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A Computational Model of Self-Signalling in Procrastination

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Abstract

People often procrastinate on tasks that they are ostensibly motivated to complete. We argue that dominant formal accounts – particularly temporal discounting models – capture the impulsive nature of procrastination but struggle to provide comprehensive cognitive explanations of three central features: which tasks people procrastinate on, why procrastination often feels bad, and when people finally begin working after a period of procrastinating.

We propose a computational framework to explain the mechanisms of avoidance in procrastination. In our model, agents choose how much effort to exert by reasoning over a probabilistic generative model of task progress over time. This structure supports inferences about competence and task difficulty from noisy progress signals. Crucially, agents incur an additional cost for negative belief updates about their own competence, capturing an aversion to appearing incompetent that motivates self-handicapping. With this structure, the model reproduces key behavioral, affective and cognitive signatures of procrastination.