

MULTIPLE RAPID AUTOMATIC NAMING MEASURES  
OF COGNITION: NORMAL PERFORMANCE  
AND EFFECTS OF AGING<sup>1</sup>

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*Summary.*—Rapid automatic naming tasks are clinical tools for probing brain functions that underlie normal cognition. To compare performance for various stimuli in normal subjects and assess the effect of aging, we administered six single-dimension stimuli (color, form, number, letter, animal, and object) and five dual-dimension stimuli (color-form, color-number, color-letter, color-animal, and color-object) to 144 normal volunteers who ranged in age from 15 to 85 years. Rapid automatic naming times for letters and numbers were significantly less than for forms, animals, and objects. Rapid automatic naming times for color-number and color-letter stimuli were significantly less than for color-form, color-animal, or color-object stimuli. Age correlated significantly with rapid automatic naming time for each single-dimension stimulus and for color-form, color-number, color-animal, and color-object stimuli. Linear regression showed that rapid automatic naming times increased with age for aggregated color stimuli, aggregated single-dimension stimuli, and aggregated dual-dimension stimuli. This age effect persisted in subgroups less than 60 years of age and greater than 60 years of age. We conclude that normal performance time is dependent on the task, with letter and number stimuli eliciting most rapid responses, and that most rapid automatic naming times increase with age.

Cognitive performance in a normal population is characterized by broad variance, due in part to the influence of hereditary and developmental factors, and also by education, practice, medical disease, medication, age, and a host of environmental factors (Stroop, 1935; Goetz, Jacobson, Murnane, Reid, Repperger, & Goodyear, 1989; Salthouse, 1991; Strauss, Loring, Chelune, Hunter, Hermann, Perrine, Westerveld, Trenerry, & Barr, 1995; Vendrell, Junque, Pujol, Jurado, Molet, & Grafman, 1995; Wechsler, 1997).

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