This is an author produced version of a paper presented at V-lang International Conference, Warsaw, 17th November 2011.

Citation for the published paper:

Mats Deutschmann, Anders Steinvall, Anna Lagerström

*Gender-Bending in Virtual Space: Using Voice-Morphing in Second Life to Raise Sociolinguistic Gender Awareness*

Gender-Bending in Virtual Space - Using Voice-morphing in Second Life to Raise Sociolinguistic Gender Awareness

Mats Deutschmann, Anders Steinvall & Anna Lagerström
Department of Language Studies, Umeå University
Umeå, Sweden.
Mats.deutschmann@engelska.umu.se; anders.steinvall@engelska.umu.se; lagerstrom.a@gmail.com

Abstract

This paper presents further innovative use of virtual worlds under the pilot stages of ASSIS (A Second Step in Second Life), a project funded by Umeå University. One aim of the project is to make use of the affordances offered by Second Life in order to raise sociolinguistic language awareness among teacher trainees and other students studying sociolinguistics. Several experiments have been conducted where creative use of the avatar in combination with so-called “voice-morphing” allowed students to be exposed to, or experience different linguistic identities. In the following paper, we describe four such experiments.

In the first, we recreated a classic sociolinguistic experimental design, the so-called matched-guise test, in order to test whether our female students were evaluated differently on various personal characteristics when they appeared as male avatars. Contrary to previous match-guise studies, our results showed that all the females were more positively evaluated than all the ‘males’. However, this overall pattern was very likely a result of the poor quality of the female-to-male voice-morph. In the second experiment, students were offered the possibility of experiencing the opposite gender in a cross-cultural course setting in SL, in order to reflect over how this “gender change” affected the way they were treated in conversations. Only one student took this opportunity leaving few conclusions, except awareness of the ethically problematic aspects of such arrangements. In the third experiment, we used voice-morphing in SL to raise students’ awareness of how gender stereotypes can influence their perception of teachers. In addition to the real (male) teacher, we created two voice-morphed teacher assistant avatars in SL, one male and one female. Student evaluations showed that they were partly influenced by stereotypes and partly not. The design of the experiment was criticized by the students, however, as they felt that they had had too little time with the teacher assistants to evaluate them properly and therefore gave average ratings. In the fourth study we used similar characters as in the previous study, but in an online lecture during which the real teacher spoke as himself and also gave talks, one as his female and one as his male PhD student. The students listening to the lecture evaluated the female PhD student as more likeable and the male PhD student as more intelligent. After, the design was revealed and the students reflected extensively on the result and how unconscious gender stereotypes influence how we judge people.

The models and studies presented here point to the potential of virtual worlds as tools for awareness-raising activities regarding gender as a social construct.

1. Introduction

On the basis of studies from various 3D VEs, Thorne, Black & Sykes [1] point to several possibilities for language learning including in the area of experimentation with identity in relation to language. In this context, gender is a variable that has been contemplated as important, but while Second Life (SL) offers excellent opportunities to investigate gender roles, little has been written about this topic in relation to SL and language studies (SL) [2].

In the project ASSIS, funded by Umeå University, Sweden, we wanted to raise gender awareness among language students using the affordances offered in SL. The activities were integrated in courses in sociolinguistics, where the social-constructivist view on gender and language was one of the main topics explored. According to this view, gender is not a stable state, but rather constructed in the conversational interplay between interlocutors [3] [4]. We wanted to raise awareness of the
mechanisms of this construction through experiments using voice-morphing and avatar construction. The following paper describes four such experiments.

2. Case Descriptions

In all of the cases described below, we used the voice-morphing tool that is available in SL in packages consisting of 5 voices (feminine packages, masculine packages etc.) from ‘Voice Island’. Once purchased, the voice-morph can be activated by clicking on the arrow beside the voice button in Viewer 2. You then have the option to activate one of the five voice-morphs (see Fig. 1 below).

![Voice-morph options in package ‘Feminine 2’](image)

2.1 Matched-Guise Experiment

This experiment explored matched-guise technique using the possibilities that virtual worlds offer in terms of gender manipulation. The original study [5] investigated how Canadian listeners’ attitudes were affected by the language of the speaker. Four bilinguals would read the same text in both English and French. These recordings were then played to respondents or ‘judges’, who were asked to evaluate the speakers on personal characteristics. Of course the ‘judges’ did not know that the same people were speaking in the two languages. The study showed that the person reading was evaluated differently depending on which language was used. Since then the technique has been used and developed in a number of studies investigating different attitudes to language output such as national and regional accents, [6]. While comparisons of gender effects on evaluations of different dialects have been studied previously [7], to the best of our knowledge, no study has explored this technique in virtual worlds, and with regard to gender.

