

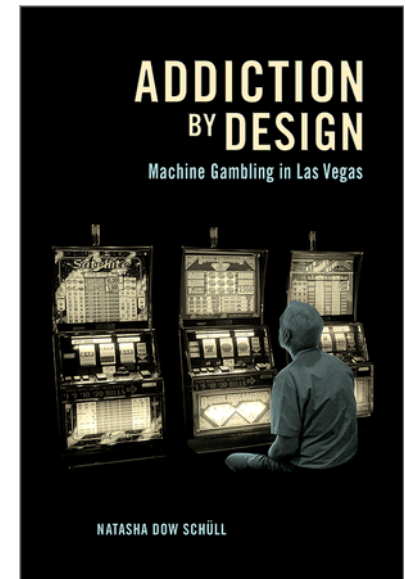
# **The Cost of Getting Lost: Measuring the Slot Machine 'Zone' with Attentional Dual Tasks**

W. Spencer Murch  
June 7<sup>th</sup>, 2016

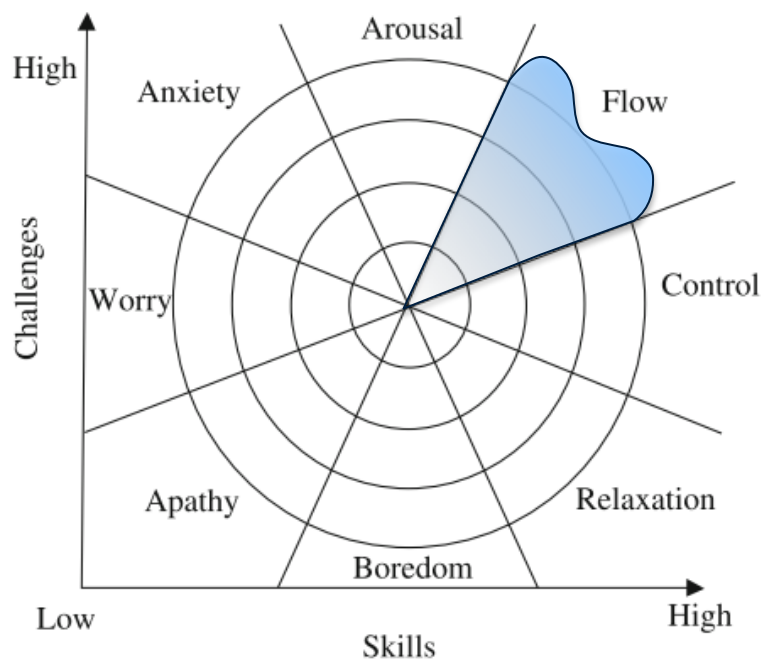
# The Machine Zone

*"...the solitary, absorptive activity [machine gambling] can suspend time, space, monetary value, social roles, and sometimes even one's very sense of existence... the point is to stay in a zone where nothing else matters."*

