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**Supplementary information.**

1. Measure of auditory semantic priming: Experiment 5

While the methods and characteristics of visual masking have been extensively studied (see Kouider & Dehaene, 2007 for a review), less is known about auditory masking and unconscious auditory processes (but see Kouider & Dupoux, 2005; Lamy et al., 2008). In order to verify that the auditory masking method we designed allowed participants to process the prime despite not being aware of it, we measured semantic priming from masked auditory stimuli in Experiment 5. Here, the auditory prime consisted of one of the spoken sounds “two”, “four”, “six” or “eight” and was followed by a target consisting of one of the spoken sounds ”one”, “three”, “seven”, or “nine”. Nine naive participants were asked to judge whether the auditory target was bigger or smaller than five, as fast and as accurately as possible. The methods for reaction time analyses were similar to those employed in the main experiments. In the conscious condition, participants were able to categorize both targets and primes as bigger or smaller than five (mean accuracy = 94.7% ± 2.5% and 91.7%, ± 4.3%, respectively). In the unconscious condition, categorization dropped to chance-level for the primes (accuracy =51.3 ± 2.5%, one sample t-test: $t(8) = 0.96$, $p = 0.37$), while remaining high for the targets (accuracy =96.9% ± 1.2%). A two-way ANOVA was conducted with prime-target congruency (i.e., both the prime and the target are bigger/smaller than 5, or one is bigger and the other smaller) and numerical distance (numerical distance between the prime and the target: 1, 3, 5 or 7) as within-subject factors, and participants as the random variable. In the conscious condition, we found both a main effect of congruency ($F(1,8) = 7.05$, $p = 0.03$, $\eta^2 = 0.47$), and an interaction between congruency and numerical distance ($F(1,8) = 8.76$, $p = 0.02$, $\eta^2 = 0.52$), which is considered to be a hallmark of semantic processing of numbers. In the unconscious condition, the congruency main effect did not reach significance ($F(1,8) = 3.58$, $p = 0.095$, $\eta^2 = 0.31$). However, an interaction between congruency and numerical distance was found ($F(1,8) = 6.51$ , $p = 0.03$, $\eta^2 = 0.45$), reflecting the unconscious semantic processing of the auditory digits. In addition, we found a

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linear relationship between the amplitude of priming in the presence and the absence of masking (adjusted $R^2 = 0.52$, $p = 0.02$).

2. Control of primes awareness: Experiments 6-8

In order to rule out the possibility that participants consciously perceived the primes, but could not correctly report their relations due to memory failure (since the question about the primes pair appeared after the question about the targets pair), we ran Experiments 6, 7 and 8. Each control experiment started with a conscious block of 96 trials that was an exact replication of the conscious block in Experiment 1, 2 and 3, respectively. The conscious block was followed by an unconscious block of 96 trials, which was identical to that of Experiment 1, 2, and 3, except that no task on the targets pair was to be performed. In these conditions, while prime awareness in the unconscious block benefited from the training during the conscious block, it could not be underestimated due to interferences from the task performed on the target pairs. On the other hand, participants were more likely to be aware of the primes pair in these experiments, since they could allocate all their attentional resources to it, rather than having to focus on the targets pairs as well. Like in the main experiments, participants who could correctly judge primes' similarity with accuracy above 65% in the unconscious block were excluded from further analyses (1 in Experiment 6, 2 in Experiment 7). Three participants from Experiment 8 were excluded due to low performances in the conscious block (respective accuracies= 49.5%, 48.3% and 68.1%). After excluding these outliers, sample sizes were identical with those of the unconscious conditions in the main experiments (i.e., 17 participants in Experiment 6, 22 in Experiment 7, and 21 in Experiment 8). Replicating the findings of the main experiments, mean accuracies in the conscious blocks were high (Experiment 6: 86.3% ± 4.3%; Experiment 7: 85.7% ± 3.1%; Experiment 8: 84.1% ± 2.9%), but remained at chance in the unconscious block (Experiment 6: 52.2% ± 3.5%, $t(16) = 1.19$, $p = 0.25$; Experiment 7: 49.8% ± 2.0%, $t(21) = -0.24$, $p = 0.80$; Experiment 8: 50.3% ± 1.8%, $t(20) = 0.39$, $p = 0.70$). This rules out

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the alternative interpretation of the main experiments, and confirms that participants were indeed unaware of the primes.

**References.**

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