Our experiment was set up in a Master’s course at a Swedish university with four female students, from Sweden, Iran, South Africa and China. We made machinima recordings of the students reading a short text in SL using their real voices and female avatars. We then used female-to-male voice-morphing and male avatars to record the same students reading the same texts as ‘males’. Approximately 50 outside ‘judges’ were asked to evaluate the avatars using a 7-point Likert scale. Essentially following the methodology and trait inventory of Cavallaro & Chin [6], the traits were ‘hardworking’, ‘intelligent’, ‘ambitious’, ‘confident’, ‘trustworthy’, ‘considerate’, ‘kind’, ‘honest’, ‘caring’, ‘likeable’ and ‘funny’. One obvious difference compared to previous studies was that the ‘judges’ could see an avatar. Because the appearance of the avatar could affect the evaluation, the students were asked to keep their two avatars as ‘neutral’ as possible in relation to one another.

Based on the results from Andrews’ study, where male voices were evaluated higher than their female counter-parts on all traits [7], our hypothesis was that male avatars would be evaluated higher, especially on prestige attributes such as ‘intelligence’, ‘confidence’ and ‘hardworking’. Our hypothesis was refuted. In fact, the female avatars were evaluated higher on all characteristics. However, statistically significant differences were only found (t-test, ps 0.05) for one avatar and for three characteristics (‘confident’, ‘intelligent’ and ‘kind’). The most feasible explanation for these results was that poor and artificial quality of the female-to-male voice morphs influenced the ‘judges’ leading to higher evaluations of the un-morphed female voices. We find it unlikely that the avatar appearances produced this outcome.
2.2 Students Gender-Bending
In the second experiment, we gave students the opportunity to gender morph to experience if there was any difference in the way that they were treated in conversations when acting the opposite sex. The setting for this second experiment was a Master’s course in sociolinguistics where the students were to discuss gender and language matters in a cross-cultural setting with peers from Chile. All participants could choose to gender morph or not, and perhaps because almost all students were female and the female-male morphs had proved themselves of poor quality, only one person decided to use this option. Unfortunately, she was far from convincing as the voice sounded artificial, but nevertheless she maintained that the experience was “extremely liberating”, but “quite psychologically disturbing”.

In retrospect, the main problems with this model are the ethical dilemmas it presents. Firstly, we do not know how students may react when they enter the role of the opposite sex. Some students may find this extremely disturbing (for a number of reasons), and the experience may trigger psychological processes over which we have little control. A second dilemma is the fact that interlocutors may say or do things they would otherwise not if they knew the true identity of the conversational partner. People may, for example, disclose secrets or make flirtatious approaches, all of which can cause considerable embarrassment and place students in difficult positions. With all this in mind, we hesitate to propose this approach and instead recommend more controlled models where the educators themselves take on the gender morphed roles.

2.3 Evaluation of Teacher Assistant(s)
In the third experiment, we used voice-morphing in SL to study if gender stereotypes influenced students’ perception of teacher performance. The pedagogic aim was to raise teacher trainee students’ awareness of this issue. The setting was a course in sociolinguistics on the subject of gender attended by 34 third-year EFL teacher trainees. The students were to conduct two case discussions on the topic of gender in the classroom in SL, and would be joined by outside ‘expert peers’ (active language teachers and researchers). In SL, the students were split into 11 discussion groups of 3-4 students and one expert peer, and assigned their own sound parcel (see Fig. 2). They were also told that there would be two teacher assistants, Rory (female) and Rico (male), circulating during the discussion helping out to clarify things.

In reality, a (real) teacher acted as both Rico and Rory, with his voice morphed to a lower pitch for Rico and higher pitch for Rory. After each session, the students then evaluated the two in an online...
The student's ratings of Rory and Rico were analyzed using t-tests ($p \leq 0.05$). In order to compare student ratings with actual performances, the group discussions were recorded, and used to collect data corresponding to the statements in the questionnaire. The students rated Rico significantly higher than Rory for facilitating discussion (workshop 2), giving both males and females more attention (workshop 1), and for making students speak. This result was unexpected as studies show that female teachers are more likely to be rated high for promoting discussion and giving students attention [8]. However, data from the sound recordings showed that Rico facilitated discussion more, meaning that the students were not influenced by gender stereotypes in this case. Rory, was rated significantly higher than Rico for addressing male and female students equally (workshop 1), for “taking over conversation”, and for “listening with interest”. It is well established that teachers tend to address male students more frequently than female [9]. However, the sound recordings showed that contrary to this and to most students’ perceptions, Rory and Rico both addressed proportionally more female students. It is possible that the teacher overcompensated, or that female students were more active in interacting with teachers. Contrary to the evaluations, the sound recordings showed that Rico, not Rory, took over conversation more. It is possible that we expect this kind of behaviour from male but not female teachers. That Rory was considered to be a more interested listener was expected as female teachers tend to be perceived as better listeners [10]. These results confirm that the students were at least partly influenced by gender stereotypes in their evaluation of Rory and Rico.