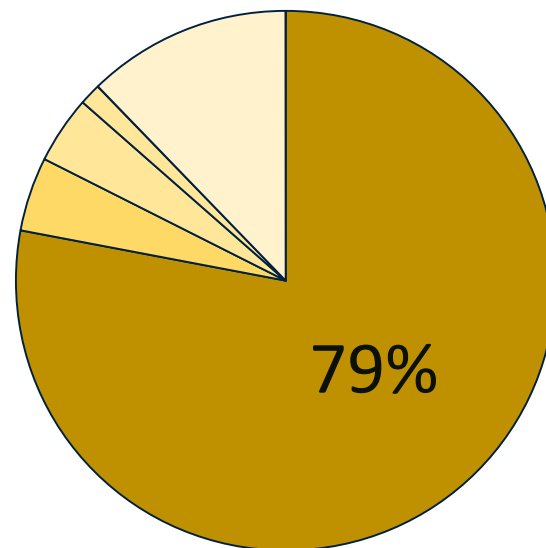
*(Schüll, 2012)*



# Flow and Dissociation



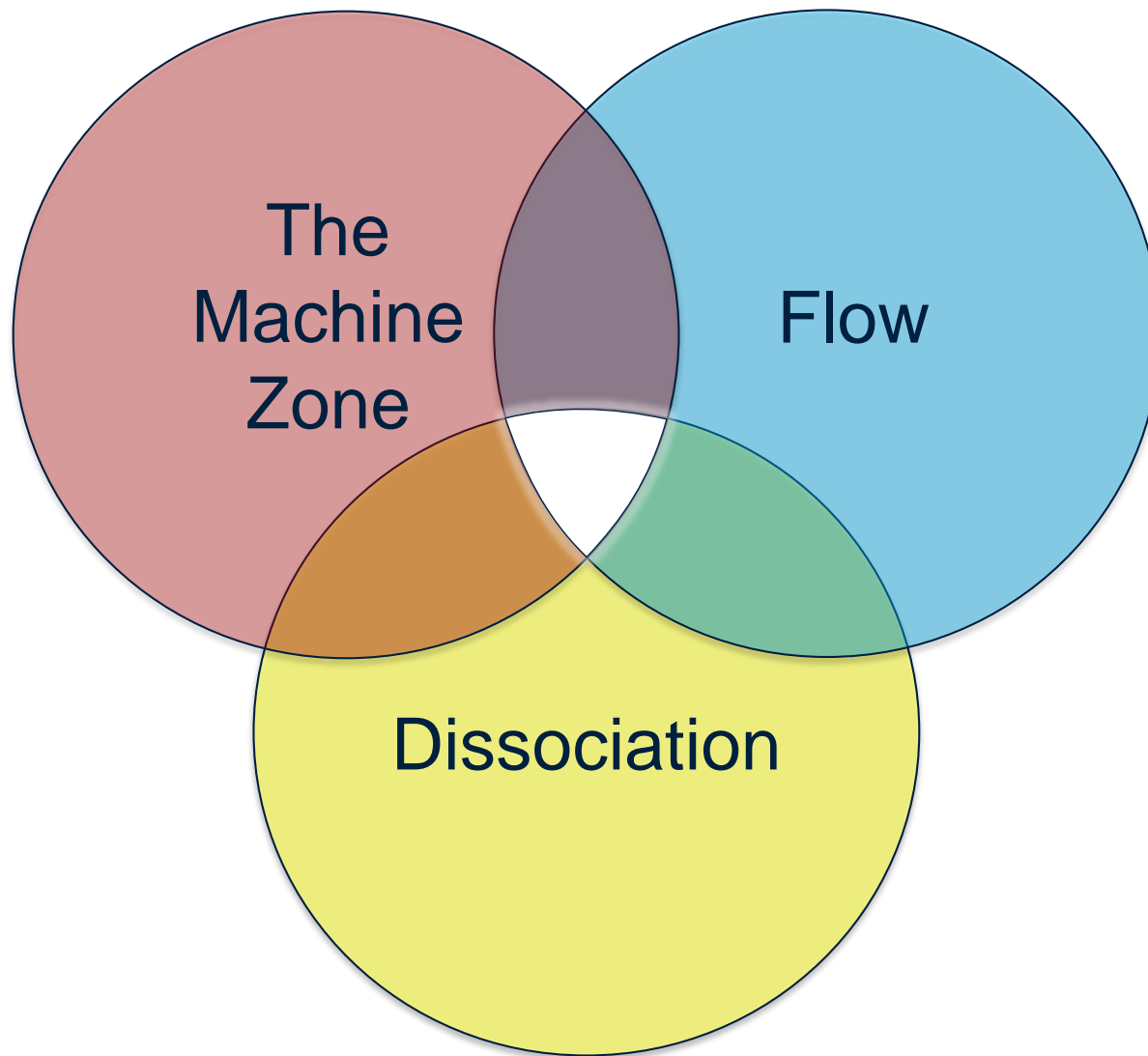
- Poker machines
- Horse or dog racing
- Table games at a casino
- Cards
- Other



Type of Gambling Where "Felt as though in a Trance."

