

Finding Time: A Systematic Comparison of Subjective Time Assessments

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Background

Subjective time perception (STP):

- Perception of how short or long a certain duration of time feels to an individual
- Consistently related to hyperbolic discounting^{1,2,3}

STP assessments:

- Distinctly different across studies, without comparisons
- Maximum time frame is 3 years
- Only used in Western countries

Research goal of this systematic comparison:

- Psychometric properties of each ST assessment
- Cross-cultural validity of each assessment
- Pick a winner for the next, cross-cultural study on the role of STP in retirement saving

This study was preregistered⁴

Methods

Participants: Psychology undergraduate students from each a university in the Netherlands and Indonesia. Current sample: $N = 124$ ($N_{NL} = 97$, $N_{IDN} = 27$). Target sample size = 552 (data collection is ongoing).

Subjective time assessments – Time frame:

- Short time frame: 3-36 months (3 months interval)
- Long time frame: 5-60 years (5 years interval)

Delay discounting task – Winning a lottery scenario:

How much money do you need to be paid to wait [3 months] instead of receiving EUR 75 now? (*Systematically varied across trials*)

- Short time frame 3-36 months; base amount EUR 75; IDR 500000)
- Long time frame 5-60 years; base amount EUR 1000, IDR 7000000)

Lexicographic method, with four criteria: (1) split-half reliability, (2) correlation between short and long time frame STPs, (3) ease of use, (4) association with hyperbolic discounting.

Subjective Time Assessments

First assessment

HORIZONTAL LINE

Left Very short - Right Very long

HORIZONTAL LINE

Left Very long - Right Very short

VERTICAL LINE

TOP Very long - BOTTOM Very short

VERTICAL LINE

TOP Very long - BOTTOM Very short

UNBOUNDED LINE

DOT PLACEMENT

Within-subject randomization:
Short/Long time frame order

Second assessment

HORIZONTAL LINE

Left Very short - Right Very long

HORIZONTAL LINE

Left Very long - Right Very short

VERTICAL LINE

TOP Very long - BOTTOM Very short

VERTICAL LINE

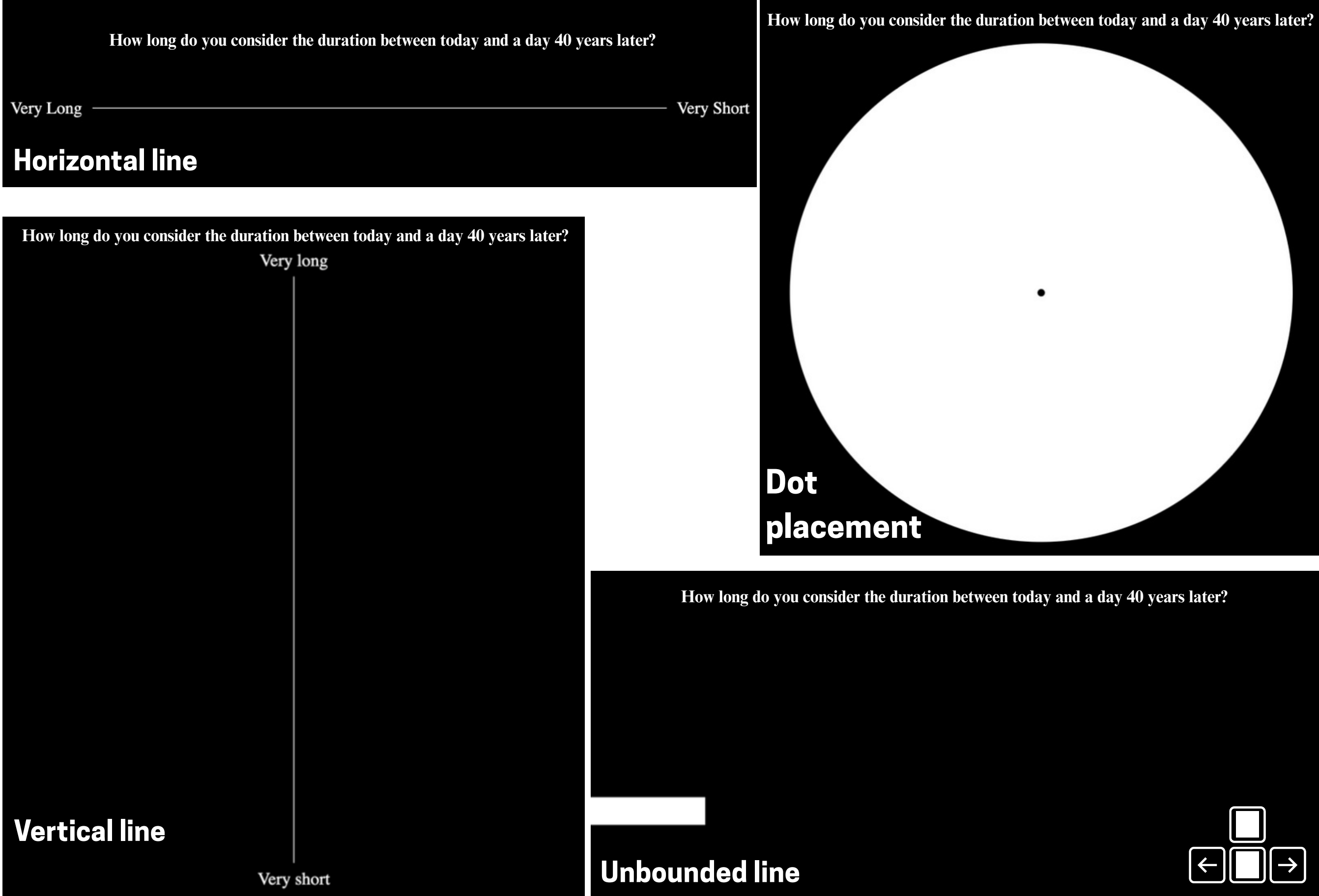
TOP Very long - BOTTOM Very short

UNBOUNDED LINE

DOT PLACEMENT

The timeframe order is consistent
with the first assessment.
No repetition of same type of assessment.

How long do you consider the duration between today and a day [40 years] later?



Preliminary Results, Conclusions, & Future Steps

Criteria	Split-half reliability ($\geq .60$)	r short/long timescales ($\geq .30$)	Ease of use (≤ 3)	Delay discounting ($>50\%$)
Assessments				
Horizontal line S-L	.97 (.97)	.81 (.81)	1.73	100% (100%)
Horizontal line L-S	.96 (.92)	.81 (.81)	1.67	96% (94%)
Vertical line S-L	.95 (.96)	.77 (.77)	2.07	96% (96%)
Vertical line L-S	.96 (.96)	.82 (.82)	1.59	100% (91%)
Unbounded line	.98 (.98)	.80 (.80)	2.57	95% (97%)
Dot placement	.94 (.94)	.77 (.77)	2.32	98% (100%)

Note. Outside the (): results for the short timescale. Inside the (): results for the long timescales.

Conclusions

- All assessments perform exceptionally well in all criteria.
- The assessments can be used to measure a more extended timeframe (~60 years).
- The direction of time appeared to have the potential to impact assessment outcomes.

Future steps

- Use the winning assessment to conduct a cross-cultural study on the role of STP in retirement savings intentions/decisions in the Netherlands and Indonesia.

References

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