Temptation to Consume Information

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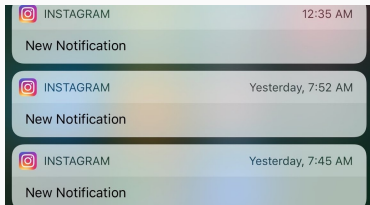
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Context

- From 2000–2007 alone, 29x increase in global capacity to telecommunicate information (Hilbert and López, 2011, Science)
- What are the welfare implications of increased information supply?

Context

Italian high society in shock as millionaire banker throws ultra exclusive engagement party at Turin villa - only to make stunning accusations against fiancée in his speech
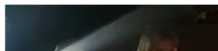
The high-flying Italian couple were standing at

- Allcott et al. (2022, AER): self-control problems cause 31% of social media use

- Robertson et al. (2023, Nature HB): negative framing of news headlines causally *increases* news consumption

Research question

Large literature in economics on information avoidance. But is information freely avoided when undesirable?

1. Is undesired information *tempting*?

    $\implies$ welfare costs from availability of undesired information

2. Are information preferences dynamically inconsistent?

Related literature: theory

- Many theories of preferences for information.
- Most relevant: information has psychological (intrinsic) value
    - Avoid information with negative affective consequences (Caplin and Leahy, 2001, QJE; Caplin and Leahy, 2004, EJ; Brunnermeier and Parker, 2005, AER; Köszegi, 2006, JEEA; Lipnowski and Mathevet, 2018, AEJ:Micro).
- Existing theories do not account for dynamic inconsistency in intrinsic preferences for information.
- My conjecture: curiosity $\implies$ avoiding available information is costly.

Related literature: empirical

- People often avoid/forget undesirable information... (Oster et al., 2013, AER; Zimmermann, 2020, AER; Huffman et al., 2022, AER; Roy-Chowdhury, 2022)

- But also seem to be impatient to acquire when it has no instrumental value (Eliaz and Schotter, 2007, AER; Nielsen, 2020, JET; Masatlioglu et al., 2022; Falk and Zimmermann, 2023, MS)

Does acquisition of upsetting/useless information reflect failed self-control?

Temptation and self-control

- Gul and Pesendorfer (2001)

- A decision-maker (DM) chooses over *menus* in period 1, using $\succeq_1$. She then selects an item from the menu in period 2 according to $\succeq_2$.

- Consider a binary choice, $a \in \{0, 1\}$.

- Key to consider $\succeq_1$ over possible period 2 menus $\{\{0\}, \{0, 1\}, \{1\}\}$.

- For example:
    - $\{0\}$ commits to working
    - $\{0, 1\}$ gives the option to procrastinate
    - $\{1\}$ commits to procrastination

Temptation and self-control

- Suppose $a = 1$ consumes information and $a = 0$ avoids it. Consider a DM with $\{0\} \succ_1 \{1\}$.

- Standard preferences $\implies \{0\} \sim_1 \{0, 1\}$.

- $a = 1$ is *tempting* if $\{0\} \succ_1 \{0, 1\} \succsim \{1\}$.
    - *Strongly Tempted* $\implies \{0\} \succ_1 \{0, 1\} \sim_1 \{1\}$
    - *Tempted* $\implies \{0\} \succ_1 \{0, 1\} \succ_1 \{1\}$

- Note: self-control costs $\implies$ strict preference for commitment without dynamically inconsistent choice

Experiment objectives

- Session 1: How many people's menu preferences imply temptation (ex ante) for the information we offer?

- Session 2: Do menu preferences reflect sophistication about self-control costs/dynamic inconsistency?

- Leverage lab: create an information object which induces guilt but has no instrumental use

Session 1 outline

- Recruit 670 US participants from Prolific.

- Participants choose whether to take $4, knowing there is a 'small' chance they are a *Donor*, meaning $15 will be removed from a charity donation if they take the bonus.

- Learn they will be able to find out *Donor* status by 'opening an envelope' (setting $a = 1$) in a day's time.

- Collect menu preferences over $\{\{0\}, \{0, 1\}, \{1\}\}$ (Toussaert, 2018)

- $\{0\}$ commits to avoiding information, $\{0, 1\}$ gives the option to consume or avoid, and $\{1\}$ commits to consuming.

