

# A daily diary investigation of self-regulation in gambling: Factors contributing to success and failure in playing within self-imposed gambling limits

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Set your limits  
for time and money

THIS  
FAR  
NO  
FURTHER



# Motivation of Research

- ***Self-regulation strategies*** used by gamblers
  - Cognitive strategies
    - Recalling previous problems from gambling; Thinking about how money can be better spent
  - financial management
    - leaving ATM cards at home when going to gambling sites
  - Behavioural substitution
    - engaging in a new form of entertainment or distraction
  - self-exclusion
    - banning oneself from gambling venues
  - *Dawson et al., 2017; Hing et al., 2017; Hodgins & el-Guebaly, 2000; Moore et al., 2012; Rodda et al., 2017*
  - ***Self-imposed gambling limits***
    - Specific amounts of money or time as limits to one's gambling (Lalande & Ladouceur, 2011)
    - Self-regulation failure: Violation of limits are common
    - Little is known about ***situational factors*** that increase the likelihood of violating gambling limits

# Situational variables as risk factors of violating self-imposed gambling limits



- (Coping with) Daily stress and hassles prior to gambling episode
  - Found to increase gambling urges (Elman et al., 2010)
  - Causes dieters giving up on self-imposed eating restraints (Herman & Polivy, 1975)
  - Violating of drinking limits more common on days with high daily hassles compared to hassle-free days in a *daily diary* study (Muraven et al., 2005)
- Prior resisting temptations in other domains
  - E.g., palatable food, smoking, alcohol, drug, etc.
  - Increases the likelihood of violating self-imposed drinking limits (Muraven & Baumeister, 2000)
- Theoretical framework: “Affect regulation priority” account of self-regulation failure
  - Coping with negative affect takes precedent over self-control (Tice & Bratslavsky, 2000)
  - Those led to suppress negative mood consumed more comfort foods than those in the control condition (no sig. difference for non-comfort foods) (Evers et al., 2010)

# Research Questions and Hypotheses

- *Daily diary* assessment of prior situational demands and violation of self-imposed gambling limits
  - H1a: The higher *daily stress and hassles* experienced, the more likely gambling limits violated.
  - H1b: The greater the *temptations in other domains*, the more likely gambling limits violated.
  - Within-person relationships assessed with daily diaries
- Roles of trait self-control (TSC)
  - Chronic ability to inhibit unwanted response across situations (Tangney et al., 2004)
  - May serve as a *buffer* against self-regulation failure
  - H2 (Main effect): Violation of gambling limits *less* likely among gamblers with high vs. low high TSC
  - H3 (Moderator): The effect of daily stress and/or temptations in other domains on violation of gambling limits will be *lower* among gamblers with high vs. low TSC



# Method

- Participants
  - A community sample from 3 research centres (Guelph, ON, Toronto, ON and Winnipeg, MB)
  - Eligibility
    - individuals had to be 18 years or older,
    - gambled at least once a week,
    - currently adopted a goal of reducing gambling activities, and
    - should not have received a psychological diagnosis in recent years
  - 389 responded to ads
  - 155 passed eligibility criteria
  - Baseline diary and 21 daily diaries
  - N= 103 provided sufficient daily diary data (i.e., gambled at least once during the daily diary collection stage)
  - Average of 16.5 days of responses



# Method (Cont'd)

- Baseline online survey
  - Use of self-imposed gambling limits (amount, time, etc.)
  - Gambling behaviour for past 4 weeks (G-TLFB; Weinstock, Whelan, & Meyers, 2004)
  - Trait self-control scale (TSC: Tangney et al., 2004)
- 21-day diaries
  - Part A: Experiences from the current day
  - Gambling urges at the moment (GUS: Raylu & Oei, 2004)
  - Daily Stressors Questionnaire (DSQ: Bolger et al., 1989)
    - Yes/no to demands from work, home, ill health, etc.; tension with family members and others
    - Index: Summing total number of stressors and tensions
  - Resisting urges to engage in non-gambling activities
    - Food, smoking, alcohol, marijuana, other drugs, other urges (1= not at all, 4= a lot)
    - Score: averaging responses to five items