Aged 18 years (n = 160)

(Csikszentmihalyi, 2014; Government of South Australia, 2005)



## Common threads for 'Zoning' gamblers:

1. Subjective feeling of immersion
2. Inattention to activity-irrelevant events
3. Absence of stimulus-independent thought (other goals, time of day, etc.)
4. Pleasant or pleasurable physiological state

# Problem Gambling as a Disorder of Pathological Attention?

- Problem gambling is associated with ADHD.  
*(Breyer et al., 2009; Waluk, Youssef & Dowling, 2016)*
- Substance users bias their attention to stimuli that predict the presence of their preferred substance.  
*(Brevers et al., 2011; Field and Cox, 2008)*
- Problem gamblers notice less of their surroundings while playing slot machines.  
*(Diskin and Hodgins, 1999; 2001)*

# Hybrid Casino Lab at UBC



# Hybrid Casino Lab – Studies 1-4

- 208 UBC undergraduates (*Studies 1, 3, 4*), and 30 regular machine gamblers (*Study 2*).
- 20-30 minute play sessions with \$40 CAD of house money.
- Remaining credit was converted to cash bonuses (to a maximum of \$12 CAD).
- Bet size was limited to \$0.20 CAD (20 lines, studies 1, 2 and 3) or \$0.60 CAD (study 4).
- Machine return-to-player: 89%



# Visual Detection Dual Task

- If it is true that 'zoning' gamblers miss things unrelated to the EGM, then we expect that they will fail more-often to detect changes in the visual area peripheral to the game.

# Visual Detection Dual Task

- Two projector screens mounted to the sides of a slot machine at  $30^{\circ}$ , near on the player.
- Moving shapes would appear at the outer edge of one of the screens and would travel for 2.5s toward the game, disappearing at the inner edge.
- 700 distractor shapes (white circles) with 15 target shapes (red squares) shown semi-randomly.
- Response by button press.

# Mind Wandering Dual Task

*“Just now, were you thinking about the game, or were you mind wandering?”*

- 20 semi-random experience probes during play, indicating the content of their thought just before the question appeared.

# Survey Measures

- Canadian Problem Gambling Inventory

*(Ferris & Wynne, 2001).*

- Dissociation Questionnaire

*(Jacobs, 1988; Diskin & Hodgins, 1999; 2001).*

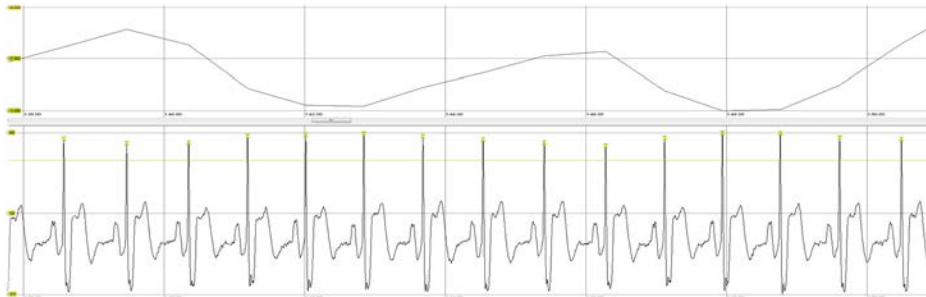
- Game Experiences Questionnaire

*(Ijsselstein, Poels & De Kort, 2008).*

# Cardiac Psychophysiology

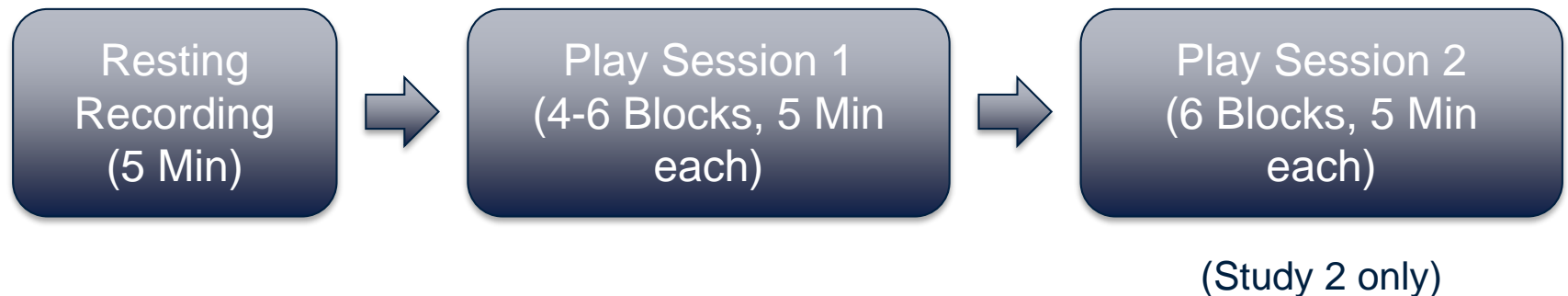
- Some influences on the heart's natural pace begin in the central nervous system, and as such are subject to psychological influence.
- Respiratory Sinus Arrhythmia (RSA) has proved useful for quantifying composure and mental effort during cognitive tasks

*(Blascovich & Berry Mendes, 2010)*



# Psychophysiological Analysis

- Sessions were divided into 5-minute blocks to make them comparable to the 5-minute resting recording done prior to the task.



