The effect of abstract numerals on long-range time interval estimation

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1. Introduction

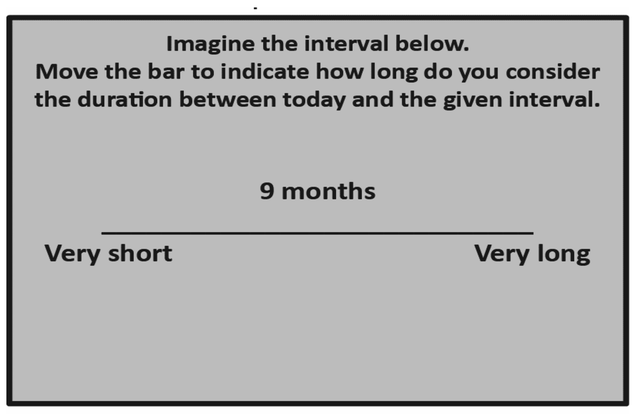
Most studies of time perception focused on the range of milliseconds, seconds and minutes. Consequently, there is limited knowledge of how people process long-range time intervals concerning from days to years.

Aims: Estimate the psychometric functions that describes long-range time interval perception and compare them with those of abstract numerals magnitude and future personal events.

Hypothesis: The abstract numerals as part of the stimulus presentation influence the magnitude estimation of time intervals.

2. Methods

The crossmodal line paradigm was used with three experimental groups. The participants of group I (N=20) estimated the magnitude of abstract numerals in the 3 to 36 range. The task for Group II (N=18) was to estimate the magnitude of time intervals indicated in the format "nn months". Participants of Group III (N=19) estimated the magnitude of time intervals indicated by future personal events. The line was scaled with the tags “very short and “very long” in the extremities. The scale line was presented in a “Forward” order (left to right) and in a “Backward” order (right to left) to both groups.

