Choosing when to work and when to play:

How mindset impacts psychology students' decision to allocate effort and time to school activities

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SUMMARY

Theories from social and developmental psychology propose that humans very early on hold beliefs (i.e., mindsets) about whether or not their intelligence is malleable over the course of a lifetime (1). Such growth mindset of intelligence is beneficial for dealing with challenges, learning, investing effort (2), and experiencing well being at school (3). However, it is unknown if and how intelligence mindsets affect a person's preferences to engage in studying rather than leisure. Models of economic choices propose that decision-making involves two phases, valuation and action selection. Much work has been done to better understand the valuation phase, which involves the integration of motivational features of choice options into a subjective value that then drives the selection of choice outcomes (4).

Here we combined these two research streams and asked: If intelligence mindset affects decision making about engaging in school activities (vs. leisure activities), and how they potentially affect the valuation of school activities during decision-making ?

Second year psychology students (n = 54, 20.59+/- 0.04, 47 female/ 7 male) were randomly assigned to a Growth mindset (GM) or a Fixed mindset (FM) intervention. They were told that the aim of the study was to help future students to better prepare for exams, and were encouraged to answer spontaneously. Following the mindset intervention all participants performed a forced choice task during which they had to imagine to be one week or one month before an exam. Under these two contextual scenarios they had to choose between a leisure and a default school activity. Participants also rated each activity on its subjective value (how much they like to engage in this activity), and motivational features such as pleasantness (intrinsic motivation), intellectual enrichment (identified motivation), importance for school (extrinsic motivation) and its difficulty (cost).

The results showed that during the forced choice task, and according to the cover story of contributing to an optimal revision schedule for future students, participants chose more often the school activities, but these choices were influenced by mindset and contextual scenario. **The GM intervention group chose more often the school activity than the FM intervention group**, and especially one week before exams. In the rating task, school activities valuation was influenced by the pleasantness, enrichment, importance for school and difficulty of each activity. Importantly, **the intervention moderated the impact of difficulty on valuation**. Taken together these findings indicate that short mindset interventions influence activity choice but also the valuation phase during decision-making by changing the weight of the difficulty of school activities.

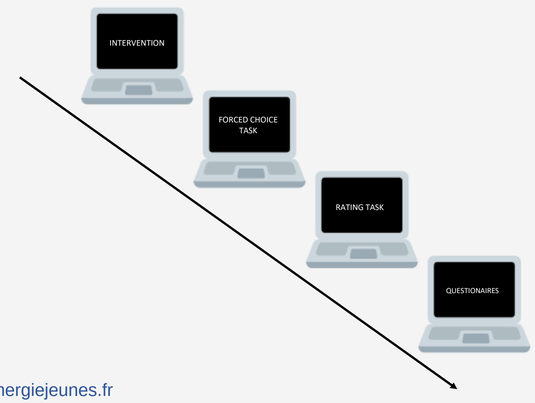
(1) Dweck, C. S. (1988). Goals: An approach to motivation and achievement. Journal of personality and Social Psychology, 54(1), 5-12.

(2) Schroder, H. S., Fisher, M. E., Lin, Y., Lo, S. L., Danovitch, J. H., & Moser, J. S. (2017). Neural evidence for enhanced attention to mistakes among school-aged children with a growth mindset. Developmental Cognitive Neuroscience, 24, 42-50.

(3) Zeng, G., Hou, H., & Peng, K. (2016). Effect of growth mindset on school engagement and psychological well-being of Chinese primary and middle school students: The mediating role of resilience. Frontiers in psychology, 7, 1873.

(4) Rangel, A., Camerer, C. & Montague, P. A framework for studying the neurobiology of value-based decision making. *Nat Rev Neurosci* **9,** 545–556 (2008). https://doi.org/10.1038/nrn2357

OVERVIEW OF EXPERIMENTAL DESIGN



FORCED CHOICE TASK

Students performed 80 choices under the following instruction:

Imagine the exams are in one week (or in one month).
You are doing the yellow activity, but if you want you can switch and engage in the activity in white. Which activity do you choose?