### Study 1

- Undergraduates
- Target detection task
- Surveys
- Cardiac measures
- $N = 43$ ,  $N_{\text{Control}} = 19$

### Study 2

- *Regular machine gamblers*
- Target detection task
- *Mind wandering task*
- Surveys
- Cardiac measures
- $N = 30$

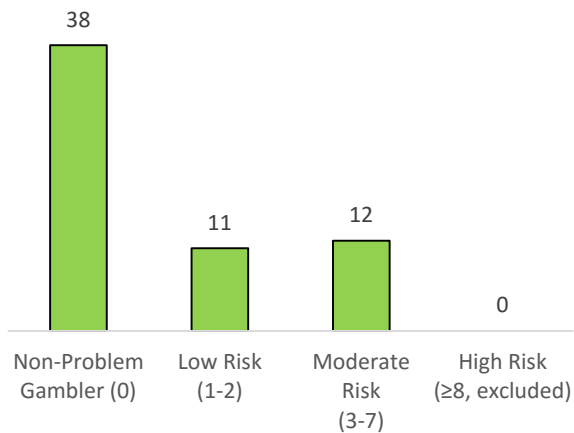
### Study 3

- Undergraduates
- Target detection task
- *Target detection task (again)*
- Surveys
- $N = 39$

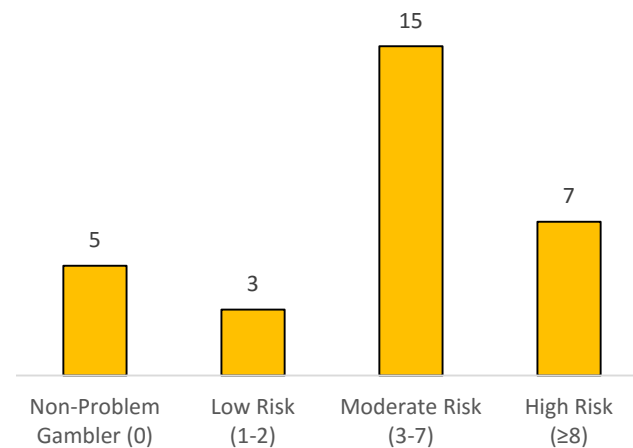
### Study 4

- Undergraduate males
- *Social condition*
- Some surveys
- Cardiac measures
- $N = 107$

