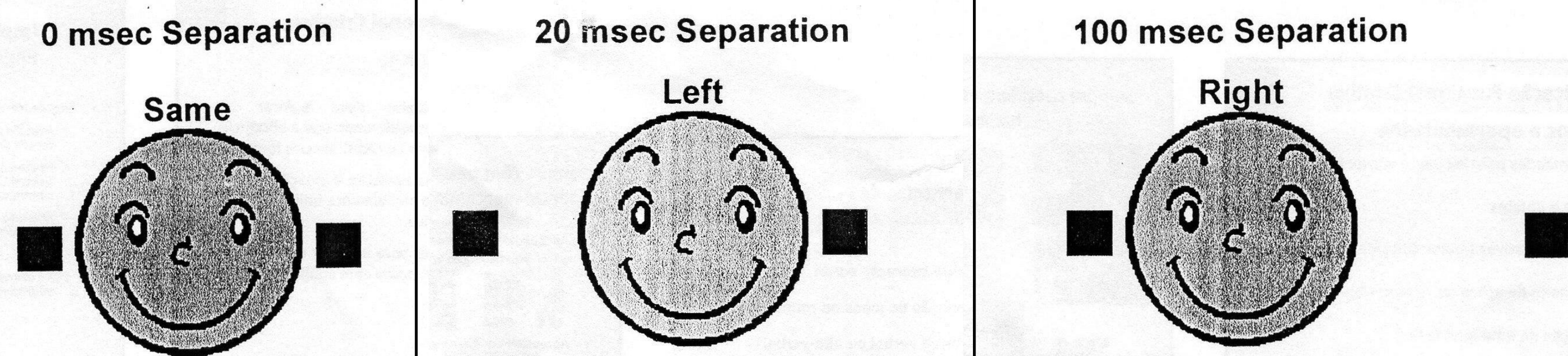


## Introduction

The Central Auditory Nervous System (CANS) has several functions and abilities, one of these abilities is sound localization. Among the types of localization, the focus of the present study was lateralization, that is, discrimination of sounds, specifically on the right or left ear. No available clinic test using non-verbal stimuli through headphones presentation have been found in the literature that investigate this auditory ability in milliseconds.

Prof. Frank Musiek (University of Arizona) and Prof. Eliane Schochat (University of São Paulo) developed the Click Ordering Lateralization Test (COLT) with the aim of verifying the minimum time necessary for the CANS to be able to lateralize the sound. Therefore, the objective of this research was to determine a standard of normality, based on typical young adults, for the COLT.

Trial Example:



## Methods and materials

The COLT consists of two lists (two tracks), with 54 items and 9 different interaural intervals, in milliseconds. The stimuli consist of noise bursts, presented at an intensity of 50dB NS and the interaural time differences between the presentation of the noise bursts vary between 0, 60, 90, 120, 150, 170, 190, 210 e 230ms. The test was administered to 58 subjects with normal hearing, who passed the DDT screening and were divided into two groups: A and B. To avoid the learning effect, in group A, track 2 consisted of the first presentation, while, in group B, the testing started with track 1.

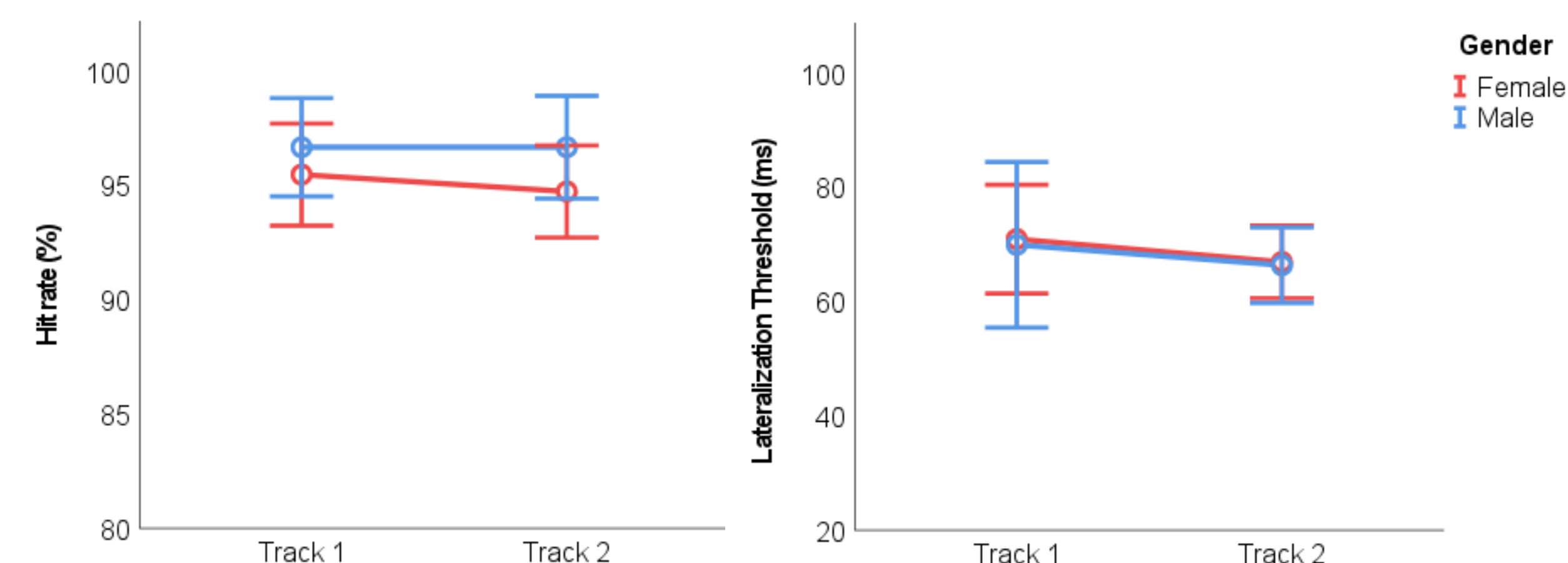
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## Results

In general, we observed a high performance of the sample studied in the test, with an average number of correct answers above 94% and an average interval detection limit of less than 72 ms for all test ranges for individuals of both genders (Figures 1 and 2).

In track 01, 86% of the sample had a hit percentage above 90%, while 84% of the sample had a hit percentage above 90% for track 02. Hit rates of 100% were found in 39,66 and 41.38% of the sample in tracks 01 and 02, respectively. Regarding interval detection limits, 84.48% of the sample obtained thresholds of 60 ms in both tracks. There were no statistically significant effects of the gender, track, or test start order on the percentage of correct answers and lateralization threshold ( $F \geq 1,594$ ,  $p \geq 0,212$ ).



Figures 1 and 2. Mean hit rate and lateralization threshold on COLT according to gender and track.

## Conclusion

The average number of correct answers for COLT for the normal-hearing adults was 95%. The lowest interaural interval threshold for the studied population was 170 ms (with 99.72% correct answers). There was no statistically significant difference between test tracks and between groups (organized according to the testing order), which indicates an equivalence between tracks. This fact is quite important, as it facilitates reevaluation situations, in addition to psychometric equivalence between the ranges. Furthermore, according to a recent study, the COLT is very reliable in test-retest condition, showed to be a promising tool to be part of the CAPD test battery evaluation.