RESULTS

Activity choice was impacted by two factors and their interaction:

- **Mindset intervention**

Students choose more school activities after a Growth mindset intervention compared to the Fixed mindset intervention.

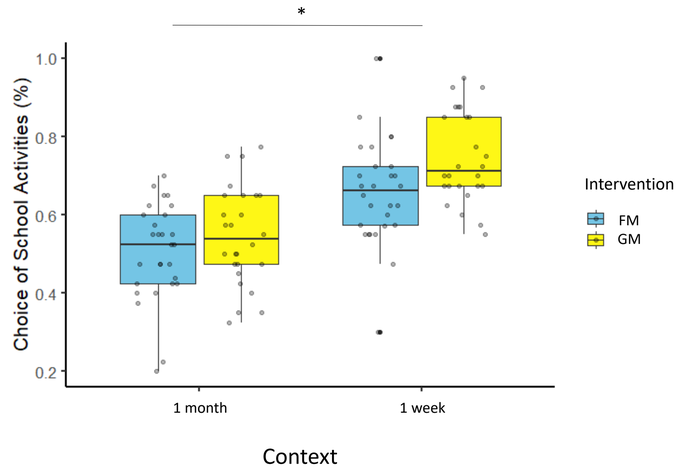
- **Contextual scenario**

Students choose more school activities one week than one month before exams.

- **Intervention * Context**

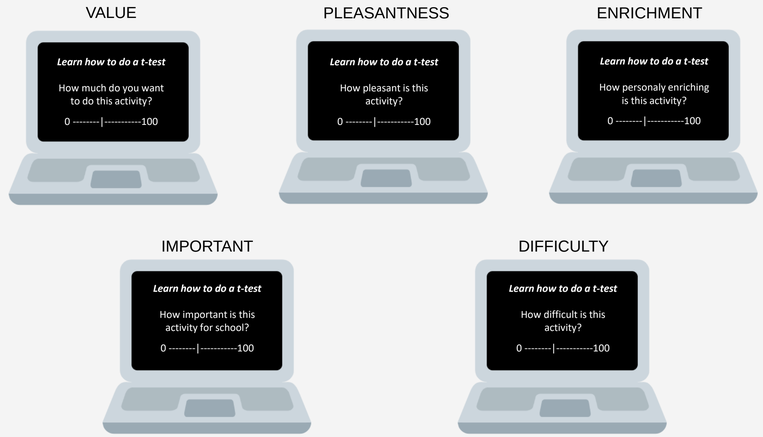
The impact of intervention was larger one week than one month before exams.

Binomial General Linear Mixed Model



RATING TASK

Students the rated 100 activities on:



RESULTS

School activities valuation was impacted by all features:

- **Pleasantness, enrichment and importance for school**

Impacted positively school activity values

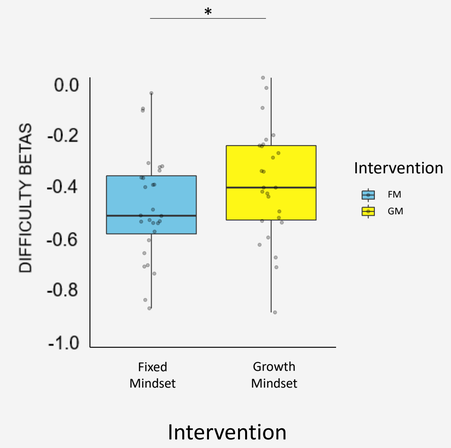
- **Difficulty**

Impacted negatively school activity values

- **Intervention * Difficulty**

Activities valuation was less impacted by the difficulty after the growth mindset intervention than after the fixed mindset intervention.

Linear Mixed Model



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