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# Attitudes, Prior Interaction, and Petitioner Credibility Predict Support for Considering the Rights of Robots

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## ABSTRACT

The purpose of this study is to determine levels of support for consideration of the rights of robots and to identify predictors of support for robot rights. Findings demonstrated that negative attitudes toward robots, perceived credibility of the petitioner, and prior interaction with robots were significant predictors of individuals agreeing to sign a petition on the issue of robot rights. Gender of the participant and whether the petitioner was a human being or Pepper robot did not significantly predict willingness to sign the petition.

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## 1. INTRODUCTION

Although rights for robots have been discussed for quite some time in academic circles, mainstream public conversations on the topic of robots' legal and moral patiency are newly emergent. In November 2017, when Saudi Arabia extended citizenship to the robot Sophia (Hanson Robotics), weighing the merits of rights for robots extended into everyday discourse. Advances in technological development have left ethicists, scientists, designers, and policy-makers eager to begin public deliberations about the potential extension of rights and protections to robots. Many have argued that considering rights for robots is an important ethical debate that must occur as the technologies advance in both ability and scope [1, 2].

Social scientists have long focused attention on petitions because they are often used to create pressures for social change, with people generally accepting that the larger number of signatures affixed, the more widespread the sentiment in favor of the proposal [3]. Attitudinal dispositions toward the positions or groups advanced in petitions are a major factor in whether one agrees or declines to sign.

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In the case of gauging support for serious consideration of robot rights, whether one holds relatively positive or negative attitudes towards robots, in general, is likely to predict petition endorsement. Prior experience interacting with robots may also influence willingness to sign, as mere contact with unlike others can lead to increases in affinity and attraction.

Factors beyond a potential signer's endorsement of the position advanced can play a role in whether or not they agree to sign a petition. One factor that may influence endorsement is the nature of the requesting petitioner.

The MAIN model asserts that technological affordances trigger cues, which lead to the application of judgmental short-cuts, or heuristics, which influence attributions of credibility [4]. The agency (A) affordance of the model is concerned with the nature of the actor (for instance, whether the agent is a person, computer, or robot). It is possible that a social robot agent speaking on its own behalf will lead to an authority or investment heuristic tied to higher credibility than a human agent doing the same.

In addition, some previous research reports differences in the way men and women perceive robots [5]. Gender also has been linked to petition-signing activity (with women signing in greater numbers than men [6]), and to the type of petitions endorsed (with women more likely to sign in the categories of women's and animal rights and men more likely to sign in the categories of economic justice and human rights [7]).

Therefore, the purpose of this study is to determine in a sample of U.S. American college students (1) the level of willingness to consider the rights of robots and (2) the strongest predictors of support for robot rights. Support for consideration for robot rights was operationalized as willingness to sign a petition urging the United Nations to form a working group on the issue. The potential predictors included participants' negative attitudes toward robots, prior interaction with robots, nature of petitioner (human versus Pepper robot requester), perceptions of petitioner credibility, and participant gender.

## 2. METHODOLOGY

An experiment was employed to examine the willingness to sign a petition for robot rights. Participants included 167 undergraduate students enrolled in communication courses at a large Midwestern U.S. American research university. Ages ranged from 18 to 39 years, with mean of 20.81 (SD = 2.44). The majority (n = 92, 54.8%) identified as female. Most were White/Caucasian (n = 122, 72.6%) and then followed by Black/African-American (n = 20, 11.9%). In terms of prior

interaction with a robot, 106 (63.1%) participants reported never having interacted with a robot.

Participants were randomly assigned to receive a scripted videotaped request to sign a petition urging robot rights consideration from either a human confederate or Softbank's Pepper humanoid robot. After advancing a brief justification of the importance of the issue, the petitioner asked participants if they would sign a document urging the U.N. to form a working group on the issue. Participants were asked to indicate whether they would sign the petition (y/n) and to rate the degree of their willingness to do so from (1) *extremely unwilling* to (7) *extremely willing*. Because this was an experiment, we did not ask participants to actually sign a petition.

Then they were requested to complete predictor variable measures (negative attitudes toward robots, perceptions of petitioner credibility, prior interaction with robots, and a demographic set including participant gender). The perceived credibility of the petitioner (human or Pepper robot) was measured with 18 items (e.g., trustworthy/untrustworthy) [8] (*Item M* = 4.99, *Item SD* = .85,  $\alpha$  = .91) on 7-point scales. Negative Attitudes about Robots (NARS; [5]) was measured with 14 items (e.g., I would feel uneasy if I was given a job where I had to use robots) (*Item M* = 3.08, *Item SD* = .64,  $\alpha$  = .85) on 5-point Likert type scales.

