**Introduction**

Today, there seems to be no doubt that subliminal stimuli have an effect. However, it is still unclear how long primes should be minimally presented for priming to occur and how long primes can be maximally presented while still guaranteeing their unconscious nature.

The goal of this study is twofold: first, we want to sketch the time-course of subliminal semantic priming effects, which will allow us to determine the onset and process of these priming effects. Second, we want to sketch the time-course of prime visibility, which will allow us to determine until when priming effects can be considered “unconscious”. Furthermore, gaining insight in the development of prime visibility will shed light on whether this prime visibility develops in a gradual or rather an all-or-none fashion.

This study provides new insights in the development of subliminal semantic priming. Since this is ongoing research, I will present the first preliminary findings.

**The time-course of subliminal semantic priming effects**

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**Method**

65 volunteers were asked to categorize targets as smaller or larger than 5. Fig. 1 shows an example of a congruent trial. 1, 4, 6 and 9 were presented as primes and targets. 2, 3, 7 and 8 were only presented as targets. So both novel and repeated primes were used.

Prime duration was manipulated. Each participant received various trial blocks where the prime duration sequentially increased. To include as many different prime durations as possible, 4 prime duration chains were created, depending on the refresh rate of the monitor used. Each subject received one of these chains:

- **Chain 1** ($N = 17$): 17–34–50–57 ms

After completing all the blocks within a chain, subjects participated in a post test to assess prime visibility. They received the same chain again, and were asked to apply the same task instructions as before, but now to the primes instead of the targets.

**Results**

**Time-course of priming**

Fig. 2 shows the development of priming effects (RTs on incongruent trials – RTs on congruent trials, i.e. RCEs) across increasing prime durations. The strength of the observed priming effects increases in a linear manner as prime duration becomes longer. This trend appears to be similar for repeated and novel primes. However, for the novel primes a ceiling effect for priming (± 55 ms) seems to be reached at a prime duration of 50 ms, while for the repeated primes the priming effect appears to keep on increasing until 80 ms at a prime duration of 90 ms.

**Time-course of visibility**

Fig. 3 shows the development of visibility (% of primes recognized correctly). Until a prime duration of 35 ms, prime visibility lies between 50 and 60% for both novel and repeated primes. However, when primes were presented for 40 ms or longer, primes were clearly identified above chance level. Furthermore, from then on, novel primes were significantly more visible than repeated primes.

**Intercepts and slopes**

Fig. 4 shows the raw RTs on congruent and incongruent trials for novel and repeated primes separately. Linear models were fitted to the 4 RT categories and estimated intercepts and slopes across all subjects are reported. The intercepts for all categories are similar. However, the slopes differ. For novel primes, a significant positive slope is found for both congruent and incongruent trials. Contrarily, for repeated primes a strong positive slope is found for incongruent trials, but a null slope is found for congruent trials.

**Conclusion**

Summarizing these first results, we can conclude that the development of priming effects occurs in a rather linear way. Within the time-courses of priming and visibility differences can be observed between novel and repeated primes. This discrepancy is also expressed by the observed differences in slopes. These findings require further investigation, but it already becomes clear that they could shed new light on theoretical and methodological issues regarding subliminal semantic priming. Future analyses will include multilevel analyses to examine individual differences.

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