Session 2

- Have collected $\succeq_1$ in session 1 over $\{\{0\}, \{0, 1\}, \{1\}\}$.

- 50% chance $\{0, 1\}$ is implemented regardless of ranking.

- Otherwise, 80% chance first choice is implemented; 20% chance second choice is implemented.

- Note 13 possibilities (e.g. $\{1\} \succ_1 \{0, 1\} \succ_1 \{0\} \implies$ avoiding information is a temptation).

Types

The two types tempted by undesirable information:

Tempted (T): $\{0\} \succ_1 \{0, 1\} \succ_1 \{1\}$

Has low self-control costs; relatively unlikely to succumb to temptation

Strongly Tempted (ST): $\{0\} \succ_1 \{0, 1\} \sim_1 \{1\}$

Has higher self-control costs; relatively likely to succumb to temptation

Envelope in session 2

Here is your virtual envelope. Inside is a message which will tell you that there was either a **0% or a 20% chance that $15 was removed from the donation** pot as a result of your choice.

If it says there was a 20% chance of $15 being removed, you will then be asked whether you want to confirm if this was the case.

Do you want to open the envelope now?

Result 1: Prevalence of temptation

Table 1: Menu preferences from session 1

Menu preference	Type	N	Share	
$\{0\} \succ_1 \{0,1\} \succ_1 \{1\}$	**Tempted**	**254**	**38.4%** (1.9)	
$\{0\} \sim_1 \{0,1\} \sim_1 \{1\}$	Indifferent	80	12.1% (1.3)	$\Big\}$ **49.1%**
$\{0\} \succ_1 \{0,1\} \sim_1 \{1\}$	**Strongly tempted**	**71**	**10.7%** (1.2)	
$\{0\} \sim_1 \{0,1\} \succ_1 \{1\}$	Standard info. averse	54	8.2% (1.1)	
$\{0,1\} \succ_1 \{0\} \succ_1 \{1\}$	Flex	50	7.6% (1)	
$\{0,1\} \succ_1 \{1\} \succ_1 \{0\}$	Flex	34	5.1% (0.9)	
$\{0,1\} \succ_1 \{0\} \sim_1 \{1\}$	Flex	33	5% (0.8)	
$\{1\} \succ_1 \{0,1\} \succ_1 \{0\}$	Self-control (info. loving)	29	4.4% (0.8)	
$\{0,1\} \sim_1 \{1\} \succ_1 \{0\}$	Other	17	2.6% (0.6)	
$\{0\} \succ_1 \{1\} \succ_1 \{0,1\}$	Flexibility averse	14	2.1% (0.6)	
$\{1\} \succ_1 \{0\} \sim_1 \{0,1\}$	Other	13	2% (0.5)	
$\{0\} \sim_1 \{1\} \succ_1 \{0,1\}$	Commitment loving	9	1.4% (0.5)	
$\{1\} \succ_1 \{0\} \succ_1 \{0,1\}$	Flexibility averse	4	0.6% (0.3)	
Total		662	100%	

Result 2: Willingness to pay

Figure 1: Histogram of WTP for $\{0\} \succ_1 \{0, 1\}$ for Tempted types
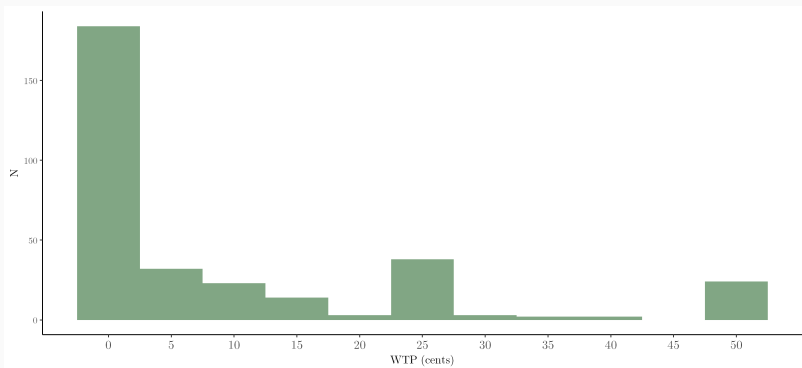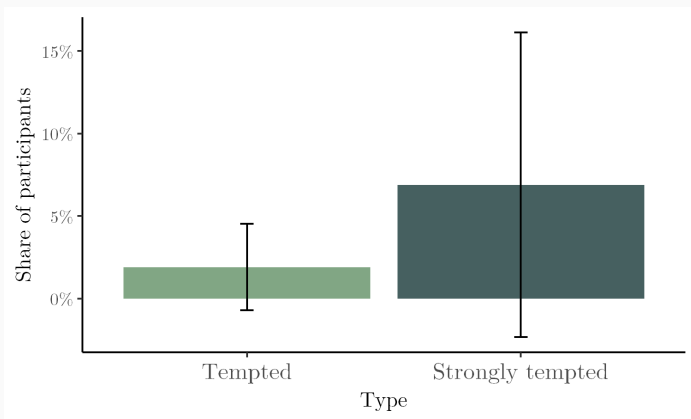

