Figures and figure supplements

A mechanistic insight into sources of error of visual working memory in multiple sclerosis

Ali Motahharynia and Ahmad Pourmohammadi *et al.*

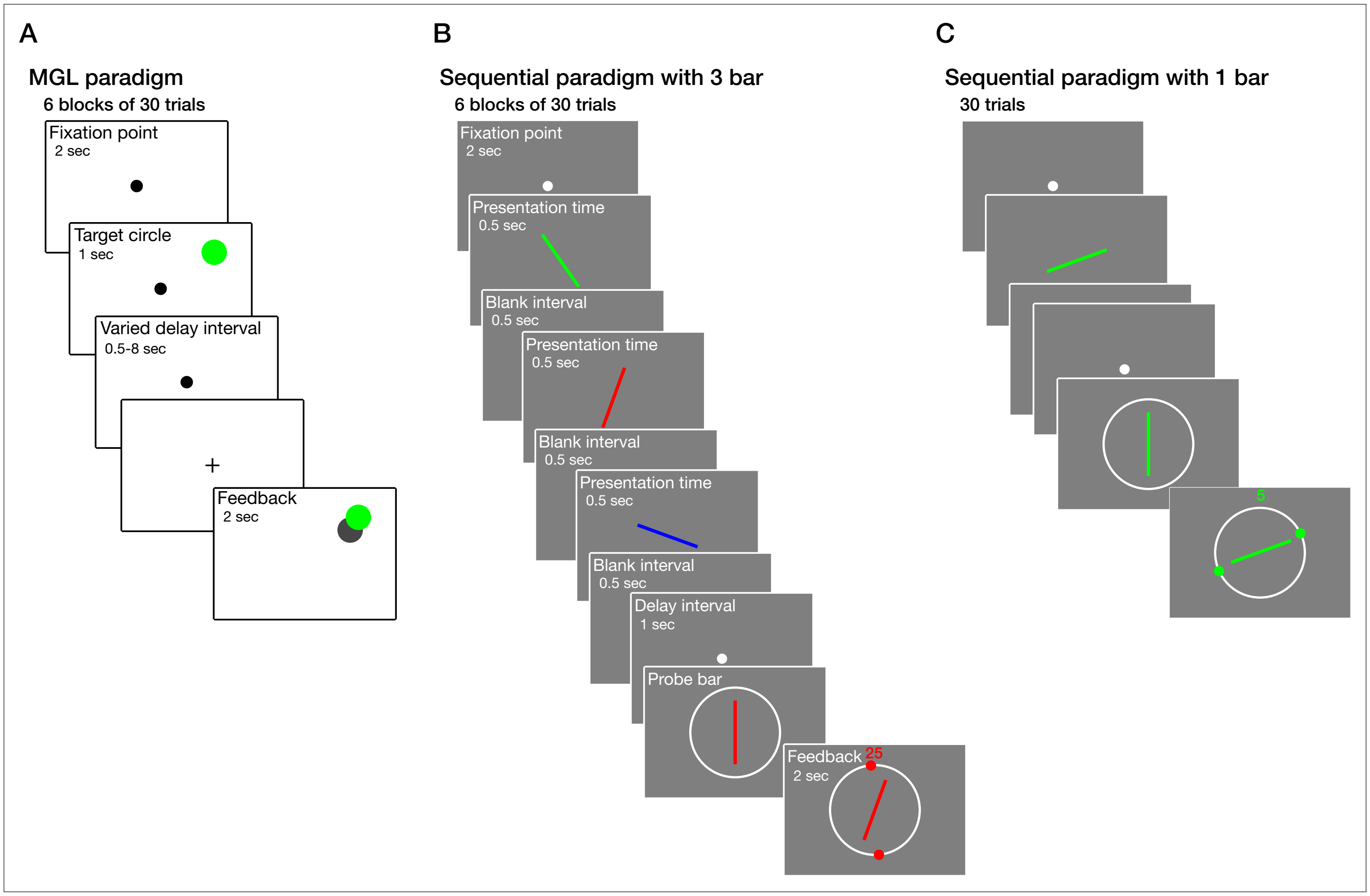

Figure 1. Schematic design of visual working memory (WM) paradigms. (**A**) In the memory-guided localization (MGL) paradigm, participants were asked to memorize and then localize the position of the target circle following a random delay interval of 0.5, 1, 2, 4, or 8 s. Following their response, visual feedback was presented. (**B**) In the sequential paradigm with 3 bar (high memory load condition), a sequence of three colored bars was presented consecutively. Participants were asked to match the orientation of the probe bar to the previously presented bar with the same color. Visual feedback was displayed following their response. (**C**) The 1 bar paradigm (low memory load condition) has the same structure as the 3 bar paradigm except for presenting one bar instead of three.