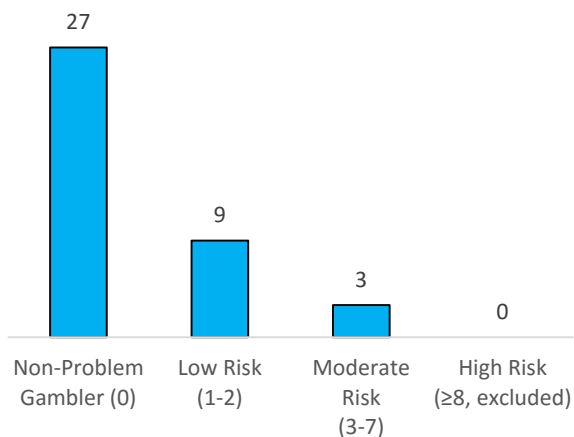
PGSI Distribution - Study 1



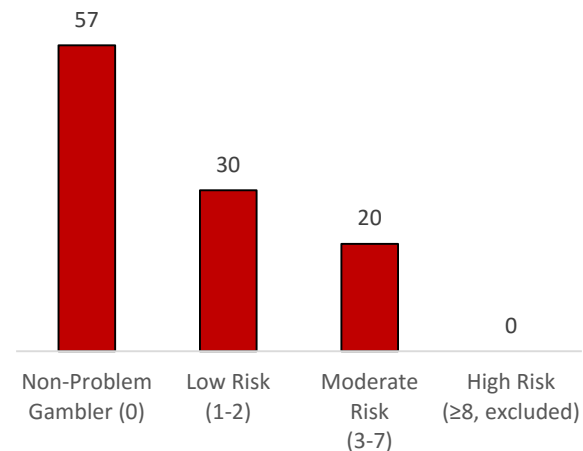
PGSI Distribution – Study 2



PGSI Distribution - Study 3



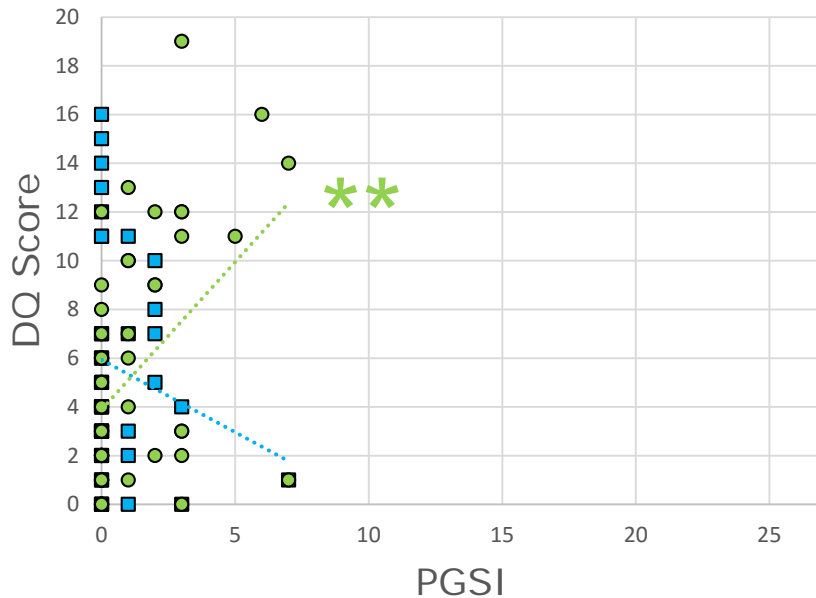
PGSI Distribution - Study 4





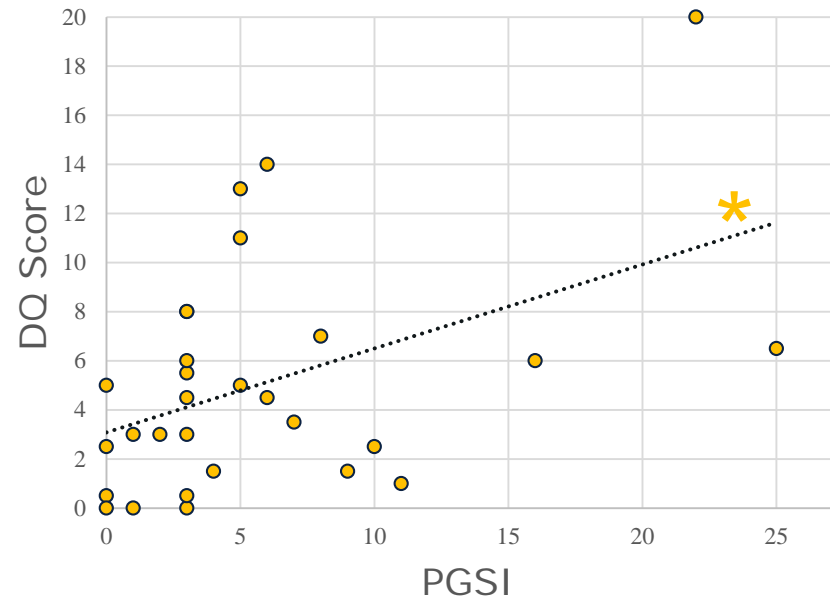
# Hypothesis 1: Subjective 'Zone' Experiences

