The intrinsic reward of language learning

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During the last decade, we have accrued important knowledge regarding the neural
networks involved in the hard process of language acquisition. However, it is still
unknown which are the neural process underlying the human drive to learn a language.
Recent theoretical models have proposed that during human evolution, emerging
language-learning mechanisms might have been glued to phylogenetically older
subcortical reward systems, reinforcing human motivation to learn a new language.
Supporting this hypothesis, we recently showed that adult learners exhibited robust
functional MRI activation in the ventral striatum – a core region of reward processing –
when successfully learning the meaning of new words. These results provided the first
neural evidences of the important role of reward and motivation during language
learning and supporting the idea that the strong coupling between neocortical language
regions and the subcortical reward system provided a crucial advantage in humans for
successfully acquire linguistic skills. Furthermore, we recently showed that successful
language learning (without the presence of external feedback) boosted also the
activation of reward-memory circuits [substantia nigra/ventral tegmental area complex
(SN/VTA), and the hippocampus (HP)]. Thus, intrinsic driven learning seems to be
strongly coupled with subserving reward-memory processes needed to ensure future
recall success. We believe this intrinsically motivated-learning mechanism might be
crucial for boosting formation of long-term memories, specially in our everyday lives, as
we continually acquire new knowledge in the absence of any obvious immediate reward.

A key question for the future is whether tapping into intrinsically rewarding forms of
learning might be a more effective educational strategy than relying on external
feedback and incentives. A second critical issue is to which extent the implication of this
reward-learning intrinsic mechanisms could predict the success of the process of
learning a new language (considering the contextual and sociolinguistic factors
surrounding the learning experience). This could be crucial for improving the design of
educational programs – for example, in teaching foreign languages – and also for
improving the recovery of verbal skills lost after stroke.

References

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