

First Impressions in Human-Agent Virtual Encounters



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Introduction

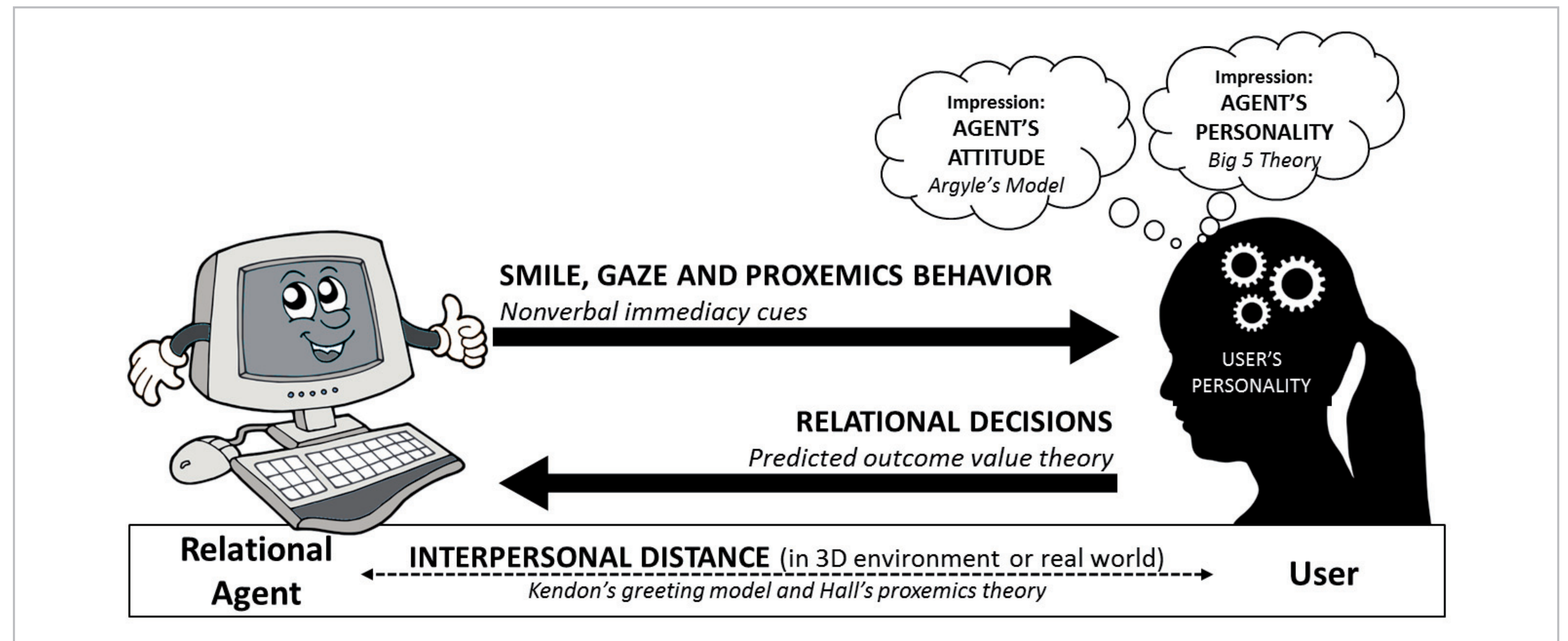
Relational agent: Embodied conversational agent capable of establishing and maintaining a relationship with users.

Context of study: The greeting phase of a first encounter between relational agent and user.

Research questions:

