

Dr. Ljerka Ostojić

Recommender

PCI Registered Reports

March 21, 2022

Dear Dr. Ljerka Ostojić,

Thank you so much for your effort, constructive comments, and suggestions on our manuscript. We have made modifications to our manuscript accordingly. Moreover, we apologize regarding the language in the previous manuscript, which may have caused comprehension issues. In this round, we have enhanced the language of the manuscript. Our replies to your and the anonymous reviewer's comments are as follows.

Comments & Replies to Review by Anonymous Reviewer

1-1

I thank the authors for clarifying how they intend to account for the length of intervening events in their methods. However, by including only a single question about filled rate of duration (for both past and future), I do not see how they can disentangle the potentially separate contributions of length and absolute number of intervening events. I would therefore recommend including two questions for both past and future: one about the length of intervening events (as currently included), and one about the absolute number of intervening events.

Reply:

We thank the reviewer for this pertinent comment. We have modified our experimental design to fit it, with some changes. As the concept of filling rate is addressed in the manuscript, it consists of both the length and number of intervening events simultaneously. We believe that it is challenging to clarify our assumptions if we merely calculate the length and number separately. Fortunately, our sample size is large enough for us to divide the participants into two groups and still be able to reach a power of 95% for each group (see Sample size and power analysis in the manuscript for the detailed information). In one group, participants will be asked about the length and number of intervening events, whereas in the other, they will be asked about the filling rate in the way we designed it in the previous version of the manuscript. Using these two groups, we are able to confirm the influence of length and number, and clarify whether participants take both the length and the number of intervening events into consideration at the same time.

Comments & Replies to Review by Recommender

2-1

You write that, “*Analogous to the stimuli and tasks used in research of short durations, in longer durations we assume that how much the duration is filled with events, which we refer to as the filling rate of the duration in the present study, will also have an influence on psychological distance. The filling rate of the duration is a function of the number of events and the length of each event in the past and future.*” However, this is an untested assumption and is also not backed up by any theoretical considerations, at least not in the current version of your report. It seems to me that it would be important to first establish that people take both aspects of durations into account before this can be used as a manipulation in this study.

Reply:

Thank you for pointing out the lack of theoretical evidence to support our assumption. We are sorry that we were not clear enough, thus causing your confusion. Regarding the evidence of the length and number of intervening events that affect time perception and estimation, there is little literature that takes the length and number into consideration simultaneously, but there is some evidence discussing the length and number of events separately. The filled duration illusion (FDI) proposes that a filled interval is perceived to be longer than an empty interval of the same physical duration, which means the number of events influences how people perceive time. Concerning the influence of the length of events on time perception, Liverence and Scholl (2012) found that the way in which a continuous event that is segmented into discrete units greatly influences duration judgments; this refers to how time perception is affected by the length of events as well. This has been clearly stated in our revised manuscript and we hope that it will be easier to understand. In addition, we have made some modifications in our experimental design to conduct an investigation of how the length and number of intervening events affect time estimation (psychological distance) separately, which will be elaborated in the following 2-2.

2-2

You further write (later on), “*The filling rate of duration in our study is not only the number of intervening events in the duration, but also the length of each event (see Supplementary Information). Moreover, there must be events that we have actually experienced in the past (will experience in the future), even if they are not listed. What we focus on in our study is the event, which we have actually experienced or will experience in the future, and its length. In this respect, the focus of our study is different from that of Caruso et al. (2013).*” Without knowing that this is how participants do indeed experience durations and also that they are able to take into account both aspects when answering questions about durations, your measure rests on many assumptions. Nowhere does the reader receive information on whether it is known that participants actually pay attention to both number and duration of each event when assigning fullness to a duration, and how these two aspects interact in such assignments. In this situation, the reviewer’s advice seems very useful. However, it seems critical to also address the lack of theoretical or empirical justification for the assumptions mentioned above (or provide it) as well as adjust the text throughout the report where appropriate in regards to the new measure if you decide to pursue the reviewer’s suggestion.

Reply:

We thank the reviewer for this pertinent suggestion; we have changed our experimental design in accordance with the reviewer’s suggestion for further improvement. As our sample size allows us to divide participants into two groups and also be able to reach the power of .95, we will ask half the participants about the filling rate of duration (Group 1) and the rest about the length and the number of intervening events (Group 2). Thus, we will be able to provide a justification for the filling rate of duration. All possible outcomes and explanations are listed as follows:

Possible outcomes

To facilitate easier classification, in this case we discuss the relationship regardless of whether it is positive or negative.

Group 1: filling rate, psychological distance

1a: filling rate is related to psychological distance

1b: filling rate is not related to psychological distance

Group 2: length, number, and psychological distance

2a: both length and number are related to psychological distance

2b: only length (or number) is related to psychological distance

2c: neither length nor number is related to psychological distance

Possible explanations

We interpret the results as follows:

Group 1: Filling rate and psychological distance

	1a: Filling rate is related to psychological distance	1b: Filling rate is not related to psychological distance
Group 2: Length, number, and psychological distance	2a: Both length and number are related to psychological distance	All the three factors (length, number, and filling rate) affect psychological distance. The result shows that the filling rate consisted of both the length and the number of the intervening events. This result is in accordance with our hypothesis: when the filling rate of duration is greater, the psychological distance is farther.
	2b: Only length (or number) is related to psychological distance	The length (or number) and filling rate affect psychological distance. These results show that the filling rate of duration just consisted of length (or number) of intervening events. Moreover, our hypothesis is partially supported; when the filling rate of duration which consists of length (or number) of intervening events is greater, the psychological distance is farther.
	2c: Neither length nor number is related to psychological distance	Only the filling rate affects psychological distance. These results show that the concept of filling rate should be considered as a complex combination of length and number of events rather than a simple combination. Our hypothesis is supported: when the filling rate of duration is greater, the psychological distance is farther.
		Both length and number are related to psychological distance, while the filling rate of duration is not related to psychological distance. These results show that the scale that we used to measure the filling rate of duration is not valid enough for measuring both the number and the length of intervening events simultaneously.
		Either length or number is associated with psychological distance, while the filling rate of duration is not related to psychological distance.
		These results show that either the concept of filling rate needs to be rediscussed or the way in which we ask participants to answer should be reconsidered.
		None of the factors are related to psychological distance. These results show that our hypothesis and the concept of the filling rate of duration is not supported and needs further investigation.

We hope this modification regarding the experimental design provides an empirical justification for the assumptions. We have modified the manuscript accordingly.