Rethinking mental fatigue : The role of motivation

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Résumé

Introduction

Fatigue was once seen as purely physical, but is now understood as physical and mental. In modern societies, the constant information flow heightens the risk of mental fatigue, affecting everyone from casual exercisers to elite athletes. Understanding its mechanisms is crucial. This study examines mental fatigue resulting from mental exertion, excluding chronic conditions needing medical diagnosis. Our key question is: What causes this fatigue? Is it an irreversible depletion of mental resources like physical fatigue, or does it relate to changes in motivation? Through experimental research, we aim to contribute to this scientific debate.

Method

We evaluated mental fatigue using a sequential task with two groups: fatigue and control. The fatigue group performs a demanding task, while the control group watches a documentary and answers simple questions. Both groups later complete the same cognitive task. To assess the effect of mental fatigue on motivation, we used cardiovascular indicators, particularly the pre-ejection period (PEP) and heart rate (HR), to measure mental effort beyond performance measures. The motivational intensity theory (Brehm & Self, 1989; Wright, 1996) informs our hypotheses on mental effort:

1. We predicted that participants in the fatigue group would exert more mental effort during the initial task than the control group.

2. We also anticipated that the demanding initial task would make the subsequent task seem more difficult for participants in the fatigue group, resulting in less mental effort. In contrast, since the control group had not completed a demanding task, they were expected to increase their effort on the subsequent task, as long as success was possible and justified.

3. In the subsequent task, we predicted that the fatigue group would exert less effort than the control group, supporting the notion that fatigue effects stem from the heightened perceived difficulty of the initial task.

Results

*Intervenant

- Subjective data: Participants in the fatigue group reported feeling more mentally fatigued than those in the control group after completing the first task (p =.031).
- Behavioral data: No significant differences emerged between the groups on the subsequent task.
- Physiological data: A significant interaction emerged for PEP and HR, showing a decreased investment between the first and second tasks for the fatigued group, while the control group exhibited the opposite phenomenon, $p < .001$. Furthermore, the control group invested more in the subsequent task than the fatigued group ($p = .033$).

Discussion & Conclusion

Our results show that completing a demanding initial task increases fatigue and perceived difficulty of future tasks. This is evident in the lower mental effort devoted to a subsequent task compared to a control group that watched a documentary.
Although more research is needed, our findings suggest that engaging in complex tasks, especially those seen as uncontrollable or externally imposed, with minimal reward, can reduce motivation for later tasks and lead to decreased engagement (Inzlicht & Schmeichel, 2012; Kurzban, 2016).

This has practical implications: for instance, someone returning to physical activity may struggle to commit to a workout after a tough day, viewing it as too effortful. Consequently, they may not engage fully or at all.
This concept also applies to elite athletes; minimizing mentally demanding tasks, especially before competition, is essential for optimizing performance.

References

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