Children’s Knowledge and Imaginary About Robots

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## Authors

Fortunati L.;Esposito A.;Sarrica M.;Ferrin G.

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704 children aged 9-14.

## Implications For Stakeholders About

Researchers

# Abstract

The aim of this paper is to investigate on children’s knowledge and imaginary about robots. To do so, we administered to 704 children from 17 classes of 8 elementary and secondary schools, a survey with close and open questions about their conceptualization of robots. To carry out this study we took as point of reference the theoretical framework of social representations. The main results are that children evaluate toys, robots and human-beings as significantly different on all the characteristics considered. More than toys, robots have mechanical movements, they move, are more intelligent than toys but they do not keep company to them. By contrast, human beings are perceived by children starting from their corporeity: they eat and sleep, move by themselves, are intelligent and speak, keep eye-contact and company. However, children complain about the fact that human beings do not play with them. The imaginary about robots that children receive from media is characterized by anthropomorphic shapes, bodies and by human-like cognitions, feelings and behavior. The more examples of visual products with robots children are able to evoke, the higher they evaluate robots on all human-like characteristics (e.g. it looks into my eyes). Hence, the tension between imaginary and knowledge can be confounding because the human-like features of fictional robots are more advanced than those reachable by the factual ones.

# Outcome

"As to the cognitive and pragmatic facets, results show that children are well aware of the differences between toys, robots and human-beings. They consistently recognize robots as a mechanical device, able to move more than toys, yet without the bodily and cognitive characteristics that are typically human. These results, which are coherent with previous research [18] show that children from the age of 9 are already aware of what the key characteristics of robots are.

Nevertheless, a different picture emerges when we look at the imaginary that is conveyed to children by visual media (and in particular by the cinema). Robots in this domain of knowledge are advanced technical devices too: however, they are also characterized by anthropomorphic shapes and bodies (e.g. Transformers, The Terminator) and by human-like cognitions, feelings and behavior (e.g. Futurama, 𝑊𝑎𝑙𝑙⋅𝐸). Moreover, the correlations between quantity of examples reported by children and the characteristics associated with robots show that media play a powerful role in constructing a human-like representation of robots: the more examples children are able to evoke, the higher they evaluate robots on all human-like characteristics (e.g. “It looks into my eyes”). In sum, even though the representations of robots are still techno-centric, the boundaries between robots and humans that was so clear in the cognitive and pragmatic facets shared by children tend to become less sharp when images are considered." (Fortunati et al., 2015, p. 693)