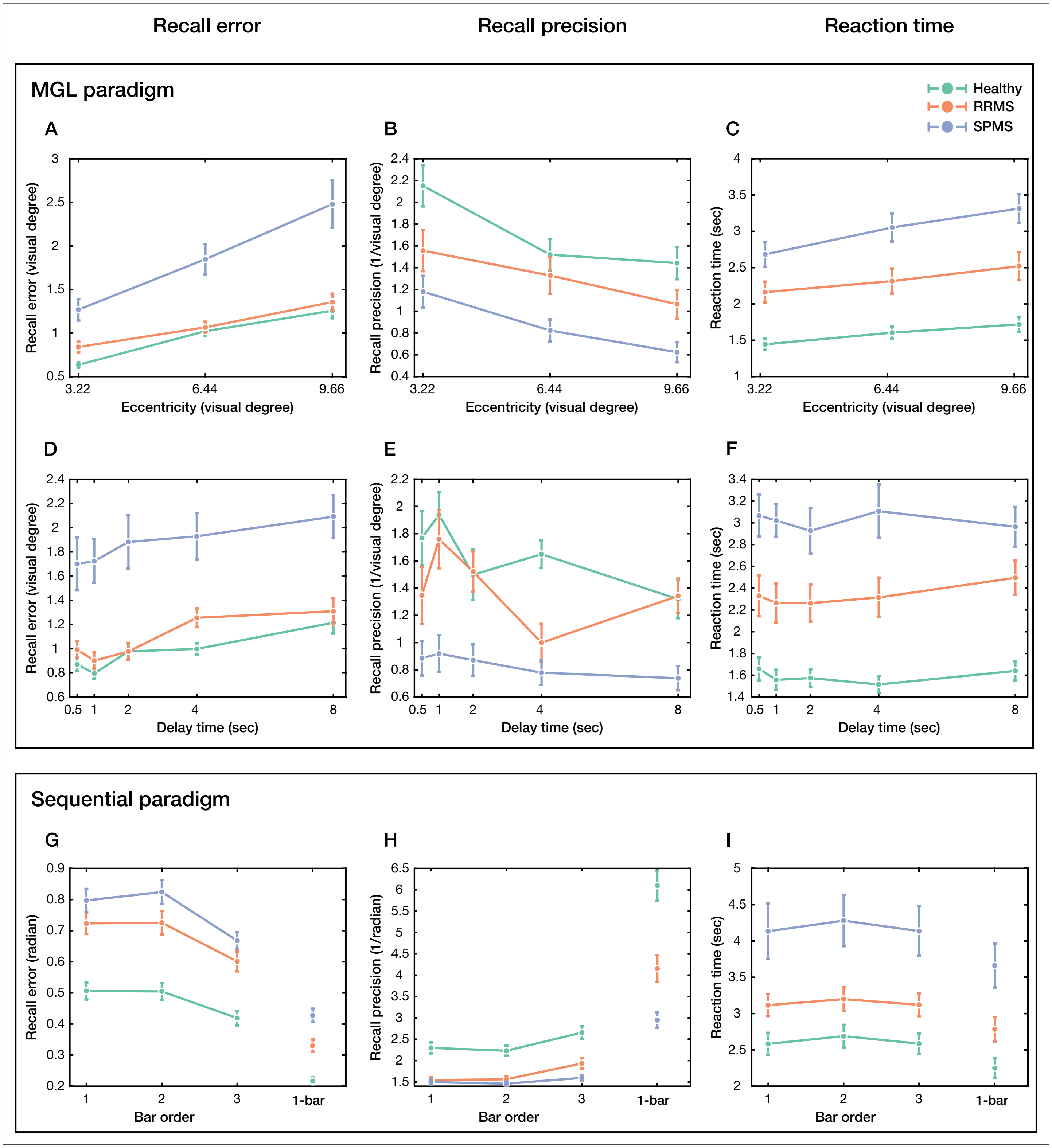

Figure 2. Recall error and precision of healthy control and multiple sclerosis (MS) subtypes (relapsing-remitting [RRMS] and secondary progressive [SPMS]) in visual working memory (WM) paradigms. (**A**) Recall error, (**B**) recall precision, and (**C**) reaction time as a function of distance for the memory-guided localization (MGL) paradigm. (**D–F**) The same as a function of delay interval. (**G**) Recall error, (**H**) recall precision, and (**I**) reaction time as a function of bar order in the sequential paradigms with 3 bar (left of each subplot) and 1 bar (right of each subplot). Data are represented as mean ± SEM.

