

Cultural Differences and Similarities in Perceptions of Artificial Social Agents (ASAs)

Comparing Dutch and Chinese speakers' perceptions of ASAs

CSE3000: Research project
Johan Hensman
j.hensman@student.tudelft.nl
Supervisors: Nele Albers, Willem-Paul Brinkman

1. Background

- **Artificial social agents (ASAs)** are systems designed to interact with humans in a socially intelligent manner [1].
- As the field of robotics is rapidly advancing, some studies focused on **creating more effective agents** by analysing peoples' perceptions [2].
- In pursuit of this, researchers constructed a **standardized manner** to evaluate ASA [1].
- However, other researchers have seen that culture has a significant influence on an individual's perception of ASAs [3].
- So, **cultural influence** should be examined to create more effective ASAs.

2. Research Question

What are the cultural differences and similarities between Dutch and Chinese speakers in their perceptions of ASAs?

3. Method

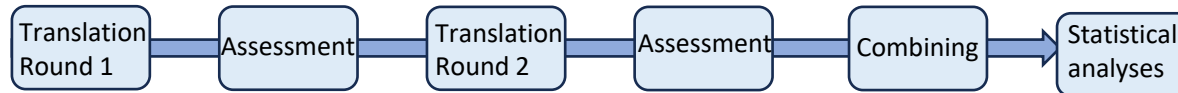


Figure 1: Flowchart of the method

Two experts translated the original questionnaire into Dutch separately and another reconciled them. The translations were then validated by conducting a survey using the original and the translated questionnaire and by calculating the Intra Course Correlation (ICC) scores of the answers.

All items that had a low ICC value needed to be retranslated. The new translations were again validated and the best results from rounds 1 and 2 were combined into 1. This resulted in the preliminary Dutch questionnaire.

From previously collected data and the data we gathered during the translation round, we calculated the correlation using ICC values, the variation using the Bayesian t-test and we calculated the difference in scores between the Chinese and Dutch speakers.

4. Results

Figure 2: Item level

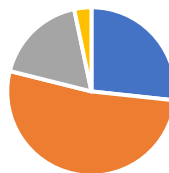


Figure 3: Construct level

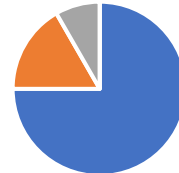
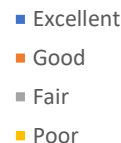


Figure 4: Short version



This research showed that the long version of the newly translated Dutch questionnaire has a decent correlation on an item level, where **79% had a good or excellent correlation value**. Findings also show that it is preferred that researchers should compare the results of their survey on a construct/dimension level with the English questionnaire in future use as **91% had good or excellent correlation value**.

Results also showed that there was bias in the language conversion in the construct 'Agent's Enjoyability'. Dutch speakers gave a higher score for User's Engagement (UE), but they gave a lower score for Human-Like Behaviour (HLB), Natural Appearance (NA), Natural Behaviour (NB), Agent's Usability (AU), Performance (PF), Agent's Likeability (AL), Agent's Sociability (AS), Agent's Personality Presence (APP), User's Trust (UT), User-Agent Alliance (UAL), Agent's Attentiveness (AA) and Agent's Coherence (AC).

5. Conclusion

The first objective of this paper was to create and validate a Dutch translation of the ASA questionnaire. We **provided a preliminary version of the translated questionnaire** that already showed a satisfactory level of correlation. Secondly, we wanted to compare the view of ASAs of Dutch and Chinese speakers. Findings showed that Dutch speakers **rated the ASA differently on 13 constructs** compared to the Chinese speakers. Using these new findings and the questionnaire, a better understanding has been brought, which can be used in further research on ASAs.

6. Future works

1. Another round of translation should be conducted to increase the accuracy of the translation.
2. Another survey should be done containing 14 agents to get a more generalised view on ASAs
3. we also recommend a study that focuses on the Dutch and Chinese cultures.

References

- [1] Siska Fitrianie, Merijn Bruijnes, Fengxiang Li, Amal Abdulrahman, and Willem-Paul Brinkman. The artificial-social-agent questionnaire: Establishing the long and short questionnaire versions
- [2] Nele Albers, Mark A. Neerincx, Kristell M. Penforis, and Willem-Paul Brinkman. Users' needs for a digital smoking cessation application and how to address them: A mixed-methods study.
- [3] Mohammad Obaid, Maha Salem, Micheline Ziadee, Halim Boukaram, Elena Moltchanova, and Majd Sakr. Investigating effects of professional status and ethnicity in human-agent interaction. In Proceedings of the Fourth International Conference on Human Agent Interaction, pages 179–186. ACM