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# Perceived pain of humans and robots: An exploration of the effect of agent, pain source, and pain type in pain attribution to biological and non-biological agents

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## Abstract

This study investigated the empathy of humans toward non-biological agents like robots and compared it to their empathy toward their conspecifics. 90 participants watched a human and a robot in painful scenarios (32 short videos created with animation techniques) and rated the intensity of pain experienced by the agent. The scenarios were created by manipulating the type of agent experiencing pain (human or robot), the source of pain (object or person), and the type of pain (physical or emotional). Results showed that humans were perceived to feel more pain than robots. In addition, the perceived pain scores were higher for scenarios where the source of pain was an object compared to a person, however, this depended on the type of pain. Emotional pain scores showed significant differences between the source of pain being an object versus a person, but physical pain scores did not depend on the source of pain.