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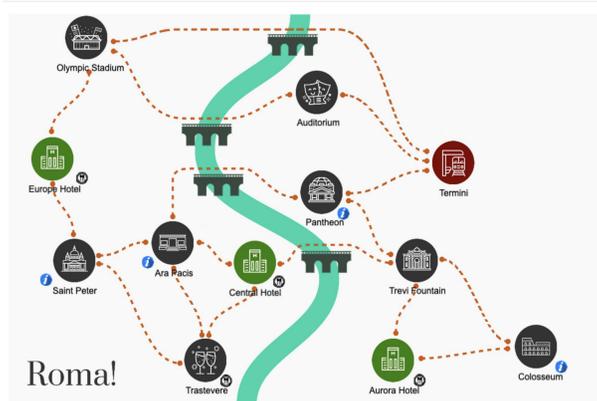


Figure 1. Example of the virtual map (easy level).

MATERIALS AND METHOD

A sample of 29 older adults were randomly assigned to receive either individual training (n=17, M=8, F=9) or collaborative training (n=12, M=2, F=10). Demographic information is shown in Table 1.

The training programme consisted of two sessions per week, for a total of 10 sessions. Participants were given the task of planning a two-day trip to Rome, which included booking hotels, buying train tickets, visiting places of interest and navigating a virtual map of the city (Figures 1 and 2). The task was designed to vary in three levels of difficulty: easy (1-3), medium (4-6) and difficult (7-10).

In the individual training group, participants completed the task at their own pace. Each collaborative training group consists of three participants who engaged in collective discussions to solve the task. The interaction and communication within the groups were overseen by a psychologist, who also served as the group moderator. An observer was also present to record any noteworthy data regarding cognitive performance and to provide technical assistance when required.

RESULTS



Figure 3. The average trend of learning (levels of difficulty reached, from 0 to 10) from session 1 to session 10, in individual and collaborative training groups

GROUP	DIFFICULT LEVEL (%)	MEDIUM LEVEL (%)	EASY LEVEL (%)
INDIVIDUAL TRAINING	47%	47%	6%
COLLABORATIVE TRAINING	25%	75%	-

Table 4. The percentage of participants that reached each level of difficulty at the last session of the training.

As illustrated in Figure 3, a cubic linear learning trend is evident in the training. This finding suggests that as the training sessions progressed, the participants were able to successfully complete increasingly challenging tasks. A comparison of the learning trends of individual and collaborative training groups reveals no significant differences.

Upon conclusion of the training programme, a greater proportion of participants in both groups demonstrated proficiency at medium or difficult levels. The SWIFT training has been shown to be effective in enhancing the complexity of planning and problem-solving processes (see Table 4 and Figure 3).

As illustrated in Table 2 (IGT score), Table 3 (Zoo Map score) and Table 5 (Stroop test), a significant enhancement in reasoning, planning and inhibition abilities was observed among both training groups.

The present study identified a number of noteworthy distinctions between individual and collaborative training groups (see Table 3). The individual training group demonstrated a significant enhancement in the Key Search task, while the collaborative training group exhibited greater improvements in information processing speed and working memory (cfr. PASAT score).

In the context of individual training, participants are afforded the opportunity to direct their full attention towards the processes of planning and problem-solving. Conversely, participants in collaborative training are required to share their planning strategies with their peers, thus necessitating the development of effective interaction skills. Strategic interactions may require the ability of share the relevant information with the other members of the group and this in turn may require working memory and speed of processing.

This interpretation is speculative in nature. It is acknowledged that further validation is required to substantiate these results, which can be achieved through the collection of additional data.

INTRODUCTION

Ageing is associated with a variety of changes in cognitive abilities, such as planning and problem solving, which in turn affect wellbeing and quality of life. Stimulating these abilities could help to maintain independence.

Moreover, within small groups, cooperation may amplify the effects of stimulation, thereby fostering self-efficacy and self-consciousness. A programme that integrates a training in these abilities with a collaborative environment may represent a successful approach to promote active ageing. **Shared, Web-based, Intelligent Thinking Training (SWIFT)** is a newly developed AI tool that aims to enhance problem solving abilities by simulating a real-life scenario, either collaboratively or individually. A study was conducted to ascertain the effectiveness of SWIFT.

OBJECTIVES		
EASY LEVEL	MEDIUM LEVEL	DIFFICULT LEVEL
-GO TO SLEEP AT 10 PM	-REACH TRASTEVERE	-GO TO SLEEP AT 12 PM
	-VISIT THE PANTHEON	- VISIT PALATINE HILL
-REACH THE TREVI FOUNTAIN	-MEET YOUR FRIENDS IN TRASTEVERE ON SATURDAY AT 7	-GO VISIT VILLA BORGHESE ON SATURDAY AT 9 PM
-REACH TRASTEVERE		
-VISIT ARA PACIS	-DO GYMNASTICS ON SUNDAY MORNING	-HAVE DINNER ON SATURDAY
		- VISIT SAINT' ANGEL CASTLE
-DO GYMNASTICS ON SUNDAY MORNING	-DO NOT SPEND MORE THAN YOUR BUDGET	-HAVE LUNCH ON SUNDAY
		-GO BACK HOME AS SOON AS POSSIBLE

Figure 2. Examples of objectives at different levels of difficulty.

GROUP	AGE (YEARS)	EDUCATION (YEARS)
INDIVIDUAL TRAINING	71.06 (5.22)	13.53 (4.86)
COLLABORATIVE TRAINING	74.17 (6.47)	14.67 (2.10)

Table 1. Demographic information.

IOWA GAMBLING TASK (IGT)	
PRE-TEST	1.38 (0.87)
POST-TEST	4.68 (0.94)*

Table 2. Means and standard deviation of pre-test and post-test Net scores.

*p-value < 0.01

	KEY SEARCH (BADS)	ZOO MAP 1 (BADS)	PACED AUDITORY SERIAL ADDITION TEST (PASAT)
INDIVIDUAL TRAINING			
PRE-TEST	6.82 (2.32)	3.41 (4.06)	39.71 (11.81)
POST-TEST	8.59 (2.09)*	4.76 (2.94)	40.06 (10.02)
COLLABORATIVE TRAINING			
PRE-TEST	7.75 (3.01)	4.17 (3.04)	38.09 (10.95)
POST-TEST	7.58 (2.57)	5.33 (2.74)	42.82 (10.73)*

Table 3. Means and standard deviation of pre-test and post-test scores of the Key Search Test, Zoo Map Test and Paced Auditory Serial Addition test, for the individual and collaborative training groups.

* p-value < 0.05

STROOP TEST	Correct responses (%)	
	CONGRUENT CONDITION	INCONGRUENT CONDITION
PRE-TEST	93%	77%
POST-TEST	94%	83%*

Table 5. Percentage of correct responses, in congruent condition and incongruent condition, in pre-test and post-test.

*p-value < 0.05

CONCLUSIONS