Measuring Participant Characteristics that Relate to Sign Language Technology Acceptance

R·I·T

Hernisa Kacorri[2], Matt Huenerfauth[1], Sarah Ebling[3], Kasmira Patel[1], Mackenzie Willard[1], Kellie Menzies[1]
[1]Golisano College of Computing and Information Sciences, RIT [2]Graduate Center CUNY [3]University of Zurich

Introduction

Technology to produce animations of sign language from a simple script of the sentence would enable easy-to-update and dynamically generated signing content online, which would benefit deaf signers. Many research teams internationally investigate this technology; researchers typically use their software to generate some animations and then ask deaf participants to evaluate the output by:

(a) **answering comprehension questions**

(b) **giving subjective ratings of the quality**

But there is little consensus about what characteristics of study participants to report:

(i) **demographic background**

(ii) **technology experience**

What if **(i)** and **(ii)** are predictive of **(a)** and **(b)**?

If participants' characteristics differ between studies (or aren't reported), then we can't compare the performance of sign language animation systems across different studies, which is necessary for progress in a maturing field of research.

Knowing which participant characteristics affect scores collected in evaluation studies guides researchers in selecting what information to report about their participants.
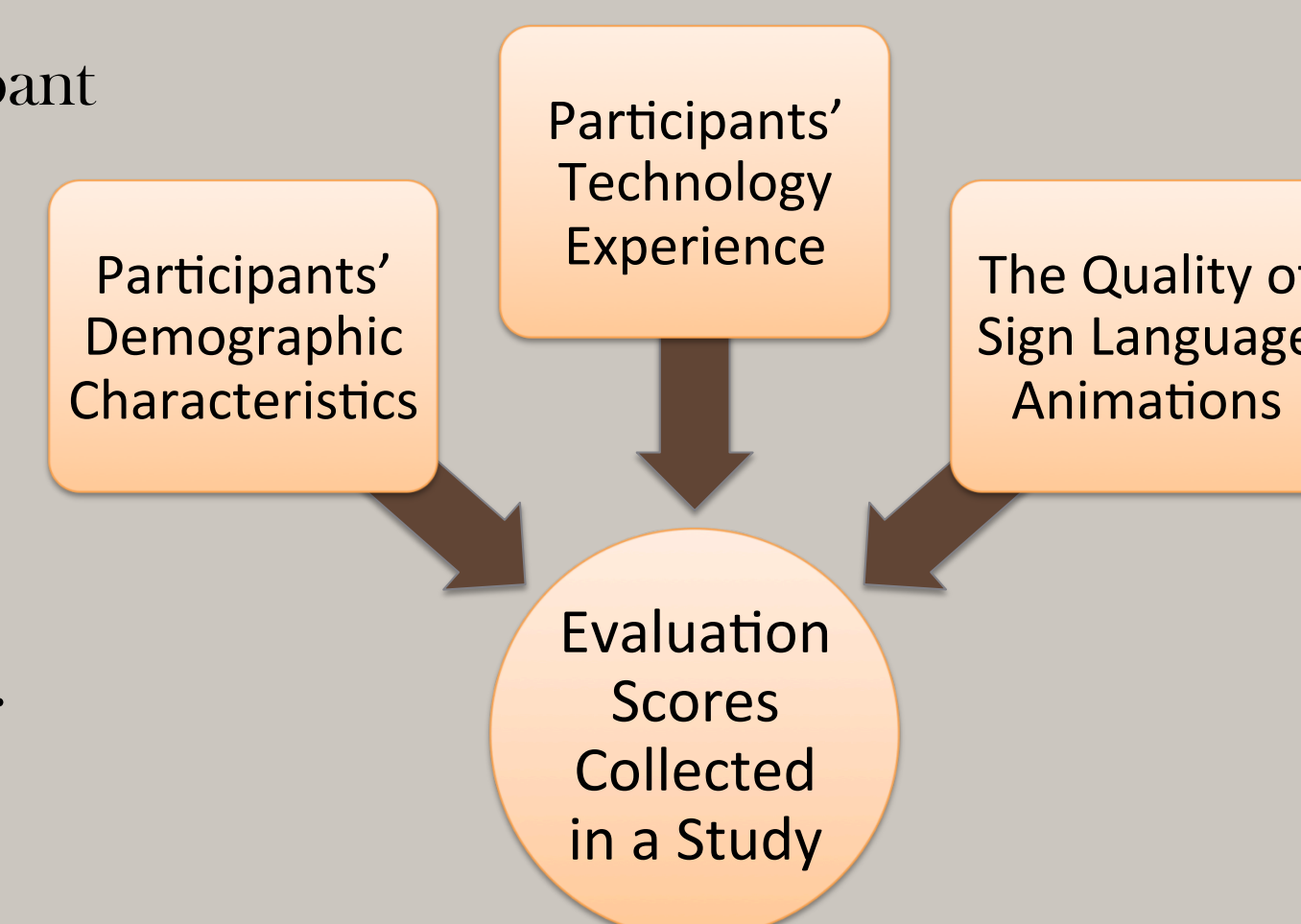

Methods

In-person survey of 62 deaf and hard-of-hearing ASL signers in Rochester, with questions about demographic background and technology experience, asked via both ASL-video and English text.

