



Bridging the Divide Between Functional and Cognitive Psychology



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In the current academic climate, there are few incentives for reflecting on meta-theoretical issues. We therefore greatly appreciate the fact that several colleagues took the time to read and comment on our target paper (De Houwer, Hughes, & Barnes-Holmes, 2017) in which we focused on one of those issues: the relation between functional and cognitive psychology within the context of applied research. The commentaries complement the target paper by providing additional support for the arguments that we put forward (e.g., Hambrick, 2017; Mickes, 2017; Smith, 2017) but also by raising possible counterarguments (e.g., Goldsmith, 2017; MacLeod & Risko, 2017; Markman, 2017; Proctor & Xiong, 2017; Wills & Hollins, 2017). We are happy to see broad consensus about the idea that communication between functional and cognitive researchers is possible. There was less agreement, however, about (a) whether communication between functional and cognitive researchers can produce benefits, (b) the type of communication that would be most beneficial, and (c) the maximal extent to which communication could be beneficial. In the remainder of this paper, we address each of these points of disagreement.

Should Functional and Cognitive Researchers Communicate?

Proctor and Xiong (2017) argue that functional and cognitive researchers cannot interact in mutually beneficial ways because their approaches are fundamentally different (also see MacLeod & Risko, 2017). Although we agree with their premise, we do not subscribe to their conclusion. We believe that scientists, just like people in general, can benefit from diversity. It is true that different worldviews lead to differences in scientific aims and differences in the actions that researchers undertake to reach those aims. However, actions that are directed at one set of aims can often be put to use in the pursuit of other aims, especially when different sets of aims are interrelated (as is the case with the aims of functional and cognitive psychology). Hence, functional research has the potential to facilitate cognitive research and vice versa.

The fact that Proctor and Xiong (2017) resist this conclusion seems to be grounded in a continuing belief that functional and cognitive psychology are scientific rivals that can only compete.

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More specifically, they argue that both approaches share the aim of predicting behavior and thus compete in trying to achieve this aim. However, even an overlap in aims does not preclude fruitful collaboration between functional and cognitive researchers.¹ At least in principle, it is possible to learn from how (scientific) rivals operate. Denying this possibility on an a priori basis results in a monolithic scientific landscape that is viable only to those who believe that there is one objectively best way of uncovering one objective truth. Rather than adopting such a monolithic model of psychological science, we prefer to explore ways in which functional and cognitive researchers can interact to their mutual benefit.

What is the Best Way of Communicating?

In the target paper, we argued that applied psychology can benefit from analyzing phenomena in terms of general functional principles such as reinforcement and stimulus control (De Houwer et al., 2017). Most importantly, it allows functional and cognitive researchers to communicate about research in a way that is both abstract (thus avoiding the problems of effect-centric research) and agnostic with regard to the mental processes that mediate the effect (thus avoiding the problem of proxies and maximizing theoretical freedom). Wills and Hollins (2017), on the other hand, argue that communication in terms of general functional principles might reintroduce the problem of proxies and orientate attention away from the unique features of the specific issue that applied researchers seek to address (e.g., improve the quality of eye witness testimonies). Instead, they propose that applied psychology should focus on observations and engage in effect-centric research that sticks to the data.

We agree that *abstraction* should not be a priority for applied psychology but believe that *abstractive analysis* is vital for its success. Although both abstraction and abstractive analysis deal with the relation between knowledge about individual cases and knowledge about general principles, the flow of information differs. Whereas abstraction involves knowledge about specific cases that influences knowledge about general principles, abstractive analysis involves knowledge about general principles that is applied to specific cases. We agree with Wills and Hollins (2017) that abstraction could be detrimental for applied psychology by detracting attention from the particularities of the specific issue that is being addressed. However, applied psychology can definitely benefit from abstractive analyses because it creates the possibility of applying knowledge about general principles (e.g., reinforcement) to specific cases (e.g., tantrums in children). The functional analytic-abstractive level of explanation offers an important repertoire of general principles that can be used for this type of abstractive

analysis. Hence, we believe it is helpful for applied researchers to communicate in terms of general functional principles.

Doing so does not reintroduce the problem of proxies. In essence, general functional principles are categories of individual effects that share certain functional properties (e.g., all instances of reinforcement involve an increase in response frequency as the result of outcomes that follow the responses). Hence, it makes little sense to say that an individual effect is a proxy of a general principle; it is merely an *instance* of a general principle. Of course, the claim that a specific effect is an instance of a particular functional principle could turn out to be incorrect. However, because general functional principles refer only to the environment and behavior rather than to non-physical mental mechanisms, it is much easier to verify whether a specific effect is an instance of particular functional principle than it is to verify whether an effect is mediated by a particular mental mechanism.

Although we continue to defend the usefulness of communication in terms of general functional principles, we certainly do not want to restrict all scientific communication to this level. Of course it can be useful to communicate in terms of specific observations or topographical descriptions of effects, especially as a starting point. Contrary to what Proctor and Xiong (2017) seem to suggest, we also do not want to abolish communication at the mental level. It is self-evident that cognitive researchers must speak about mental mechanisms when operating at that level. Our main point is that communication in terms of general functional principles offers unique benefits to both functional and cognitive researchers and therefore would be ideal to optimize the outcome of their interactions. This implies that we are advocating multilingualism rather than a new type of unilingualism.

Finally, Wills and Hollins (2017) argue that we struggle to give good examples of research that was inspired by both cognitive theories and general functional principles. We acknowledge that we provided too few concrete examples in our manuscript, in part because of restrictions in space but primarily because of our lack of knowledge of the applied psychology literature. We are therefore very happy that both Hambrick (2017) and Micks (2017) give additional examples of how analyses in terms of general functional principles can facilitate cognitively inspired applied research. We are convinced that many more examples will emerge once communication between functional and cognitive researchers becomes more common.

To What Extent Can Communication Between Functional and Cognitive Researchers be Mutually Beneficial?

Goldsmith (2017), Markman (2017), and MacLeod and Risko (2017) seem to agree that increased communication between functional and cognitive researchers in terms of general functional principles can provide benefits for applied psychology. However, they discuss two reasons for why cognitive researchers might benefit less from functional research than we suggested in our target paper. They argue that we underestimate the power of cognitively-inspired applied research and that we overestimate the power of the functional approach.

¹ Note that Proctor and Xiong (2017) do not take into account the fact that functional and cognitive researchers have different reasons to aim for prediction. For functional researchers, prediction cannot be seen independently from the goal to influence behavior. For cognitive researchers, prediction serves as a touchstone for the evaluation of theories about mental mechanisms (Hayes and Brownstein, 1986).

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