

RESEARCH DESIGN AND METHODS

Participants

Forty-two young adults (18–30 years old) participated in the study. They were recruited from the University of Toronto and the University of Waterloo. All participants were screened for hearing impairment and had normal hearing. The study was approved by the ethics committees at the University of Toronto and the University of Waterloo. Participants received a monetary reward for their participation.

Apparatus

Participants were seated in a sound-attenuated chamber. They wore headphones and viewed the stimuli on a computer monitor. The stimuli were presented using a personal computer (Dell) running MATLAB (MathWorks) and Psychtoolbox (Brain Research Associates, Inc.).

Procedure

Participants were familiarized with the task before the experiment. They were then randomly assigned to one of two groups: the control group and the experimental group. The control group received a baseline condition, and the experimental group received a condition with a specific manipulation.

The baseline condition consisted of a series of trials. Each trial started with a fixation cross on the screen for 200 ms. This was followed by a stimulus presentation phase. The stimulus was a sequence of three tones. The first tone was a reference tone, and the second and third tones were comparison tones.

The experimental group received a condition where the second tone was replaced by a complex tone. This complex tone was a superposition of the reference tone and a second tone. The amplitude of the second tone was varied across trials to create different levels of complexity.

After each trial, participants were asked to judge whether the second tone was more similar to the first tone or the third tone. They responded by pressing a key on the keyboard. The response was recorded, and the next trial began.

Results

The results of the experiment are shown in Figure 1. The control group showed a high level of accuracy in their judgments. The experimental group showed a lower level of accuracy, particularly for the more complex tones.

The decrease in accuracy for the experimental group was more pronounced for the more complex tones. This suggests that the manipulation of the second tone in the experimental condition affected the participants' ability to make accurate judgments.

The results also show that the control group's performance was relatively stable across different levels of complexity. This indicates that the baseline condition did not introduce any significant biases or effects.

The overall findings of the study suggest that the manipulation of the second tone in the experimental condition had a significant effect on the participants' judgments. This effect was more pronounced for the more complex tones, indicating that the complexity of the tones played a role in the results.

The results also suggest that the control group's performance was relatively stable across different levels of complexity. This indicates that the baseline condition did not introduce any significant biases or effects.

The overall findings of the study suggest that the manipulation of the second tone in the experimental condition had a significant effect on the participants' judgments. This effect was more pronounced for the more complex tones, indicating that the complexity of the tones played a role in the results.