Dissociation Questionnaire by PGSI  
Studies 1 & 3



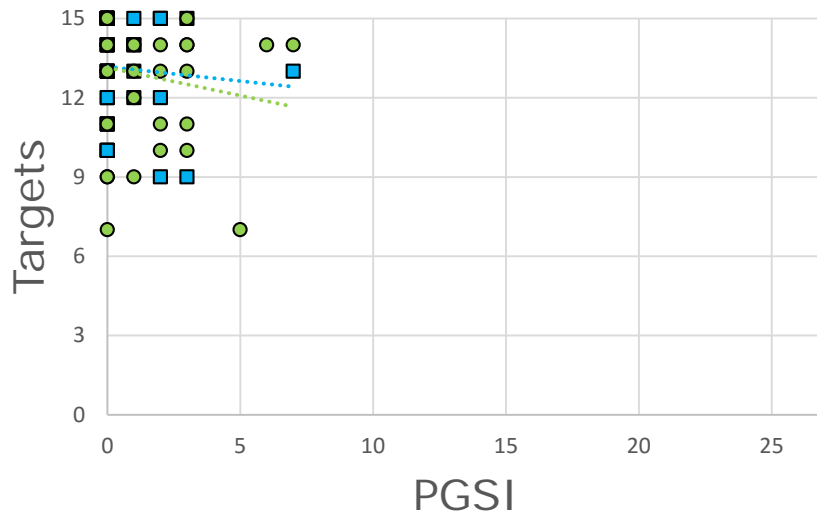
Undergraduate Students

Dissociation Questionnaire by PGSI  
Study 2



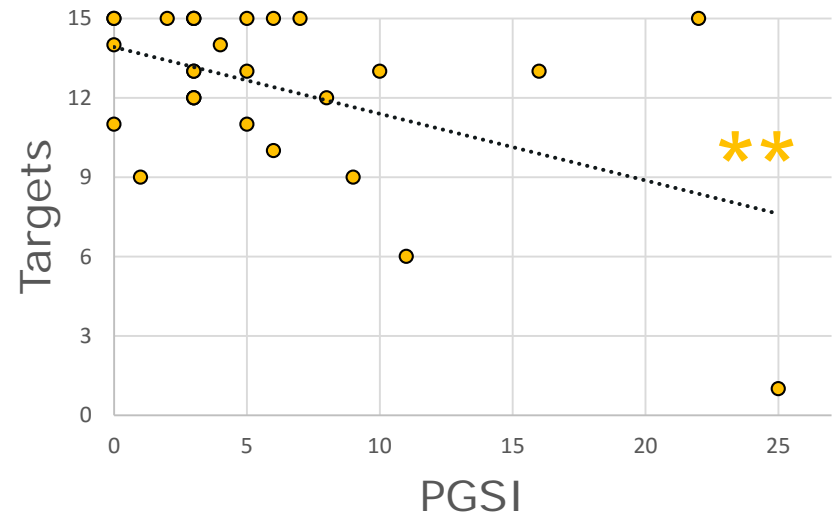
# Hypothesis 2: Peripheral Inattention

Target Response by PGSI  
Studies 1 and 3



Undergraduate Students

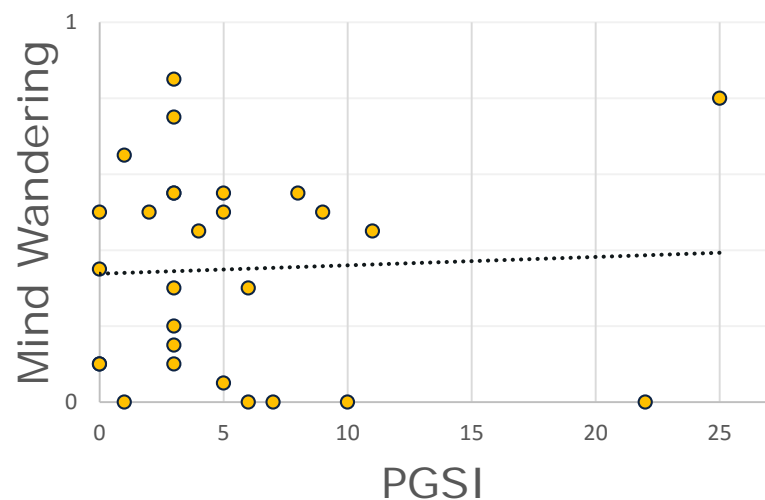
