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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

There is strong evidence that objects presented simultaneously in a visual array have their component features initially processed in parallel, then subsequently combined to form the perceived objects. The evidence is in the form of the nature and frequency of perceptual errors and the pattern of reaction times for recognition of presented features and objects. Continuing project research is providing equivalent evidence which demonstrates, for the first time, similar analyses and perceptual processing for auditory events. An important side benefit to the research is the validation of new methods to define the elemental features for the perception of important classes of auditory stimuli. In addition to training future scientists, long-term benefits of the research are (1) in defining important, moderate- and higher-level limits (e.g., beyond masking or sensory acuity) to accurately and rapidly perceiving auditory events (and the sources of the events) under stressful, noisy conditions, and (2) in defining effective strategies for reliably circumventing those newly-identified limits.

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PERCEPTION OF AUDITORY EVENTS: ATTENTIONAL LIMITATIONS

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26 July 1994

Annual Technical Report for Period 1 July 1993 - 30 June 1994

Prepared for

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STATUS OF RESEARCH

There is strong evidence that objects presented simultaneously in a visual array have their component features initially processed in parallel, then subsequently combined to form the perceived objects. The evidence is in the form of the nature and incidence of perceptual errors and the pattern of reaction times for recognition of presented features and objects. Continuing project research is providing equivalent evidence which demonstrates, for the first time, similar analyses and perceptual processing for auditory events. An important side benefit to the research is the validation of new methods to define the elemental features for the perception of important classes of auditory stimuli. In addition to training future scientists, long-term benefits of the research are (1) in defining important, moderate- and higher-level limits (e.g., beyond masking or sensory acuity) to accurately and rapidly perceiving auditory events (and the sources of the events) under stressful, noisy conditions, and (2) in defining effective strategies for reliably circumventing those newly-identified limits.

WRITTEN PUBLICATIONS

A manuscript describing research completed to date should be completed by the end of this summer and will be submitted for scientific peer review. The citation for this manuscript is provided immediately below. By the end of 1994 there will be a second manuscript based upon data collected earlier this year.

Hall, M.D., Pastore, R.E., Huang, W., and Acker, B. (1994). Perceptual evidence for auditory feature integration. Journal of Experimental Psychology: Human Perception & Performance. (To be submitted August, 1994).

PARTICIPATING PERSONNEL

Barbara Acker has been supported under the ASSERT proposal for the past year. Ms. Acker is completing her master's thesis and will be continuing to work toward the PhD.

Shannon Farrington was supported during the summer of 1993 while an undergraduate student at SUNY-Cortland. He is working on the project during the current summer as a graduate student at SUNY-Binghamton. Mr. Farrington currently is working toward his master's degree as an interim step toward earning the PhD.

Michael D. Hall is supported during the current summer under the ASSERT grant. Mr. Hall is completing his PhD and will be receiving post-doctoral training beginning this Fall at the University of Washington, Seattle.

Elizabeth Stocum, as an undergraduate, has been working on the project since January, 1994.

INTERACTIONS

A poster describing the research completed during the first portion of this grant period was presented at the annual meeting of the Psychonomic Society in Washington, DC in November, 1993. In addition, a portion of an invited address by the first author described some preliminary findings from this research project. Copies of both presentations were included in the December 1993 Interim Progress Report of the associated (parent) research grant F4960-93-1-0027. Citations for these presentations are:

Hall, M.D. and Pastore, R.E. (1993). An auditory analogue to feature integration. Psychonomic Society, Washington, D.C., November 4, 1993 [Poster presentation].

Pastore, R.E. (1993). Implicit assumptions in modeling higher level auditory processes. Journal of the Acoustical Society of America, 93, 2307. [Abstract of invited paper].

CONSULTATIVE FUNCTIONS

In addition to the typical, ad hoc, service as a peer reviewer for scientific journals and granting agencies, the principal investigator is now a Consulting Editor for Perception & Psychophysics.

INVENTIONS

There were no inventions or patents stemming from the research effort.