# Method (Cont'd)

- 21-day diary (Cont'd)
  - Part B: Gambling activities engaged on the previous day (lagged)
  - Gambled yesterday (yes, no?)
  - Duration and location of gambling episode
  - Types of gambling
    - 1: cards, 2: casino-type table games (roulette, craps), 3: slot machines or VLT, 4: sports betting (e.g., sports, horses, fantasy sports, Proline, etc.), 5: scratch tickets or pull tabs, etc.
  - Intended limit for gambling (no, yes)
  - Amount spent on gambling
  - *Questions about gambling limits*
    - Intensity of temptation to violate gambling limits
    - ***Success or failure in sticking to gambling limits (maintained vs. violated)***
    - Reasons for ending of gambling episode
    - Feelings at the end of gambling episode

# Results: Self-imposed limit-setting

- Average gambling and gambling limit setting and violations
  - Gambled on 31.5% of the days
  - Set limits 62.6% of gambling days
  - Violated gambling limits on **22.7%** of the days
  - 75.9% of limit violations involved exceeding monetary limits (10.1% time limits)
- Comparison of gambling episodes: Limit not set (1) vs. Limit set and maintained (2) vs. *Limit set and violated (3)*
  - Time spent gambling and net losses were **higher** for 3 than for 1 or 2
  - Negative emotions at the conclusion of gambling were **stronger** for 3 vs. 2
  - Gambling in casinos and VLT more frequent for 3 vs. 2

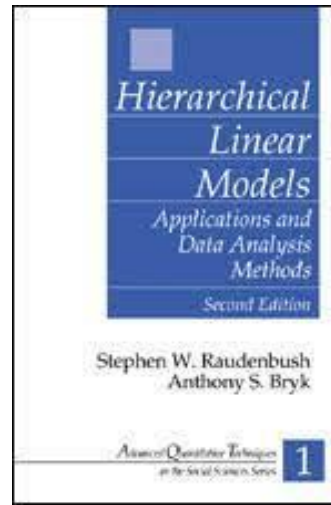


# Factors associated with setting and violating gambling limits during gambling episodes

	Did Not Set Limit	Set Limit		F-test	p-value
		Did Not Violate Limit	Violated Limit		
	M (SD)	M (SD)	M (SD)		
<b>Time spent gambling</b>	2.17 (1.41) <sup>b</sup>	1.62 (0.97) <sup>c</sup>	2.68 (1.47) <sup>a</sup>	22.5	<.001
<b>Net loss on gambling</b>	108.95 (239.11) <sup>b</sup>	30.25 (37.46) <sup>c</sup>	180.93 (320.07) <sup>a</sup>	11.36	<.001
<b>Gambling urges</b>	3.86 (1.92) <sup>a</sup>	3.09 (1.67) <sup>b</sup>	3.76 (1.85) <sup>ab</sup>	10.01	<.001
<b>Urges in other domains</b>	1.78 (0.88)	1.77 (0.94)	1.75 (0.75)	0.02	0.98
<b>Temptation to violate limit</b>	-	2.12 (0.99) <sup>b</sup>	3.15 (1.24) <sup>a</sup>	7.01	<.001
<b>Mood when stopped gambling</b>					
<b>Happy</b>	1.97 (1.32) <sup>a</sup>	1.80 (1.13) <sup>ab</sup>	1.33 (1.08) <sup>b</sup>	5.34	.005
<b>Excited</b>	1.81 (1.34) <sup>a</sup>	1.38 (1.15) <sup>b</sup>	0.94 (0.85) <sup>c</sup>	10.42	<.001
<b>Sad</b>	1.64 (1.48) <sup>ab</sup>	1.22 (1.22) <sup>b</sup>	1.79 (1.14) <sup>a</sup>	5.32	.003
<b>Anxious</b>	1.46 (1.32) <sup>ab</sup>	1.17 (1.16) <sup>b</sup>	1.78 (1.17) <sup>a</sup>	5.37	.005
<b>Tense</b>	1.64 (1.42) <sup>a</sup>	1.25 (1.12) <sup>b</sup>	1.66 (1.16) <sup>a</sup>	4.14	.017
<b>Angry</b>	1.61 (1.46) <sup>a</sup>	1.04 (1.15) <sup>b</sup>	1.72 (1.29) <sup>a</sup>	8.90	<.001
<b>Guilty</b>	1.85 (1.54) <sup>a</sup>	1.43 (1.21) <sup>b</sup>	2.07 (1.26) <sup>a</sup>	5.99	.003

