

Exploring the Utility of an Extended Theory of Planned Behavior Framework for School-Based Gambling Prevention Programs

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Some context...

Introduction

- ▶ Adolescent problem gambling (PG) has emerged as a significant global public health concern (Dickson-Gillespie et al., 2008; Korn, 2000).
 - ❖ $\approx 0.9\text{--}8.1\%$ of adolescents, internationally, meet diagnostic criteria for PG (Volberg et al., 2010).
 - ❖ Adolescent PG is associated with **SERIOUS** concurrent and subsequent problems (Cook et al., 2014; Hansen & Rossow, 2008; Volberg et al., 2010; Dussault et al., 2011; Wanner et al., 2009).
- ▶ Adverse and potentially long-term implications of PG on health and well-being underscore the importance of prevention.

How do we currently understand and attempt to prevent adolescent PG?

Predictors/Correlates of Adolescent PG

- ▶ Several predictors/correlates have been identified in the literature (Gillespie et al., 2007; Tang & Wu, 2012; Temcheff et al., 2013):
 - ❖ Cognitive (e.g., biases, outcome expectancies)
 - ❖ Attitudinal (e.g., gambling attitudes)
- ▶ Few studies take into account the possible connections among predictors (Lee, 2013).
 - ❖ Advances in our understanding of PG and in the development of effective prevention efforts proposed to rely heavily on development of comprehensive models that define associations b/w predictors (Blaszczynski & Nower, 2002).

Prevention of Adolescent PG

- ▶ A number of school-based youth PG prevention initiatives exist, but few tested for efficacy (Williams, West, & Simpson, 2012).
- ▶ Majority of existing prevention curriculums attempt to (Derevensky et al., 2004; Williams et al., 2010):
 - ❖ Raise awareness and increase knowledge of issues related to PG;
 - ❖ Enhance decision-making, coping, and social skills.

Prevention of Adolescent PG (cont'd)

- ▶ Most have been developed in the absence of a well-defined theoretical framework describing the expected mechanisms by which it exerts its effect.
 - ❖ However, even for 'theory-based' initiatives, it is unknown exactly how the theory was used in their development → important limitation.

Prevention of Adolescent PG (cont'd)

