MeSA-IE Assist Test Norms

A review of the normative studies for the children's version of the Trail Making paper and pencil version of this test reveals that there are relatively few large scale normative data sets available (Baron, 2004). Most of these studies appear to be "norms of convenience." This variability in the subject populations used in these research studies combined with the recognized problems using the cutoff test scores provided by Reitan & Wolfson (1992) makes meaningful test interpretation challenging. There is no one normative study that is accepted as the standard reference by neuropsychologists for evaluating the results of this test.

The best solution, in this author's opinion, is deriving the norms based on a meta-analysis of multiple research studies using a regression analysis. The normative database used for this test was calculated by the author using a polynomial best fit regression equation. This methodological approach has been previously used to create a normative data in the field of neuropsychology by Russell (1987) for the Wechsler Memory Scale, Zachary and Gorsuch (1985) with the WAIS-R and by Heaton et al. (1991) for the Halstead-Reitan Neuropsychological Evaluation System. The goal of this approach is to create a predictive model based on a summary analysis of a large numbers of studies in order to derive an accurate normative reference group composed of non-impaired individuals. The value and benefits of using a regression analysis deriving age based test norms is elaborated in detail by Mitrushina et al. (2005) in their comprehensive review and discussion of this statistical methodology.

The test norms used are based on a best fit polynomial formula derived by the author from a meta-analysis of 6 studies that were completed from 1966 to 1995. The majority of these studies were reviewed and summarized by Baron (2004), but this meta-analysis also included the normative data from Reitan (1971) and Spreen & Strauss (1998). The total number of non-impaired individuals included in these studies was 1,401 for both Test A and B. Using the best fit formula calculated for the MeSA-IE test it was possible to accurately determine the mean and standard deviation of both Tests A and B for non-impaired individuals between the ages of 8 to 14. The mean and standard deviation for each test was then used to calculate an individual's standard score for the Attention Control (ACQ) and Cognitive Flexibility (CFQ) quotient scale scores based on his or her exact age. The Executive Control (ECQ) quotient scale score which is a combined measure of ACQ and CFQ was calculated based on the total completion time for both Test A and Test B and their respective standard deviations. Since, males and females have not been identified in research studies to be different in their test performance no breakdown by gender was included.

The mean normative test score regression formula was calculated for the ECQ, ACQ and CFQ scales. These ACQ and CFQ scales are based on the mean test time scores for the age groups in the studies included in the regression analysis. The quotient scale labeled Executive Control Quotient (ECQ) was mathematically derived from these two primary quotient scales scores using

equal weighting based on combining the normative data sets used for Test A and Test B. The ECQ was included in order to provide a comprehensive measurement of an individual's overall performance on both Tests A and B. All of these three standard quotient scale scores, by definition, have a mean of 100 and a standard deviation of 15.

