July 25th, 2024

Edmundo Kronmüller, PhD

Handling Editor

*Cognitive Processing*

Dear Dr. Kronmüller:

My co-authors and I have submitted a revised version of our manuscript COPR- D-23-00175 “Predictive Alternating Runs and Random Task-Switching Sequences Produce Dissociative Switch Costs in the Consonant-Vowel/Odd-Even Task.” We are encouraged that our reviewer found this version of the article to be “clearer” than our previous submission and remains optimistic regarding its contribution to the task switching literature. Below, we provide our response to the Reviewer’s remaining comment. Consistent with the previous revision, major modifications to the manuscript have been made using blue-colored font. We appreciate the invitation for further revision and hope that our manuscript is now suitable for publication in *Cognitive Processing*.

Sincerely,

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**Reviewer 1**

**Comment 1:** The authors have addressed most of my points satisfactorily, and the article is now clearer. However, my major point 4 was not addressed adequately, and I will detail why I think it is important to consider this in order to recommend this article for publication.

Local cost is calculated as the difference between Switch and Non-Switch trials. The authors find that the RT local cost was higher in Random switching compared to Predictive. This leads them to interpret that "unpredictable switch trials are especially taxing when participants must reconfigure task-sets." However, the reason for a higher RT Local Cost in Random is not due to an increase in RT during Random switch trials (in fact, the RTs for switch trials are virtually the same between Random and Predictive). RT Local Cost is only higher in Random because the RTs for non-switch trials are higher in Predictive. Given that there are no differences in the switch trials, I believe the interpretation that "unpredictable switch trials are especially taxing when participants must reconfigure task-sets" is incorrect. In fact, there is no behavioral cost at the time of reconfiguration (which should be seen in the RTs of switch trials). In my opinion, this is a problem associated with the calculation of local cost itself, which should use another reference point as I specified in my previous review. Unfortunately, the authors do not address the criticism beyond adding a section on page 22 that does not properly address my point.  
Another example, on page 23 the authors talk about "task predictability benefits performance on switch trials" [...] "however, because random switching lacks a predictive pattern, this benefit only occurs for the predictive pattern." The RT data presented show no behavioral evidence of benefit on switch trials. In fact, the only difference in RT shows that the predictive non-switch is greater than random non-switch.

In conclusion, I believe the authors should abandon the interpretation of the local cost and refer only to the global cost. Additionally, it would be beneficial for the field if the authors could more explicitly specify the limitations and problems associated with the calculation of local cost for future research. This would not only clarify the current study but also guide upcoming studies in how they might address these issues more effectively.

***Response:*** Thank you for taking the time to provide an additional review of our manuscript. We believe that it is important to retain our discussion of local RT switch costs for consistency with the broader task-switching literature and to remain consistent with our initial predictions. We believe that reframing our paper based on the data patterns would be inappropriate and misleading; however, we are happy to further develop the points you mention as we agree that they are important interpretation points.

In our revised manuscript, we have tempered the language of our discussion of local switch costs while emphasizing the role of task-set inertia effects as a primary factor underlying this effect. As you note above, the primary difference in RT data is for non-switch trials which is consistent with a task-set inertia account of local cost changes (e.g., non-switch trials are faster for predictive versus non-predictive switching). As such, we now note on pg. 23 that the observed differences between local cost types appear to reflect changes in non-switch trials rather than just switch trials. Finally, we also note in this section that although a task-set inertia account can potentially explain this pattern on local switch costs, more research is needed to fully explore this account, such as direct comparisons of varying run lengths.

Separately, we have also expanded our discussion of switch cost computations (now on pgs. 23-24). While our computation of local switch costs is consistent with previous research investigating this cost type, we now note the lack of a common reference point as a potential limiting factor when interpreting switch costs and emphasize the need for caution when drawing comparisons between local costs for each presentation sequence.