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### Title

CARDIOVASCULAR INFLUENCE IN THE AUDITORY AEP

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Sandman, C. A., & Swanson, J.M. (University of California, Irvine, and Fairview Hospital, Costa Mesa) **Car-diovascular influence in the auditory AEP.** Previous re-ports indicated that perception and the AEP are influenced by phases of the cardiovascular system. The current tudy was conducted to examine the influence on the auditory AEP of stimuli synchronized with systolic and diastolic components. In addition a condition requir-ing subjects to attend to the stimulus was compared with a condition without these demands. Eighteen right-handed subjects were paid to participate in two balanced conditions. In one condition they were instructed to sit quietly and tones were pre ented through headphones. In the second condition they were told to count the tones and that a bonus would be given at the end of the session

for accurate reporting. EE Gs were recorded from  $C_3$  and  $C_4$  to linked mastoids and sampled online at 1 KHz. A tone (450Hz) was synchronized with either the diastolic or systolic component of the cephalic or digital pulse pressure wave. For each condition, 40 artifact-free re-sponses were collected.

Stimuli synchronized s with diastolic components re-sulted in significant enhancement ( $F(1/17) = 12.48$ ) of N1 when compared with stimuli triggered by systole. This effect was most apparent in the attend condition and in the right hemisphere. The latency of P1 was significantly ( $F(1/17) = 4.84$ ) shorter when stimuli were synchronized with diastole in the attend condition.

Subjects were separated into two groups; accurate and inaccurate responders. Consistent with the first analysis, N1 was augmented when stimuli were synchronized with diastole. Further, stimuli elicited by ystole yielded larger N2 responses in subjects correctly identifying the number of stimuli ( $F(1/11) = 5.19$ ). The latency of N1 was faster for subjects correctly reporting the number of presentations ( $F(1/12) = 7.48$ ).

The heart period was extended for the interval during stimulation when the stimuli were synchronized with systole. However, the heart period of the beat after stimula-tion was extended when the stimulus was synchronized with diastole. These findings are consistent with earlier reports indicating that transient fluctuations in the car-diovascular system have significant effects on the brain.