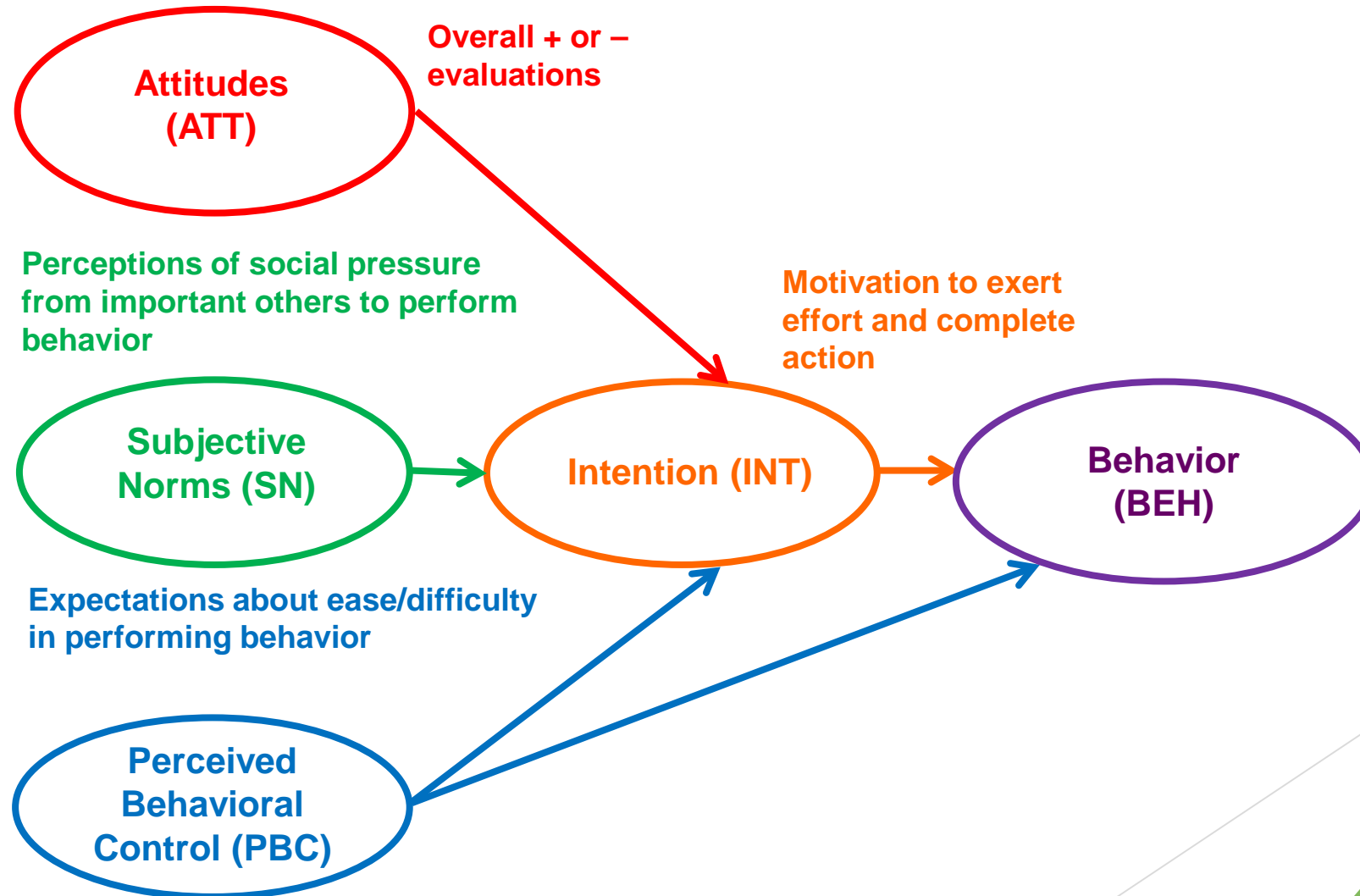
- ▶ Evidence for changes in gambling behavior is mixed.
 - ❖ Some prevention initiatives observed to reduce the number of current gamblers or the frequency of gambling, while others found to be unsuccessful in modifying gambling behavior (St-Pierre et al., 2015).
- ▶ Clear need for development of PG prevention initiatives in the context of new theoretical models (Williams et al., 2010).

The Theory of Planned Behavior: A Novel Approach for Understanding PG?

The Theory of Planned Behavior (TPB)

- ▶ TPB is a social cognition model that is recognized for:
 - ❖ understanding relationships between predictors for a range of behaviors (Ajzen, 1991, 2002; McEachan et al., 2011);
 - ❖ developing effective behavior-change interventions (Buckley et al., 2010; Hill & Abraham, 2008; Jemmott et al., 1999, 2005; Poulter & McKenna, 2010).
- ▶ Increased consideration of the TPB as a framework for describing gambling behavior and for developing PG prevention initiatives is therefore warranted (Cummings & Corney, 1987; Evans, 2003).

The TPB (cont'd)



The TPB and Gambling

- ▶ Validity of TPB model for *young adult* gambling and PG has received some empirical support (Martin et al., 2010, 2011; Wu & Tang, 2012).
 - ❖ However, significant issue is the TPB's exclusive focus on cognitive processes to explain gambling.
 - ❖ Problematic since gambling shown to be influenced by emotional processes (Brown et al, 2004; Gee et al., 2005).
- ▶ The role of anticipated emotions in the context of gambling?