# Results: Analysis of within-person relationships

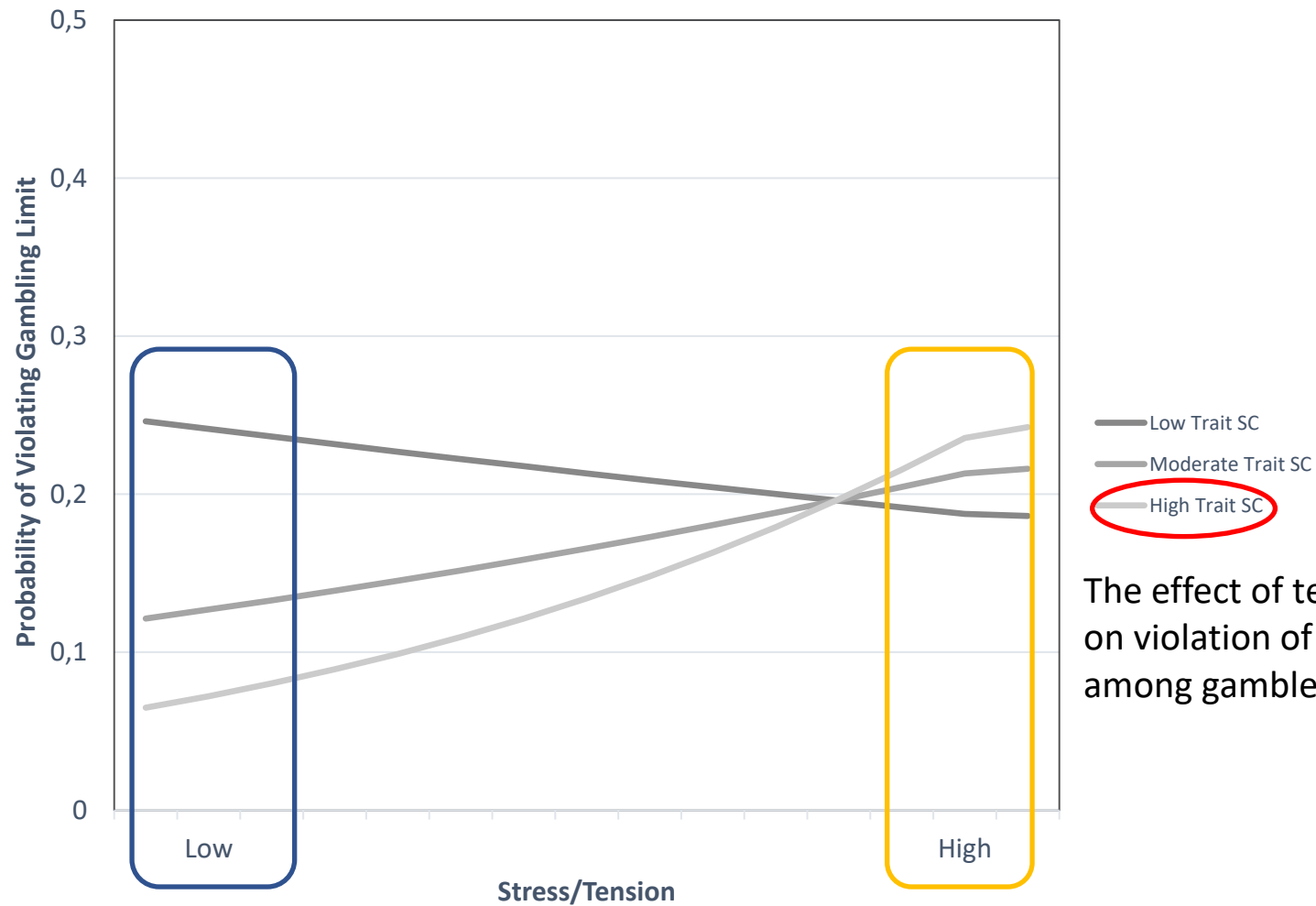
- Hierarchical linear modelling (HLM; Raudenbush & Bryk, 2002) was used to predict DV (likelihood of limit violation) from
  - Level 1 variables: within-person variation (situational variables)
    - Daily stress/hassles
    - Resisting temptations in other domains
    - Gambling urges
    - Temptation to violate limits
  - Level 2 variable: between-person variation (individual difference)
    - Trait self-control (TSC)
  - Cross-level interaction terms
    - Daily stress/hassles by TSC
    - Resisting temptations in other domains by TSC



