

Special Collection - Call for Papers

“Working Memory and Executive Functions: Theoretical Advances”

(guest editors: Sergio Morra, Steven Howard, Vanessa Loiaza)

Working memory and executive functions are constructs of crucial theoretical and practical importance because of their major role in higher cognition, intelligence, and cognitive control. However, they are also the grounds of hot scientific debate. Several theoretical issues are unresolved that also have important implications in applied contexts. The goal of this Special Collection is to contribute to the current debate by presenting and interconnecting research articles that address, and hopefully clarify, some of the most relevant conceptual and empirical problems in this field.

First of all, what is the relation between working memory and executive functions? In the domain of adult cognition, working memory and executive functions started as two clearly distinct fields of research, now being connected by ongoing research on attentional control of working memory and some studies on the relation between working memory and updating. In developmental psychology, instead, many researchers assume that working memory is an executive function itself. Evidently, this issue needs theoretical and empirical clarification.

Second, can we take any models as paradigmatic (in the sense of T.S. Kuhn)? The field of working memory had long been dominated by componential models assuming separate storage devices for different types of information; however, in recent decades, this view faced some difficulties (e.g., defining the capacity of each specialized store), and findings that highlighted the importance of domain-general resources favored the emergence of models of working memory based on attentional processes. However, several such models have been proposed; a major current debate revolves on their comparison or possible integration, and we definitely need more empirical results that help to solve this debate. In the field of executive functions, perhaps Miyake’s model of three distinguishable and correlated functions (inhibition, updating, and shifting) is the most widely accepted, but interpreted in different ways (e.g., many developmentalists replace updating with working memory in this triad). Furthermore, in the course of child development, when and how do the executive functions emerge and differentiate? And should the number of executive functions be limited to three, or is there any reliable evidence for the existence of other, specific executive functions?

Third, we need to clarify the (joint?) involvement of working memory and executive functions (or working memory and other executive functions, if working memory is positioned as one of them) in higher cognition. There is extensive evidence supporting the hypothesis that working memory capacity is a major causal factor of fluid intelligence; however, the relation between working memory and crystallized intelligence is less investigated, as well as the relations of inhibition,

shifting, and updating with intelligence. Moreover, there is extensive empirical evidence for an involvement of executive functions or working memory in numerous specific abilities or skills, but this evidence has not always translated into clear process models.

Finally, there is a long tradition of studying working memory and executive functions in clinical populations, and more recently, research has flourished on intervention programs aiming to improve these components of the cognitive system in elderly people or in cognitively impaired children. The debate is open on how, why, and to what extent such programs are effective, and our understanding could be advanced by well-designed empirical studies and by the proposal of explicit models of the change processes.

As guest editors of this Special Collection at the Journal of Cognition, we invite contributions that present experimental or individual-difference behavioral findings, neuroscientific results, meta-analyses, computational models, or innovative theoretical articles that advance our understanding of the aforementioned issues. In particular (but not exclusively), we invite contributions along any of the following lines:

- Research on the relations between working memory, inhibition, updating, and shifting in young adults, in children, or across the life span.
- Research focusing on comparing, integrating, or advancing theories/models of working memory.
- Research focusing on comparing, integrating, or advancing theories/models of executive functions and their development.
- Research that advances our understanding of how working memory or executive functions contribute to intelligence or other important cognitive abilities.
- Insights into working memory and executive functions from research into clinical populations, atypical development, or ageing.
- Research advancing theoretical understandings of the effects of training working memory and/or executive functions, which extends beyond evidence of efficacy to generate insights or evidence in relation to theories of change.

Deadline for submissions: Now extended to November 30th, 2023

*Full **fee waivers** will be offered to those authors whose institution cannot pay, whereas authors with funding capable of covering fees will not be offered waivers. In the latter case, the usual discounts would apply for ESCoP members, recent reviewers of the JOC, and researchers at the same institution as a member of the editorial board. Any author requesting a waiver should establish their need with a letter signed by the relevant authority at their institution.*