Tests of Memory

THE REY–OSTERRIETH COMPLEX FIGURE TEST

The Rey–Osterrieth Complex Figure Test (ROCF) involves both an assessment of copy accuracy and recall accuracy. This chapter considers only the memory or recall condition, and the reader is referred to the chapter on visual and construction functions for information related to the copy condition. The immediate recall condition of the Rey–Osterrieth may not be a pure visual memory test, as it tends to correlate with the Block design subtest of the WAIS-R, Trail Making Test Part B, and the Category Test (Cornell, Roberts, and Oram, 1997) and loads on a visuospatial perceptual/memory factor (Berry, Allen, & Schmitt, 1991). The Rey–Osterrieth has been administered in a variety of manners, and the relationships among these different manners is not entirely understood. The most frequently used methods are: a, copy, immediate recall, 30-minute delay; b, copy, 3-minute recall, 30-minute recall; c, copy, 30-minute recall; and d, copy, immediate recall, 3-minute recall, 30-minute recall. In addition, a 45-minute recall is used instead of a 30-minute recall. Meyers and Meyers (1995a) reported no difference in 30-minute recall scores regardless of whether the immediate or 3-minute recall methods was used.

Percent retention of recall scores on the Rey–Osterrieth tends to correlate better with left hippocampal atrophy than with right hippocampal atrophy following head injury (Bigler et al., 1996). Silverstein, Osborn, and Palumbo (1998) reported that chronic schizophrenics exhibit worse recall scores than acute, outpatient schizophrenics or patients with other psychotic disorders. Because of the complexity of the design and the heterogeneity of most scoring systems, memory for the ROCF may be related to both left- and right-hemisphere function. Although they used a nonconventional administration method (copy with a 20-minute unwarned recall), Breier et al. (1996) found that when the scoring system was divided into figural (accuracy of rendering the details) and spatial (accuracy of placement of details) aspects, the spatial and figural scores were associated with right- and left-hemisphere dysfunction; the figural score was less sensitive. Qualitative scoring systems have generally been developed and evaluated in the interpretation of the copy condition, but at least one qualitative scoring system has its greatest utility in evaluating the recall condition (Loring, Lee, & Meador, 1988).

Meyers and Meyers (1995b) developed a comprehensive scoring system for the ROCF that includes aspects of accuracy and placement. In addition, their methods utilize a delayed recognition procedure, as previous research had indicated this method as a source of
clinical information (Meyers & Lange, 1994). Meyers, Bayless, and Meyers (1996) developed a system of classifying types of protocols based on errors and scores using their scoring system. This system identifies subjects as exhibiting primarily retrieval, storage, encoding, or attention problems. Meyers and Volbrecht (1998a) confirmed the types using cluster analysis and examined the external correlates of the clusters and provided base rates of the different error profiles in 601 normal subjects.

Younger subjects between the ages of 6 and 12 years show a trend toward improvement in immediate recall memory for the Rey–Osterrieth (Akshoomoff & Stiles, 1995a). There is an age-related difference in memory score in children between the ages of 7 and 14 years, even when copy score is covaried out, indicating development of spatial memory itself (Anderson & Lajoie, 1996). These authors also provide tables of mean values by age in a sample of 376 normal Canadian children.

An opposite trend is seen at the other end of the developmental spectrum. Advanced age is associated with decreases in performance on the immediate recall condition (Ostrosky, Jaime, & Ardila, 1998; Rosselli & Ardila, 1991); however, these are not strictly due to decreases in memory as the accuracy of copy, immediate recall, and delayed recall all decrease at similar rates after the age 70 years (Chiulli, Haaland, La Rue, & Garry, 1995). In general, age has a greater effect on memory than it does on copy performance (Chervinsky, Mitrushina, & Satz, 1992) and the relationship is particularly strong over the age of 60 years (Berry, Allen, & Schmitt, 1991). The effect of aging on Rey–Osterrieth recall scores may be related to a loss of detail (Mitrushina, Satz, & Chervinsky, 1990) and does not appear to be solely related to changes in visual–spatial construction or organization (Hartman & Potter, 1998). Using a copy, immediate unwarned recall, and 30-minute delayed recall procedure, Chiuli et al. (1995) found that the copying organization strategy, although related to recall accuracy, did not show age-associated declines in healthy elderly individuals.

The Taylor Figure is sometimes suggested as an alternate form of the Rey–Osterrieth. Although it appears that the copy scores are similar when both are administered to the same subjects, there may be important differences in immediate recall (Peirson & Jansen, 1997) and in percent recall memory scores (Kuehn & Snow, 1992). Therefore, it would be preferable to develop separate norms for the Taylor rather than rely on the attractively extensive Rey data base.

It is extremely important to consider the method of administration of the Rey–Osterrieth as well as the scoring system when choosing a normative base or study on which to base interpretation of individual results. Although Berry and Carpenter (1992) reported that the delay period did not have an effect on performance, it is difficult to generalize beyond the age group of this study since developmental trends tend to moderate other group differences. The delayed recall score was the only measure to discriminate between patients with Alzheimer’s dementia and patients with frontotemporal dementia, indicating utility in this sometimes difficult diagnostic decision (Pachana, Boone, Miller, Cummings, & Berman, 1996).

The ROCF may not be a measure of visual memory so much as a measure of memory per se. In a large-scale, multicenter study of left- and right-hemisphere seizure disorder patients, there were no significant differences between right- and left-hemisphere patients on the ROCF (Barr et al., 1997). However, an alternative qualitative scoring system resulted in significant differences between right- and left-hemisphere foci of temporal lobe epilepsy patients (Piguet, Saling, O’Shea, Berkovic, & Bladin, 1994). In addition, scores on the