로봇을 반장으로: AI 로봇 권리에 대한 어린이의 입장 연구

Robots for Class President: Children's Positions Toward AI Robot Rights

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Abstract

The legal status of robots and artificial intelligence (AI) is an issue raised by scholars and policymakers who are interested in how these technologies will affect our society. However, this discussion lacks the input of the general population, an essential stakeholder in the development of AI and robots. To obtain a perspective on Korean youth's perceptions of the issue, we conducted a survey of Korean youths (N=105) consisting of hypothetical future scenarios addressing human rights for robots. This study shows children are primarily supportive of robot rights in scenarios that contain human-robot interactions at their core; however, when robots were depicted apart from humans, children are not as supportive of granting legal electronic personhood.

1. Introduction

With the rapid development of robots and artificial intelligence (AI), questions regarding the definition of personhood are rapidly arising. One extreme view is the proposal by the European Parliament, which stated that autonomous, adaptable and self-learning robots are to be granted a form of electronic personhood and be "responsible for making good any damage they may cause" [1]. After a backlash from the robotics community[1], the Parliament went back on its proposal. The discussion on what rights AI robots will be granted, however, remains an open question.

Debates on whether AI should and can be considered a legal person have emerged as AI robots, humanoid or otherwise, are increasingly inserted into society. Supporters argue for similarities between robots and corporations [2], some argue that robots do not possess or defend the interests of humans and therefore should not be considered legal persons [3]. With the growing number of AI systems, the decision about what kinds of rights and responsibilities robots should be granted is much needed.

Most discussion about the personhood of robots revolves around experts and policymakers. We posit that understanding the perception of the general population is vital for newly developed technologies that should align well with the end user's perspectives [4]. Several related studies have examined how children interact and build relationships with robots [5]. Other authors have also investigated how preschool children perceive robots [6] through interviews and drawings.

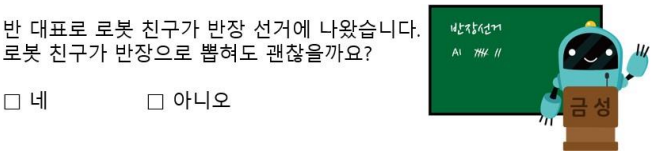

Figure 1: Example question on political rights.

In this research, we conducted a survey with 105 children in South Korea and asked them about their perceptions of AI and robot rights (see Figure 1 for example). Human rights are one of the backbones of legal personhood, and applying such rights to electronic agents would completely shift our views of robots, AI, and humans. Our survey was composed of hypothetical future scenarios in which respondents' answers would either grant or deny human rights to robots.

Our findings suggest that children are primarily supportive of robot rights. We hypothesize that children are able to perceive of robots with a more humanized image and thus grant a significant degree of rights in the proposed scenarios. In scenarios in which robots and humans socially interact as equals, the children were more open to robot rights; however, in scenarios not centered around human-robot interaction and situations in which humans are at risk, the children's perspectives were not as one-sided as previously argued.

[1] http://www.robotics-openletter.eu/

2. Methodology

To understand children's positions on the AI robot rights issue, we conducted a survey of young people (N=105) in Daejeon, South Korea. The survey hypothesized a storyline set in the year 2050, where robots are autonomous social beings that think and socialize with humans. This storyline was presented in a manner that would invoke children's curiosity and establish a starting point for their imaginations. The survey asked for the children's reactions to several scenarios that address critical aspects of human rights listed in the United Nation's Universal Declaration of Human Rights (UDHR), which is known as a milestone document in the history of human rights. Among them, we chose five rights: legal, privacy, political, labor, and security. Figure 1 shows an example scenario. Below, we list the five scenarios:

2.1 Legal Rights Scenario

This scenario asked, *"The robot sneaked into a convenience store in its neighborhood, drank a bottle of soda, and the owner caught it. What should the owner do?"* The possible reactions were as follows: "Let it go with a warning" (against legal rights) and "Call the police" (in favor of legal rights). The objective here was to observe whether children would follow the due process of law with robots. Since the survey respondents were children, we designed a lenient case that does not follow due legal procedures instead of other severe judgments, such as turning off the robot indefinitely.

2.2 Privacy Rights Scenario

The next scenario asked, *"A robotic friend sent a letter (or a message) to a robot living with a human family. Can the human family members open the letter without asking the robot?"* We consider the respondent to be in favor of robot rights to privacy if he/she states that families should not open the letter and against it otherwise.

2.3 Political Rights Scenario

The third scenario (also presented in the example figure) asked, *"A robot friend decided to run for class president of your class. Do you think it is okay to elect the robot?"* If the respondent considered the electoral candidacy of robots acceptable, we consider this answer to be in favor of robots' political rights.

2.4 Labor Rights Scenario

We also asked, *"A working robot cleans a human family's house every day. If the robot asks, should the human family pay a salary to the robot?"* If the respondent supported the payment of a salary, we consider him or her a supporter of robots' labor rights.