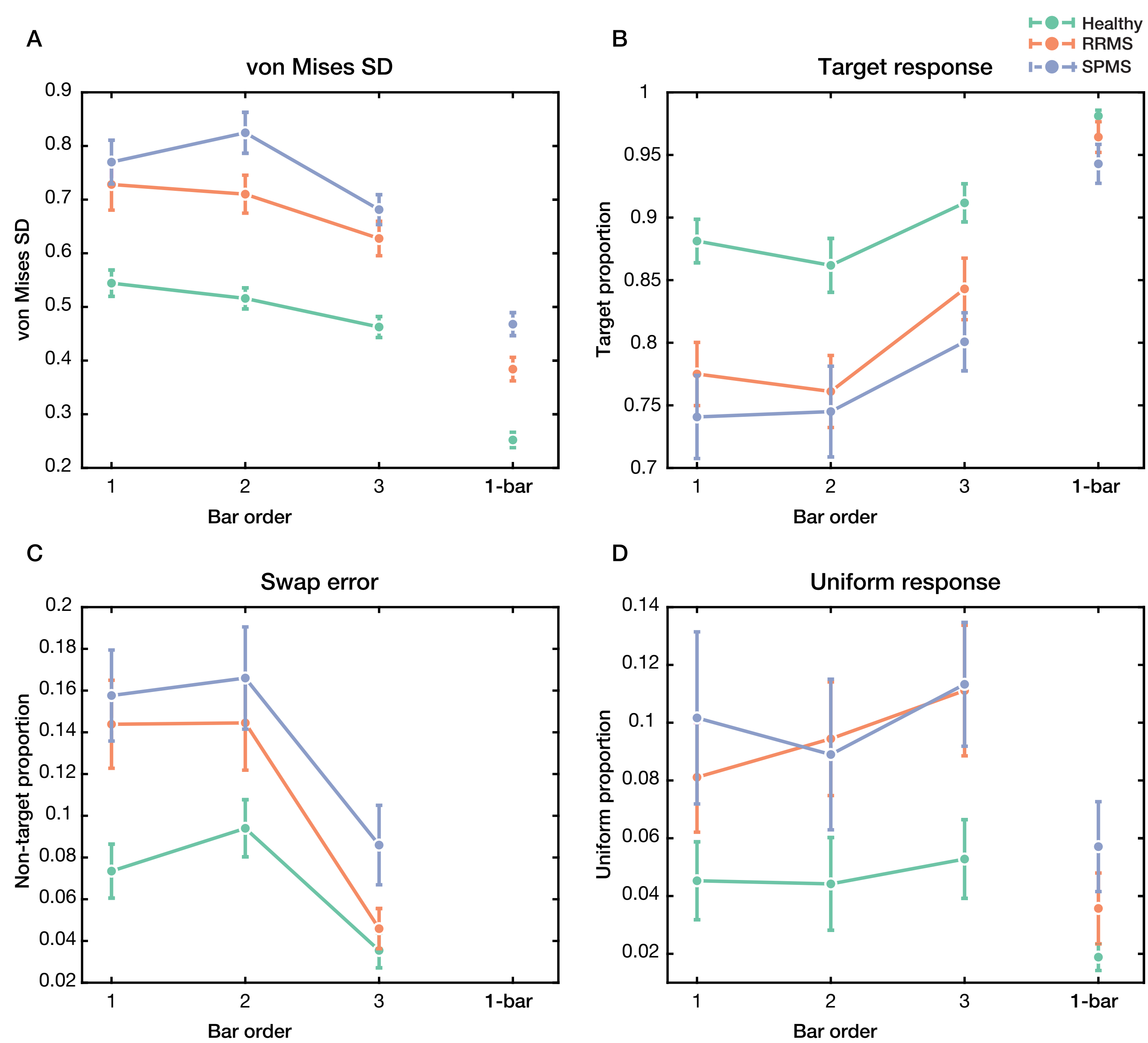

Figure 3. Sources of recall error in high and low memory load conditions (3 bar and 1 bar, respectively). (**A**) von Mises SD (circular standard deviation of von Mises distribution), (**B**) Target response (probability of response around the target value), (**C**) swap error (probability of response around the non-target values), and (**D**) uniform response (probability of random response) for healthy control and multiple sclerosis (MS) subtypes in the sequential paradigms with 3 bar (left of each subplot) and 1 bar (right of each subplot). Data are represented as mean ± SEM.