Target Response by PGSI  
Study 2



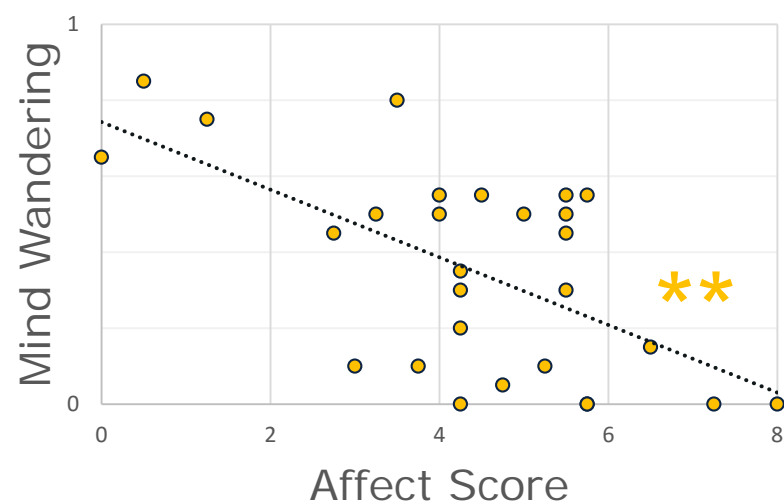
Regular Machine Gamblers

### Hypothesis 3: Mind Wandering (Study 2, Regular Gamblers)

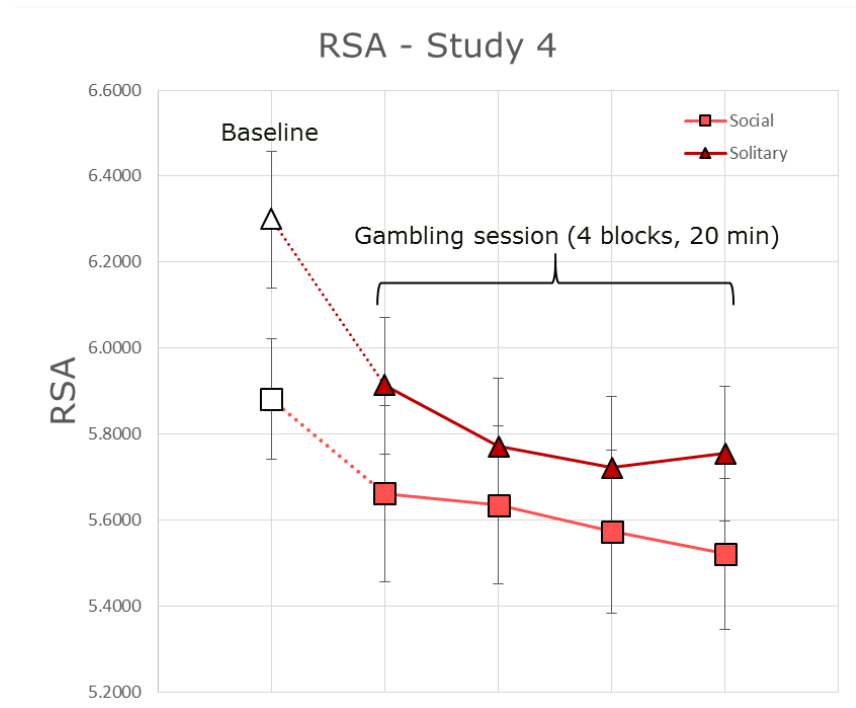
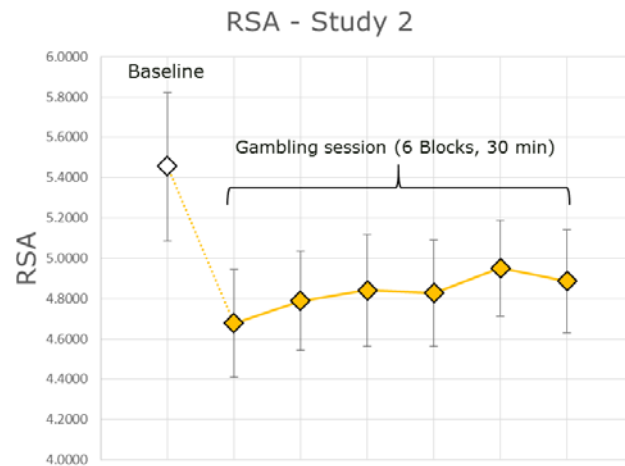
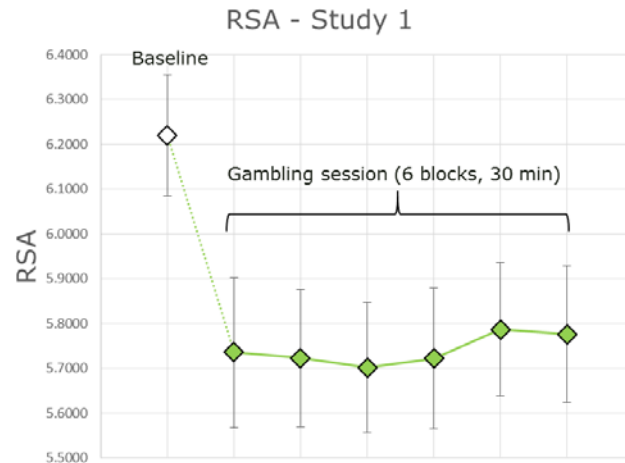
Mind Wandering Frequency by PGSI