Displayed animations of sign language (generated by multiple modern systems), each followed by subjective rating scales and comprehension questions.

Regression analysis of the subjective ratings and comprehension scores, as predicted by demographics and technology-experience, in order to identify characteristics with greatest predictive power.

We now recommend questions to include in evaluation studies of sign language animation, and the results of these questions should be reported in any publication, to enable comparison across studies.
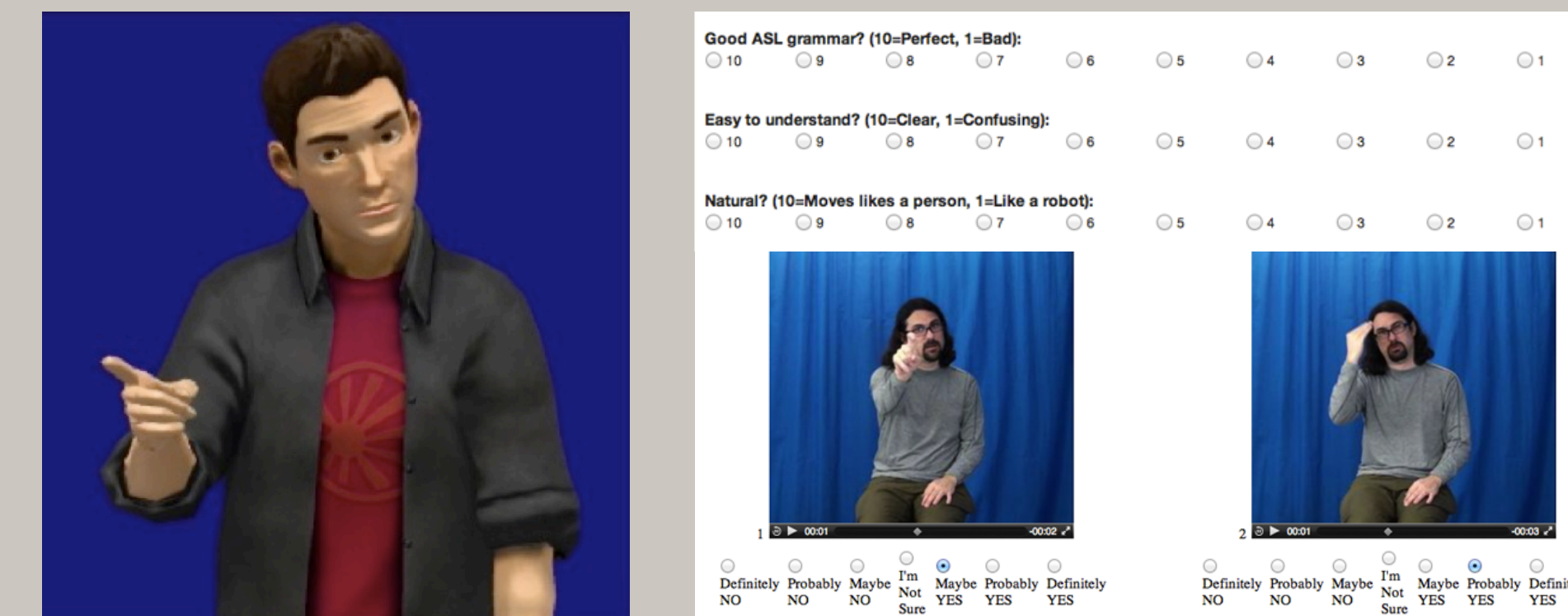
Important Characteristics

Childhood school: Those who attended residential schools for deaf children tended to have higher comprehension scores for ASL animations yet gave more critical subjective ratings.

ASL at Home: Those who use ASL in their homes regularly gave more critical subjective ratings of animation quality.

Frequency of online media viewing and sharing: Those with more online video experience had harsher subjective ratings of the animation quality.

Animation attitude: Those who answered more favorably about the usefulness of computer animations in general tended to give higher subjective ratings to the ASL animations shown.

More details available in: H. Kacorri, M. Huenerfauth, S. Ebling, K. Patel, M. Willard. 2015. Demographic and Experiential Factors Influencing Acceptance of Sign Language Animation by Deaf Users. In Proceedings of the 17th Annual SIGACCESS Conference on Computers and Accessibility (ASSETS'15). Lisbon, Portugal. NY: ACM Press.

Question Items

ASL version available: http://latlab.ist.rit.edu/assets2015

When you were a child, what type of school did you attend? You can select more than one. __ Residential school for deaf students, __ Daytime school for deaf students, __ Mainstream school

What language do you use at home? You can select more than one. __English __ASL __Other

How often do you do each of the following?
- Watch TV shows, movies, etc., on computer, laptop, tablet, or smartphone
- Watch video clips on the computer, laptop, tablet, or smartphone
- Download media files from other people on the computer, laptop, tablet, or smartphone
- Share your own media files on a computer, laptop, tablet, smartphone

For each, select: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree
- Computer animations of sign language could be used to give information on a website.
- Computer animations of sign language could be used to give information in a public place (e.g. airport, train station).
- Computer animations of sign language could be used as an interpreter in a face-to-face meeting.
- Computer animations of sign language could be used as an interpreter for telephone relay.
- I would enjoy using computer animations of sign language.
- Other people would enjoy using computer animations of sign language.