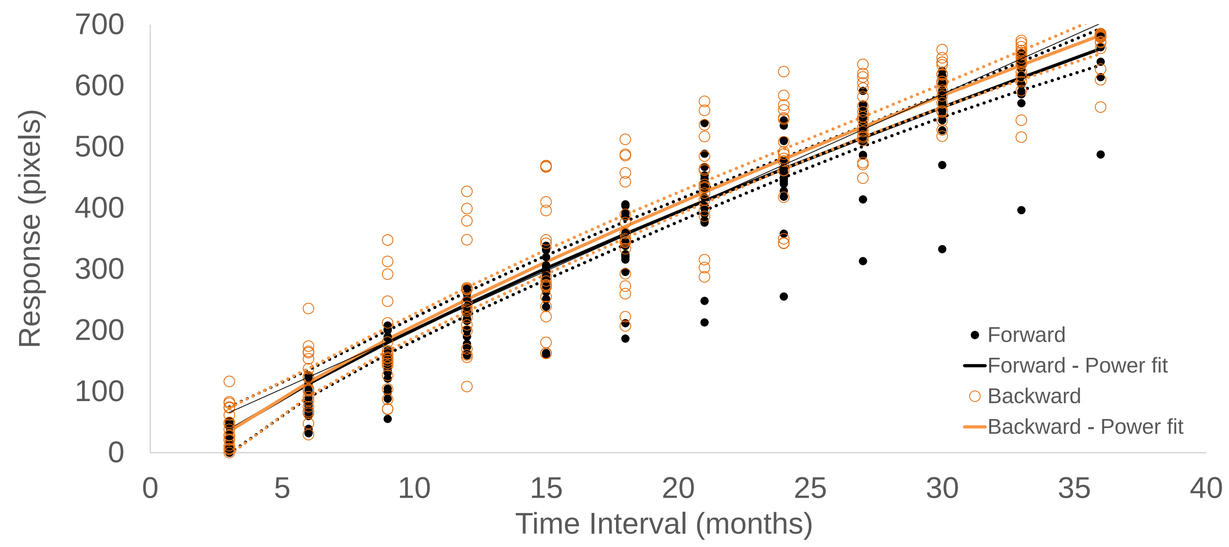


3. Results

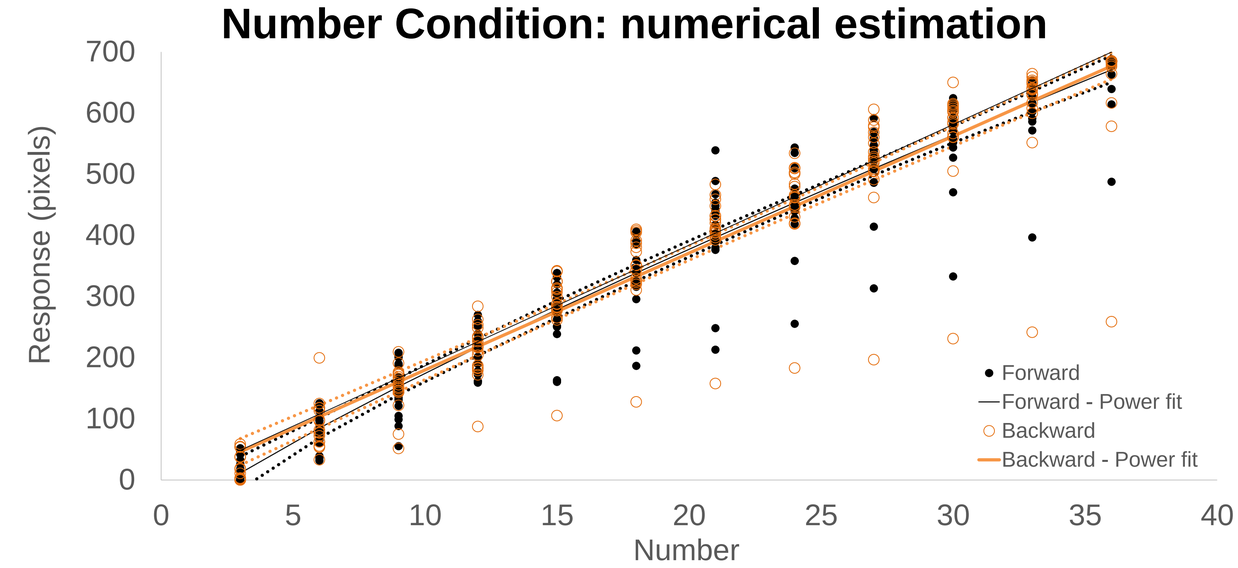
Power functions provided a better fit to the data as compared to linear and logistic models, with BIC values at least 2 units lower. The estimates for the parameter of the power model were 0.84, 0.77 and 0.58 for Groups I, II and III, respectively. Nonlinear fixed-effects model analysis did not find significant difference between Group I and II (df=413, t=-1.09, p>.27), but Group III was different from Group I (df=392, t=-2.46, p<.01) and Group II (df=414, t=-3.72, p<.005).

Figures: Continuous lines represent the best fitted power functions, while dotted lines represent the upper and lower prediction bounds for the fitted functions with a confidence level of 95%.