- 43% of those tempted by information are willing to pay **both** effort costs and money for the preference $\{0\} \succ_1 \{0, 1\}$.

Session 2

- For 50% of participants, $\{0, 1\}$ is implemented regardless of $\succeq_1$.
- Collect data on participants' **choices** $a \in \{0, 1\}$.
- Measure self-control costs via **deliberation time** on envelope page.

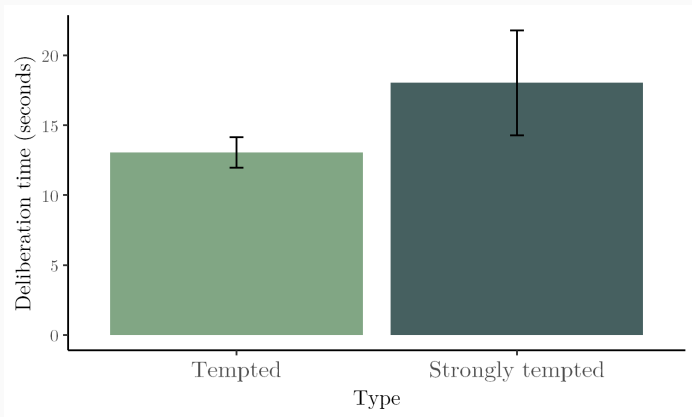## Result 3: Dynamic inconsistency

Figure 2: Share opening envelope by type

- 3% of those tempted by information access it when offered.
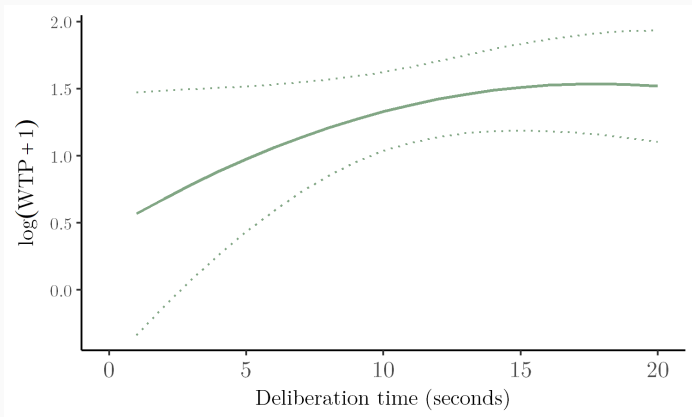
Result 4a: Self-control costs and type

Figure 3: Deliberation time under $\{0, 1\}$ by session 1 preference

- *Tempted* types have lower deliberation time than *strongly tempted* types, as predicted by model.

Result 4b: Self-control costs and WTP

Figure 4: Willingness to pay for $\{0\} \succ_1 \{0, 1\}$ vs decision time

- *WTP* for $\{0\} \succ_1 \{0, 1\}$ *increases* in deliberation time in session 2, as predicted by model.

Implications

- Dynamic inconsistency has implications for empirical and theoretical work on information preferences
- Relevance to new research agenda on digital addiction and welfare effects of social media (Allcott et al., 2020; Allcott et al., 2022; Braghieri et al., 2022)
    - Deeper foundation for self-control problems with social media: compulsive demand for information
- If information is tempting, stronger case for regulating it like other temptation goods