Mind Wandering Frequency by Affect

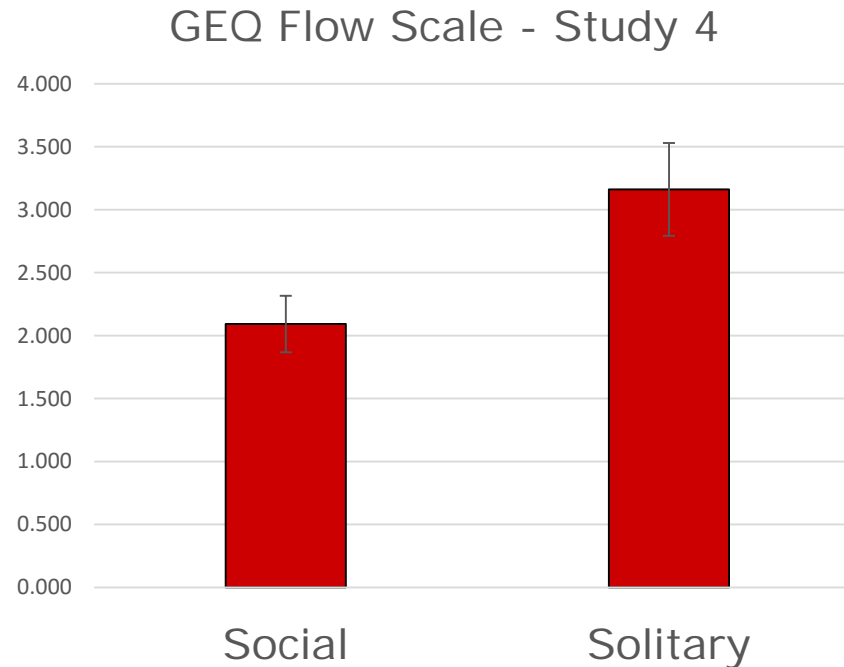


# Hypothesis 4: Psychophysiological Response



## Hypothesis 5: Solitude Enhances Zoning

(Study 4, Social Influences on the Zone)



# Conclusions

- Slot machine players do report “*Zone*” experiences.
- Gamblers who are more at-risk miss more peripheral events.
- While physiological measures of the zone are harder to identify, greater risk of problem gambling is not associated with a chronically aversive resting state.
- If gamblers do seek out the zone, we might expect to find them in seclusion.

# Implications

- Responsible gambling messaging
- Sampling
- The Zone may not be unitary.

# Thanks for your time!

--And thank you to the *CGR@UBC* team!

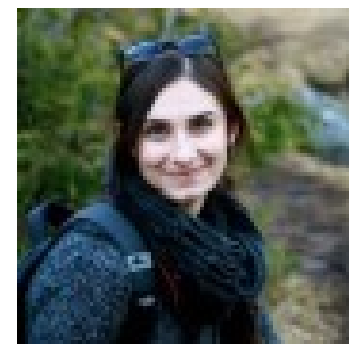
These projects were made possible by...



Dr. Luke Clark



Stephanie Chu



Brooke  
McDonald

Stephanie Yeh, Cameron Drury and Nataly Kaufman