Procrastination as a Mental Tax

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Seminar Applied Work in Progress

Motivation

Procrastination: Choosing to wait when an agent's long-run self would choose to do it (O'Donoghue & Rabin, 1999)

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- Procrastination is widespread.
  - 72.3% of 65,950 students across 97 US institutions reported problems with procrastination (Shatz, 2026).
  - 65% of 4,677 GB adults reported being very or fairly prone to procrastination (YouGov, 2025).
- Outstanding work may carry psychological costs before completion.
- The perceived benefit of postponing work depends on how accurately these psychological costs are anticipated.

Research Questions

- Do people underestimate the psychological costs of procrastination?
- Can reminders and references to timing choices affect decisions to procrastinate and psychological costs?
- How do procrastination decisions and forecast accuracy change with experience?

Literature

- Economic explanations use present bias and optimistic beliefs about future effort costs and available time (O'Donoghue & Rabin, 1999; Breig et al., 2020; Cordes et al., 2024).
- Anticipating unpleasant tasks can reduce utility; unfinished goals can trigger intrusive thoughts and disrupt other activities (Loewenstein, 1987; Masicampo & Baumeister, 2011).
- Excuses may make procrastination more attractive by reducing psychic costs (Lepper, 2024).
- Reminders can improve follow-through, but their effects depend on message content and whether they are anticipated (Karlan et al., 2016; Ericson, 2017).

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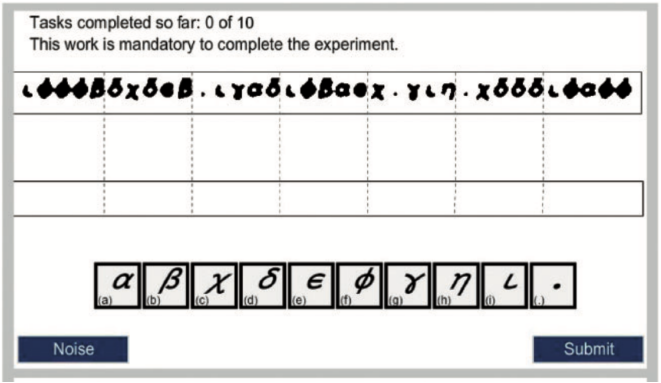
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Our project:

- Forecast errors about the psychological costs of delay
- Effects of reminders and content on timing choices and psychological costs

Experimental Design

Transcription Task



- Transcribe 35 handwritten Greek characters (Augenblick & Rabin, 2019).
- Click the "Noise" button whenever a signal sounds.
- Progress is erased if the button is not clicked within 5 seconds of a signal or is clicked when no signal occurs.
- Task completion requires at least 80% accuracy upon submission.

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A pre-session and three main sessions on Prolific, each two days apart.

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- Demographics
- Practice task
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Session 2

- Realised burden
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- Same message condition
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Session 3

- Realised burden
- Remaining tasks

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Serves as recruitment and is open for 3 days.
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- Introduction of transcription task and practice
- Choice of task schedule:

  Two additional parts of 5 transcription tasks each

  - 1st additional part: end of session 1 VS beginning of session 2
  - 2nd additional part: end of session 2 VS beginning of session 3

$\rightarrow$ The pre-session choices indicate a preferred work schedule.

Session 1

1. 10 compulsory tasks
2. Information on alternative task schedule and randomized message assignment:
   - No message
   - Two session-only messages
   - Two choice-referencing messages

   (Same message condition in both intervals)

Session 1

Example of a session-only message:

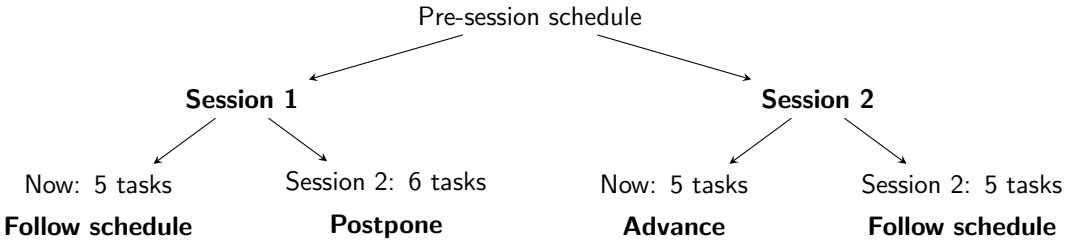
> Session 2 is tomorrow. You will complete 6 tasks from the first additional part, followed by 10 compulsory tasks. Reply 345 to confirm receipt.

Example of a choice-referencing message:

> Session 2 is tomorrow. You postponed the first additional part beyond your original schedule, so you will complete 6 tasks from this part, followed by 10 compulsory tasks. Reply 345 to confirm receipt.

