More than a machine: Exploring the humanization of sex robots

Tess George, MA   Emily Weiss, MA   McWelling Todman, PhD   Ali Revill   Robert Becerra   Sally McHugh   Jonathan Sabbagh

Background

As robotics and artificial intelligence (AI) advance at rapid rates (Shoham et al., 2018), the prospect of sex robots occupying more significant roles in humans' lives begs a variety of questions. Scholars have begun to consider the implications of human-robot interactions, especially those pertaining to humanoid sex robots.

Discussions around the sex robot industry seek to understand the intricacies of the physical and emotional interactions between humans and humanoid robots.

Sex robots can be generally characterized as mechanical, computerized, life-size, human-like, products, equipped with artificial genitalia adept for intercourse (Richardson, 2016).

The humanization of sex robots was evaluated in this study to explore the extent to which people deemed sex robots as having a human essence.

Fantasy proneness, a trait defined by a deep and extensive involvement in fantasy (Wilson & Barber, 1981), may relate to the humanization of sex robots. A fantasy-prone individual may be more likely to engage intimately with an artificial companion.

Considering designers of sex robots often utilize humans' psychological tendency to anthropomorphize to build these products (Sullins, 2012), it was relevant to explore how anthropomorphism related to the humanization of sex robots. Anthropomorphism has generally been defined as the tendency to ascribe human characteristics to non-human entities (Zlotowski et al., 2015).

Further, this study also inquired whether or not the virtual (online) task of building a personalized sex robot could subsequently evoke higher evaluations of humanizing robots.

References

Richardson, K. (2016). Sex Robot Matters: Slavery, the Prostituted, and the Rights of Machines. IEEE Technology and Society Magazine, 35(2), 46-53. doi:10.1109/ mts. 2016.2554421

Shoham, Y., Perrault, R., Brynjolfsson, E., Clark, J., Manyika, J., Niebles, J., . . . Bauer, Z. (2018). The AI Index 2018 Annual Report (Rep.). Stanford, CA: Standford University.

Sullins, J. P. (2012). Robots, Love, and Sex: The Ethics of Building a Love Machine. IEEE Transactions on Affective Computing, 3(4), 398409. doi:10.1109/t-affc.2012.31

Wilson, S. C., & Barber, T. X. (1981). Vivid Fantasy and Hallucinatory Abilities in the Life Histories of Excellent Hypnotic Subjects ("Somnnambules"): Preliminary Report with Female Subjects. Concepts, Results, and Applications, 133-149. doi: 10.1007/978-1-4684-3974-8_10.

Zlooki, J., Strasser, E., & Bartneck, C. (2014). Dimensions of anthropomorphism. Proceedings of the 2014 ACM/IEEE International Conference on Human-robot Interaction - HRI '14. doi:10.1145/2559636.2559679.

Purpose & Hypotheses

AIM 1: Examine how fantasy proneness (FP) relates to individuals' propensities to humanize sex robots.

AIM 2: Examine how anthropomorphism (AMPH) relates to individuals' propensities to humanize sex robots.

AIM 3: Investigate how virtually building a sex robot influences individuals' tendencies to humanize sex robots.

H1: A sex robot will be perceived as more human by participants who score higher on fantasy proneness.

H2: A sex robot will be perceived as more human by participants who score higher on anthropomorphism.

H3: Sex robot humanization scores will be higher amongst test group participants who engage in the behavioral task of building a humanoid robot, compared to the humanization scores amongst control group participants.

Methods

Participants

Participants were recruited using Amazon's Mechanical Turk (MTurk).

