

Table 2 Number of Names Recalled

Case	A	B	C	D	E	Mean (SD)
Before Program	14	8	5	3	2	6.4 (4.8)
After 6-month Program (Photographs)*	18	14	11	8	7	11.6 (4.5)
After 6-month Program (Actual person)**	19	13	11	11	5	11.8 (5.0)
1 year After Program***	18	16	11	10	5	12.0 (5.1)
2 years After Program****	17	14	/	8	7	11.5 (4.8)

*Assessment 1, **Assessment 2, ***Assessment 3, ****Assessment 4.

Assessments 3 and 4

As shown in Table 2, the average numbers of names recalled from the photographs one and two years after the rehabilitation program were 12.0 and 11.5, respectively. These recall scores were almost identical to those immediately after the training program.

Assessment 5

No significant improvement in the results of general learning tasks was observed after the rehabilitation program (Table 3). As for the correlations between the face-name association results (score increase and maximum score) and the results of various neuropsychological measures, no correlations were observed between the recall score and the result of remote memory test, learning task or frontal lobe function test. However, a significant correlation was detected between the recall score and FIQ assessed by WAIS-R ($r = 0.96$).

As regards the photographs of staff members of another ward, only one patient (Case A) remembered two names, but he did not recall the name when meeting the staff member face-to-face one week after the training, no did he remember the name when shown the same photograph one year after the rehabilitation program. The other four patients failed to learn the name of any staff member of another ward.

Discussion

We have presented the principles and functioning of a 6-month course of domain-specific knowledge training for small groups of patients with alcohol-related Korsakoff syndrome. A primary concern for this project was that poor motivation characteristic of these amnesics might serve as a great obstacle. Contrary to prediction, however, all patients completed the 6-month program and significant effects were obtained. In the group training, when a subject gave a correct answer, all members clapped hands; and when the answer was

Table 3 Scores of General Learning Tasks (Mean (SD))

	Before Program	After Program
Rey Auditory Verbal Learning Test		
Immediate recall	8.0 (0.8)	7.5 (1.0)
Delayed recall	3.8 (1.5)	4.0 (2.9)
Delayed recognition	7.8 (5.7)	8.5 (1.3)
Rey-Osterrieth Complex Figure Test		
Delayed recall	10.5 (7.1)	10.0 (7.0)

incorrect, cues such as the first sound of the name were given to induce the correct answer. Efforts to make the training into an enjoyable, game-like session could, at least in part, have contributed to the successful completion of the program.

The number of names recalled from the photographs increased significantly, suggesting that patients with Korsakoff syndrome could learn to remember names of persons by repetitive practice. However, no improvement in the results of general learning tasks was observed, confirming earlier observation that the effect of rehabilitation was not generalized into other aspects of memory. These findings are in line with the notion of the "acquisition of domain-specific knowledge" approach of memory rehabilitation advocated by Glisky and Schacter. Our results demonstrated that training using photographs was suitable for practical purposes, because some transference of learned knowledge to real life was observed.

There has been no long-term study on the maintenance of domain-specific knowledge in patients with Korsakoff syndrome. Our results indicate that the recall scores one year after rehabilitation were almost identical to those immediately after the training, suggesting that the name-face association persisted for a long period of time. Considering the fact that 11 of the 25 staff members who were working in the ward at the time of training had been transferred to other wards by one year after training, our results were rather good. That speed of forgetting is slower in patients with Korsakoff syndrome than in those with temporal lobe amnesia⁵² gave a theoretical basis for the premise that the acquisition of domain-specific knowledge might be particularly effective in patients with Korsakoff syndrome.

A significant correlation was observed between the name recall score and FIQ assessed by WAIS-R, suggesting that domain-specific memory rehabilitation may be more effective in those patients with a low level of cognitive impairment limited to amnesia.

All patients except Case A failed to memorize the names of the staff members of another ward. Even in Case A, the face-name association was not retained