

## Introduction

Early work on selective attention used auditory-based tasks (e.g., dichotic listening) to better understand capacity limitations and individual differences.

However, reliably measuring differences in attention control has posed a challenge for the field, and most tasks are based in the visual modality.

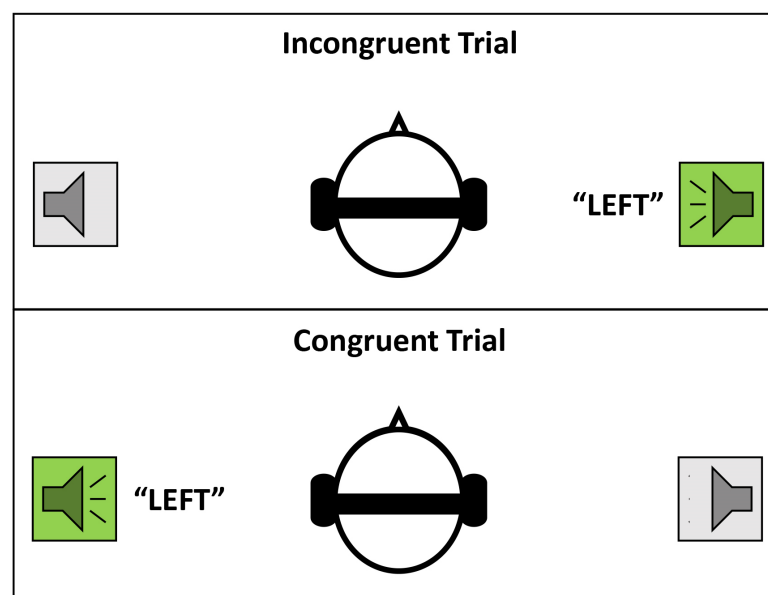
We developed three efficient auditory tests of attention control to shed light on modality effects: Auditory Flanker, Auditory Stroop, and Auditory Simon.

An adaptive response deadline accounts for speed-accuracy tradeoffs.

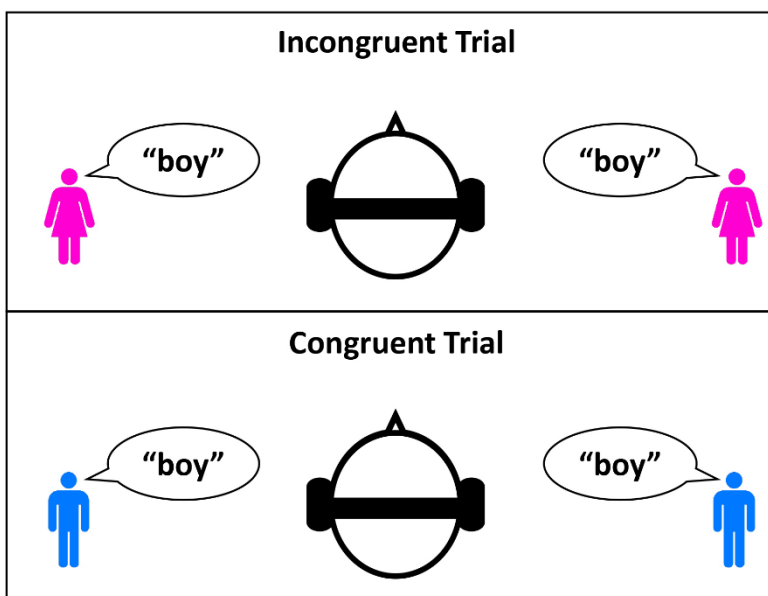
We tested the generality of attention control using measures of visual attention control, processing speed, multitasking, and dichotic listening.