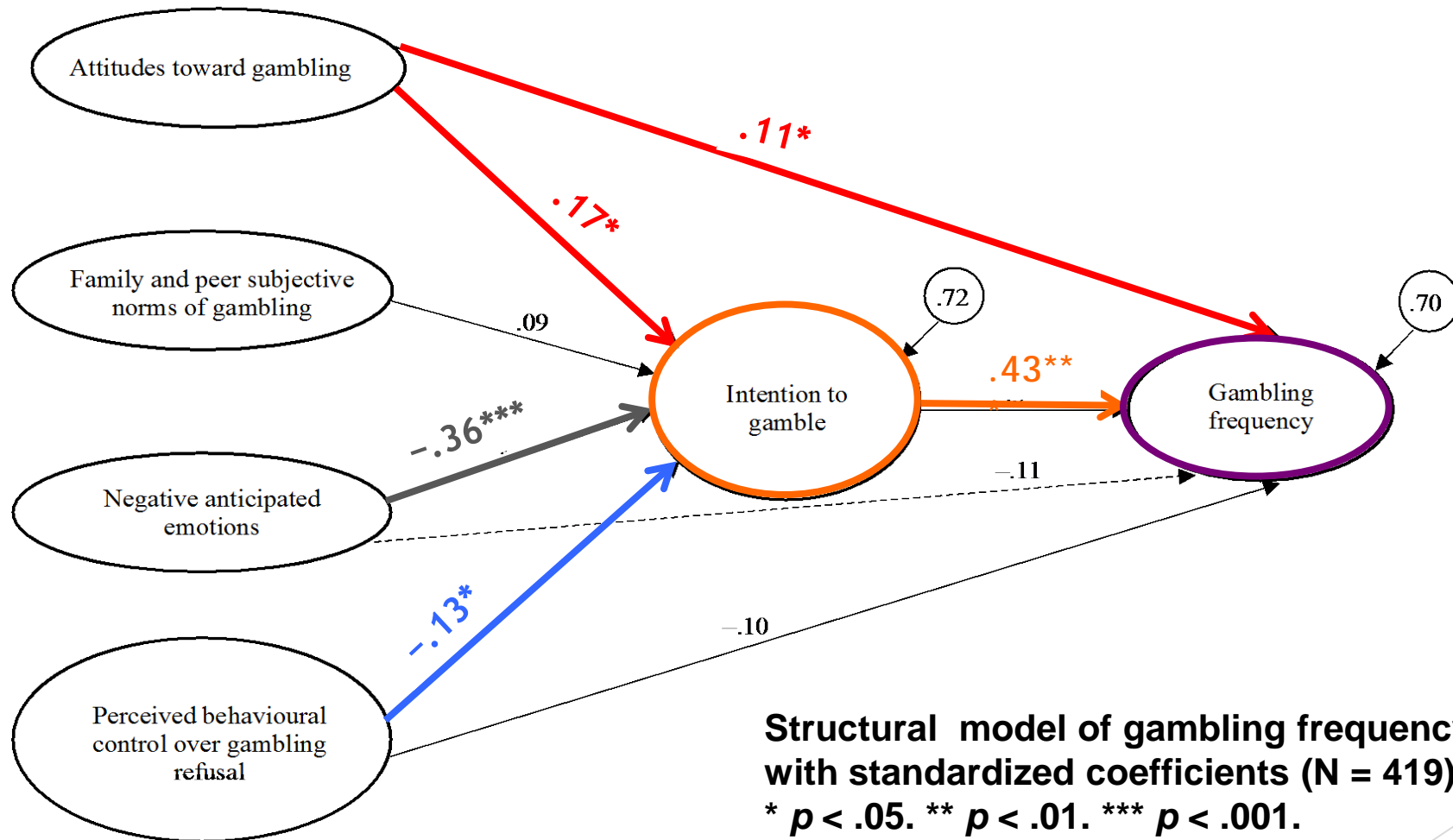
NAE, TPB, and Gambling

- ▶ Negative anticipated emotions (NAE) are presumed to influence participation in potentially addictive activities.
 - ❖ Individuals are motivated to avoid negative feelings resulting from their behavior, and therefore make decisions to minimize risk for experiencing these later on.
- ▶ *Among adults*, NAE shown to be important in gambling decision-making and intentions, and contribute to the prediction of gambling intentions over and above other TPB components.
- ▶ Is an extended TPB model, which includes NAE, a valid framework for understanding gambling behavior, particularly among adolescents?

