# Can Artificial Intelligence be seen as an Attachment Figure

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## Introduction

- Loneliness is thought of as a pandemic (Palgi et al., 2020).
- The World Health Organization (WHO) has recently launched a commission to address loneliness as a pressing health threat, with one of its priorities being to promote social connection (WHO, 2023).
- Less people are getting married, fewer people are forming friendships, and it seems that human connections might fail to provide a solution for the loneliness epidemic.
- Artificial Intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions), and self-correction (Gillath et al., 2021).
- Can AI also simulate or even replace human connection?
- Although humans tend to fear and distrust AI's, past research has shown that this lack of trust can be overcome via attachment security priming (Gillath et al., 2021).
- Our goal was to examine whether a task meant to form friendship by increasing closeness between humans will also work to increase closeness between human participants and AI and in turn reduce loneliness.
- We used the task designed by Aron et al. (1992), which increased conversational intimacy (higher self-disclosure) and closeness between humans and compared it to a control task (Small-Talk).

## Hypotheses

- 1. The Aron et al. (1992) task will result in higher intimacy and closeness, and lower loneliness.
- 2. People will feel closer to other humans.
- 3. AI, after the Aron et al. (1992) task, will be perceived more as a relationship partner.

## Method

*Participants*

- 124 participants, ages 18 to 42, were recruited & given course credit via SONA.
  - Gender: Male 39, Female 85, Nonbinary/Transgender/Other 0
  - Relationship Status: Single 83, Dating Exclusively 34, Dating Nonexclusively 5, Engaged 1, Married/Divorced/Widowed/Other 0

*Procedure*

- Before arrival participants were randomly assigned to one of four conditions.
- After consenting and receiving instructions, participants proceeded to engage with an avatar that had pre-recorded questions and answers, and which was controlled by a Research Assistant.
- Participants were introduced to the virtual environment and the avatar they interacted with (same-sex, same age).
- Depending on the condition, participants either engaged in the Instant Friendship task or a Small-Talk task and were told the avatar was either controlled by an AI or a human.
  - Condition 1: Small Talk, Human
  - Condition 2: Instant Friendship, Human
  - Condition 3: Small Talk, AI
  - Condition 4: Instant Friendship, AI
- Following task completion, participants filled out a self-report measure, evaluating closeness, intimacy, and desire for companionship, using the Subjective Closeness Index (SCI) from Berscheid et al. (1989), Inclusion of Other in Self (IOS) scale from Aron et al. (1992), and Desire for Companionship (DFC) scale.
- Lastly, participants completed the UCLA loneliness scale and the Social Emotional Loneliness Scale for Adults (SELSA) from DiTommaso and Spinner (1997) to evaluate if forming a close bond with the human/AI reduces their loneliness.

Figure 1. The virtual environment and avatar **(female participant)**

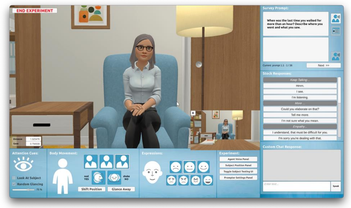
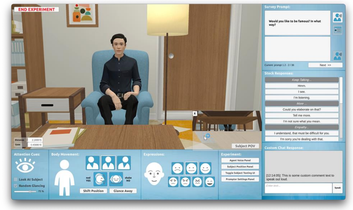


**Figure 2. The virtual environment and avatar (male participant)**



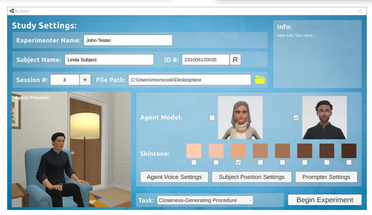
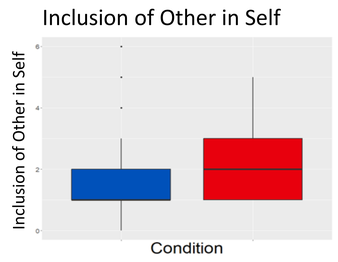
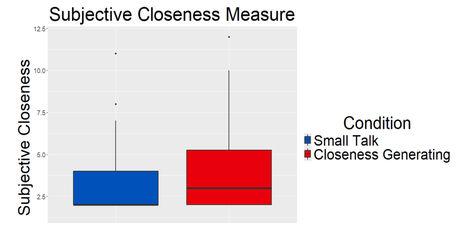
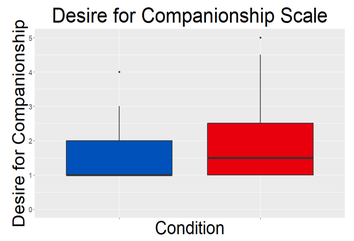
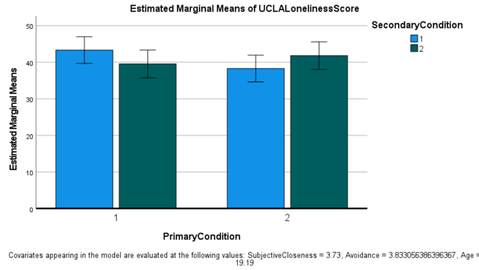



**Figure 3. Researcher settings view (pre-experiment)**




Covariates appearing in the model are evaluated at the following values: SubjectiveCloseness = 3.73, Avoidance = 3.83305638696367, Age = 19.19

## Results

- We used 2-way ANOVAs to assess the impact of task type (Small-Talk vs. Instant Friendship) and avatar identity (human vs. AI), on reported Inclusion of Other in the Self (IOS), Subjective Closeness (SCI), and Desire for Companionship (DFC) scales.
- IOS: There was only a main effect for task type, $F(1, 120) = 7.611$, $p = 0.007$, but no main effect of avatar identity (i.e., no significant difference between AI and Human conditions, and no interaction.
- SCI: There were main effects for both avatar identity, $F(1, 120) = 4.077$, $p = 0.0457$) and task type, $F(1, 120) = 4.27$, $p = 0.0409$), but no interaction.
- DFC: There were main effect for avatar identity, $F(1, 120) = 4.906$, $p = 0.029$), and task type, $F(1, 120) = 7.13$, $p = 0.009$), but no interaction.
- We also ran ANCOVAs predicting loneliness from the conditions, as well as closeness (SCI), avoidance, and age. The analysis on UCLA loneliness revealed main effects for SCI, avoidance, and age, and a marginal effect for the interaction between type of task and avatar identity, $F(1, 111) = 3.85$, $p = 0.052$.

## Conclusion

- Our findings demonstrate that exposure to the instant friendship task led to higher scores on all three indicators of Closeness as compared to the Small Talk condition, regardless if the participant believed the avatar to be controlled by a Human or AI. This corroborates earlier research by Aron et al. (1992).
- There was a significant difference between the AI and Human conditions on SCI and DFC, but not on IOS, indicating that people felt more closeness and experienced an increased desire to be comforted by humans compared to AI when going through Closeness Generating tasks, but did not feel a difference in reflection of self between AI and humans.
- We found effects only on the UCLA loneliness scale, such that when allegedly interacting with AI the instant friendship task led to lower loneliness, but that was not the case when interacting with a human.

## References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