

When Performance Goals deplete Attentional Resources and Impair Cognitive Performance

Introduction

• In academic contexts, performance-approach goals (PAP goals) refer to the desire to outperform others, demonstrate one's abilities, and succeed (Elliot & Harackiewicz, 1996). Thus, PAP goals are concerned with normative evaluation.

Does performance-approach goal adoption predict later performance ?

- A large amount of longitudinal studies show that PAP goal endorsement is a positive predictor of academic success (for a review, see Darnon, Butera, Mugny, Quiamzade, & Hulleman, 2009).
- However, Beilock, Kulp, Holt, and Carr (2004) showed that an induction of evaluative pressure did impair intellectual performance. Evaluative pressure to perform creates a dual-task environment asking both - correct execution of the task, and - management of performance worries.

This dual task would lead to a temporarily decrease of the individual's working memory capacity, necessary to solve the focal task (Baddeley, 1986).

Hypotheses:

- During a demanding cognitive task, PAP goals might reduce performance (**Experiment 1**).
- This decline of performance might be due to the fact that PAP goals focus the individual on performance-related thoughts and worries (**Experiment 2**).

Experiment 1:

Do PAP goals reduce cognitive performance?

Method:

- **Participants:** 48 university students randomly assigned to one of the 2 experimental conditions.
- **Task:** Modular Arithmetic Problems (Beilock et al., 2004) solved in a laboratory context.



- In each block: easy, intermediate and complex problems. Performance on complex problems: will assess whether PAP goals also consume a part of cognitive resources during the solving.

- 2 experimental conditions:

1. Control group
2. PAP goal induction: supraliminal presentation of 50 words related to performance.

Results:

- To measure the effect attributed to the PAP goal induction:

$Perf_{phase\ 2} - Perf_{phase\ 1}$

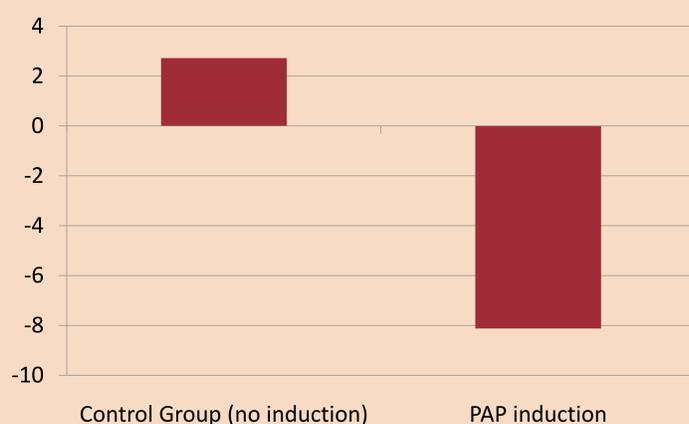


Figure 1. Phase 2 – Phase 1 difference in performance for complex problems (%)

- **Score: PAP induction < Control Group, $F(1, 40) = 4.6, p < .04, PRE = .10$**

- No significant difference between the 2 groups for easy and intermediate problems.

Experiment 2:

Why PAP goals reduce cognitive performance

Method:

- **Participants:** 96 university students randomly assigned to one of the 4 experimental conditions.
- **Task:** the same as in Experiment 1.
- **Procedure:** to directly manipulate concerns about performance, we used Wegner's thought-suppression procedure (Wegner, 2009).
- **4 experimental conditions:**

1. Control group
2. PAP goals (explicit instruction) only
3. PAP goals + suppression of neutral topic
4. PAP goals + suppression of PAP-related thoughts.

Results:

- In the model contrast:

the 4 conditions are respectively weighted **1 -1 1 -1**: if it is true that PAP goals reduce performance because they induce performance worries, then the *PAP goals only* and the *PAP goals + suppression of PAP-related thoughts* conditions should induce lower performance than the *control* and the *PAP goals + suppression of neutral topic* conditions.

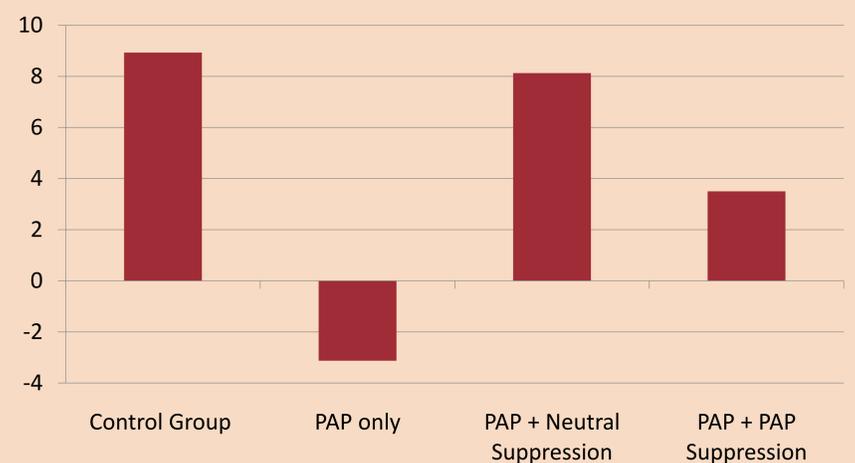


Figure 2. Phase 2 – Phase 1 difference in performance for complex problems (%)

- **This contrast is significant: $F(1, 82) = 4.32, p < .05, PRE = .05$**

- The 2 orthogonal contrasts are not significant.

Discussion:

Experiments 1 and 2 examine the effect of PAP goals on a task whose performance is prone to decrease if a part of cognitive resources is consumed by irrelevant information. Experiment 1 highlights the harmful consequences of PAP goal induction on performance. In Experiment 2, the "PAP goals only" and the "PAP goals + PAP suppression" groups both perform lower than the two other groups (importantly not focused on PAP goals); hence, this demonstrates that the mere induction of PAP goals already leads to a strong activation of thoughts linked to performance. Thus, the solicitation of working memory would be divided between the storage, processing and retrieval of task-relevant information on the one hand, and the activation and processing of PAP goals, potentially associated with anxiety and worries.

References

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