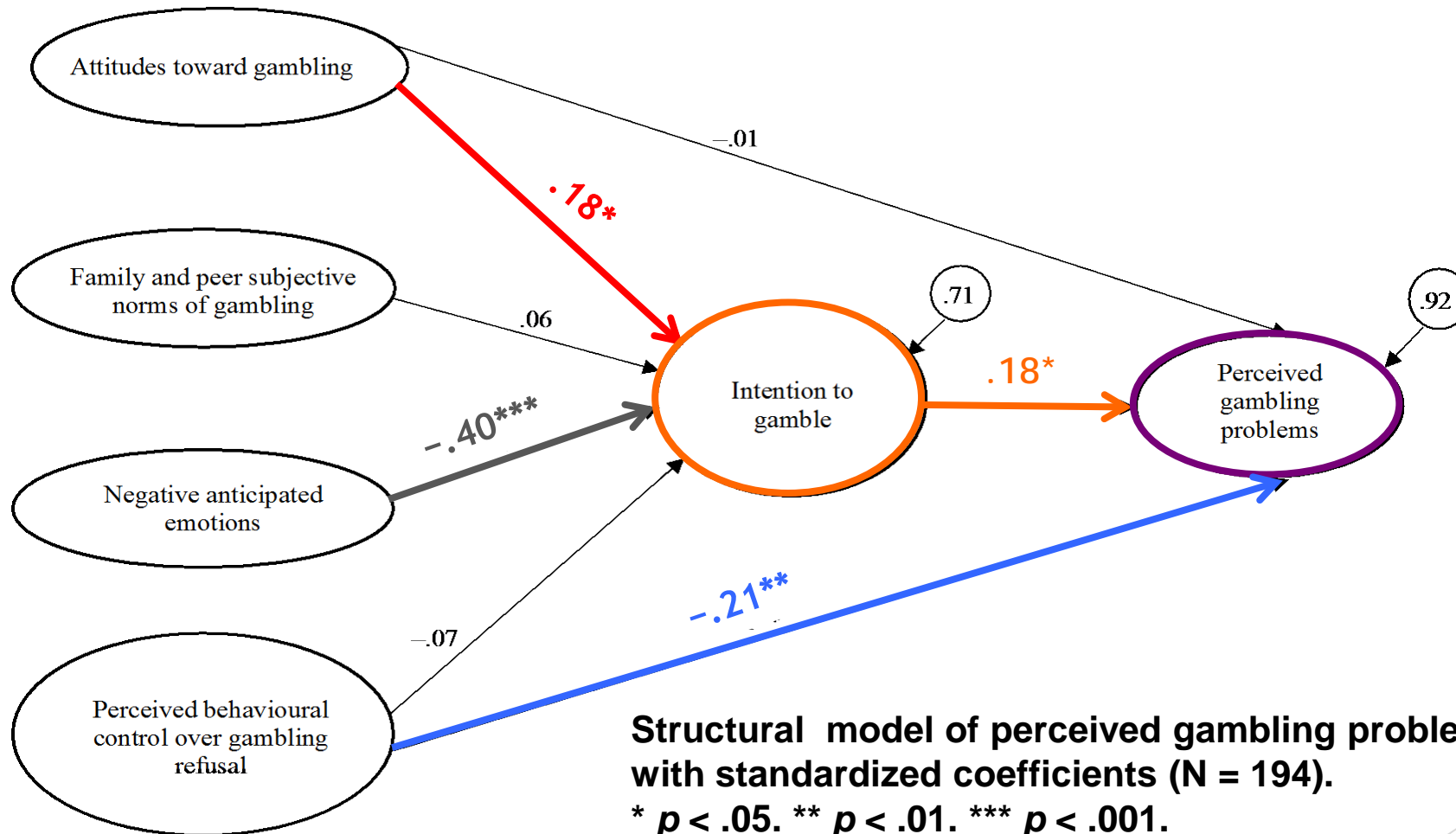
Extended TPB for Adolescent Gambling

- ▶ St-Pierre et al. (2015) investigated the explanatory value of an extended TPB for adolescent gambling frequency and PG.
 - ❖ Using cross-sectional data collected from 419 high school students (ages 14-17), structural equation models were estimated to determine the direct and indirect effects of NAE and the TPB components on gambling frequency and perceived problems.
 - ❖ The results generally supported an extended TPB as a valid framework for explaining adolescent gambling behavior and problems.

Extended TPB for Adolescent Gambling (cont'd)



Extended TPB for Adolescent Gambling (cont'd)



The Theory of Planned Behavior: A Novel Approach for Preventing PG?

TPB and Behavior Change Interventions

- ▶ A number of studies have applied TPB to the development of interventions aimed at modifying beliefs, intentions, and behaviors for several adolescent risk activities, or in the evaluation of these interventions (e.g., Buckley et al., 2010; Jemmott et al., 1999, 2005; Poulter & McKenna, 2010).
- ❖ TPB has been relatively neglected in the field of addiction behavior change (Webb, Sniehotta, & Michie, 2010).
- ❖ However, preliminary findings are promising (e.g., Cuijpers et al., 2002; Guo et al., 2015).

Clean Break

- ▶ 25-minute, school-based adolescent PG prevention tool (docudrama) that addresses common beliefs (e.g., ATT, SN, PBC, NAE) about gambling through testimonials and dramatic vignettes.
 - ❖ Theory-based in both content and structure/format.
 - ❖ Development supported by empirical research on predictors of gambling intentions and behavior.
