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# The Effects of Choice and Ingroup Strength on Responses to Robots: A Comparison between the U.S. and China.

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**Introduction**

We are exploring cultural differences in people's responses to technology based on the premise that fundamental differences in culture affect how people respond to and collaborate with particular instantiations of technology. We are currently most interested in how people interact with and respond to intelligent agents, such as robots and are focusing on the interaction between choice (autonomy), presentation of the robot as an ingroup member, and culture. We are conducting a three phased experiment to study the interplay between these factors. Phase one of the study is complete and we will be embarking on phase two in the next month, and hope to have phase three underway in early April. In the process of designing this experiment, we have confronted numerous methodological obstacles and are exploring the situation sampling method to address some of these issues. By April, we should have a good idea of the success of this method.

## Theory & Hypotheses

Iyengar & Lepper [1] established that there may be cultural differences in how people respond to having choice. In cultures that promote *independent* selves (most Western cultures, such as the United States and Canada), individual choice and personal autonomy may be intrinsically motivating. In cultures promoting *interdependent* models of the self (many non-Western cultures, including Japan and China), personal choice may have considerably less intrinsic value. In cultures emphasizing interdependent selves, people may prefer to submit to choices expressed by others if the situation enables them to fulfill the superordinate goal of cultural belonging. We hypothesize that a robot that asks people's preferences will be more appealing to and accepted by people who are culturally American and that a robot that chooses for participants will be more appealing to and accepted by people who are culturally Chinese. Whereas Americans will seek to express their distinctiveness in the choices they make, Chinese will prefer to express their belongingness by adhering to a choice made by the robot. We expect this effect, however, to interact with the framing of the robot as an ingroup member. We hypothesize that the effect for Chinese participants will only hold when the robot is framed as an ingroup member because Chinese participants' desire to adhere to the preferences of the robot will be tied with their perception that by doing so they are adhering to the norms and expectations of their ingroup. For American participants, we anticipate no effect for ingroupness. In summary, we hypothesize that:

H1: Americans will experience more efficacy, relatedness, and will be more accepting of a robot that asks their preferences whereas Chinese will experience

more efficacy, relatedness, and will be more accepting of a robot that makes choices for them.

H2: The effect described in H1 will only hold for the Chinese if the robot is framed as an ingroup member.

## Method

We are conducting a three phased experiment to test our hypotheses. The first two phases rely on the situation sampling method recently described by Kitayama and colleagues [2]. The situation sampling method is appealing because the cultural prompts are produced by people representing the cultures of interest and not by the researcher. In step A, the researcher asks participants to describe situations in their own words. These situations are then provided without revision (although with translation if needed) to a second set of participants from the cultures represented in the study and rated by those participants. The result is a less biased "manipulation."

In our case, we are using situation sampling to identify appropriate ingroup manipulations. In phase one, we have elicited situations reflecting weak and strong feelings of ingroupness from U.S. and Chinese students. In phase two, we will provide a random selection of the U.S. and Chinese generated situations to another sample of seven U.S. and seven Chinese students and ask them to rate each situation on the extent to which it evoked feelings of ingroupness. We can then select ingroupness manipulations based on these ratings. In all three phases, we are employing cultural priming as described by Hong and colleagues [3] in which culturally relevant images (e.g. Tiananmen Square, McDonalds, etc.) are shown for a few seconds prior to the experiment, thus emphasizing the

participant's identification with that culture. The third phase of our experiment is expected to be a 2 x 2 x 2 design with choice (robot asks preference vs. robot chooses), ingroupness (weak, strong), and cultural identity (U.S. vs. Chinese). If in phases one and two we discover that a single manipulation will not apply to both U.S. and Chinese participants, then our ingroup dimension will have four (not two) levels representing the ingroupness manipulations for both cultures (U.S. weak ingroup, U.S. strong ingroup, Chinese weak ingroup, Chinese strong ingroup).

### **Discussion**

Ours is an initial study with the goal of learning about peoples' response to robotic technology as much as trying out new methods for conducting cross-cultural research. At this workshop, we are excited about learning about others' methods and approaches to

conducting cross-cultural research and hope to get feedback on our approach.

### **References**

- [1] Iyengar, S. and Lepper. Rethinking the Value of Choice: A Cultural Perspective on Intrinsic Motivation. *Journal of Personality and Social Psychology*, 76, 2 (1999), 349-366.
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- [3] Hong, Y., Morris, M., Chiu, C., & Bennet-Martinez, V. Multicultural Minds: A Dynamic Constructivist Approach to Culture and Cognition. *American Psychologist*, 55, (2000), 709-720.