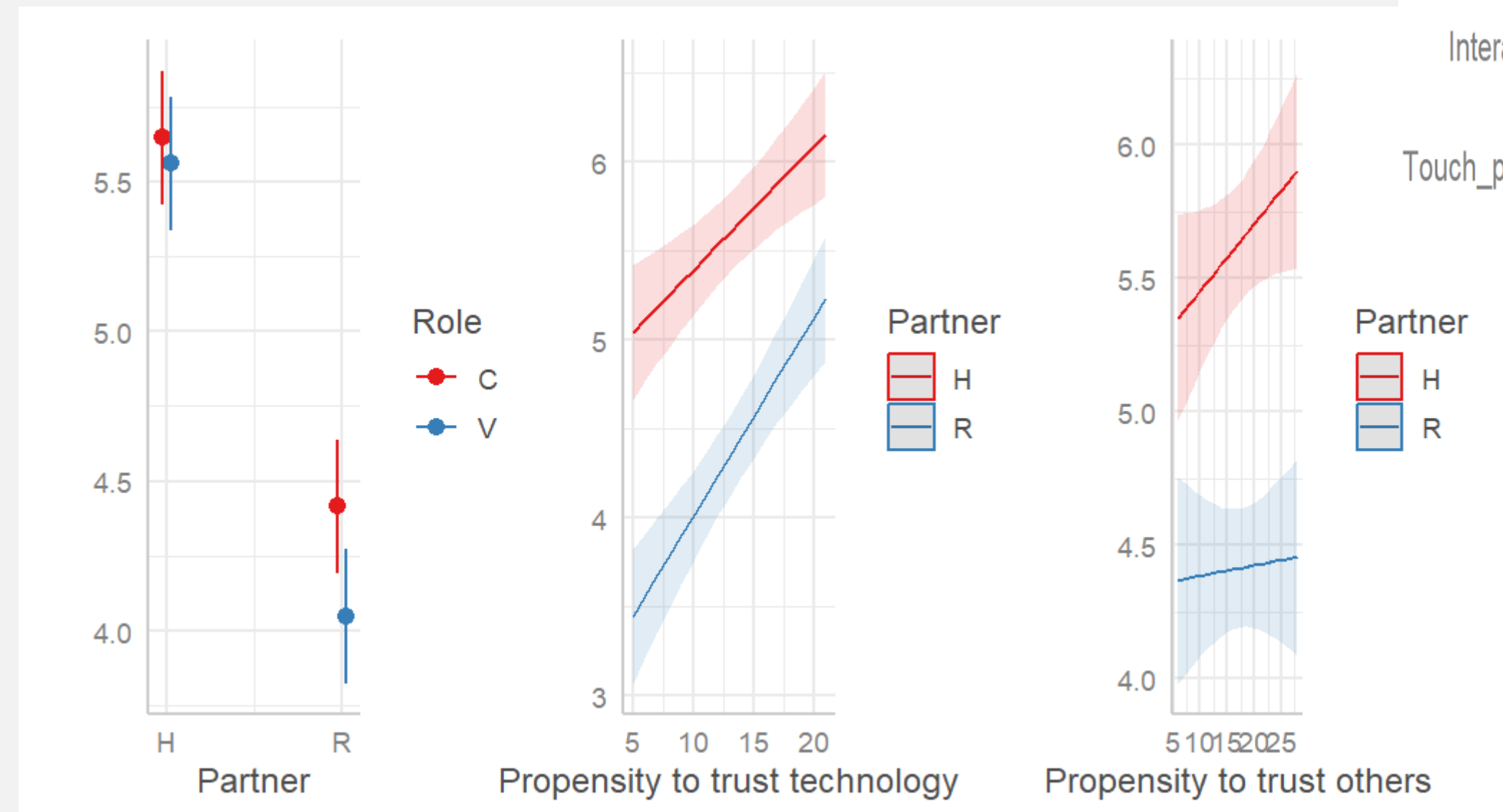


Results: self-reports

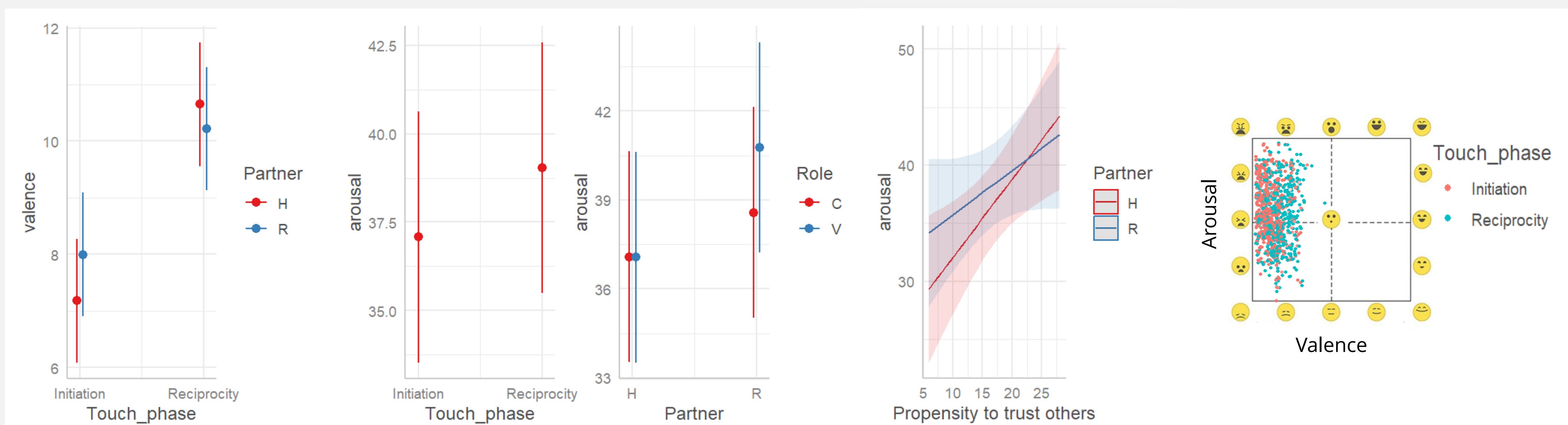
Interaction realistic,
Touch appropriate, Touch pleasant



Partner's trustworthiness



Characters' affective state



Conclusions

- Human-robot comforting touch is perceived as less realistic, appropriate and pleasant, and more arousing than human-human touch. A robot vs human partner is less trustworthy, especially when it shows vulnerability.
- Reciprocity of touch is thought to improve the affective state of the interacting partners, but less so when a robot is involved.
- Participants' **propensity to trust technologies is associated with more positive perceptions of the robot.**
- Participants' propensity to trust others is associated with more trust in the human character.

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Selected References

- (1) Law, T., Malle, B. F., & Scheutz, M. (2021). A touching connection: how observing robotic touch can affect human trust in a robot. *International Journal of Social Robotics*.
- (2) Willemsse, C. J., Huisman, G., Jung, M. M., van Erp, J. B., & Heylen, D. K. (2016). Observing touch from video: The influence of social cues on pleasantness perceptions. In *Haptics: Perception, Devices, Control, and Applications: 10th International Conference, EuroHaptics 2016, London, UK, July 4-7, 2016, Proceedings*

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