

Technical University of Denmark



Adapting the Theory of Visual Attention (TVA) to model auditory attention

Roberts, Katherine L.; Andersen, Tobias; Kyllingsbæk, Søren ; Lamberts, Koen

Publication date:
2014

[Link back to DTU Orbit](#)

Citation (APA):

Roberts, K. L., Andersen, T., Kyllingsbæk, S., & Lamberts, K. (2014). Adapting the Theory of Visual Attention (TVA) to model auditory attention. Abstract from London Meeting of the Experimental Psychology Society, London, United Kingdom.

DTU Library
Technical Information Center of Denmark

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Adapting the Theory of Visual Attention (TVA) to model auditory attention.

Katherine L Roberts¹, Tobias Andersen², Søren Kyllingsbæk³, and Koen Lamberts¹.

1. University of Warwick.
 2. Technical University of Denmark.
 3. University of Copenhagen.
- k.roberts@warwick.ac.uk

Mathematical and computational models have provided useful insights into normal and impaired visual attention, but less progress has been made in modelling auditory attention. We are developing a Theory of Auditory Attention (TAA), based on an influential visual model, the Theory of Visual Attention (TVA). We report that TVA provides a good fit to auditory data when the stimuli are closely matched to those used in visual studies. In the basic visual TVA task, participants view a brief display of letters and are asked to report either all of the letters (whole report) or a subset of letters (e.g., the red letters; partial report). For the auditory task, we used dichotic, concurrently-presented synthesised vowels. These auditory stimuli are closely-matched to the visual stimuli, in that they are simultaneous, separated in space, and unchanging over time. We found that TVA could successfully model the auditory data, producing good estimates of the rate at which information is encoded (C), the minimum exposure duration required for processing to begin (t_0), and the relative attentional weight to targets versus distractors (α). Future work will address the issue of target-distractor confusion, and extend the model to accommodate stimuli that vary in their spectro-temporal profile.

1. Bundesen, C. (1990). A theory of visual attention. *Psychological Review*, 97, 523-547.