- ▶ While *Clean Break* is previously shown to be appealing to and appropriate for adolescents, its efficacy in producing changes in gambling intentions and behaviors has not yet been established.



Research Question and Objective

- ▶ Is an extended TPB model suitable for informing the design and evaluation of school-based PG prevention initiatives?
 - ❖ Evaluate efficacy of targeting NAE and TPB components in a school-based prevention tool (*Clean Break*) for eliciting changes in gambling beliefs, intentions and behavior.

Evaluation of *Clean Break*

Participants

- ▶ 280 adolescents from one large high school in the greater Montreal, Canada area.
 - ❖ 2 more participants excluded for insincere responding.
- ▶ 13-17 years of age ($M = 15.11$ years, $SD = 0.94$).
- ▶ 35.7% in grade 9; 38.2% in grade 10; 26.1% in grade 11.
- ▶ Participants randomly assigned, by individual classrooms, to an intervention ($n = 141$; 71 males) or control condition ($n = 139$; 69 males).

Measures

- ▶ Survey consisted of developmentally appropriate, psychometrically sound scales:
 - ❖ **Gambling Attitudes Scale** (Moore & Ohtsuka, 1997)
 - ❖ **Gambling Injunctive Norms Scale** (Moore & Ohtsuka, 1997)
 - ❖ **Perceived Control over Gambling Refusal Scale** (Wu & Tang, 2012)
 - ❖ **Gambling Intention Scale** (Moore & Ohtsuka, 1997)
 - ❖ **Gambling Activities Questionnaire - Adapted** (Gupta & Derevensky, 1996)
 - ❖ **DSM-IV-MR-J** (Fisher, 2000)
- ▶ Survey also included a 4-item scale to measure NAE:
 - ❖ Internal consistency: Cronbach's $\alpha = .87$; Test-retest reliability: $ICC(3, 132) = .72$, 95% CI [.61, .80].