## Method

300+ subjects completed the three Auditory Conflict Tasks of attention control:

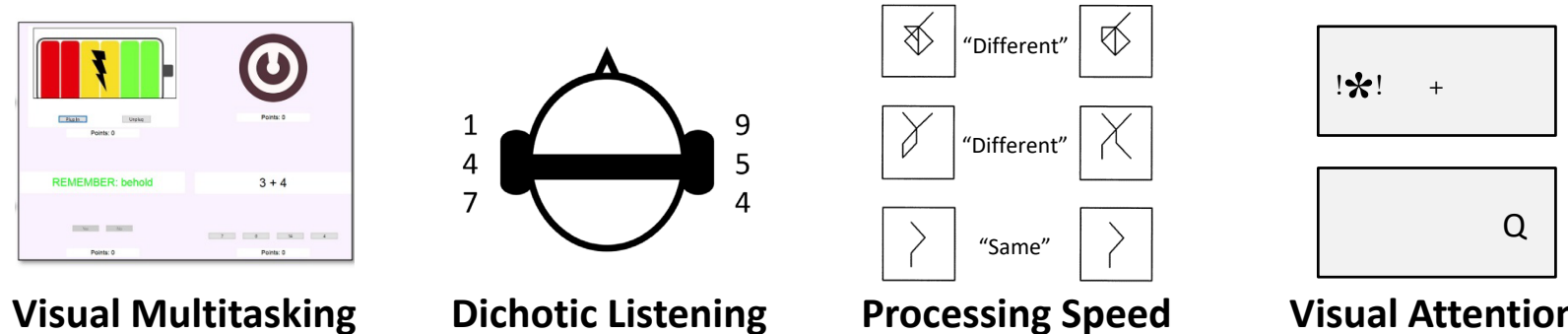


**Auditory Simon:** Indicate which ear received auditory input while ignoring the meaning of the word.



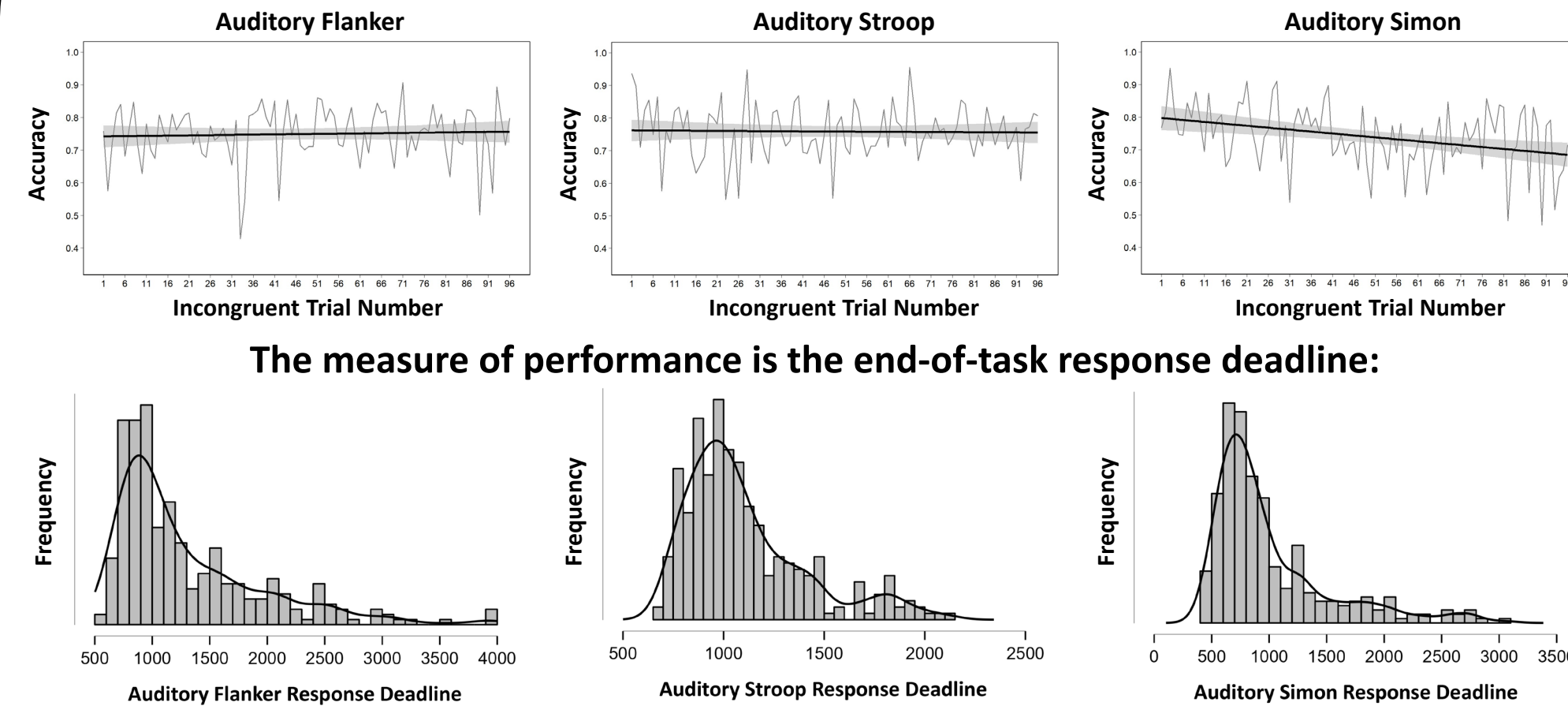
**Auditory Stroop:** Indicate whether the word refers to a male or a female while ignoring the pitch of the speaker's voice.

