Methodological advances regarding Mental Time Travel

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What is mental time travel?

Episodic memory (Tulving) + Episodic planning (Attance & O'Neill, 2001).

The cognitive capacity to situate thought in times other than the present, including episodic memory and episodic planning.

- In the present
- Remembering
- Knowing
- Imagining
- Future thought
- Other

Why does the methodology need to change?

- There has been significant advances in our understanding of Mental Time Travel and its components:
  - Especially a focus on it neural correlates
  - Laboratory evidence that temporal direction is related to task demands (Smallwood, Nind & O'Connor, 2009)
  - Generally acknowledged as transient
- But all the research is laboratory based!

Our approach

- Repeated measures to explore transience
  - 20 measures over two days
- Emphasis on tapping real-world thoughts
  - Random schedule to avoid anticipation effects
  - Data collection mode uses pre-existing participant infrastructure

- What were you thinking about?
  - How were you feeling?
  - Because of what you were thinking about, will you do anything?
  - Where were you?
  - Were you alone or with other people?

The Sample

- 87 participants (data completed and matched)
  - 32% male
  - Mean age 22, range 17-55
  - Only one non-regular phone user:
    - 99% used SMS daily (36% used voice calls daily)
  - 68% used their own phone,
    32% borrowed one

Completion promptness

Reminder SMS arrival → open app

- Mean of 40 seconds
- Median 30 seconds

The mobile phone was kept handy, and answered very quickly by participants.

Time to complete

Open app → finish last question

- Mean of 1.5 minutes (max 56 minutes)
- Median < one minute

The questionnaire was not burdensome in terms of time.

Completeness

- 90% response rate (averaged across participants)

- All attempted surveys were complete
  - 87% offered extra optional info
  - Mean length of 32 characters
  - Median length of 27 characters
  - Longest at 201 characters

The quick responses were not due to participants failing to answer all of the questions.

Was the data psychologically informative?

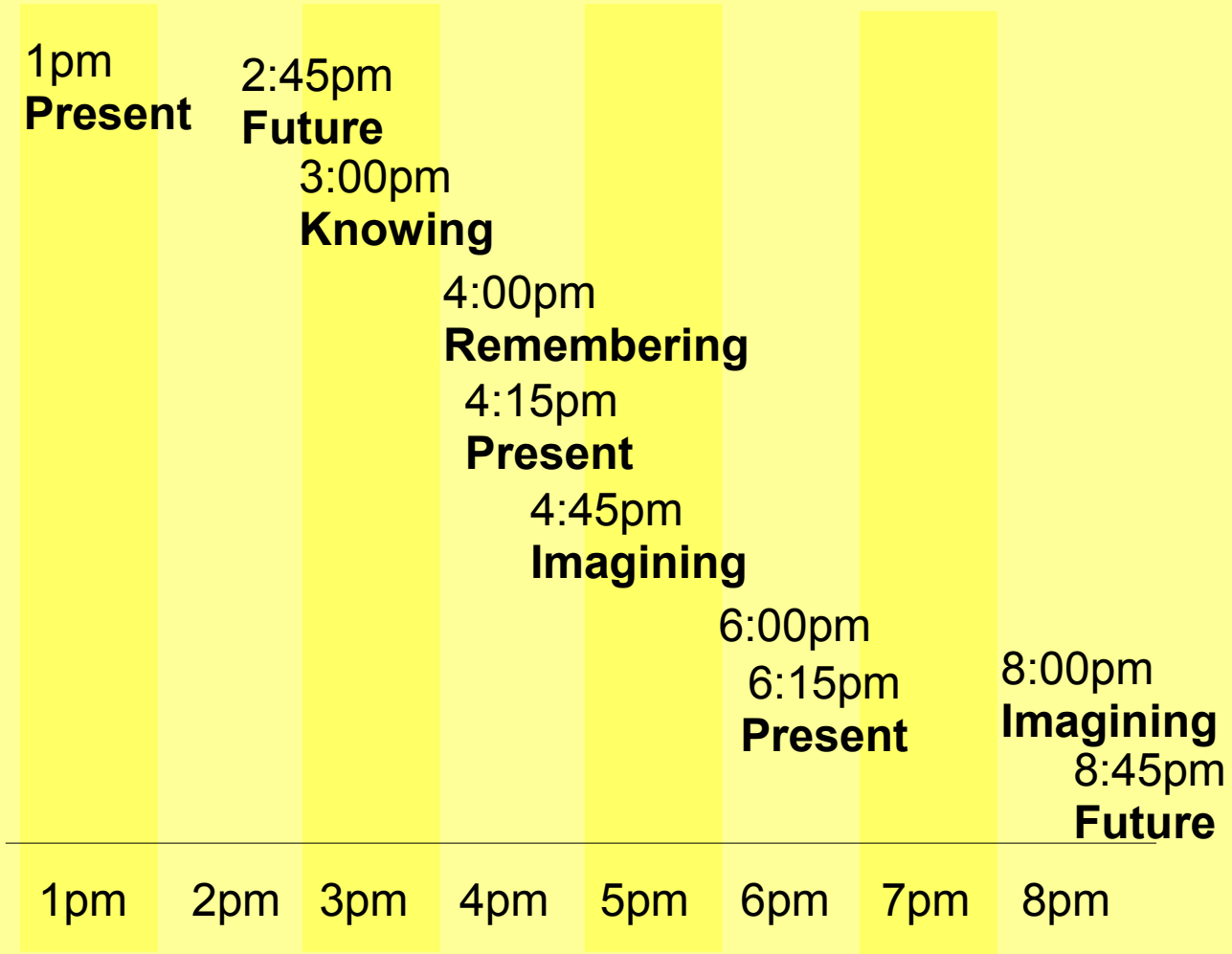
Statistically speaking, *almost.*

- A Design Effect value of 2 indicates suitability for multilevel analysis
  - The intraclass correlation coefficient, ρ, is an effect size measure akin to η^2 in ANOVA.
  - The Design Effect adjusts ρ for the level 1 sample size (here, the number of repeated measures)
  - Design Effect = 1 + (# of repeated measures -1) ρ.
- A simple no-predictor hierarchical logistic model of Mental Time Travel grouped by individual has a Design Effect value of **1.94**

Was the data psychologically informative?

Theoretically speaking:

Absolutely.



Participant experience

The following data is from the debriefing survey with all participants to date (*n* =124 participants).

- 80% rated the data collection method's convenience as “good” (18% “neutral”, 2% rated it “poor”)
- 100% rated its privacy as “good”.
- “Given the choice for the data gathering method in a study such as this, would you prefer to record or respond...”
  - On paper – Purely by SMS – Online
  - On a digital device supplied by the researcher, other than a mobile phone
  - **The way you did for this study 50%**

Participants embraced this methodology.

Limitations

- Somewhat effort intensive for the researcher
- The use of the app was restrictive
  - Limited time-frame due to costly subscription
  - Limited the type of phone that could be used

- Lack of convergent validation with pre-existing Mental Time Travel scales

What is next?

- Further analysis:
  - Demographic factors and non-completion
  - Time of day prompt received and response completion
- More data collection
  - Comparative data quality and participant attitudes when using SMS rather than an app

Conclusion

This new ambulatory self-report methodology for mental time travel...

- *Is pragmatically achievable*
- *Produces meaningful, robust data of individual differences*
- *Well received by participants*

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