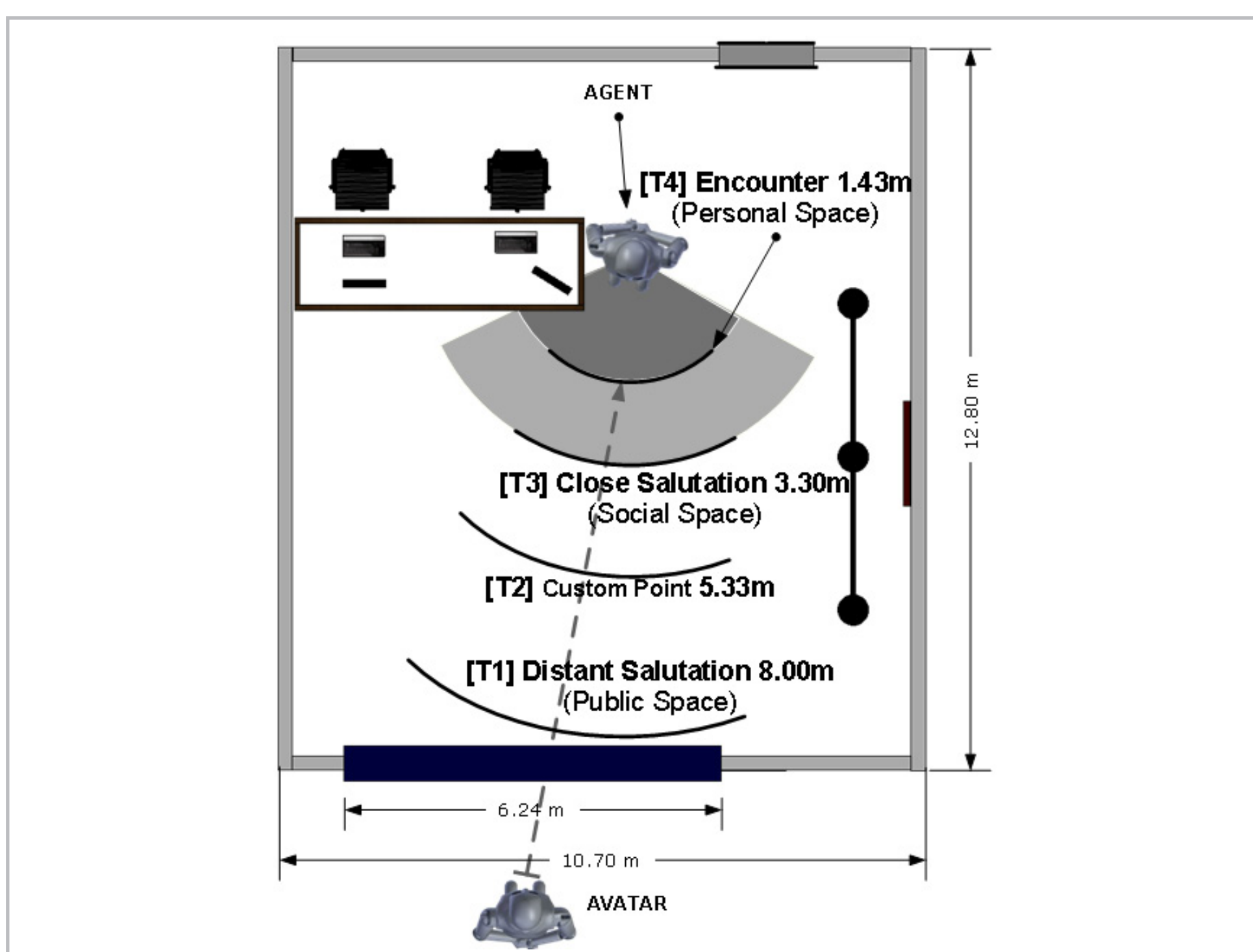
1. What nonverbal cues make the best or worst impressions on approaching users?
2. What is the effect of first impressions on users' willingness to work with the agent?

Theoretical Framework



User Studies

Nonverbal Behavior Interpretation [1]



Interface and setting: 17" monitor, different camera perspectives (1st vs. 3rd)

