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# Software Announcements

## VIAT: A Windows Program for Demonstrating Visual-Attention Effects

Visual phenomena have always attracted people's attention. Many of them, such as geometrical illusions, illusory aftereffects, color illusions, subjective contours, or Gestalt principles, are relatively easy to demonstrate in textbook figures (see, e.g., Shiffman, 1990). However, the situation is quite different for phenomena such as apparent movement and others, the demonstration of which require the rapid presentation of several stimuli. Such demonstrations are rather difficult to produce and are accomplished usually through the showing of movies. This is also the case for visual attention, where for the effects to show up, short stimulus presentation times and highly flexible stimulus conditions are essential. While research on attention was boosted by the emergence of computers, and several interesting visual-attention phenomena have recently been discovered (see, e.g., Treisman, 1986), it is hard to find tools for demonstrating them appropriately. Usually, one has to rely solely on textbook figures.

In order to provide such a tool, I have developed the program VIAT, aimed at demonstrating many interesting phenomena related to visual attention and preattentive processing. The phenomena comprise (1) pop-out in visual search for targets with attributes such as color, orientation (global orientation, local orientation contrast), certain forms and patterns, movement of luminance patterns, scene-based properties (shading, lighting, 3-D orientation); (2) no pop-out in visual search for movement of isoluminance patterns (needs 256-color video mode), conjunctions (of color and form, color and color); (3) texture segregation of regions whose elements differ in attributes such as color, orientation, orientation gradient, crossings, blob size, number of terminators, statistical properties; (4) color–word interference; and (5) negative priming.

Within each paradigm, one can display a new stimulus configuration by simply pushing a mouse button. This allows one to respond to a certain stimulus display by switching to a new one and to get an impression of the task difficulty. In the visual-search paradigm, for instance, one can repetitively switch to a new stimulus display as soon as one detects the target and thereby observe one's speed of responding. This procedure is sufficient to demonstrate, for example, search asymmetries for certain stimulus attributes—that is, response time differences between conditions in which the role of target and distractors are exchanged. Exchanging the role of target and distractors is accomplished by simply pushing another button.

Since most of the interesting effects can be demonstrated with this simple procedure, data collection is not provided by the program.

VIAT runs under the Windows 3.1 operating system and allows easy manipulation of a number of display parameters. For instance, for visual search one can choose the number of distractors, element size, and other parameters. It is also possible to import user-created bitmaps as distractors and targets. This property allows new stimuli to be tested quickly before one runs experiments with them.

Furthermore, the program allows the user to save the window area as a bitmap which can then be used, for example, to create transparencies. Finally, an on-line help file provides at least one reference for each demonstration, where details can be found.

**Availability**. The program VIAT is freeware and is located as a file (viat1.zip) on a World-Wide Web (www) page with URL: http:/www.tu-bs.de/institute/AllgPsych/viat.htm from where it can be downloaded.

### REFERENCES

SHIFFMAN, H. R. (1990). *Sensation and perception*. New York: Wiley.
TREISMAN, A. (1986, November). Features and objects in visual processing. *Scientific American*, **255**, 106-115.

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## Utilizing the Sound Blaster 16 Board for Dichotic Listening Studies

Dichotic listening (i.e., auditory stimuli with two competing stimuli simultaneously presented to the two ears; see Hugdahl, 1988) has been utilized in studies of attention since its introduction by Broadbent (1954), and in studes of cerebral lateralization of function since the original studies of Kimura (1961). A major limitation of this methodology has been the difficulty of generating stimuli. With the advent of computers with analog to digital (A/D) conversion capabilities, automated production of stimuli became feasible. Until recently, however, only a few research laboratories had actually acquired adequate hardware and then developed software specific to their hardware systems to sucessfully produce dichotic stimuli. A/D conversion boards were relatively expensive, and programming to control the boards for dichotic studies was not trivial. For example, dichotic listening generation for on-line research was originally imple-