Keywords: Bilingualism; Executive functions; Flexibility; Inhibition and updating
Numerous studies have been comparing the cognitive and especially executive functioning of bilingual and monolingual subjects. We have already presented former results (SOFMER 2010) showing an adult bilingual advantage (subjects aged from 20 to 60 years old) for response time in several tasks calling for the executive components of Inhibition and Updating according to Miyake’s model (2000).

The aim of the present study is to compare the executive functioning of bilingual and monolingual teenagers.

Subjects and methods.– The scores of 20 bilingual teenagers (16–18 years old) were compared to those of monolingual teenagers, matched on age and certain socio-demographic variables. The protocol included several verbal and non-verbal tasks assessing the three components: flexibility (verbal and graphic fluencies), updating (Updating test) and inhibition (GoNoGo).

The results of an analysis of variance with three factors [language (bilingual/monolingual); executive components (flexibility/inhibition/updating); material (verbal/non-verbal)] showed a triple interaction between the three factors. This triple interaction is due to the fact that overall, bilinguals obtain better results in the non-verbal condition, and especially for the flexibility task, whereas monolinguals do better in the verbal condition in the same task.

Discussion.– Our results are consistent with a large part of the literature showing that bilinguals perform better than monolinguals on non-verbal executive tasks, whereas monolinguals do better on verbal ones.

Conclusion.– We will discuss our results in relation to those obtained with adult subjects, showing that those executive skill profiles could reverse with age.

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Personalized rehabilitation of cognitive functions based on simulated Activities of Daily Living (sADL)


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Keywords: Brain injury; Cognitive rehabilitation; Virtual Reality; Simulated Activities of Daily Living (sADL); Virtual Therapeutic Scenario (VTS)

Cognitive impairments are a major factor of loss of autonomy and dependence. Each year in France, more than 25,000 people, mostly young adults between 15 and 25 years, suffer from cognitive impairment resulting from Traumatic Brain Injury (TBI), especially after a road accident. At the same time, more than 130,000 people suffer a disabling stroke. Rehabilitation interventions are needed to enable these people to recover capacity and return to instrumental Activities of Daily Living (aADL), such as grocery shopping. Unfortunately they are difficult to carry out and often below the expected efficacy. The assets of virtual reality to address this big problem of public health are today scientifically recognized. In this context, we designed the AGATHE tool (Adaptable, configurable and upgradable tool for the generation of personalized therapeutic applications in cognitive rehabilitation) (AGATHE project, ANR-09-TECS-002). The first objective was to provide therapists with an innovative means of dealing with cognitive rehabilitation and, to offer patients personalized rehabilitation sessions, on the basis of simulated Activities of Daily Living (sADL).

AGATHE core leans on a virtual neighborhood where functional places are positioned (town, studio, post office, supermarket). Each functional place is conducive to functional tasks or specific sADL (topographic tasks, post mail, shopping...). During the session and the Virtual Therapeutic Scenario (VTS), the participant’s activity is measured through indicators that provide a picture of the participant’s functioning.

The aim of the paper is to present the rationale of the design of AGATHE tool as well as preliminary results collected among therapists and participants with brain injury regarding usability issues.

Further reading

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