PHONETIC DISCRIMINATION AND NON-NATIVE SPOKEN-WORD RECOGNITION

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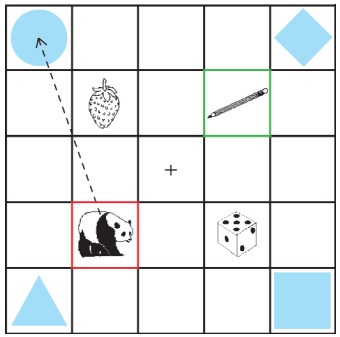
INTRODUCTION

Words sharing initial segments are briefly activated during the recognition of spoken words. For example, given the input *panda*, English listeners will initially activate *panda* and *panic* among other candidates, which will then compete against each other for recognition. However, in a non-native language, listeners may be less accurate in processing phonemes. This may in turn influence competitor activation in nonnative listening.

QUESTION

Do non-native listeners consider candidates for spoken-word recognition that would not feature in the native listeners' set of candidate words?



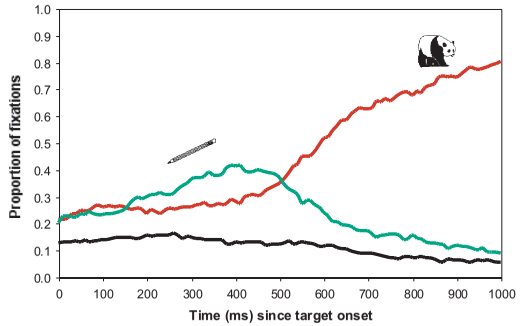
"Click on the panda. Now put it on top of the circle."

EYE-TRACKING PARADIGM

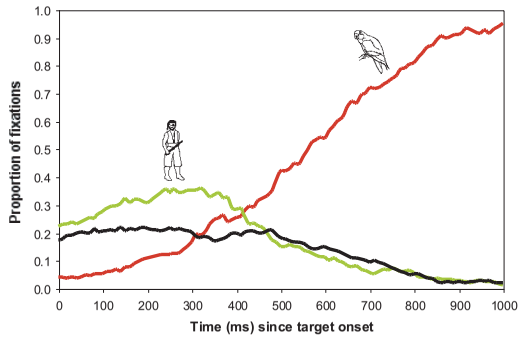
Participants' eye movements are monitored while they listen to spoken sentences. On a computer screen they click on pictures of objects whose names are mentioned in the sentence. The probability of fixating a picture is determined by lexical activation of the name of the picture. Eye tracking provides a continuous measure of word-activation level, since the process of comprehension can be monitored as spoken language unfolds over time.

It takes about 200 ms to program a saccade. When this latency is taken into account, fixation probabilities in the eye-tracking paradigm are closely time-locked to presented speech.

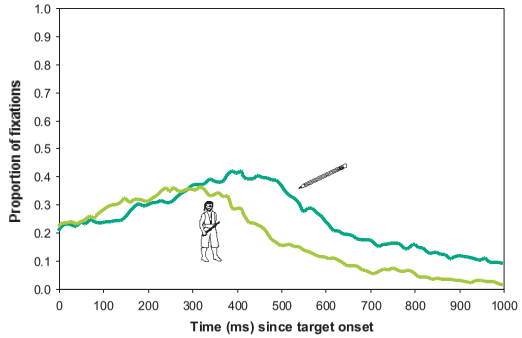
Indistinct vowels for Dutch listeners



Distinct vowels for Dutch listeners



Distinct vs. indistinct competitor activation



EXPERIMENT

20 Dutch participants followed spoken instructions in English to click on pictures of objects using a computer mouse. A target picture (e.g., the picture of a panda) was always presented along with distractor pictures.

The name of a distractor picture either shared initial segments with the name of the target picture (e.g., target panda, /pændə/ and competitor pencil, /pɛnsl) or not (e.g., strawberry or dice). Half of the target-competitor pairs contained English vowels that are often confused by Dutch listeners (e.g., /æ/ and /ɛ/ as in panda-pencil), the other half contained vowels that are unlikely to be confused (e.g., /æ/ and /aɪ/ as in parrot-pirate).

	indistinct vowels	distinct vowels
target:	**panda** /pændə/	**parrot** /pærət/
distractor:	**pencil** /pɛnsl/	**pirate** /paɪrət/
unrelated distractor:	**strawberry** /strɔːbəri/	**key** /kiː/
	dice /daɪs/	**flower** /flaʊə/

Dutch listeners fixated distractor pictures with confusable English vowels longer than distractor pictures with distinct vowels. This demonstrates that the sensitivity of nonnative listeners to phonetic contrasts can result in spurious competitors that should not be activated for native listeners.

CONCLUSION

Insufficiently precise phonetic discrimination by non-native listeners leads to the spurious activation of lexical competitors that would not feature in the native listeners' set of candidate words.

Non-native spoken-word recognition is impaired by phonetic discrimination behavior that is more appropriate to the native than to the non-native phoneme inventory.