Session 1

3. Decision on the additional part schedule:



Session 1

4. WTP to remove the additional part:

   Using a multiple price list, participants choose between:

   - Completing the additional part according to their timing choice
   - Forgoing a stated amount of bonus to remove the additional part

→ The switching point indicates the value of eliminating the whole task obligation.

(Which includes psychological burden, effort cost, messages, etc.)

Implement for a small subset of randomly selected participants.

Session 1

5. Predicted psychological burden: self-reported prediction of psychological costs
   - Task-related costs
     - How often do you expect thoughts about the additional part to come to mind when you are doing other things?
     - How tense or stressed do you expect to feel when you think about the additional part?
     - How much do you expect thoughts about the additional part to interfere with your ability to concentrate on other activities?
   - Choice-related costs
     - How guilty/proud/much regret do you expect to feel about this decision?

   Task-related items adapted from Ehring et al. (2011); Cropley et al. (2012). Choice-related emotion items adapted from Watson et al. (1988); Brehaut et al. (2003).

6. Finish the additional part if choose to complete in Session 1

Intervals: Messages

- Participants receive messages according to their assigned condition.
- They are asked to log in to Prolific and reply to acknowledge receipt of each message.

Session 2

1. Realised psychological burden: at the start of Session 2
   - How often did thoughts about the additional part come to mind when you were doing other things?
   - How tense or stressed did you feel when you thought about the additional part?
   - How much did thoughts about the additional part interfere with your ability to concentrate on other activities?
   - How guilty/proud/much regret did you feel about this decision?
2. Finish the first additional part if outstanding
3. Follow the same sequence as in Session 1

Session 3

1. Realised psychological burden
2. Finish the second additional part if outstanding
3. 10 compulsory tasks
4. Task evaluation
   - How boring/annoying/enjoyable did you find the transcription task?
5. Post-decision follow-up and retrospective preferences
   - Did you choose to postpone any additional part during the study?
   - *(If yes)* Why did you choose to postpone?
   - Thinking back on the study, which arrangement would you have preferred?
     - I would prefer to have completed the additional part earlier.
     - I would prefer to have postponed the additional part.
     - I feel the same about both arrangements.
6. Big Five personality traits

Outcomes and Analysis

Outcomes

For participant i in interval $j \in \{1, 2\}$:

- **Timing choices**: $Postpone_{ij}$ and $Advance_{ij}$ *(Binary)*
- **Predicted burden**: P_{ij} *(11-point scale from 0 to 10)*
- **Realized burden**: R_{ij}
- **Forecast gap**: $G_{ij} = R_{ij} - P_{ij}$ *(+ve: underestimation; -ve: overestimation)*
- **WTP** to remove the additional task obligation: WTP_{ij} *(0 to £2 in increments of £0.25)*
- **Productivity**

Burden:

1. Composite measure using thoughts, stress, interference
2. Composite measure using guilt, pride, and regret

Analysis

$$Y_{ij} = \alpha + \tau_S S_i + \tau_C C_i + \lambda I_j + \theta_S (S_i I_j) + \theta_C (C_i I_j) + X'_{ij,0}\gamma + \varepsilon_{ij}$$

- $S_i = 1$ if assigned to session-only messages, and 0 otherwise
- $C_i = 1$ if assigned to choice-referencing messages, and 0 otherwise
- $I_j = 1$ for Interval 2 and 0 for Interval 1
- $X_{ij,0}$ contains pre-treatment characteristics (pre-session schedule etc.)
- Reference group: No messages
- Standard errors clustered by participant

Analysis

- **RQ1: Underestimation of psychological costs**

  Means and confidence intervals for P_{ij}, R_{ij} and G_{ij} (by timing category and interval)

- **RQ2: Effects of message assignment**

  Reg P_{ij}, R_{ij}, and G_{ij} on message-group indicators
  Reg $Postpone_{ij}$ for those who initially scheduled earlier
  Reg $Advance_{ij}$ for those who initially scheduled later
  Pairwise comparisons across message groups in each interval

- **RQ3: Changes with experience**

  Within-individual comparisons across intervals by message group
  (Timing-choice analysis: participants who initially scheduled earlier or later for both parts)

Additional Analysis

- Correlations between WTP_{ij} and burden measures
- Message effects on WTP_{ij} and changes in WTP_{ij} with experience
- Correlations between task performance and timing choices and burden measures
- Session return and completion rates
- Message acknowledgement rates and response times

Pilot

- Postpone option: pilot with 6 tasks first, and potentially change the number of tasks
- Randomize on the order of timing decision and burden prediction

Additional Questions

- WTP is to remove the entire task obligation, any way to isolate psychological burden?
- Second-interval outcomes are endogenous to first-interval outcomes. We cannot call it learning effect. Are they still valuable?

Thanks :)

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