Cross-modal ratio abstraction in children

Reem Tawfik
University of Waterloo, Waterloo, Ontario, Canada

Katherine White
University of Waterloo, Waterloo, Ontario, Canada

Stephanie Denison
University of Waterloo , Waterloo, Ontario, Canada

Abstract

In two experiments, we tested whether pre-schoolers can extract proportional information in the auditory modality and match it to a visual display. We familiarized 240 4-, 5-, and 6-year-olds to a 2-minute stream of dog barks and frog croaks in a 4:1 ratio. In a forced-choice paradigm, we then presented a visual display of dogs and frogs (varying total number of objects in the display) in the target 4:1 ratio, against comparison ratios of 1:4, 2:1, 1:1, and 6:1. Children correctly chose the matching 4:1 visual display over the 1:4 and 6:1 displays at above-chance rates regardless of absolute number, but only showed a significant preference for the 4:1 display over 2:1 and 1:1 displays when the number of objects in the display was large. These findings provide preliminary support for cross-modal ratio abstraction in preschoolers and suggest that the absolute number of items in a display impacts childrens performance.