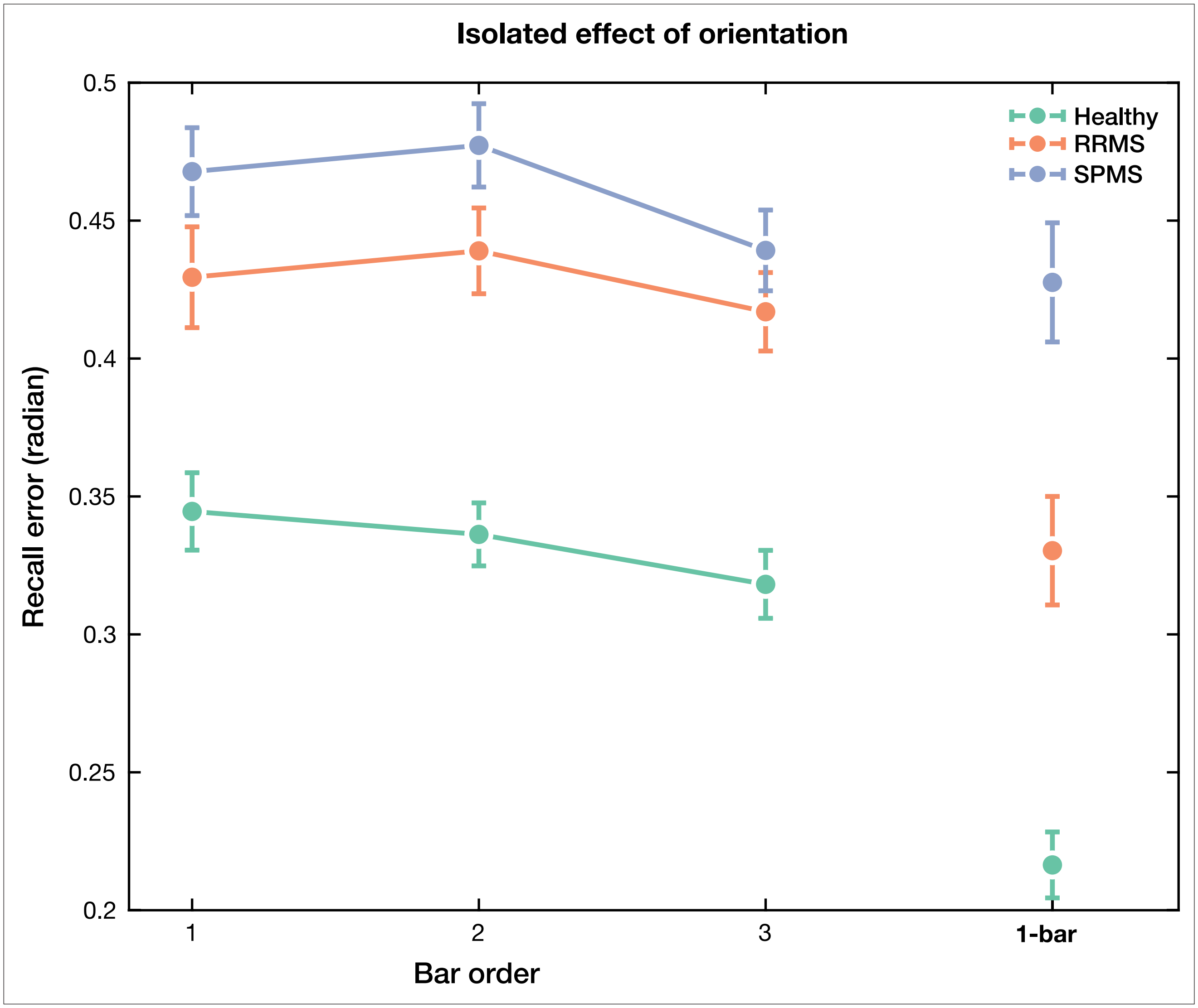

Figure 3—figure supplement 1. Isolated effect of orientation in the high and low memory load conditions. The nearest-neighbor analysis determined the isolated effect of orientation for healthy control, relapsing-remitting multiple sclerosis (RRMS), and secondary progressive multiple sclerosis (SPMS) in the high memory load condition (left of each subplot). The effect of orientation for the same groups in the low memory load condition (right of each subplot).