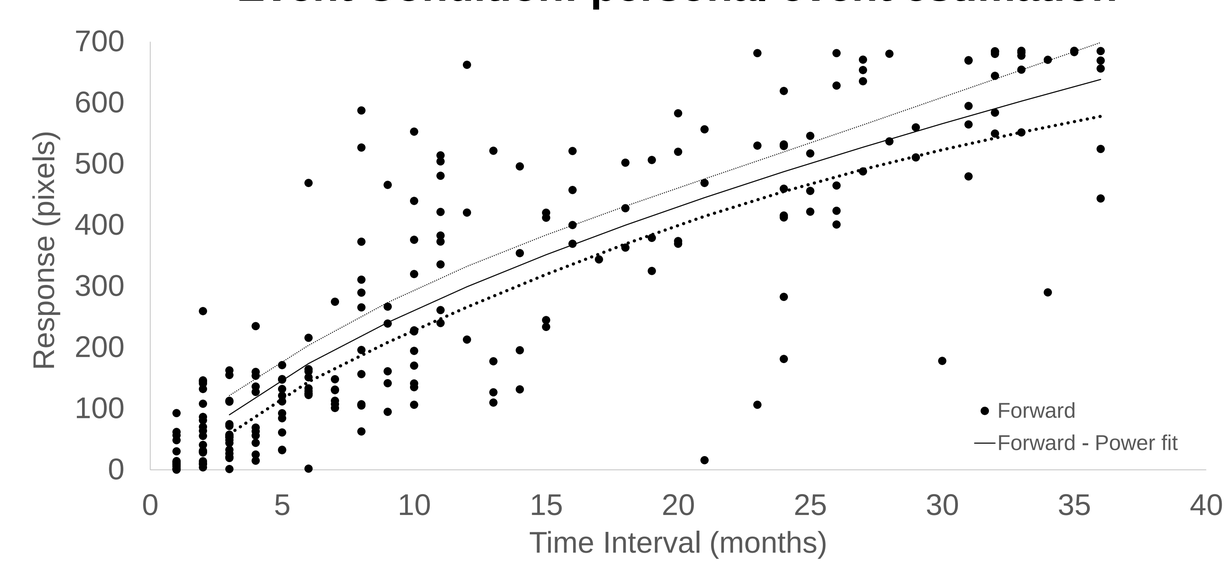
Number+month Condition: temporal estimation



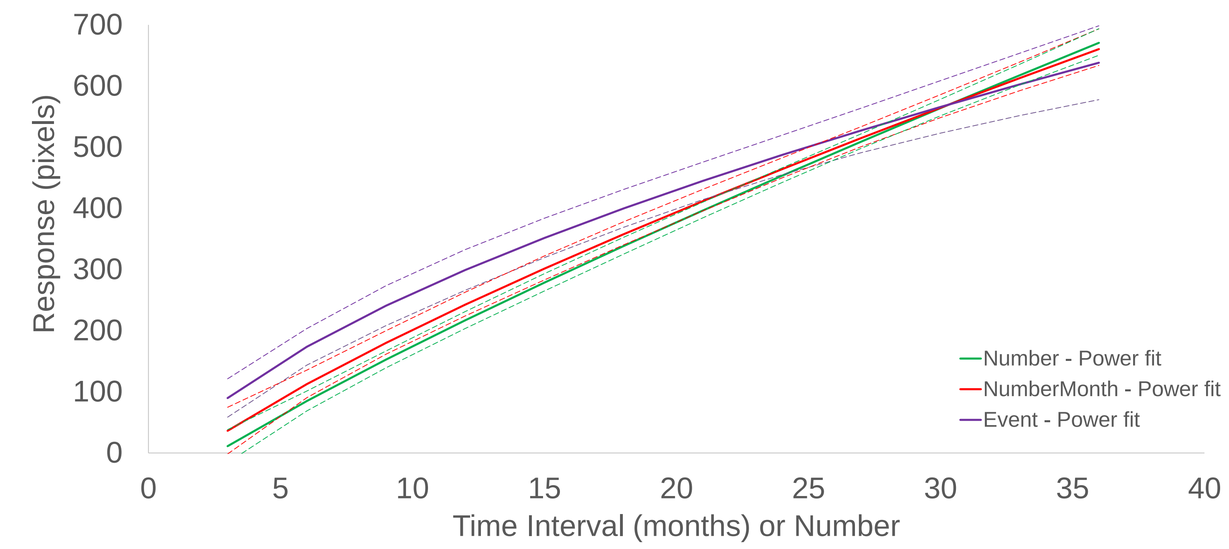
Number Condition: numerical estimation



Event Condition: personal event estimation



Comparisson: time vs. number vs. event



Conclusions

The results suggest that participants ignore the time unit and consider primarily the magnitude of the attached numeral. Experimental paradigms of measurement of long-range time perception should avoid the use of abstract numerals in stimuli presentation.

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