POSTER

Visuo-spatial ability and wayfinding performance in real-world

Raffaella Nori • Sonia Grandicelli • Fiorella Giusberti

Keywords Wayfinding · Visuo-spatial ability · Individual differences

Background

In literature, there are not many studies which have investigated the relation between visuo-spatial ability and wayfinding in real word. However, they have presented mixed results: some studies did not find a correlation between these two abilities (e.g. Rovine and Weisman, 1989) while others showed it (e.g. Blajenkova, Motes and Kozhevnikov, 2005). The present research investigated the effects of the visuo-spatial ability (V-SA), considered a multi-component ability (Logie, 1995), on wayfinding performance in adults.

Aims

We predicted that high visuo-spatial ability (HV-SA) participants performed the wayfinding better and faster than low visuo-spatial ability (LV-SA) participants who would have to make more hesitations than high visuo-spatial ability participants through wayfinding task in real-world.

Method

Thirty-seven participants completed a battery of tasks measuring V-SA: Mental rotation task, Corsi Block task, Mental folding task, Standard Progressive Matrices, Copying task, Spatial problem task were submitted to all participants in order to have a complete measure of the visual, sequential and simultaneous aspect of V-SA. To measure wayfinding, a route was constructed in the botanical garden of the University of Bologna. The route was short, each participant taken approximately 5 minutes to complete the task. Each participant was taken along the route, walking beside the experimenter from the staring to the ending position. At the ending position, the experimenter asked participants to walk along the same route to the starting position, that is, they were asked to traverse the route in a reverse direction without assistance and with the experimenter walking behind them. The experimenter recorded errors (i.e. every time participants took a wrong direction), frequency of hesitations (i.e. every time participant stopped to think about the way to take) and travelling time.

Results

One way between participants ANOVA was performed on wayfinding errors for participants assigned to the HV-SA and LV-SA group on the basis of their responses on the 6 V-SA tasks. The analysis showed that LV-SA group performed more wayfinding error (mean = 3.88) than HV-SA group (mean = 1.90); $F(1, 35) = 5.51$; $p < .05$.
A one way between participants ANOVA performed on frequency of hesitations revealed a significant effect: LV-SA group performed more hesitations (mean = 2.82) than HV-SA group (mean = 1.50); $F(1, 35) = 5.34$; $p < .05$. One way between participants ANOVA performed on travelling-time did not reveal any significant differences ($F(1, 35) = 2.59$; $p > .05$).

Conclusions

The present results provide evidence that adult participants who score high on test of visuo-spatial ability exhibit superior performance in wayfinding. Moreover, our results show that the wayfinding behaviour of the HV-SA participants is different from those of the LV-SA participants: the latter make more hesitations than the former during travelling, even if there is not any difference in travelling time. This

R. Nori (✉) • S. Grandicelli • F. Giusberti
Dipartimento di Psicologia, Universita` di Bologna, Bologna, Italy
e-mail: raffaella.nori@unibo.it

behaviour is particularly present in the middle part of the path where LV-SA participants stop shortly during wayfinding. This result could be interpreted in terms of different spatial strategies used by the two groups of participants.