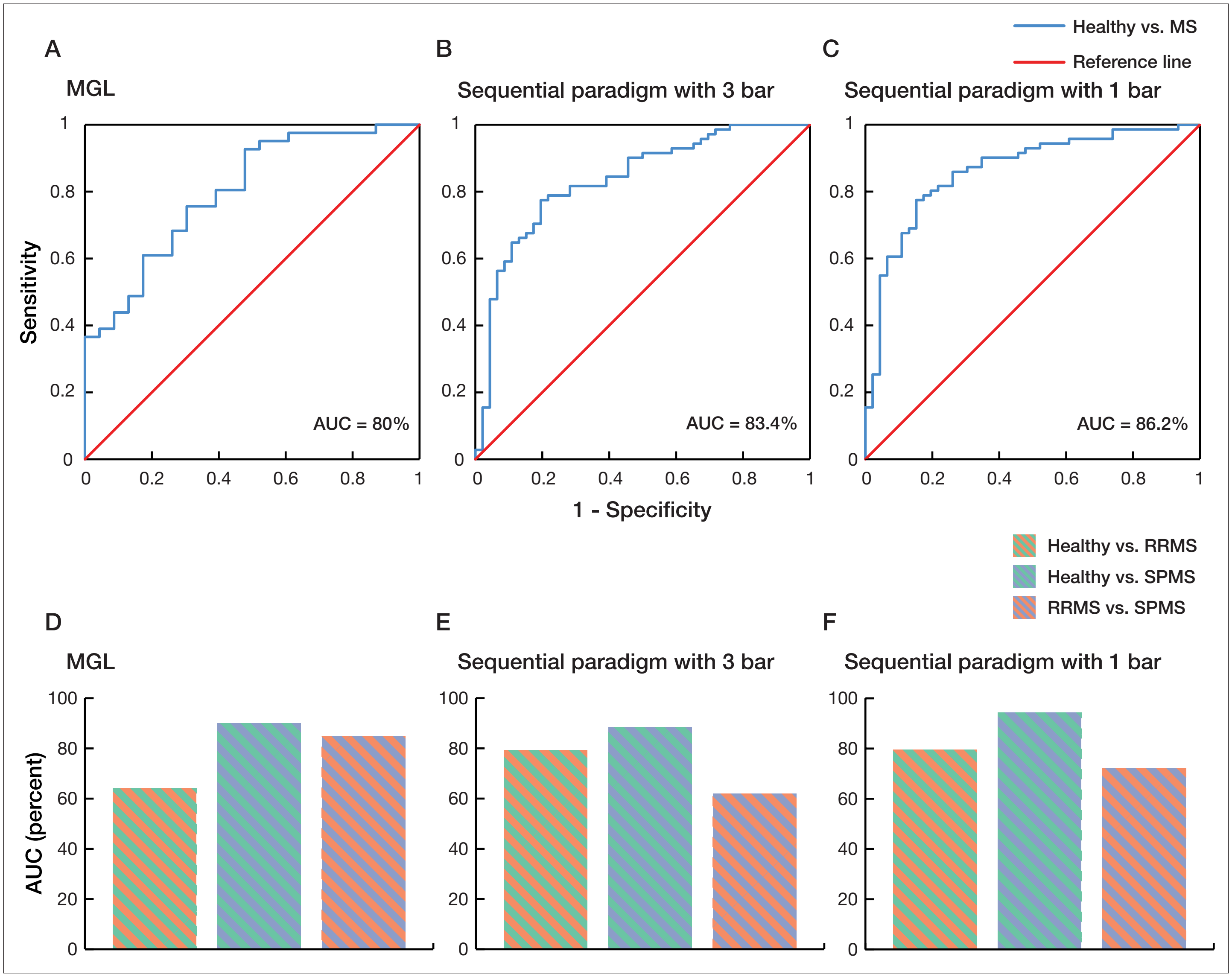

Figure 4. Classifying performance of visual working memory (WM) paradigms in differentiating healthy control from multiple sclerosis (MS) and MS subtypes, and MS subtypes from each other. Receiver operating characteristic (ROC) curve demonstrated the accuracy of (**A**) memory-guided localization (MGL) and sequential paradigms with (**B**) 3 bar and (**C**) 1 bar in distinguishing healthy control from MS patients. The precision of these paradigms in dissociating healthy control from MS subtypes (relapsing-remitting MS [RRMS] and secondary progressive MS [SPMS]) and MS subtypes from each other is represented as the area under the curve (AUC) for (**D**) MGL and sequential paradigms with (**E**) 3 bar and (**F**) 1 bar.