31 (33.7%) Female
N=92
Mean Age 35.7
61 (66.3%) Male
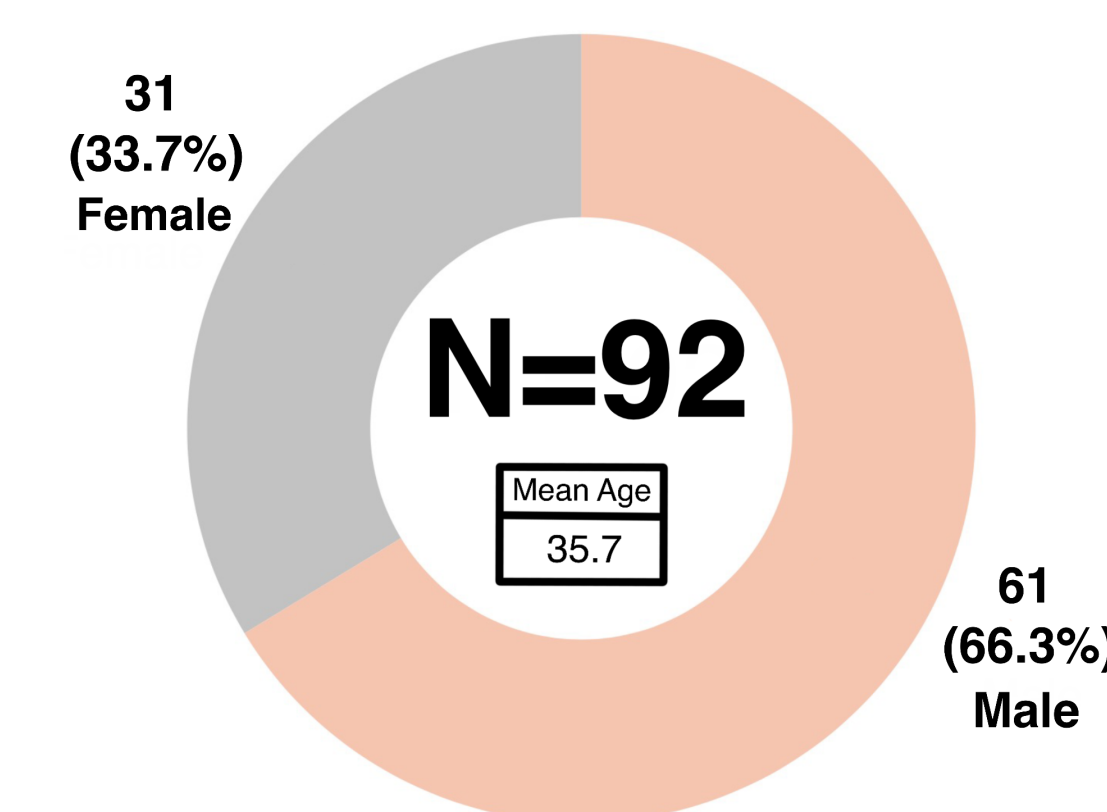
Measures

- *The Creative Experiences Questionnaire* (CEQ) was used to assess participants' fantasy proneness, and *The Anthropomorphism Questionnaire* (AMPH) was utilized to assess participants' tendencies to assume that non-human entities, have human characteristics.

- Half of participants were randomly assigned to a behavioral task to prompt the building of a personalized, humanoid sex robot, which simulated the genuine experience of how real-world consumers build a sex robot online to purchase (see **Figure 1** below).
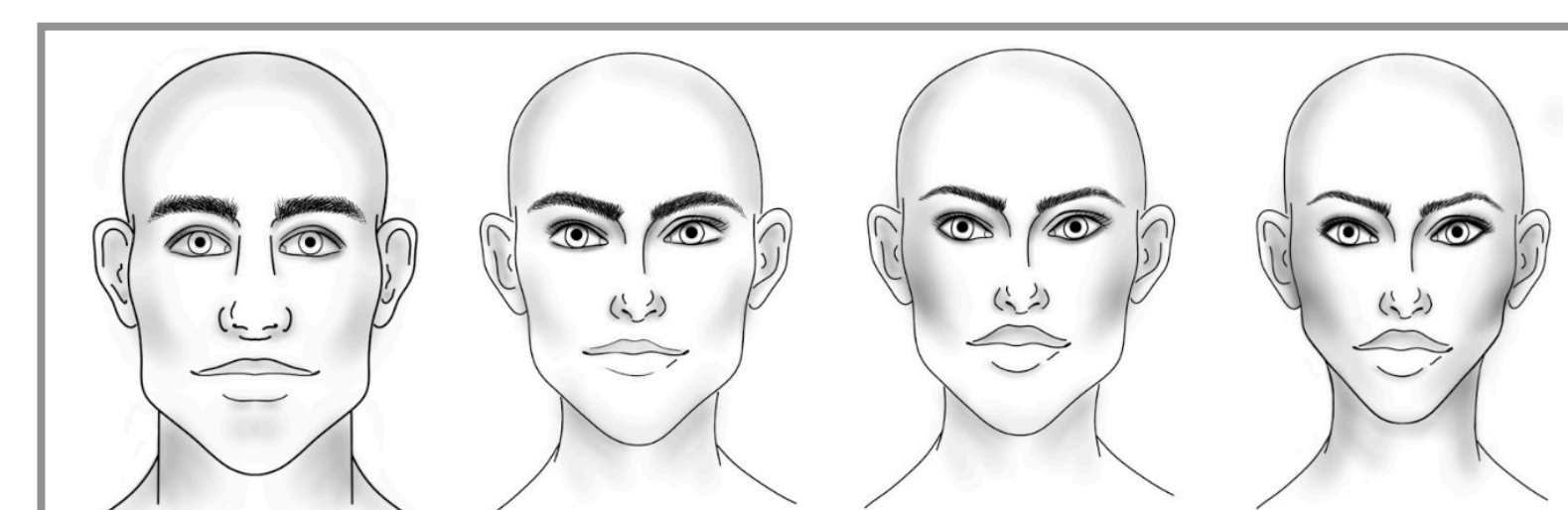
Figure 1 *Example of an item in this task asking how masculine or feminine they imagine their sex robot to be on a sliding scale.*

