(1014)

Comparing Perceptual Adaptation With Naturally Produced Fast Speech and Time-Compressed Speech. IVY L. LIU, *University at Buffalo*, CONSTANCE M. CLARKE-DAVIDSON, *University of Alberta*, & PAUL A. LUCE, *University at Buffalo*—Our purpose was to explore perception of the dual components of speech produced at a fast rate: rate of information flow and phonetic differences from normal rate speech. Previous research has shown that time-compressed speech is easier to process than naturally produced fast speech, presumably due to less careful articulation in fast speech (Janse, 2004). Other research has demonstrated that listeners adapt within 10 sentences to time-compressed speech in which rate of information is increased but phonetic characteristics are unaltered (Dupoux & Green, 1997). We further explored differences in perception of time-compressed and natural fast speech in the context of perceptual adaptation. We compared adaptation to semantically anomalous sentences produced at a fast rate versus time-compressed from a normal rate. Initial results indicate a different pattern of adaptation to time-compressed and natural fast speech. Based on these findings, we consider the possibility that rate and phonetic adaptation are separate processes.

(1015)

Talker Specificity Effects in the Perception of Foreign-Accented Speech. CONOR T. McLENNAN, *Cleveland State University*, & JULIO GONZÁLEZ, *Universitat Jaume I*—Our research examines the circumstances in which talker variability affects spoken word perception. Based on previous time-course work, we hypothesized that talker specificity effects would be more robust when processing is relatively slow. We further hypothesized that spoken word processing would be significantly slower for listeners presented with foreign-accented speech than for listeners presented with speech produced by native speakers (and thus produced without a foreign accent). Consequently, we predicted that more robust talker specificity effects would be obtained for listeners presented with foreign-accented speech. Our results confirmed these hypotheses: Listeners presented with foreign-accented speech made lexical decision responses significantly more slowly than listeners presented with nonaccented speech. Crucially, talker specificity effects were only obtained for listeners presented with foreign-accented speech. The results are consistent with previous time-course findings, and add to our knowledge of the circumstances under which variability affects the perception of spoken words.

• Motor Control •

(1016)

Resistance to Slow Motion: Strategies for Moving Near Preferred Speeds. ROBRECHT P. R. D. van der WEL & DAVID A. ROSENBAUM, *Pennsylvania State University* (sponsored by David A. Rosenbaum)—A great deal of research has focused on how people respond to challenges of moving above preferred movement rates. Much less work has focused on how people respond to challenges of moving below preferred rates. To address this issue, we asked participants to move a dowel back and forth between two large targets in time with an auditory metronome whose rate varied from slow to fast. The kinematics of participants' movements at each of the driving frequencies revealed that participants did not simply scale their movement rates with driving frequency, but used one or more of the following strategies to avoid moving slowly: (1) increasing dwell times; (2) subdividing movement time intervals; and/or (3) increasing movement path length. The results suggested that the selection of movement speed is constrained at the low end of the frequency spectrum as well as at the high end.

(1017)

Response–Response Interference in Simultaneously Executed Oculomotor and Manual Responses. LYNN HUESTEGGE & IRING KOCH, *RWTH Aachen University*—Previous research on the coordination of eye and hand movements has mainly focused on grasping movements, implying experimental paradigms where subjects have to respond with both effector systems to a common target. In the present study, we analyze on a more general level to what extent concurrently performed eye and hand movements interact. For this purpose, in Experiment 1 subjects had to respond to an auditory stimulus with either a buttonpress (manual response), a saccade to a visual target (oculomotor response), or both. In Experiments 2 and 3, the difficulty of response selection in the manual task was increased: Subjects had to cross hands and respond to the auditory stimulus with either the spatially corresponding hand or button. The results indicate that both manual and oculomotor responses generally suffer from dual task conditions, and that oculomotor response times are severely prolonged with increasing difficulty of the simultaneous manual task.

(1018)

Effects of Perceived Distance, Time-To-Contact, and Momentum on Obstacle Avoidance: The Chainmail Experiment. HUGO BRUGGEMAN & WILLIAM H. WARREN, JR., *Brown University* (sponsored by William H. Warren, Jr.)—Is obstacle avoidance controlled by perceived distance or time-to-contact with an obstacle? To dissociate these hypotheses, we vary physical walking speed, body weight, and the visual gain in a virtual environment. Fajen and Warren's (*JEP:HPP*, 2003) locomotor dynamics model predicts later turns with higher walking speed or greater weight if distance is the control variable, but predicts the opposite if time-to-contact is the control variable. Participants walked to a goal around an obstacle whose position varied in an ambulatory virtual environment. Visual gain was manipulated by making the optical motion in the display slower, matched, or faster than actual walking speed. Body weight was increased by 25% using chainmail and weight vest. Model predictions are evaluated against the human data to empirically determine whether obstacle avoidance is controlled by distance or time-to-contact. The weight manipulation allows us to analyze the influence of momentum and to specify the model's damping term.

(1019)

Why Are Two Hands Better Than One? AMANDA L. STEWART, J. DEVIN McAULEY, & STEVEN M. SEUBERT, *Bowling Green State University* (sponsored by J. Devin McAuley)—Within-hand timing variability during bimanual rhythmic performance (e.g., repetitive tapping) is reduced in comparison with unimanual rhythmic performance (Helmuth & Ivry, 1996). To explain the bimanual advantage, Helmuth and Ivry proposed that in-phase bimanual movements involve averaging the output of two clocks prior to execution, whereas unimanual movements involve only a single clock. The present study replicated the bimanual advantage using methods that matched Helmuth and Ivry (1996; Experiment 1) but additionally found differences in the amount of temporal drift between the bimanual and unimanual conditions that were positively correlated with the magnitude of the bimanual advantage. The latter result suggests that the bimanual advantage is at least partially an artifact of Weber's law. Overall, the results of this study suggest that a comprehensive explanation of the bimanual timing advantage is multifaceted.

(1020)

Action Effects in the PRP Paradigm: Locating Processes of Intentional Response Coding. MARKO PAELECKE & WILFRIED KUNDE, *Martin Luther University Halle-Wittenburg*—Ideomotor theories of action control assume that actions are represented and accessed by codes of their sensorial effects. Consistent with this view, Hommel (1993) demonstrated that the direction of the Simon effect can be inverted by intentionally recoding the responses in terms of their response-incongruent action effects. In the present study, we examined the contribution of several dissociated processes to this inversion of the Simon effect. Participants made two choice reactions in response to stimuli presented in rapid succession at variable stimulus onset asynchronies