Procedure

- ▶ Survey administered on 3 occasions:
 - ❖ Time 1: At baseline;
 - ❖ Time 2: \approx 1 week later / after completion of intervention;
 - ❖ Time 3: \approx 3 months later / after completion of intervention.

Data Analysis

- ① Missing data estimated with multiple imputation (MI).
- ② Hierarchical mixed model analyses for MI pooled data conducted to examine between-group differences (intervention, control) across time (pre- to post-intervention, pre-intervention to follow-up).
 - ❖ Gender and grade-level entered as covariates in these analyses.

Hypotheses

- ① > ↑ in NAE for intervention vs. control group;
- ② > ↓ in positive attitudes, subjective norms, and PBC for intervention vs. control group;
- ③ > ↓ in intentions and gambling frequency for intervention vs. control group.

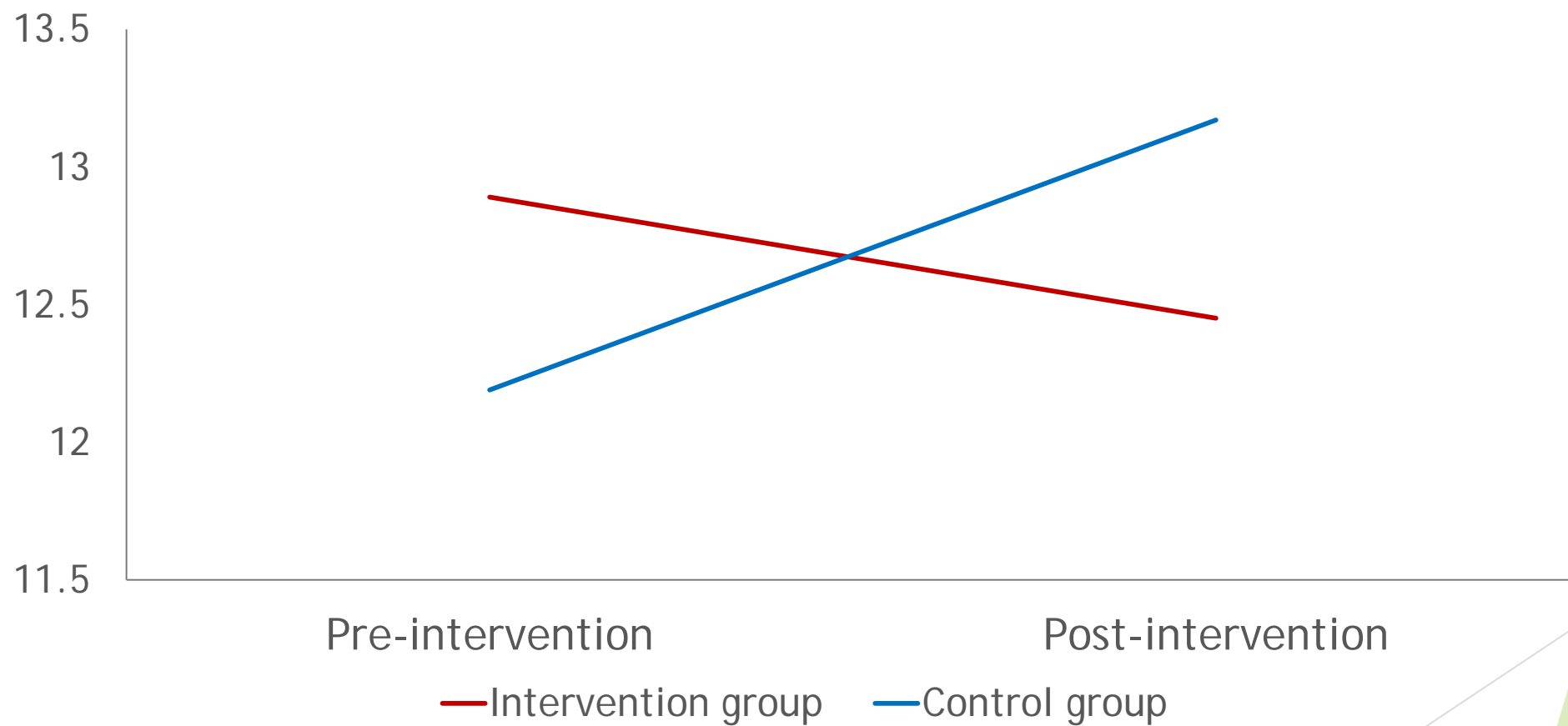
Results: Descriptives

- ▶ $\approx 40\%$ of participants reported having gambled on ≥ 1 gambling activities in past 3 months.
- ▶ Frequency of gambling at T1 was low among this sample ($M_{\text{pooled}} = 1.42$).
- ▶ At T1, participants also reported modest gambling-related INT and SN, moderately favorable ATT, high PBC and NAE.

Results: Short-Term Effects

Parameter	Intervention (<i>n</i> = 141)				Control (<i>n</i> = 139)			
	<i>M</i>	<i>SE</i>	ES	95% CI	<i>M</i>	<i>SE</i>	ES	95% CI
ATT			0.14	[0.03, 0.25]			0.18	[0.08, 0.28]
Pre	35.03	0.54			35.83	0.54		
Post	35.94	0.55			37.03	0.58		
SN			0.22	[0.07, 0.37]			0.23	[0.09, 0.38]
Pre	78.55	2.91			77.60	3.02		
Post	86.06	2.92			85.85	2.99		
PBC			0.18	[0.04, 0.33]			0.25	[0.10, 0.39]
Pre	33.54	0.44			33.14	0.45		
Post	32.60	0.41			31.89	0.38		
NAE			0.17	[0.04, 0.30]			0.00	[−0.13, 0.13]
Pre	3.45	0.07			3.34	0.07		
Post	3.59	0.07			3.33	0.08		
INT			0.08	[−0.09, 0.24]			0.17	[0.02, 0.32]
Pre	12.89	0.48			12.19	0.48		
Post	12.45	0.48			13.17	0.49		

Results: Short-Term Effects



