

Examining a Mechanism and Potential Mitigator of Unsafe Driving Linked to Mind Wandering in Young Drivers

in Young Drivers

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1. Introduction

- Road traffic crashes are the leading killer of young people aged 5–29 years¹
- Young drivers are prone to distraction²
- Mind wandering (MW) is a form of distraction involving task-unrelated thoughts³
- MW predicts unsafe driving and crashes^{4,5}

Negative Mood

- Negative mood increases MW in lab tasks⁶
- Negative mood is linked to rumination, a particularly disruptive form of MW⁷
- Individual differences in the tendency to ruminate predict MW and unsafe driving⁸

Hypotheses

- Negative mood increases:
 1. MW while driving
 2. Unsafe driving linked to MW
- 3. Trait rumination moderates the effects of negative mood

Mindfulness Training

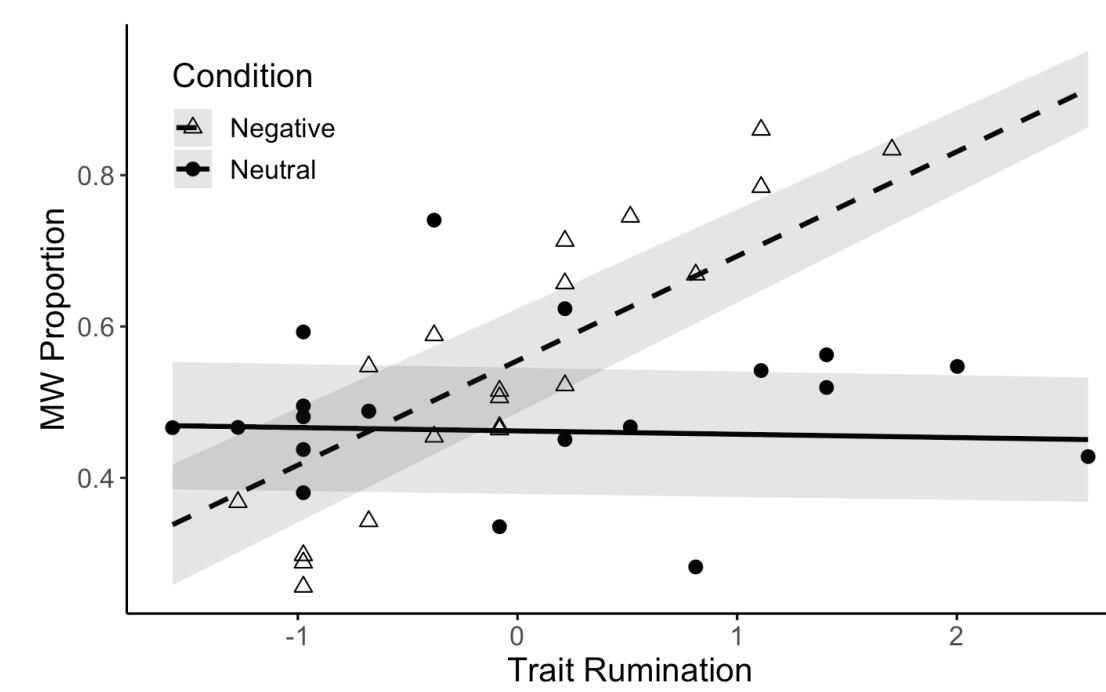
- Mindfulness is a state and trait capacity to focus on the present moment⁹
- Mindfulness training (MT) reduces MW¹⁰
- MT may increase awareness of MW, which is linked to safer driving¹¹

Hypotheses

- MT:
 1. Reduces MW
 2. Increases awareness of MW
- Exploratory:
 - Feasibility and acceptability of MT
 - Driving behaviour linked to MW awareness