Subjects completed many other cognitive ability tests over five 2.5 hour sessions:



## Effectiveness of the Adaptive Response Deadline

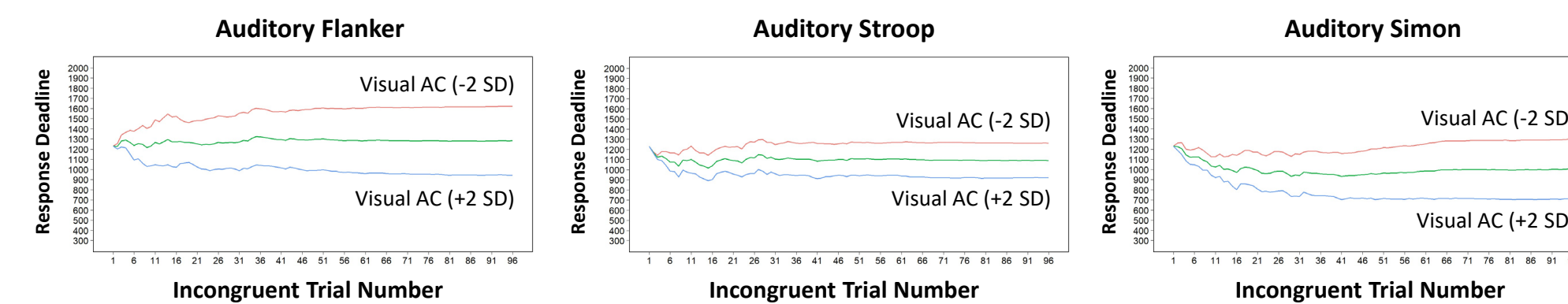
The adaptive response deadline held accuracy rates on incongruent trials at 75%:



