Supplementary Methods 1: Semantic Distance Task Description

Task instructions and practice were presented onscreen prior to each set. Subjects were requested to press a button corresponding to the larger of two entities in the real world; in a second set they determined which entity was smaller. The buttons of the response box were arrayed vertically so they corresponded to the layout of the stimuli. Each trial consisted of the appearance of an asterisk (1000 msec), followed by a blank screen (250 msec), followed by the stimulus pair, which remained in view until a response was given (maximum 6000 msec). Before the next trial, there was another blank screen (250 msec).

The magnitude of the real-world semantic distance (size difference) between two stimuli was systematically varied. Each stimulus was rank ordered from smallest to largest, with the ordinal distance of a stimulus pair defined as the difference in ranking. Each distance between stimuli (1 through 8) was tested 16 times per condition, for a total of 128 trials. These semantic distances for pairs of words and pairs of images were established in an independent sample, as described in Cohen *et al.* (13).

Supplementary Methods 2: Semantic Distance Data Preprocessing

When analyzing the distance effect, we collapsed distances 1 and 2 (requiring judgments about stimuli relatively similar in size) and distances 3 through 8 (requiring judgments about stimuli that were relatively dissimilar in size). We combined the data after conducting pairwise contrasts in repeated measures ANOVA for both RT and accuracy in the total group of subjects for each condition. Accuracy and RT data by semantic distance for a representative condition (Word), collapsed across all particpants, are displayed in Supplementary Figures 1a and 1b.

After Bonferroni correction for multiple comparisons, we found that distances 1 and 2 never differed significantly from each other in accuracy and RT in the three conditions, with a single exception (Image Incongruent accuracy). However, both distance 1 and 2 differed significantly from all distances in the 3 to 8 range for both accuracy and RT in nearly all instances, i.e., 97% of all contrasts (e.g., 1 vs. 3, 1 vs. 4, etc.; 2 vs. 3, 2 vs. 4, etc) in all conditions.

In contradistinction, pairwise contrasts within the 3 to 8 range (e.g., 3 vs. 4, 3 vs 5, etc., 4 vs. 5, 4 vs. 6, etc.) did not differ from each other in the large majority of contrasts (63%). Thus, in the Word accuracy condition 10 of 15 contrasts were non-significant; in the Image Congruent accuracy condition all 15 contrasts were non-significant; and in the Image Incongruent condition 9 of 15 contrasts were non-significant. The majority of RT contrasts within the 3 to 8 range also differed nonsignificantly. In the Word RT condition 8 of 15 contrasts were non-significant; in the Image Congruent condition 8 of 15 contrasts were non-significant; and in the Image Incongruent condition 8 of 15 contrasts were non-significant. Additionally, profiles held for all groups when analyzed individually (data not shown).

Supplementary Results: Semantic RT Predictors of Everyday Function

When semantic distance accuracy measures were excluded from analyses in which we sought to determine predictors of UPSA performance, we found that the following variables entered (after Selective Reminding): Word RT at large distances (p=.009), Image Congruent RT at large distances (p=.04), and Word RT for small distances (p=.05). The overall model was significant (F=5.77, p=.0003); R^2 was .27 in keeping with the value that we found when semantic distance accuracy measures were included.

FIGURE S1-A

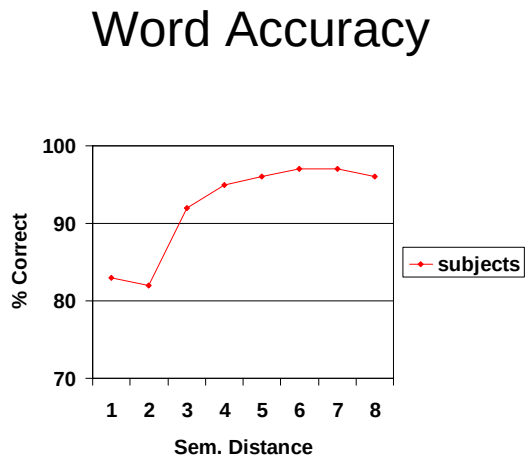

FIGURE S1-B

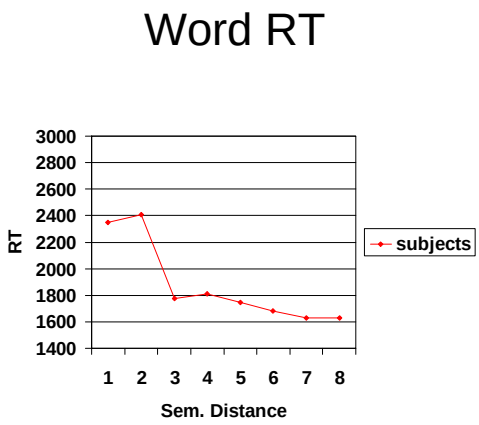

TABLE S1. Cognitive and UPSA Scores for Healthy Comparison, Mild Cognitive Impairment, and Alzheimer's Disease

Cognitive Measures	**HC**	**MCI**	**AD**	**df, F, p**	**Contrast**
Sel. Rem. Total	45.9 ± 7.8	29.8 ± 7.2	22.9 ± 6.4	2, 116 110.36, .0001	a
Log. Mem.	23.6 ± 5.1	13.8 ± 1.9	9.0 ± 5.1	2, 113 100.42, .0001	a
Clock	9.1 ± 1.7	9.2 ± .9	7.7 ± 2.9	2, 117 5.76, .004	b
Boston Naming	55.9 ± 3.8	50.8 ± 5.9	38.5 ± 17.9	2, 112 33.20, .0001	a
Letter Fluency	48.0 ± 14.1	42.7 ± 15.7	28.7 ± 14.1	2, 114 17.25, .0001	b
Sem. Fluency	19.5 ± 5.6	13.2 ± 3.9	9.8 ± 4.5	2, 114 38.97, .0001	a
Trails A	35.9 ± 12.6	45.2 ± 17.5	62.5 ± 26.4	2, 117 22.30, .0001	a
Trails B	80.1 ± 39.0	119.8 ± 57.9	193.3 ± 73.7	2,110 39.89, .0001	a
Letter Number	12.1 ± 3.6	11.6 ± 3.6	7.1 ± 3.2	2, 110 6.78, .003	b
Digit Symbol	49.2 ± 12.7	38.7 ± 10.3	25.4 ± 10.3	2, 112 37.23, .0001	a
Digit Span	16.0 ± 3.7	14.3 ± 4.1	12.0 ± 3.5	2, 113 10.61, .0001	b

a=all groups differ from each other by t test, $p<.05$
b=HC and MCI differ from AD by t test, $p<.05$