Cognitive control in interpreting

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Abstract

In this pilot study we tested 13 interpreters and 13 matched highly proficient bilinguals. All participants completed the colour Simon task and the numerical Stroop task, and both the accuracy rates and the reaction times were collected. To conclude no differences in accuracy and processing time were found on both cognitive control tasks between the groups, indicating that the interpreters' control advantage over non-interpreter bilinguals does not extend to conflict resolution.

By Clic

Aim

Multilinguals, who use their languages on a daily basis, show cognitive advantages; especially, when control requirements are high [1]. How is this finding related to one specific subgroup of highly proficient bilingual speakers: interpreters, who professionally use their cognitive control skills on a daily basis? Research on interpreting is highly relevant to cognitive science because it is considered to be a skill with high control requirements, employing a wide range of activities such as working memory, updating information, language comprehension and production concurrently. However, research in this domain has shown some contradictory results, which is mainly due to the lack of cooperation between researchers in different fields, including interpreting studies, multilingualism research, and psycholinguistics.

Methods

In the present pilot-study, we compared a group of 13 highly proficient bilingual speakers with a group of 13 interpreters. All participants were recruited in Brussels and we controlled for second language proficiency, gender, and age. All participants completed the color Simon task [2] and the numerical Stroop task [3], and both the accuracy rates and the reaction times were collected.

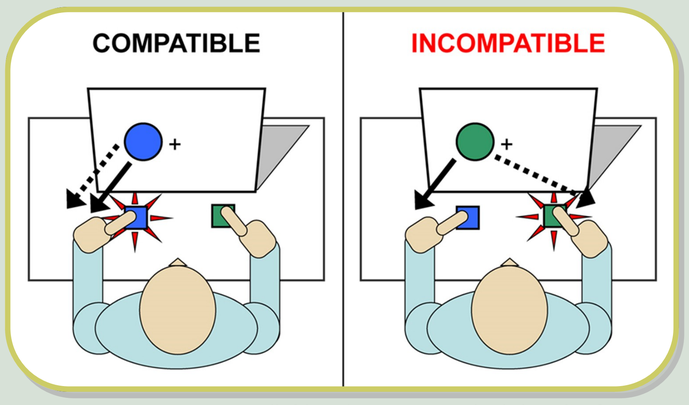


Figure 1. Congruent (left) and incongruent (right) trials of the Simon task.

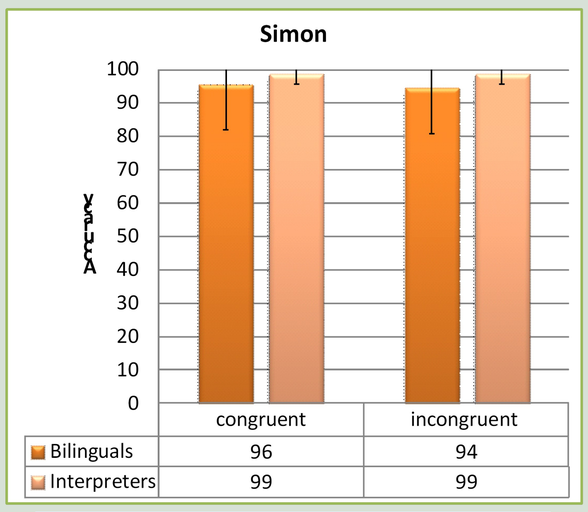
Relevant dimension	Type of stimulus		
	Congruent	Incongruent	Neutral
Numerical value	1 8	1 8	1 8
Physical size	2 9	2 9	2 2

Comparison judgments are made based on the relevant dimension, and are classified as being congruent, incongruent, or neutral based on the opposing irrelevant dimension. The correct solution in each case is underlined.