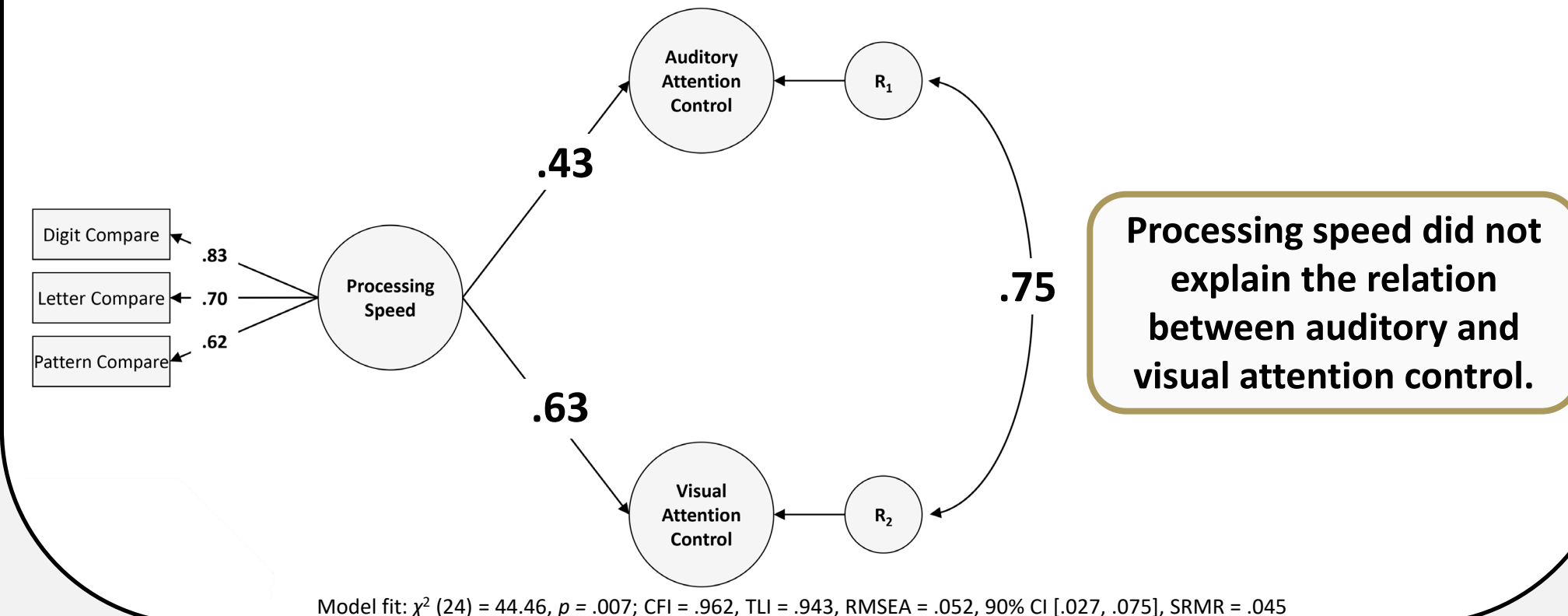
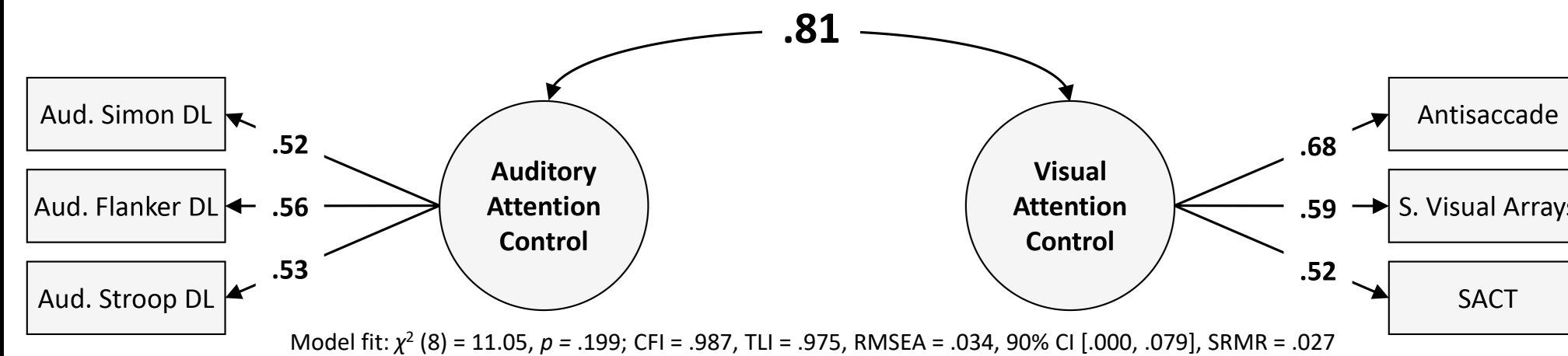
The measure of performance is the end-of-task response deadline:

