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Putting the Pieces Together: Effects of a Flow Induction on PTSD Symptoms

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Background

- Dissociation is both normative and pathological[1].
- Dissociation emerges from trauma, and perpetuates subsequent PTSD symptoms[2].
- Dissociation also underlies boredom, and the relationship between dissociative absorption and boredom suggests a shared process of turning inward[3].
- The relationships between PTSD, boredom, and dissociation suggest bored individuals or individuals with PTSD are able to access positive dissociative states.
- Flow is characterized by complete absorption, loss of self-consciousness, a sense of control, and feeling of achievement and self-efficacy[4].
- Experiencing flow may reduce symptom severity in PTSD and reduce boredom[5].
- Hypotheses:
  1. Flow induction reduces momentary PTSD symptoms and state boredom.
  2. Self-efficacy partially mediates the stress- and boredom reducing effects of the induction.
  3. Those who are more boredom prone, and those with more severe PTSD symptoms are better able to access flow states.

Purpose & Hypotheses

To investigate the effects of a flow induction on subsequent flow states, PTSD symptom severity, and state boredom. To better understand the relationship between trauma and different dissociative experiences.

Method

Procedure

Demographics and substance use were reported, in addition to the following pre-task measures:

- Traumatic Events Screening Inventory (TESI)[6]
- PTSD Checklist for DSM-5 (PCL)[7]
- Dissociative Experiences Scale (DES)[8]
- State Boredom Measure (SBM)[9]
- Boredom Proneness Scale (BPS)[10]
- Swedish Flow Proneness Questionnaire (SFPQ)[11]

Participants were randomly assigned to one of three conditions: Boredom, Flow, or Overload. They then played a modified Tetris game whose difficulty varied by condition.

Participants then completed the following post-task measures:

- 8-Item version of the PCL-5 (8_PCL)[12]
- Multidimensional State Boredom Measure (MSBS)[13]
- Flow Short Scale (FSS)[14]
- State Self-Efficacy (SSE)[15]

Method

Participants

Demographic Data

	N(%)	*M*(SD)
Participants	121	
Boredom Condition	38 (31.4%)	
Flow Condition	48 (39.7%)	
Overload Condition	35 (28.9%)	
Gender		
Female	55 (45.5%)	
Male	66 (54.5%)	
Age		33.82 (11.01)
21-34	70 (57.9%)	
35-44	24 (19.8%)	
45-54	14 (11.6%)	
55-64	9 (7.4%)	
65+	4 (3.3%)	

	N(%)	*M*(SD)
Education		
Unfinished H.S.	1 (0.8%)	
H.S. Diploma/GED	9 (7.4%)	
Associate's Degree	8 (6.6%)	
Some College	11 (9.1%)	
College Degree	63 (52.1%)	
Graduate Degree	29 (24%)	
Employment		
Employed for wages	199 (67%)	
Unemployed	98 (33%)	

Table 1.

- All participants were recruited via Amazon's Mechanical Turk. Participants under the age of 18, outside the US, or using mobile devices were excluded from participating.
- The survey was completed via the Qualtrics platform.

Results

Descriptives

	Boredom (n = 38)		Fit (n = 48)		Overload (n = 35)	
Measure	*M*(*SD*)	95% CI	*M*(*SD*)	95% CI	*M*(*SD*)	95% CI
Pre-Task						
DES	45.91 (30.94)	[35.74, 56.08]	43.42 (30.02)	[34.70, 52.13]	41.41 (32.65)	[30.19, 52.62]
BPS	109.08 (22.95)	[101.53, 116.52]	105.19 (23.86)	[98.26, 112.12]	108.80 (20.03)	[101.92, 115.68]
SBM	30.92 (11.46)	[27.15, 34.69]	30.17 (13.19)	[26.34, 33.99]	32.54 (13.24)	[27.99, 37.09]
PCL	33.24 (22.26)	[25.92, 40.56]	33.50 (24.69)	[26.33, 40.67]	37.91 (24.04)	[29.66, 46.17]
SFPQ	3.37 (0.68)	[3.15, 3.59]	3.42 (0.62)	[3.24, 3.60]	3.44 (0.61)	[3.24, 3.66]
Post-Task						
MSBS	32.05 (13.53)	[27.60, 30.57]	32.39 (12.77)	[28.59, 36.00]	35.46 (11.23)	[31.60, 39.31]
8-PCL	11.34 (9.74)	[8.14, 14.54]	10.71 (10.10)	[7.78, 13.64]	12.80 (11.10)	[8.99, 16.61]
FSS	50 (10.63)	[46.51, 53.49]	50.94 (11.90)	[47.48, 54.39]	48.86 (11.47)	[44.92, 52.80]
SSE	29.08 (4.53)	[27.59, 30.57]	30.19 (5.35)	[28.63, 31.74]	29.77 (6.44)	[27.56, 31.98]

Note. CI = confidence interval.