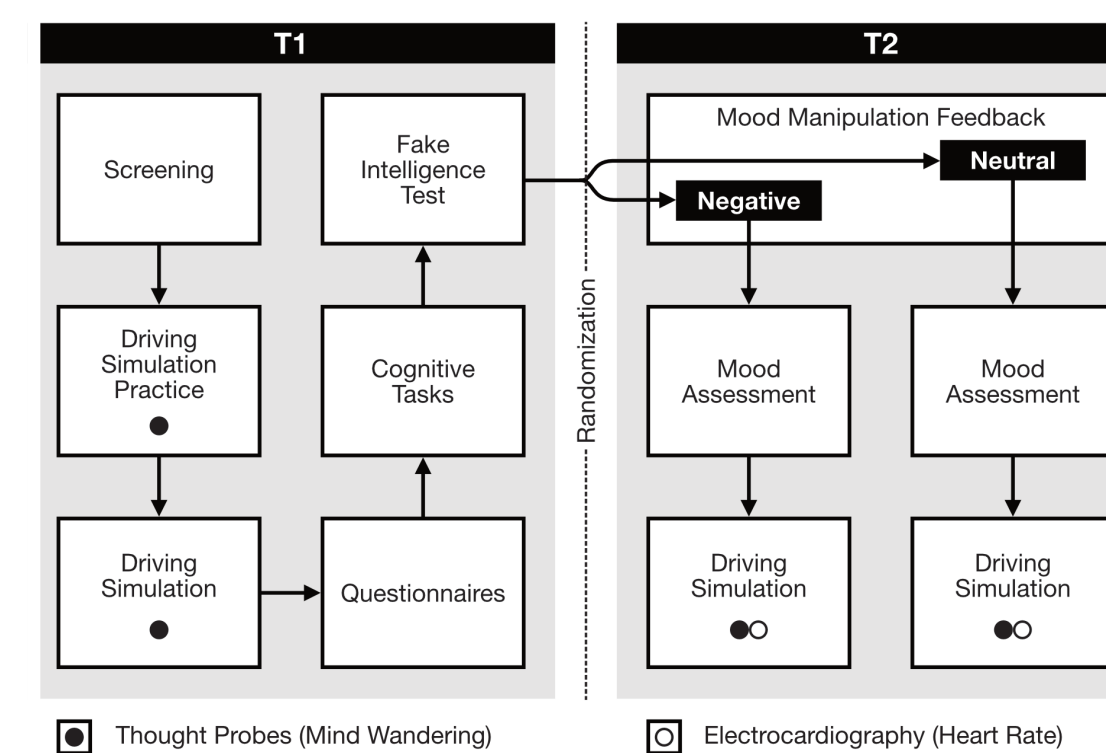
4. Negative Mood Results

- Versus neutral mood, negative mood significantly increased:
 - MW while driving ($OR = 1.79, p < .05$)
 - Headway SD while MW ($d = 1.46, p < .05$)
 - Steering while MW ($RR = 1.33, p < .05$)
- Trait rumination moderated MW increases



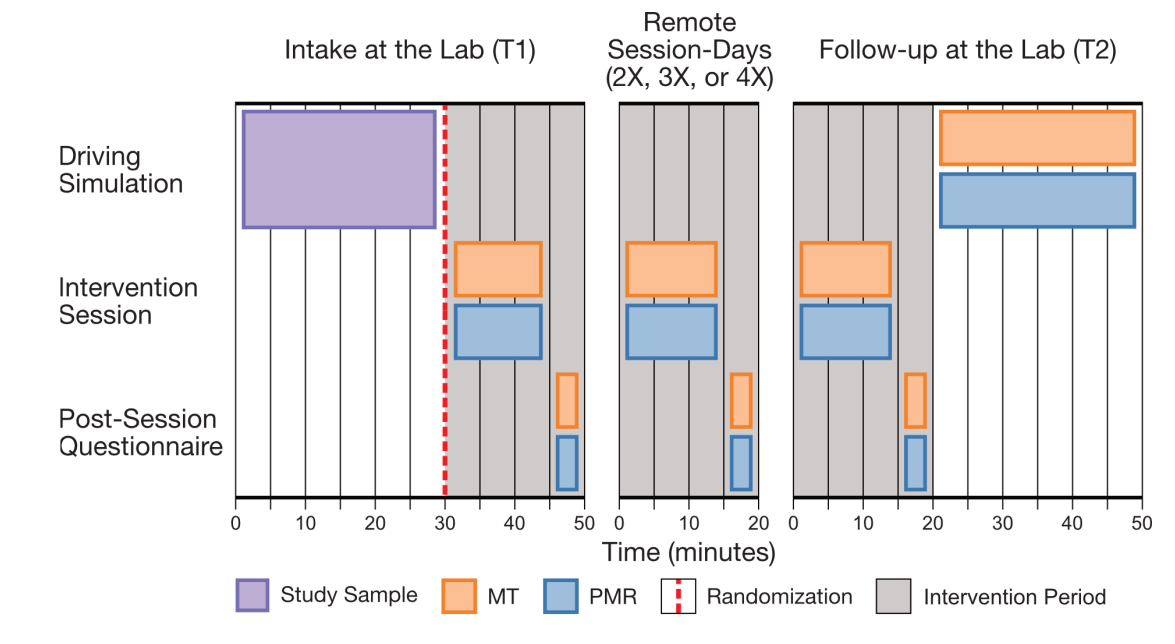
3. Negative Mood Methods

- $N = 40$ healthy male drivers, aged 20–24
- Performed two 15-minute drives (T1, T2)
- Bogus feedback on an “intelligence test” induced a negative or neutral (control) mood
- Ruminative Response Scale (RRS) measured trait rumination



5. Mindfulness Methods

- $N = 26$ healthy drivers (M & F), aged 21–25
- Performed two, 30-minute drives (T1, T2)
- To measure awareness, MW was reported spontaneously in addition to probes
- Custom website: randomized drivers to MT or relaxation training (control), delivered 15-minute training sessions and follow-up questionnaires, and tracked adherence



6. Mindfulness Results

- Versus relaxation training, MT significantly:
 - Increased state mindfulness of mind ($d = 1.03.XX, p < .05$)
 - Decreased MW while driving ($OR = 0.35, p < .05$)
- Results were unchanged after controlling for motivation, a potential confound
- Groups did not significantly differ in adherence or attrition
- Significantly more difficulties reported by the MT group vs. relaxation ($RR = 5.06, p < .01$)
- Spontaneously-reported (aware) vs. probed MW associated with more focus-like driving

2. Driving Simulation

- University of Sherbrooke simulator included brake and gas peddles, steering wheel, and vehicle seat
- Simulated drive: single-carriageway road with a 90 km/h speed limit, oncoming traffic, and slow-moving trucks ahead

Measures

- Unsafe driving: greater M and SD of speed and headway distance, steering reversal rate, and overtaking
- MW: thought-probe tones were presented every 30 to 90 seconds during each drive
 - Drivers responded with buttons on the steering wheel to indicate MW or focused driving



7. Conclusions

- Negative mood may causally contribute to unsafe driving linked to MW in young drivers
- Young drivers high in trait rumination may be particularly susceptible to negative-mood-induced MW
- MT shows promise as an intervention to reduce MW and potentially unsafe driving in young drivers
- Larger trials may definitively test the feasibility, safety, and effectiveness of MT for deployment in young drivers

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