# Assessing the Dynamic Framework of Thought and its Relation to Mind-Wandering

PANNEELS Gaëlle [a], STAWARCZYK David [a,b,c]

[a] University of Liège, Psychology and Neuroscience of Cognition Research Unit (PsyNCog) , Place des orateurs 1 (B33), 4000 Liège, Belgium.
[b] GIGA – CRC (Cyclotron Research Center) Human Imaging, University of Liège, Allée du 6 Août 8 (B30), 4000 Liège, Belgium.
[c] Fund for Scientific Research (FNRS)

Introduction

Mind-wandering (MW) might play an important role in shaping the self and supporting future-oriented thinking[1]. However, there currently is no consensus on its definition.
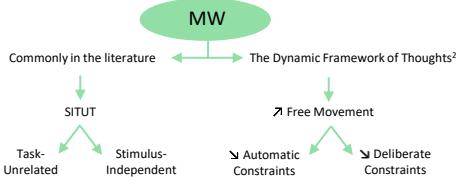

No studies to date have investigated these dimensions simultaneously.

1. Is MW associated with free movement and with automatic and deliberate constraints ?
2. Are automatic and deliberate constraints related to free movement ?

Method

☐ Go/No-Go task (SART)
☐ Probes: assessment of MW, degree of free movement, and both automatic and deliberate constraints.

186 young adults
M_{age} = 20.48
SD_{age} = 2.19

Where was your attention directed at ?
1. On task
2. Task-related interferences
3. External distractions
4. Mind-wandering
5. Mind-blanking

Free movement
My attention and/or my thoughts moved freely from one thing to the next :
1 Not at all   2   3   4   5   6   7 Totally

Deliberate constraints :
I was deliberately controlling the focus of my attention and/or thoughts :
1 Not at all   2   3   4   5   6   7 Totally

Automatic constraints :
Disengaging my attention/thoughts from what was on my mind was..
1 Not at all   2   3   4   5   6   7 Totally

Results

Linear Mixed Models (LMER)
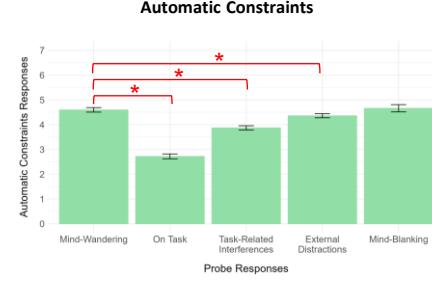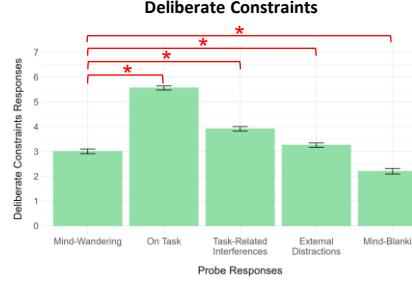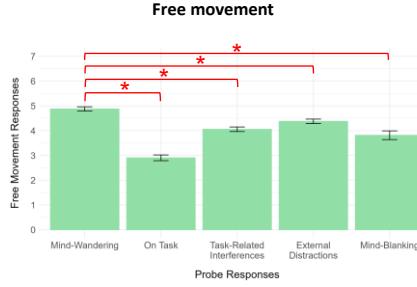
*Indicates a significant effect (p < .05)

MW and …

Free movement

Deliberate Constraints

Automatic Constraints

Free movement and …

Deliberate Constraints
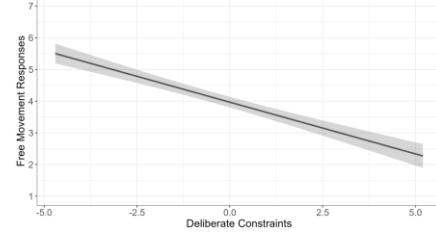
b = -0.33, SE = 0.03, t = -10.55, p < .001

Automatic Constraints
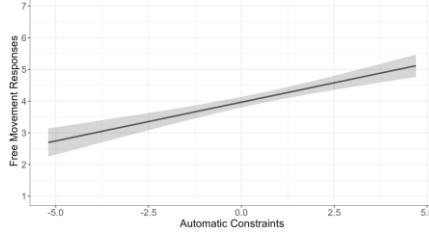
b = 0.24, SE = 0.04, t = 6.52, p < .001

Automatic and Deliberate Constraints
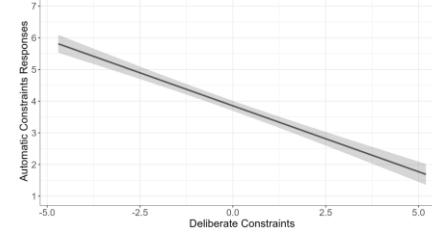
b = -0.42, SE = 0.03, t = -15.44, p < .001

Discussion

1. **MW is associated** to: ↗ degree of free movement and ↘ degree of deliberate constraints.
2. **Free movement** is related to ↘ deliberate but ↗ automatic constraints.

=> These findings indicate that the proposition of DFT is partially supported such that :
=> MW can be characterized by free movement
=> However, free movement does not correspond to low automatic constraints
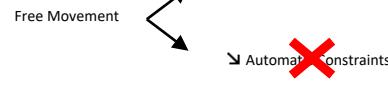
Future research should examine the relationships between the different characteristics of MW in order to clarify its definition, and in particular the links between automatic constraints and the free movement of thoughts.
=> Using different methods (e.g., Think-Aloud Procedures) could be useful to assess the dynamics of thoughts.

1. Stawarczyk, D., Majerus, S., Maj, M., Van der Linden, M. & D'Argembeau, A. (2011). Mind-wandering: Phenomenology and function as assessed with a novel experience sampling method. Acta Psychologica, 136, 370-381.
2. Christoff, K., Irving, Z. C., Fox, K. C., Spreng, R. N., & Andrews-Hanna, J. R. (2016). Mind-wandering as spontaneous thought: a dynamic framework. Nature reviews: Neuroscience, 17(11), 718–731.