373 SIGNAL DETECTION ANALYSIS OF PAIN RESPONSIVITY IN RHESUS MONKEYS. Albert T. Kulics* and Charles G. Lineberry (SPON: K. Carlson) Dept. of Pharm., School of Med., Univ. of Pittsburgh, Pgh., Pa. 15261.

Reaction time data were obtained from rhesus monkeys taught to terminate repetitive bursts of noxious electrocutaneous stimuli. One hundred trials at each of two intensities were randomly presented daily. Differences in reaction time were greater or smaller on training days as a function of stimulus intensity differences. Reaction time data were treated as ratings of stimulus intensity according to assumptions of signal detection theory permitting daily construction of relative operating characteristic (ROC) functions for each monkey. This permitted estimates of stimulus sensitivity (d') and response bias (β) to be derived from the reaction time response distributions. The ROC functions met assumptions of the signal detection model. For a particular pair of stimulus intensities, daily estimates of d' were stable and reliable; unaffected by demonstrably large between-day differences in β. Estimates of d' covaried predictably when stimulus intensity differences were made larger or smaller for a particular monkey. Further, d' values were virtually identical between monkeys for the same stimulus intensity differences. These data suggest that responses to noxious electrocutaneous stimuli may be used to study underlying perceptual determinants of behavior by means of signal detection theory in much the same fashion as current research in vision and audition with animals and humans. Finally, this has permitted the development of a model for the study of pain perception in monkeys which is analogous to the signal detection model used for recent studies of pain perception in humans.

374 DOES THE MULLER-LYER ILLUSION HAVE LATERALIZING SIGNIFICANCE? Santosh Kumar*, Joseph E. Bogen. Ross-Loos Medical Group. Los Angeles 90017

There is emerging evidence that field-reliance and field-independence are associated with right and left cerebral hemispheres respectively. The Muller-Lyer Illusion, which is caused by the oblique lines making arrowhead or feather-end on the horizontal lines of comparison, is probably attributable to a tendency to perceive the Muller-Lyer figure as a whole. Thus, the greater the illusion effect, the greater the field-reliance, and inferentially, the greater the right hemisphere participation in perceiving the length of the comparison line. A patient with left hemisphere damage and right hemisphere intact should have greater illusion than a patient with right hemisphere damage and left hemisphere intact. A normal person without damage in either hemisphere should have an illusion effect in between.

Results to date, with our current apparatus using a 50 mm standard, show an illusion effect of 20 mm for left hemisphere damaged patients, 5 mm for right damaged, and 10 mm for the normal population.