Results: Maintenance of Effects

- ▶ No significant Group \times Time effects were observed for:
 - ❖ ANY of the TPB key constructs (incl. gambling INT);
 - ❖ Gambling frequency.

Results: Gender and Grade-Level Effects

- ▶ When gender and grade-level entered into the models as covariates:
 - ❖ N.S. main effects of either variable;
 - ❖ N.S. interactions with either variable.

Final thoughts...

Discussion

- ▶ *Clean Break* was ineffective in producing changes in the variables of interest, in the desired direction, over 3-month time frame.
 - ❖ One-session prevention tool delivered to a general audience of underage, low frequency gamblers in isolation may be insufficient.
 - ❖ Application of an extended TPB model to existing adolescent PG preventive interventions does not necessarily elicit behavior change.
- ▶ Effective for youths that gamble more frequently?

Practical Implications

- ▶ Attention to additional components/targets and heuristic approaches is warranted.
- ▶ Must tailor TPB-based preventive interventions to the developmental norms/characteristics of participants.
- ▶ Need to incorporate TPB-based preventive interventions within more intensive, comprehensive curricula.

Limitations

- ▶ Sample characteristics (e.g., underage adolescents, low frequency gamblers, no PGs)
 - ❖ TPB differentially explains gambling frequency b/w PGs and non-PGs (Martin et al., 2011).
 - ❖ School-based PG prevention programs have greatest impact on students most in need (Turner et al., 2008).

Future Directions

- ▶ In the context of developing effective PG prevention practices, it will be important for future research to:
 1. Explore contributions of other cognitive/heuristic elements with extended TPB model components;
 2. Explore differences among lower vs. higher frequency gamblers, and PGs vs non-PGs.



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