### 3. RESULTS

Descriptive statistics were used to determine participants' general willingness to consider the rights of robots. Approximately 46% ( $n = 78$ ) indicated "yes," they would be willing to sign the petition urging consideration of robot rights. Using multiple linear regression analysis, we examined the strength and significance of the series of predictor variables on scores for the criterion variable "how willing would you be to sign the petition?" The overall model was significant,  $\beta = 4.764$ ,  $t$  ( $df$ ) = 4.800,  $p < .001$ , with the predictors accounting for a significant proportion of the variance in willingness to sign the petition,  $r^2 = .33$ ,  $F(5, 158) = 15.625$ ,  $p < .001$ . Negative attitudes toward robots, prior experience interacting with robots, and perceived credibility of the petitioning agent were significant predictors of willingness to sign the petition. Neither the nature of the petitioner (human versus Pepper robot) nor participant gender significantly predicted support for considering robot rights.

**Table 1. Results of the Multiple Linear Regression Analyses**

	<i>t</i>	<i>p</i>	<i>Beta</i>
Negative Attitudes	-6.349	.000	-.427
Prior Interaction*	-2.712	.007	-.178
Petitioner (human v. robot)	-1.000	.319	-.066
Petitioner Credibility	4.259	.000	.288
Participant Gender	-0.108	.914	-.007

Note. The dependent variable for all regressions was willingness to sign a petition urging robot rights consideration. \*Reverse scored

### 4. CONCLUSIONS

The purpose of this study was to determine levels of support for consideration of the rights of robots and to identify predictors of support for robot rights. Nearly half of college aged U.S. Americans in the sample are willing to sign a petition concerning consideration of robot rights. Those with less negative attitudes toward robots, previous robot interactions, and higher perceptions of petitioner credibility were more willing to endorse the petition.

Despite some previous research that suggests a gender difference in petition signing activity and attitudes toward robots, men and women did not differ in endorsement frequency. Likewise, although the MAIN model suggests that agency cues (human or robot speaker) may cue heuristics leading to differential attributions of source credibility, results showed no difference in willingness to endorse the petition based on whether a person or a Pepper robot made the request. Perceived credibility of the petitioner was influential, but appears to have functioned independently of agent type. Attitudes toward robots and previous experiences with robots deserve greater attention as potential determinants of social discourse and action related to the extension of rights and protections to robots. Future studies need to examine how other human-to-human interaction variables, such as liking and social presence [9, 10], might impact attitudes towards robots and extension of potential rights.

### 5. REFERENCES

- [1] Gunkel, D. J. (2014). A vindication of the rights of machines. *Philosophy & Technology*, 27(1), 113-132. doi: 10.1007/s13347-013-0121-z
- [2] Coeckelbergh, M. (2010). Robot rights? Towards a social-relational justification of moral consideration. *Ethics and Information Technology*, 12(3), 209-221. doi: 10.1007/s10676-010-9235-5
- [3] Blake, R. R., Mouton, J. S., & Hain, J. D. (1956). Social forces in petition-signing. *The Southwestern Social Science Quarterly*, 385-390.
- [4] Sundar, S. S. (2008). The MAIN model: A heuristic approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin's (Eds.) *Digital media, youth, and credibility: The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning* (pp. 73-100). The MIT Press: Cambridge, MA. DOI:10.1162/dmal.9780262562324.073
- [5] Nomura, T., Kanda, T., & Suzuki, T. (2006). Experimental investigation into influence of negative attitudes toward robots on human-robot interaction. *Ai and Society*, 20, 138-150. doi: 10.1007/s00146-005-0012-7
- [6] Coffé, H., & Bolzendahl, C. (2010). Same game, different rules? Gender differences in political participation. *Sex roles*, 62, 318-333. doi: 10.1007/s11199-009-9729-y
- [7] Mellon, J., Gilman, H., Sjöberg, F., Peixoto, T. (2017, July). Gender and political mobilization online: Participation and policy success on a global petitioning platform. *Ash Center Occasional Papers* (T. Saich, Ed.). Ash Center for Democratic Governance and Innovation. Harvard Kennedy School. <http://ash.harvard.edu>
- [8] McCroskey, J. C., & Teven, J. J. (1999). Goodwill: A reexamination of the construct and its measurement. *Communication Monographs*, 66, 90-103. doi: 10.1080/03637759909376464
- [9] Spence, P. R., Westerman, D., Edwards, C., & Edwards, A. (2014). Welcoming our robot overlords: Initial expectations about interaction with a robot. *Communication Research Reports*, 31, 272-280. doi: 10.1080/08824096.2014.924337
- [10] Edwards, C., Edwards, A., Spence, P. R., & Westerman, D. (2016). Initial interaction expectations with robots: testing the human-to-human interaction script. *Communication Studies*, 67, 227-238. doi:10.1080/10510974.2015.1121899