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COMMENTARIES

On invisibility and experimental evidence

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At the outset of her article Valian (2014) advocates for the existence of an effect of bilingualism on executive control (EC). She is commended for being very clear about her position. She argues that: "There is a benefit of bilingualism for executive function, but that benefit competes with other benefits that both mono- and bilinguals have to varying degrees. Depending on the composition of each group in any given experiment, the other benefits may be more plentiful in the monolingual than bilingual group (or sufficiently plentiful in both groups), so that the benefits of bilingualism are invisible. This is the possibility that I favor."

This conclusion seems problematic unless one offers substantial support to the claim that one should believe in invisible effects. Valian justifies her position regarding the invisibility of the effect by arguing that the EC construct is very complex, the tasks tap multicomponential processes, and the performance in such tasks may be affected by many other variables. Agreed, these factors may certainly compromise the detectability of the effect, but then what are the reasons to assume its existence? The author seems to bring a logical argument more than an empirical one to justify her position: "Since managing two or more languages is a challenge, it would be very surprising if bilingualism were not among the challenging factors that contribute to superior executive function". This is an argument by analogy. That is, given that other activities such as physical exercise or musical experience affect the EC system, then bilingualism might do so as well. Although this could be a good starting point for a research project, it is far from being evidence upon which one should base a conclusion, and less so after 15 years of research. Still, Valian might be right regarding the difficulty of detecting the effects of bilingualism on EC. This is a problem of signal to noise ratio. There are two ways to increase such a ratio in our favor.

The first way, as outlined by the author, is to have better understanding of EC that allows controlling for potential confounding variables. This issue requires the involvement of experts on EC, perhaps even more so than from language processing. As difficult as trying to understand the basic blocks of the EC system is, approaching this issue in a shallow way does not help. For example, what are the reasons to embrace a given model of EC as the author does? Why not other models of similar influence (e.g., Diamon, 2013; Shallice, 2002; Stuss et al., 2005)? This is not a matter of taste, since adopting a model may constrain the types of questions asked. In this respect, the contribution of experts on EC is fundamental. Indeed, the issue at stake is one that concerns them more than language scientists.

The second one is to perform experiments of the sort often carried out when looking for differences associated with groups: for example, when comparing men and women. In this case, our research will benefit very much from having experts in the field of differential psychology, who may know little about language processing but much about the designs and statistical tools required to conduct meaningful experiments that compare groups as a window onto understanding how factors of a different nature (e.g. environmental, genetic, etc.) influence behavior.

It is possible of course that when Valian referred to invisibility, she did so because she thinks that the effect of bilingualism is not only going "to compete" with other effects, but because she also thinks the effect is too modest to be systematically and robustly detected. This is more problematic since it raises the question of why anyone should bother with the contribution of bilingualism to EC, if it is minimal. What if such a contribution is basically similar to, say, washing the dishes everyday? Would anyone design and carry out a research project for this? We do not think so.

To conclude, we think that further research will help to clarify the effects of bilingualism on EC. However, if we want this to happen soon we have to bring researchers from other fields on board, such as experts in EC functioning and differential psychologists. It is not of any further use to embrace models without a clear understanding of their limitations, or employ experimental designs that do not take into account the individual differences of participants.

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