Exploring visual attentional shifts
of language learners of Japanese

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Abstract. Familiarity with the television set as a principal news and entertainment medium has allowed for a smooth transition of television programmes into the language classroom (Mishan, 2005). However, in the technology-rich environment we live in today, access to television programmes in foreign languages is not restricted to class. A good understanding of the reception of such authentic material can help inform its appropriate use by learners in different contexts. This study explores the reception of a Japanese variety show that features same-language text on screen by language learners of Japanese and native Japanese speakers through the use of eye-tracking technology and questionnaires (Sikkema, 2017). This paper reports on a section of the findings from the eye-tracking data analysis. Following a brief description of the research project, this paper describes the distribution of visual attention between different stimuli in the video stimulus by taking a closer look at participants' fixation count and total fixation duration.

Keywords: Japanese language learning, visual attention, multimodality, eye-tracking.

1.   Introduction

Recent studies in Synchronous Computer-Mediated Communication (SCMC) have recognised the benefits of using eye-tracking technology to study online language learning behaviour, albeit in combination with qualitative methods and as part of Mixed Methods Research (MMR) designs (O'Rourke, 2012; Stickler & Shi, 2017; Stickler, Smith, & Shi, 2016). Such a combination of methods not only facilitates the triangulation of data sets; it also allows for studies to incorporate participants' own perspectives into the interpretation of the data.

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This study employs an MMR design to explore online viewing behaviour of Japanese Language Learners (JLLs) during an experimental task in which participants watch an excerpt of a Japanese variety show that features same-language text on screen (Sikkema, 2017). The main purpose of this research is to examine how JLLs at different stages of their language study receive such multimodal material to inform its appropriate use by learners. It implements eye-tracking technology in order to gain a better understanding of the distribution of subjects' visual attention between stimuli that have the potential to contribute to learners' understanding of the television programme. Questionnaires are used to gain insights into participants' multimodal perception and attitudes towards using such audiovisuals as language learning material.

This paper reports on a section of the findings from the eye-tracking data and discusses what types of stimuli participants visually attend to the most. Results on fixation count and total fixation duration are examined for four participant groups; three consist of JLLs while the fourth group comprises of native Japanese speakers as a point of reference for the analysis of learners' behaviour (Sikkema, 2017, p. 291).

This research is carried out as part of a larger project run at Dublin City University (DCU) that focusses on the reception of the type of same-language text on screen featured in Japanese variety shows (Sikkema, 2017, p. 290).

2.   Method

Data has been analysed from 43 JLLs and five native Japanese speakers who took part in this research on a voluntary basis. For the purposes of this study, the JLLs were organised into three groups based on whether they had been on exchange to Japan at the time of data collection. Seventeen learners who had never been on exchange to Japan formed *Group 1: pre-exchange*. *Group 2: exchange* comprised of 20 participants who were on exchange in Japan for approximately three-and-a-half months at the time of data collection. The remaining six participants were in *Group 3: post-exchange* as they had spent a full year on exchange in Japan prior to their experiment sessions. The native Japanese speakers formed the *Reference Group*. The data sets consist of gaze data recorded with a Tobii X2-60 eye-tracker device, open and closed-ended responses collected through a pre-task and post-task questionnaire, and field notes taken during experiment sessions.

The results have been generated with dynamic Areas Of Interest (AOIs). These were created in the video excerpt and aligned with particular stimuli on the screen

in order to extract gaze data associated with these stimuli. The AOIs have been defined with the help of data visualisation tools in the eye-tracking software which showed that faces of people appearing on the show and same-language text on screen that visually represent the dialogue gathered the most visual attention from all participant groups. The charts therefore display the total number and duration of fixations allocated to areas of the screen for *faces*, *same-language text on screen* that show speech, and *other stimuli*. The default settings of the Velocity-Threshold Identification (I-VT) filter[2] were used to generate these numbers.

3.   Results

Figure 1 presents the total number of fixations that landed on faces, same-language text on screen, and other stimuli for each participant group. It illustrates that faces and same-language text on screen gathered the most visual attention for all groups.

