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Supporting non-native English speakers' listening

- Exploring display methods for automated captions -

Abstract

Multiple technologies are available to support non-native English speakers (NNS), such as machine translation or displaying captions generated by automated speech recognition. However, simply making these technologies available does not provide effective support for NNS. This research focuses on **NNS listening support**, where we investigated the **effects of displaying automated captions on listening comprehension**. Our results suggest that the **method of utilizing automated captions depends on NNS's characteristics**. Secondly, problems that NNS face during listening can be broadly divided into **problems that can be resolved by displaying automated captions**, and problems that cannot be solved but **also increase the user's workload when they look at the automated captions**. These results suggest that the support method should be changed depending on NNS user's characteristics as well as the types of listening problems.

Research Questions

- 1) How do NNSs **use** automated captions?
- 2) What are the **advantages and disadvantages** of using automated captions?

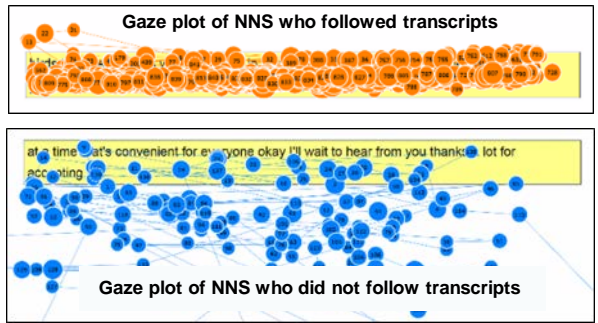
Method

Participants: 20 NNSs
Conditions: audio only vs. audio+captions (eye-tracking)
 Captions are generated by Google speech recognition API
Procedure:

- 1) **Listening Task:** participants **pressed a button** to indicate a comprehension problem
- 2) **In-depth Interview:** participants explained the **types** of problems they faced and **how long** they persisted

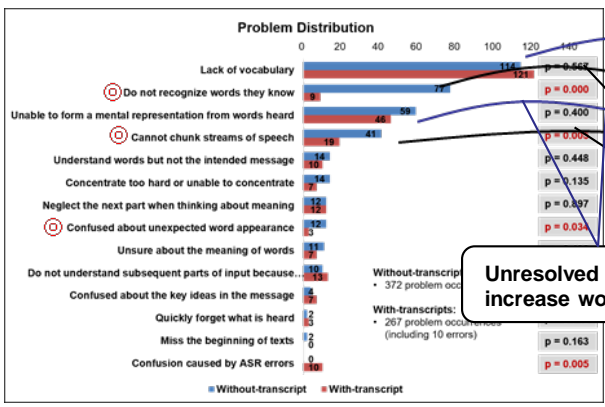
Results

How NNSs' Listening Experiences Changed

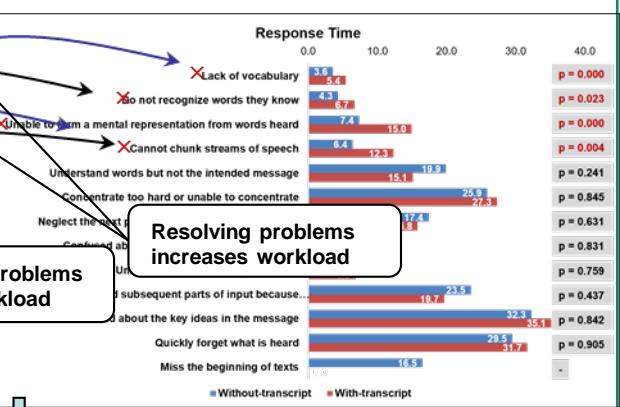


Lack of time/cognitive resources to fully exploit captions

Advantage: Problems Solved by Automated Captions



Disadvantage: Increased Workload



Unresolved problems increase workload

Resolving problems increases workload

Change support type depending on problem type

References

[1] X. Cao, N. Yamashita, T. Ishida, "How Non-Native Speakers Perceive Listening Comprehension Problems: Implications for Adaptive Support Technologies," in Proc. the 8th International Conference on Collaboration Technologies (CollabTech 2016), pp. 89–104, Best Paper Award, 2016.
 [2] X. Cao, N. Yamashita, T. Ishida, "Investigating the Impact of Automated Transcripts on Non-native Speakers' Listening Comprehension," in Proc. the 18th ACM International Conference on Multimodal Interaction (ICMI 2016), pp. 121–128, ACM, 2016.

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