# Predictors of Gambling limit violations (HLM)

Predictor	Coefficient	SE	t-ratio (df)	p	
$\gamma_{00}$ Intercept	-1.26	0.21	-5.92 (77)	<.001	
<b>Level 1 main effects</b>					
$\nu_{10}$ Temptation to violate limit	1.07	0.31	3.49 (201)	<.001	
$\nu_{20}$ Resisted urges in other domains	0.52	0.27	1.95 (201)	.052	H1b
$\nu_{30}$ Gambling urges	-0.38	0.16	-2.37 (201)	.019	
$\nu_{40}$ Stress and Tension	-0.03	0.16	-0.18 (201)	.856	H1a
<b>Level 2 main effects</b>					
$\nu_{03}$ Trait self-control	-0.08	0.02	-3.96 (77)	<.001	H2
<b>Cross-level interactions (with Trait self-control)</b>					
$\nu_{11}$ Temptation to violate limit	-0.04	0.04	-1.22 (201)	.224	
$\nu_{12}$ Resisted urges in other domains	0.08	0.05	1.76 (201)	.079	H3b
$\nu_{13}$ Gambling urges	-0.02	0.02	-0.88 (201)	.378	
$\nu_{14}$ Stress/tension	.035	0.02	2.08 (201)	.039	H3a

# Moderating role of TSC (H3a): Unexpected finding



The effect of temptations in other domains on violation of gambling limits was higher among gamblers with **high** vs. low TSC

# Summary of Findings



- Self-imposed gambling limit violations were more likely to occur
  - on days when non-gambling urges were resisted prior to gambling (e.g., food, smoking, alcohol, drug, etc.) (marginal support to H1b)
    - Consistent with “Affect regulation priority” account of self-regulation failure (Tice & Bratslavsky, 2000)
  - for gamblers with low vs. high TSC (H2)
    - Trait self-control as a buffer against self-regulation failure (DeWall et al, 2007; Muraven et al., 2005)
- The effect of daily stress/hassle on gambling limit violation was **higher**
  - **for gamblers with high vs. low self-control!** (opposite of H3)
  - Surprising, but consistent with recent views of TSC in psychology
    - High TSC is about ***pre-emptively avoiding situations in which temptations are likely*** rather than inhibiting temptations once they arise (Fujita, 2011; De Ridder et al., 2012; Galla & Duckworth, 2015, etc.)
    - High TSC is more strongly associated with desirable behaviour that are automatically performed than behaviours requiring deliberate enactment.
  - Under low daily stress, gamblers with high TSC are able to resist the temptation to violate their limits
  - Under high daily stress and temptations are high, gamblers with high TSC are prone to self-regulation failure.

# Limitations

- Small sample size (N = 103)
  - Only 87 reported having set gambling limit during the 21 days
  - Typical in daily diary studies
- Measure of daily stress and hassles
  - Yes/no responding: low sensitivity
- Self-selection bias
  - Participants who agreed and filled out daily dairies for 21 days may be systematically different from typical frequent gamblers
  - Replication is desired with a large sample drawn from gamblers who frequently use a single gambling website
  - Opportunity to collaborate with provincial/national gambling operators welcome!



# Clinical implications

- *Double swords* of self-imposing own gambling limits as a gambling reduction strategy
  - Advisable for gamblers who are usually able to stick to them
  - May backfire on days they had to resist other temptations
- Reining on the temptation to go over gambling limits is particularly difficult
  - On days gamblers have resisted other urges earlier
  - Giving a small praise to oneself on a non-addictive domain?
- High TSC is not a panacea for successful gambling self-control
  - Not a good buffer against gambling limit violation when temptations have already transpired



Thank you for your attention!

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