## Construct Validity: Auditory and Visual Attention Control

Visual attention control predicted performance on the Auditory Conflict Tasks:



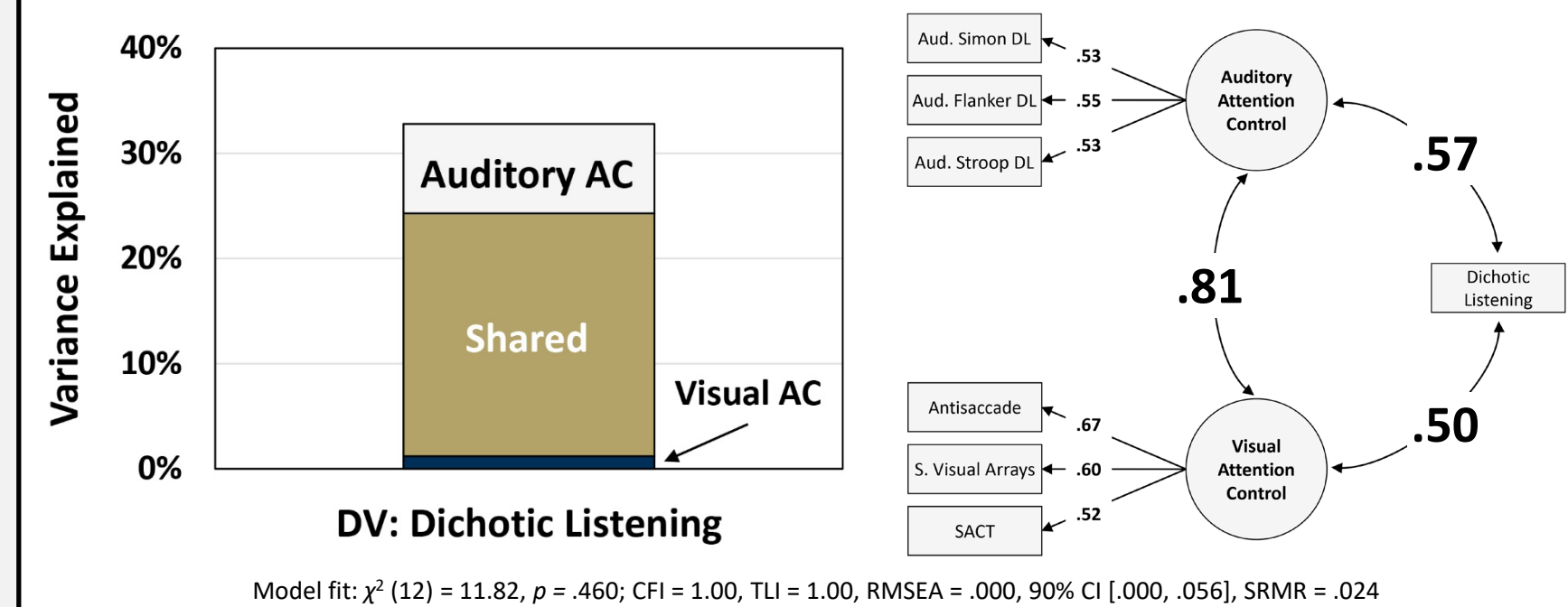
Auditory attention control measures loaded highly on a latent factor, which correlated  $r = .81$  with visual attention control ( $R^2 = 66\%$ ).