Figure 2. © 2012 White

Results

The results of our study show that both the highly proficient bilingualism group and the interpreter group perform extremely well on both cognitive control tasks. For the Simon task the following accuracy scores for the highly proficient bilinguals are found: 95.59% (*SD* = 13.52%) on the congruent items and 94.49% (*SD* = 13.65%) on the incongruent items versus for the interpreters 98.56% (*SD* = 2.91%) on the congruent items and 98.56% (*SD* = 2.91%) on the incongruent items. Both groups show similar accuracy scores ($p > .05$). The analysis of the reaction times shows that both groups do not differ significantly ($p > .05$). More precisely; 430.56 msec (*SD* = 62.90 msec) on the congruent items and 442.27 msec (*SD* = 61.81 msec) on the incongruent items for the highly proficient bilingualism group versus 432.87 msec (*SD* = 59.09 msec) on the congruent items and 448.03 msec (*SD* = 57.02 msec) on the incongruent items for the interpreting group. (See graph 1&2)

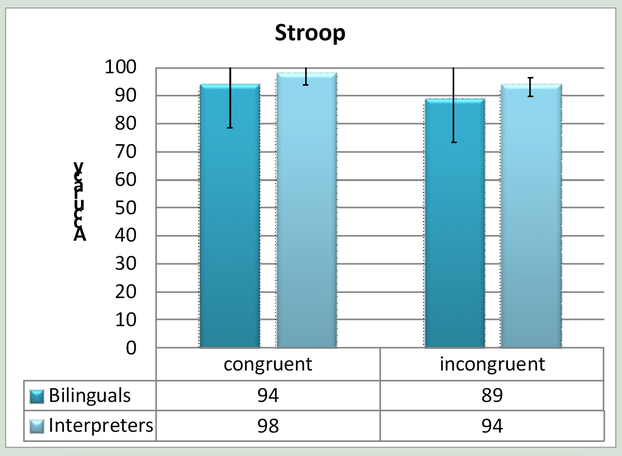


Graph 1

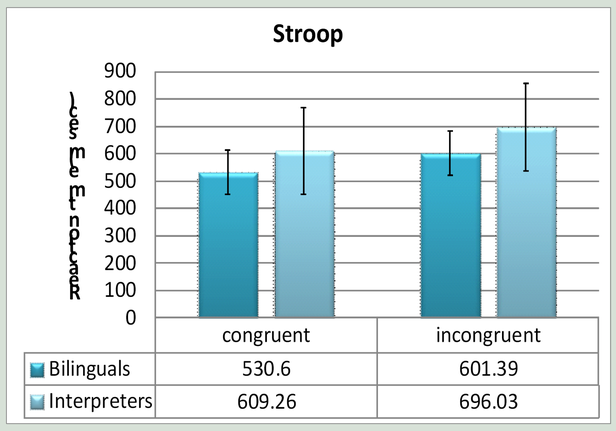
Graph 2

Results

The results of the Stroop task show a similar pattern. The highly proficient bilinguals are 94.08% (*SD* = 15.85%) correct on the congruent items and 89.22% (*SD* = 15.54%) on the incongruent items versus for the Interpreting group 98.39% (*SD* = 2.40%) on the congruent items and 93.56% (*SD* = 4.26%) on the incongruent items. The following reaction times are found; 530.60 msec (*SD* = 80.76 msec) on the congruent items and 601.39 msec (*SD* = 79.07 msec) on the incongruent items for the highly proficient bilinguals versus 609.26 msec (*SD* = 159.65 msec) on the congruent items and 696.03 msec (*SD* = 159.44 msec) on the incongruent items for the interpreters. No significant differences in accuracy scores and reaction times are found between the two groups ($p > .05$). (See graph 3&4)



Graph 3



Graph 4

Conclusion

To conclude no differences in accuracy and processing time were found on both cognitive control tasks between groups, indicating that the interpreters' control advantage over non-interpreter bilinguals does not extend to conflict resolution. These results are consistent with other studies that fail to report any professional interpreters' advantages in tasks that require interference control such as the Stroop [3] or the Simon tasks [2]. This pilot study is part of a bigger project on cognitive control in interpreting. The focus will be on other control components which are involved in interpreting, such as working memory (verbal/non-verbal) and the attention network, using both behavioral tests and functional magnetic resonance imaging in a longitudinal research design.

References

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