Figure 1.   Total number of fixations (sum) per participant group
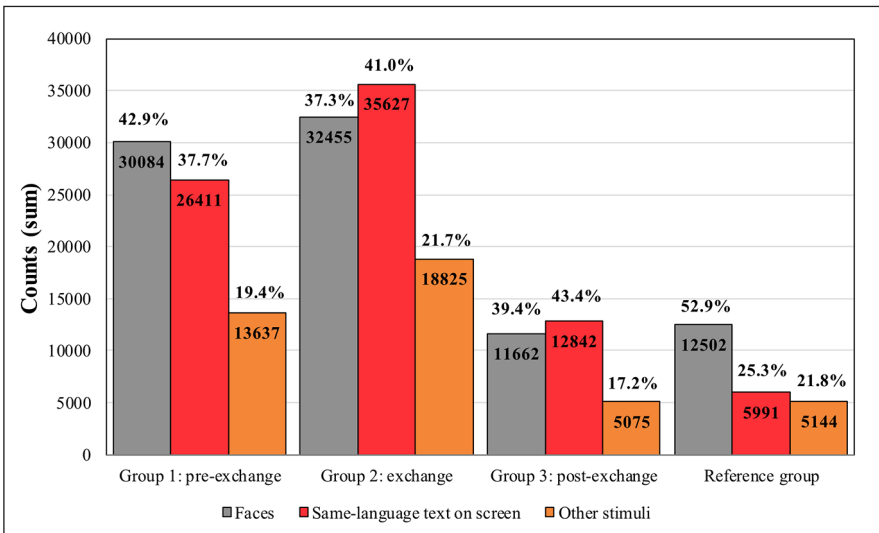
The proportions of the total number of times participants fixated on these particular stimuli were in respective group order: 80.6%, 78.3%, 82.8%, and 78.2%. When

taking a closer look at the proportions for each of the two most attention-grabbing stimuli, it appeared that participants in Group 1 (pre-exchange) and the Reference Group looked more often at faces while Group 2 (exchange) and Group 3 (post-exchange) showed a tendency to look more at same-language text on screen. The proportions for the three learner participant groups seem to be more evenly distributed between faces and same-language text on screen while the Reference Group appeared to have a more even distribution between same-language text on screen and other stimuli.

Figure 2 builds further on these findings and presents the total duration of all fixations combined for faces, same-language text on screen, and other stimuli for each participant group. It shows that the earlier identified attention-grabbers did not only gather the most visual attention, but were also fixated on the longest for all participant groups.

Figure 2.   Total fixation duration (sum) in seconds per participant group
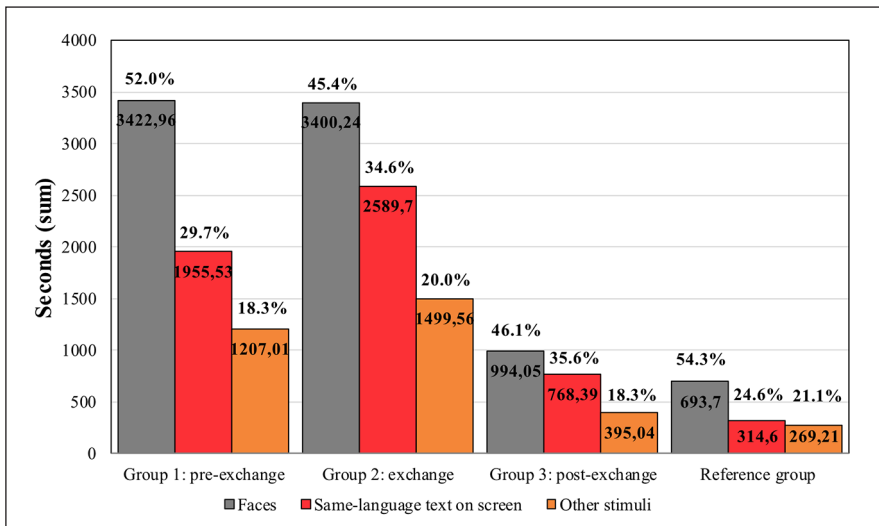
The proportions of the total duration of fixations in seconds that participants spent looking at faces and same-language text on screen are in respective group order: 81.7%, 80%, 81.7%, and 78.9%. As opposed to the previous chart, all participant groups spent most time looking at areas on the screen where faces of people appear on the variety show with the largest ratios for Group 1 (pre-exchange) and the Reference Group.

4.   Discussion

These results are in line with observations of Stickler and Shi (2017) in their study on online communication through a conferencing platform. Their findings showed that learners of the Chinese language looked most (70%) at content areas of the screen in which language teaching content is presented, followed with 20% of fixations directed towards social areas of the screen featuring the presence of participants (Stickler & Shi, 2017, p. 169). In addition, findings from the study of O'Hagan and Sasamoto (2016) on native Japanese speakers' visual attention when watching a Japanese variety show demonstrated that faces attracted the most fixations from participants (pp. 47-50). This relates to the findings of this research, although it is suggested here that JLLs visually attend faces and same-language text on screen in a rather different way from native Japanese speakers.

5.   Conclusion

This paper demonstrated that faces of people appearing on the show and same-language text on screen that represents the spoken dialogue gather the most visual attention from JLLs and native Japanese speakers in this study. Although participants in Group 2 (exchange) and Group 3 (post-exchange) look more often at same-language text on screen when compared to Group 1 (pre-exchange) and the Reference Group, the duration of all fixations together illustrate that faces of people on the show were fixated on the longest for all participant groups. These findings suggest that learners visually attend verbal stimuli more than native speakers and that social, non-verbal stimuli play a large role in participants' viewing experience.

6.   Acknowledgements

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