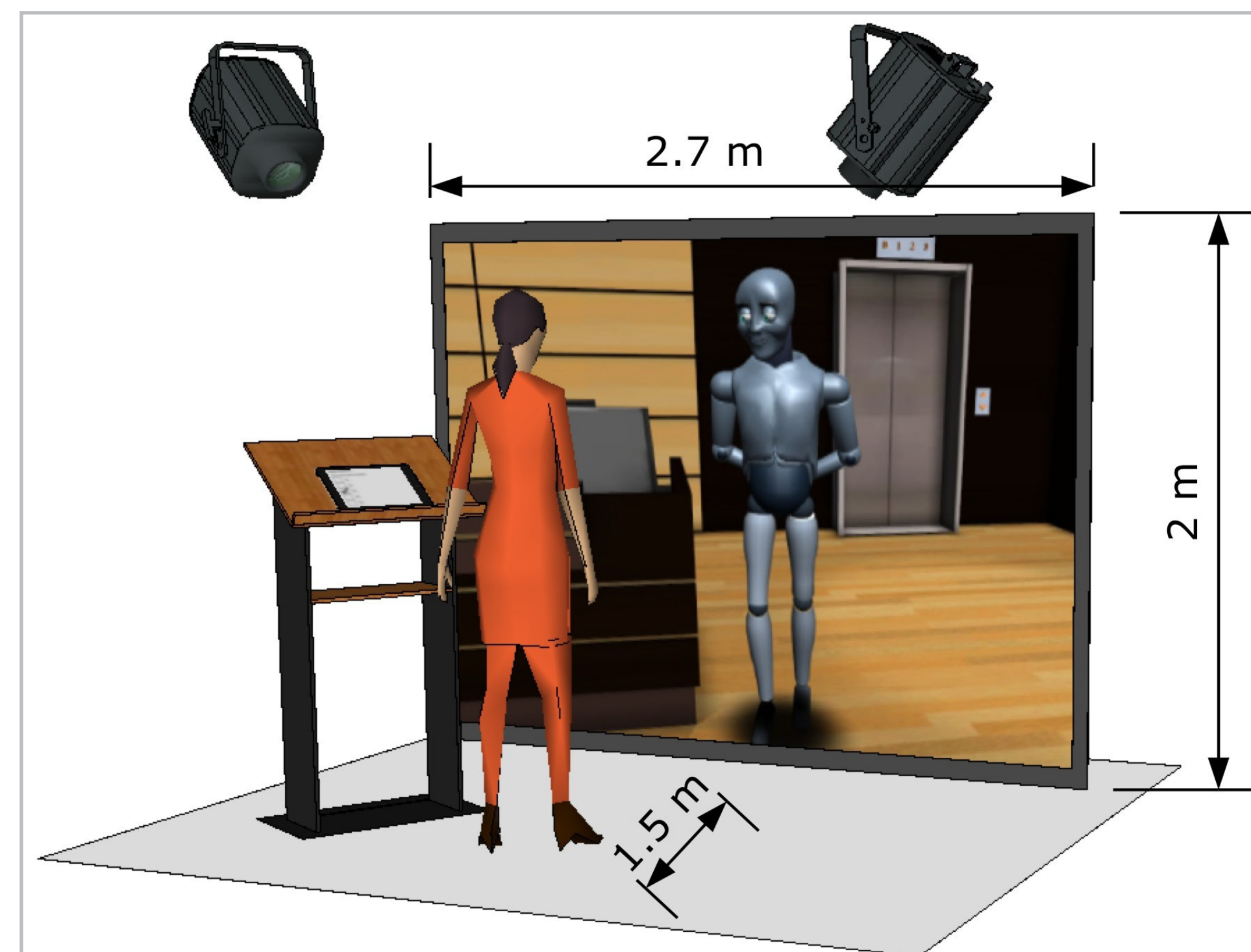
Stimuli: Combinations of agent's smile, gaze, proximity

Measures: Agent's extraversion and friendliness

Results:

1. ↑ Proximity => ↑ Extraversion judgments
2. ↑ Smile + ↑ Gaze => ↑ Friendliness judgments
3. No difference between cameras used

Nonverbal Behavior Impact [2]