- *The Ascent of Man Scale* (AOM) was administered after the experimental manipulation, or the neutral control task, to measure sex robot humanization scores, and to examine how humanization reports correlated with fantasy proneness and anthropomorphism, as well as how humanization scores differed between the experimental and control group.

Results

Higher fantasy proneness scores and higher humanization evaluations of sex robots were moderately correlated, $r = .302$, $p = .003$.

The correlation between higher anthropomorphism scores and higher levels of humanization toward sex robots was statistically significant, $r = .228$, $p = .029$.

There was a marginal difference in sex robot humanization scores between participants in the experimental group and the control group; experimental group ($M = 77.74$, $SD = 26.56$), control group ($M = 67.41$, $SD = 26.66$), $t(90) = 1.86$, $p = .066$.

Supplementary Analyses

Table 1: *Robot demographics*

"Do you currently own/have you ever owned a sex robot?"
- 14.1% Yes
- 85.9% No

"Would you ever consider owning a sex robot?"
- 21.7% Yes
- 23.9% Maybe
- 54.4% No

"Do you think it's moral for someone to engage sexually with a humanoid sex robot?"
- 2.2% It Depends
- 18.5% No
- 47.8% Yes
- 31.5% Unsure

Table 2: *Sample of short response answers*

Question: What can you imagine your sex robot would like about you?

Written responses
- "It would like the jokes I have to tell it."
- "It would like that I treat it with respect."
- "My sex robot would like how dominant I am."
- "It would love the fact that I love it, I created it. And we love each other."
- "My robot would like my stories and would appreciate my opinions."
- "I imagine the robot would be appreciative of how well I take care of it and how I can focus on things other than sex. I would also like to imagine it likes the clever games we would play together."

Discussion

As Hypothesis 1 predicted, results indicate that participants who reported higher humanization evaluations of sex robots, also scored higher on fantasy proneness. A possible explanation arises from research delineating the vivid, overactive, and extensive imaginative abilities of fantasy prone-individuals. This posits that expansive imagination, facilitates the sexual and/or romantic fantasy involving a robotic companion, as compared to a normative population whose personal fantasies are more limited in scope.

In support of Hypothesis 2, results demonstrate a statistically significant correlation between higher anthropomorphism scores and higher evaluations of humanization towards sex robots. Anthropomorphism scores were only moderately correlated with sex robot humanization levels, yet 91.3% of participants' written responses to the question *"What can you imagine your sex robot would like about you?"* were reported in anthropomorphic language (See **Table 2**). Anthropomorphizing tendencies can be argued to supplement an individual's propensity to perceive a sex robot as more human. From a theoretical standpoint, humanization measures distinct from anthropomorphism elicits a more continuous perspective between human and robot entities.

In line with Hypothesis 3, a marginal difference was shown between how the experimental group and control group humanized sex robots; participants who engaged the robot building task, humanized sex robots more than the control group. This suggests virtually building a sex robot, and imagining what it thinks and feels, may heighten tendencies to humanize it.

Moving forward, investigating the psychological mechanisms behind the efficacy of the behavioral task could concretize the excitation of "designer power" as the individual tailors their sex robot.

It is important to continue critically inquiring about the designs of sex robots, as they typically embody exaggerated, and stereotypical forms of femininity. Further, it is necessary to recognize the sex robot industry is currently exclusively male-dominated.

This topic as a whole begs the question of what it means to be human by encouraging us to consider the boundaries of our personhood, in light of technological advancements.