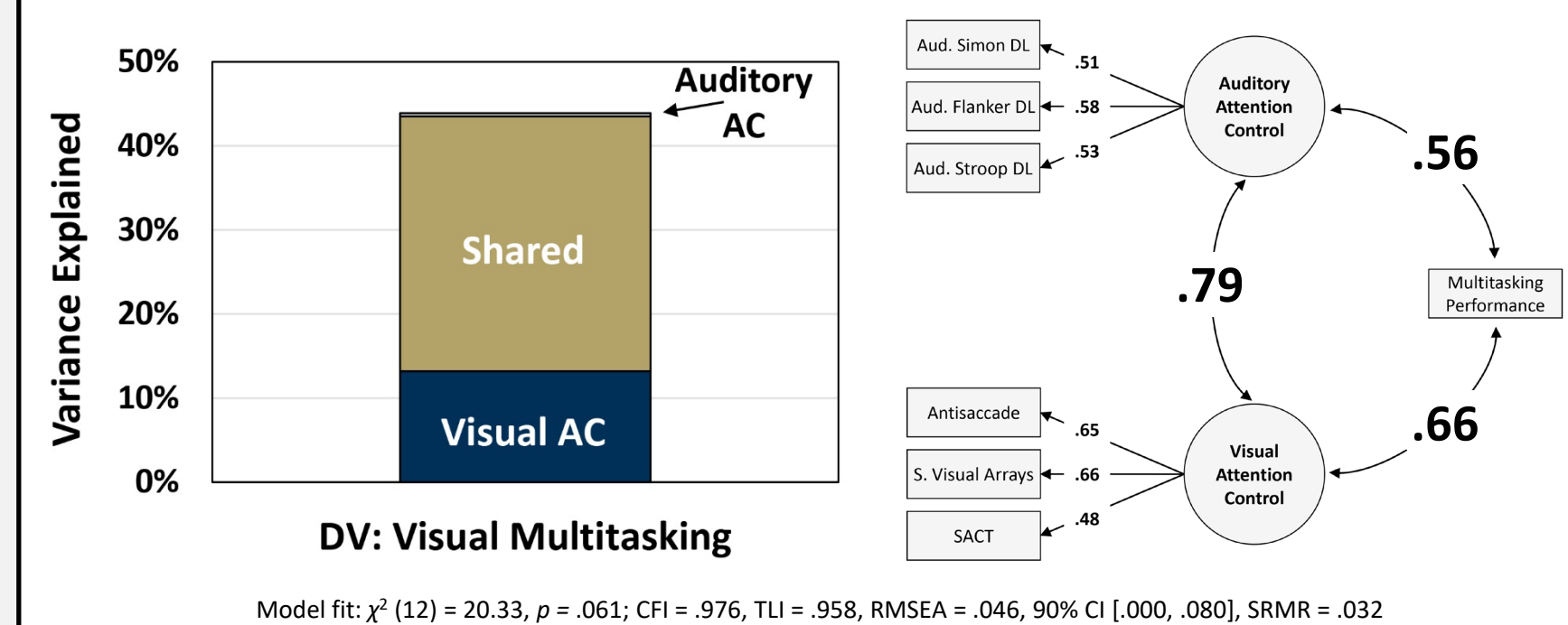
Processing speed did not explain the relation between auditory and visual attention control.

## Modality-Specific and Modality-General Effects

Auditory and visual attention control correlated with dichotic listening, but only auditory attention control explained significant unique variance.



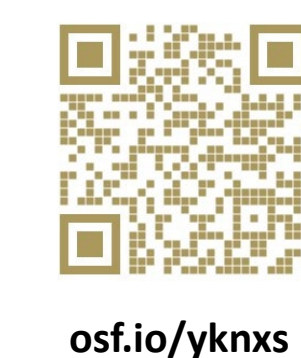
Auditory and visual attention control correlated with visual multitasking, but only visual attention control explained significant unique variance.



## Conclusion

1. Auditory and visual attention control factors were strongly correlated ( $r = .81$ ), even after controlling for processing speed ( $r = .75$ ).
2. Modality-specific attention control factors accounted for significant unique variance in modality-matched criterion measures.
3. That said, a majority of the explained variance was modality-general.
4. These results suggest an interplay between modality-general attention control and modality-specific processing.

## Pre-Print



## Personal Site



## Task Downloads