Interface and setting: Life-sized agents, user observing standing still

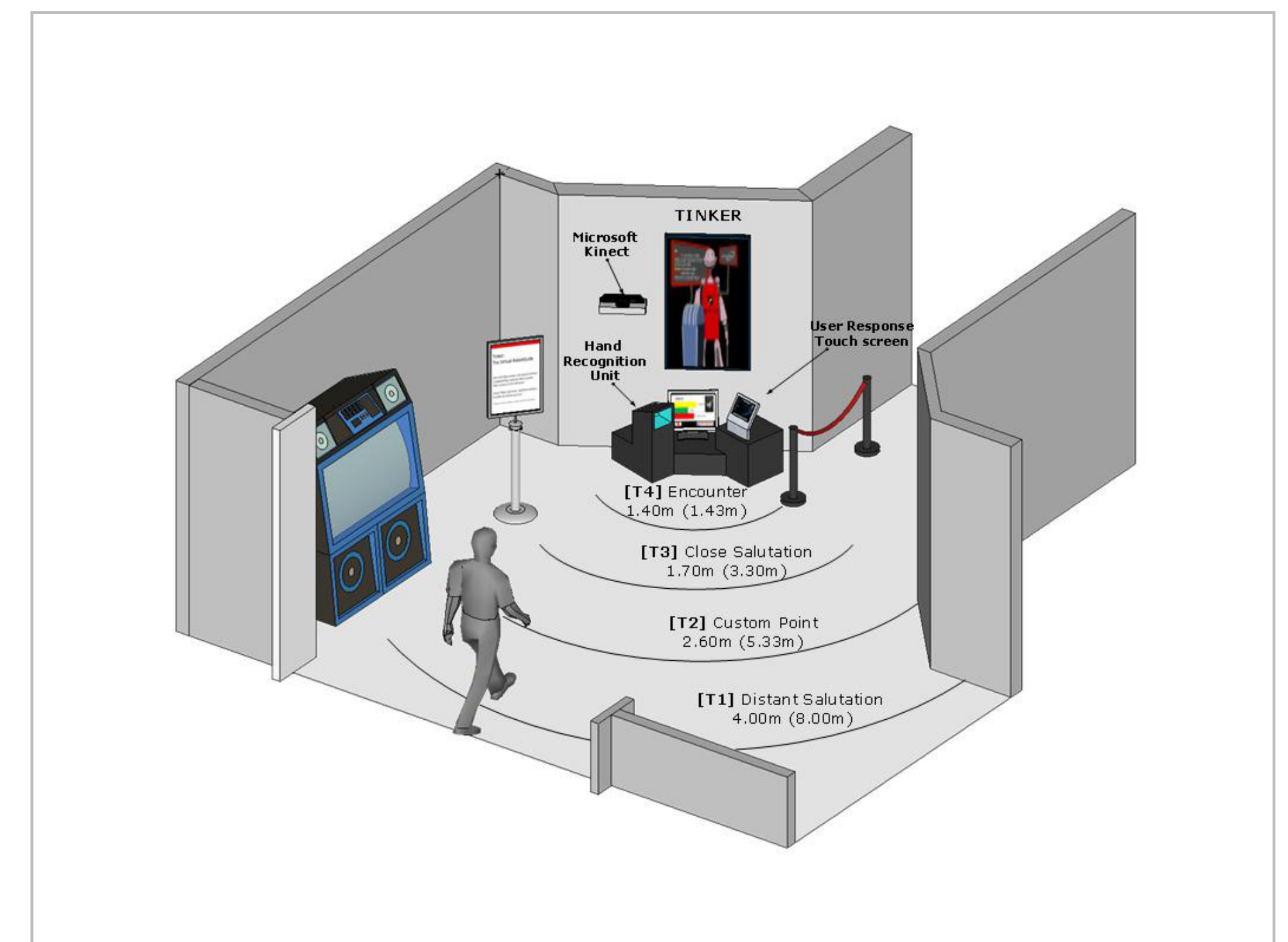
Stimuli: Agent's extraversion and friendliness

Measures: Likelihood and frequency of further encounters

Results:

1. Positive main effect of agent's friendliness on all measures
2. User's preference for friendly agents regardless of their personality level

Managing First Impressions in a Public Space (Boston MoS) [3]



Interface and setting: User walking towards relational agent (Tinker) exhibited at Boston Museum of Science

Stimuli: Tinker's friendliness (unfriendly vs. friendly vs. control)

Measures: Level of user interaction with Tinker and time spent interacting

Results*:

1. Users willing to interact more with friendly Tinker
2. User spent more time with unfriendly Tinker

*N.B.: non significant, only trends

Application in Learning Environment



Conclusion

Impression formation

Users quickly form impressions of agents' personality when agents' proximity cues are manipulated and positive interpersonal attitude judgments are made when agents smile and gaze more at the users.

Long-term impact

Users' impressions of an agent's attitude overpower impressions of personality when it comes to deciding how likely and for how long they wish to interact with a relational agent.

References

[1] Cafaro et al. - "First Impressions: Users' Judgments of Virtual Agents' Personality and Interpersonal Attitude in First Encounters". In Proceedings of IVA 2012, pages 67-80.

[2] Cafaro et al. - "First Impressions in User-Agent Encounters: The Impact of an Agent's Nonverbal Behavior on Users' Relational Decisions". In Proceedings of AAMAS 2013, pages 1201-1202 (extended abstract).

[3] Cafaro A. - "First Impressions in Human-Agent Virtual Encounters". Ph.D. Thesis in Computer Science, Reykjavik University, Iceland. May 2014.