2.5 Security Rights Scenario

The final scenario asked, *"A human child hurt his finger and is waiting for treatment at a hospital. Suddenly, a robot that was seriously injured in a car accident was brought to the hospital. Who should be treated first?"* We consider the respondent to be supportive of security rights (more specifically, in this case, supportive of medical care without discrimination) if he/she prioritized the robot's treatment over the child's treatment.

Sex	Count (%)	School Level	Count (%)
Female	53 (53.5%)	Elementary	76 (76.8%)
Male	46 (46.5%)	Middle	19 (19.2%)
		High	4 (4.0%)

Table 1: Participant demographics in our survey.

3. Results

The survey questionnaires were distributed through classrooms and private educational institutes in the Daejeon area. The survey was voluntary, and the respondents were presented with a 3-dollar toy. In total, 105 young people from 17 different schools participated in the survey. Among them, six did not complete the survey and were therefore excluded from the study, resulting in 99 respondents, as displayed in Table 1. The survey targeted elementary school children, although it was circulated among and responded by 23 students from middle school and high school. We may, in the future, consider these respondents to be a reference.

Rights	In Favor (%)	Against (%)
Legal	34 (34.4%)	**65 (65.6%)**
Privacy	**84 (84.8%)**	15 (15.2%)
Political	**80 (80.8%)**	19 (19.2%)
Labor	**58 (58.6%)**	41 (41.4%)
Security	48 (48.5%)	**51 (51.5%)**

Table 2: Number of reactions in favor and against robot rights for each one of the rights tackled in our proposed scenarios.

Our main results are summarized in Table 2, and the aggregate result shows that the children primarily granted robots rights in the proposed scenarios (median=3, mean=3.141 supportive responses). The respondents report up to 80% favorable positions in terms of privacy rights. In those scenarios in which we

Independent \ Dependent	Legal Rights	Privacy Rights	Political Rights	Labor Rights	Security Rights
Sex (Male)	0.2468	−0.2939	−0.3959	1.7128**	−2.5260***
Middle School	1.7409	−0.0892	−1.4924	−1.6301	−0.7410
High School	−0.1278	0.2677	−0.3822	0.1222	1.6866†
Support	−0.2685	2.4388***	2.9880***	3.6600***	21.5484

Table 3: Summary of logistic regression coefficients for each one of the robot rights. The baseline is a negative position toward robot rights. † P<.1, * P<.05, ** P<.01, *** P<.001. *Support* indicates that a child supported robot rights in more than half of our scenarios.

introduce robots as closely living and interacting with humans, the children granted a higher degree of rights to robots. We speculate that children may have a more anthropomorphized image of robots depending on the scenario. However, in situations in which the interaction is explicit or the robots must be prioritized over humans (i.e., legal and security rights), the children were not as supportive of granting rights as in other scenarios. Even though the children humanized the robots in specific scenarios, humans and robots were not treated as equals in all situations.

4. Discussion and Conclusion

To evaluate the probability of a respondent granting human rights to robots, we applied logistic regressions using a negative position toward robot rights as the baseline. Sex, school type, and *support* were considered control variables, where *support* indicates whether the respondent is more supportive of robot rights. *Support* indicates that the child supports robot rights in more than half of the scenarios proposed and thus has a more supportive stance toward robot rights.

The logistic regression results, presented in Table 3, suggest that sex plays a role in one's perception of robot rights across different scenarios: male children were more supportive of robot rights in the case of labor, whereas they were less supportive of security rights compared to female children. We did not find a strong correlation between age (or school level) and support for robot rights in most scenarios. In the security scenario, however, high school students were more supportive of robot rights to some extent. Note that our sample of high school students is quite small, which could result in a spurious significance.

Support is the control variable that represents a more positive stance toward robot rights. The results suggest that if a child has a positive stance regarding robot rights, he/she most likely granted privacy, political, and labor rights to robots—which are the rights that received the highest levels of support. On the other hand, being mostly supportive does not necessarily mean that a child granted security and legal rights in the proposed scenarios. Two different factors cause this discrepancy. First, the legal rights scenario was designed more appropriate to children's understanding (i.e., the committed crime was not dangerous), which may have caused many children to be lenient toward the robot. Second, in the security rights scenario, there is disagreement regarding who should be treated first between a human and a robot. The children anthropomorphized robots through this survey, and this particular question was presented the last, which may have led some children to prioritize the treatment of robots over that of humans; however, this ethical question was controversial among the children. An online survey that randomly shuffles questions may better identify children's perceptions on this topic.

The coverage of the rights in our scenarios is by no means exhaustive nor impartial; nonetheless, to develop policies regarding robots and AI that will benefit humans, we must take into consideration what people think about the inclusion of robots in society under diverse situations. This work intended to promote a more inclusive discussion about robot and human rights. AI systems are being rapidly deployed throughout society, and we hope that research projects such as ours can contribute to a better understanding of people's perceptions of AI robot rights.

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