After the experiment the design was revealed during a debriefing, with the aim to use the data as a starting point for discussions on gender stereotypes in the classroom and how these had influenced the students’ perceptions. Unfortunately, there were too many distractions during the experiment drawing students’ attention from the aim: Rory and Rico spent very little time with each group since “they” had to interact with all groups; the additional variable of an outside discussion partner took much attention, and finally students were focussing on the content since they had to write two graded reports. Many students claimed that they did not get a lasting impression of Rory and Rico, whose presence they experienced as peripheral. We thus conclude that whilst our results were partly in line with what we had expected, they did not cause the “aha-effect” we had hoped for. Letting morphed assistants partake during the entire discussion with each group would be a way around this problem.

### 2.4 The Lecture Model

During the project we were invited by one of our colleagues (Kristy Jauregi at Utrecht University, Holland) to give an online lecture on virtual worlds to her Master students in Intercultural Communication, studying a course on multilingualism and mediation. In the course, topics such as culture, identity, stereotypes, competences of the intercultural speaker and mediator are central. With the aim to demonstrate virtual world identity construction in a practical way, the online lecture, which was formally framed as a talk in SL on virtual worlds by a Swedish lecturer and his two PhD students (see Fig. 3), was projected to two groups of students (36 in all) in a lecture theatre.

![Fig. 3. The male lecturer character (left), with his female PhD student (middle) and male PhD student (right)](image-url)
In reality, the lecturer and the PhD students were the same person working from two computers using three avatars, with his un-morphed voice representing the lecturer, a female voice-morph representing the female PhD-student, and a voice-morph which made his voice deeper representing the male PhD-student. During the presentation, the lecturer introduced the subject of virtual worlds after which he handed over to “his PhD students” and logged out. In the first trial, they then each gave a 20-minute talk about ASSIS. After this, the lecturer returned and asked the students to rate the PhD students on the attributes: likeability and intelligence, using a 6-point Likert scale. The ratings were then immediately calculated and the experimental design was revealed. Students were also asked if they suspected that voice-morphing had been going on, after all, it was the topic of the lecture. This was followed by a discussion of the results and what they revealed about the groups’ stereotypical views on males and females.

The first group that was given the lecture strongly suspected that some form of voice-morphing was taking place (13/20) and hence these results were discarded. In the second lecture, we modified the design so that instead of taking two distinct turns, the “PhD students” gave the lecture together in a more conversational fashion, sometimes commenting on each other and asking questions. This was made possible by wearing two head-sets simultaneously and alternately muting the microphone on one head-set depending on which avatar was supposedly speaking. In this second group no one suspected that the doctoral students were the same person (the lecturer), and there was a significant difference between how the students evaluated the male and the female PhD avatars. The male was evaluated as slightly more intelligent (p= 0.07 using a t-test), while the female was deemed as significantly more likeable (p= 0.001 using a t-test).

The most favourable result, however, were the responses to the question of what they had learnt, posed in the post-event survey:

- “I learned how easy it was to influence people’s thoughts on somebody’s identity/personality […] It creates a whole new look on how we judge people by looks and gender!”
- “I think it’s very interesting how male and female can be so different even though they are the ‘same’ person.”
- “Yes, I learned that even though I think gender isn’t important in the vision you have of a person it plays a big role in your valuation of a person, […] in the real world too I guess.”
- I think most of us learned that our judgements […] were mostly influenced based on exterior features and voice rather than the information that they gave to us. I think it brought some kind of awareness that you have to look further than only the exterior of a person.

3. Concluding remarks
While we see great potentials in using SL to raise language awareness in relation to gender, we also encountered some problems in the development of our models. For example, the relatively poor quality of the female-to-male voice-morphs in SL hindered us from fully exploring the full potential of some of our designs. A way around this problem would be to use voice-morphing tools of better quality outside SL. We were also struck by some of the ethical dilemmas our experiments presented that we had not fully contemplated prior to the project. We thus see the future need to carefully consider all possibilities before embarking on identity manipulation, especially when students are involved. Finally we see great potential using virtual worlds in order to explore other variables that may affect listener perception. Age, outward appearances and ethnic identity are examples that we look forward to investigating in the future.
References