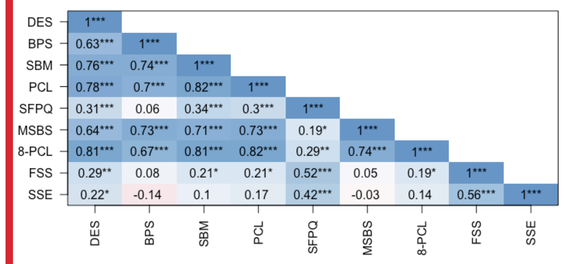
Table 2.

- Post-task state flow, boredom, and PTSD symptoms did not vary by condition when controlling for flow proneness, boredom proneness, and overall PTSD symptom severity, F (6, 226) = 0.49, p = 0.82.
- Self-efficacy did not mediate the stress or boredom reducing effects of the induction (as the induction did not have the intended effect).

Results

Correlations

**** Indicates significance at the p < 0.001 level*



Multivariate Multiple Regression

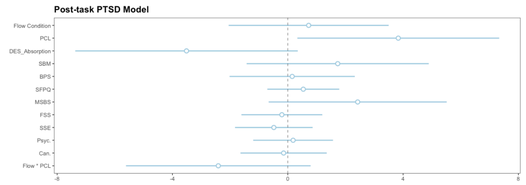


Figure 1. PTSD symptoms were predicted by PCL score (β = 0.16 [0.06, 0.26], p = 0.001), after adjusting for induction condition, dissociation, state boredom (β = 0.19 [0.07, 0.32], p = 0.003), flow proneness, age, and gender. Dissociation predicted a drop in post-task PTSD symptoms. This effect was driven by the Absorption factor of the DES (β = -0.12 [-0.22, -0.03], p = 0.01). There was an interaction between PCL score and Flow condition (β = -0.10 [-0.19, -0.005], p = 0.04). The PCL*Overload interaction showed the opposite relationship (β = 0.10 [0.005, 0.20], p = 0.04).

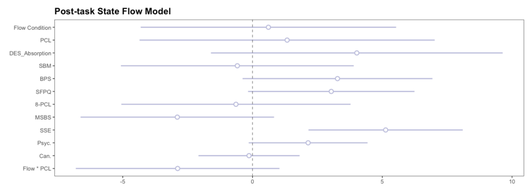


Figure 2. State flow was predicted by self-efficacy (β = 0.94 [0.57, 1.32], p < 0.001), boredom proneness (β = 0.15 [0.01, 0.27], p = 0.03), flow proneness (β = 4.81 [1.36, 8.20], p = 0.007), and psychedelic use (β = 0.26 [-0.02, 0.59], p = 0.11). Flow states were not impacted by PTSD symptoms.

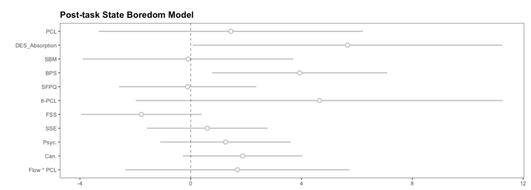


Figure 3. State boredom was related to post-task PTSD symptoms (β = 0.45 [0.003, 0.26], p = 0.003), dissociation-absorption (β = 0.20 [0.05, 0.34], p = 0.008), boredom proneness (β = 0.18 [0.07, 0.28], p = 0.001), and cannabis use (β = 0.52 [0.04, 1.01], p = 0.03). State boredom was also found to decrease as a result of increased state flow (β = -0.16 [-0.32, 0.002], p = 0.05). Feelings of state boredom did not vary by induction condition, nor were they affected by the interaction of PTSD symptoms and induction condition.

Discussion

- The induction did not produce the intended effects; the boredom condition did not increase boredom, the flow condition did not increase flow, and the overload condition did not increase stress.
- Greater boredom proneness predicted higher ratings of state flow. However, there was no relationship between PTSD symptom severity and state flow.
- A tendency for dissociative absorption was related to reduced PTSD symptoms, and increased state boredom. Absorption may protect individuals with PTSD from harmful experiences[1], while also exacerbating an individual's inability to maintain focus and attention[3], and increase state boredom. This supports the link between dissociation, boredom, flow, and PTSD.
- The relationship between dissociative absorption, flow, and PTSD symptom severity suggests that accessing flow states is difficult for those with more severe symptoms.
- Dissociation might help reduce those symptoms, but could also be maladaptive given its relationship to boredom.
- In all, PTSD symptoms may be exacerbated by the absence of positive dissociative experiences.

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