

# **Beyond Reciprocity: A Point By Point Analysis of Performance to Unpack the Role of Appraisals, Affect and Coping**

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**uOttawa**

L'Université canadienne  
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# More Than an Elitist Academic Enterprise!

- The academic performance analogy
- Sport Canada Sport Participation Policy & Canadian Sport for Life (CS4L)
- Promotion of school success and retention
  - “Mostly gain with little pain” (Marsh, 2003)
  - Province of Quebec (Perreault, 2005)
- Promotion of sport participation and active living
  - Success and identity development (e.g., Carraro & Gaudreau, 2010)
  - Relative age and sport participation (e.g., Young et al., 2011)



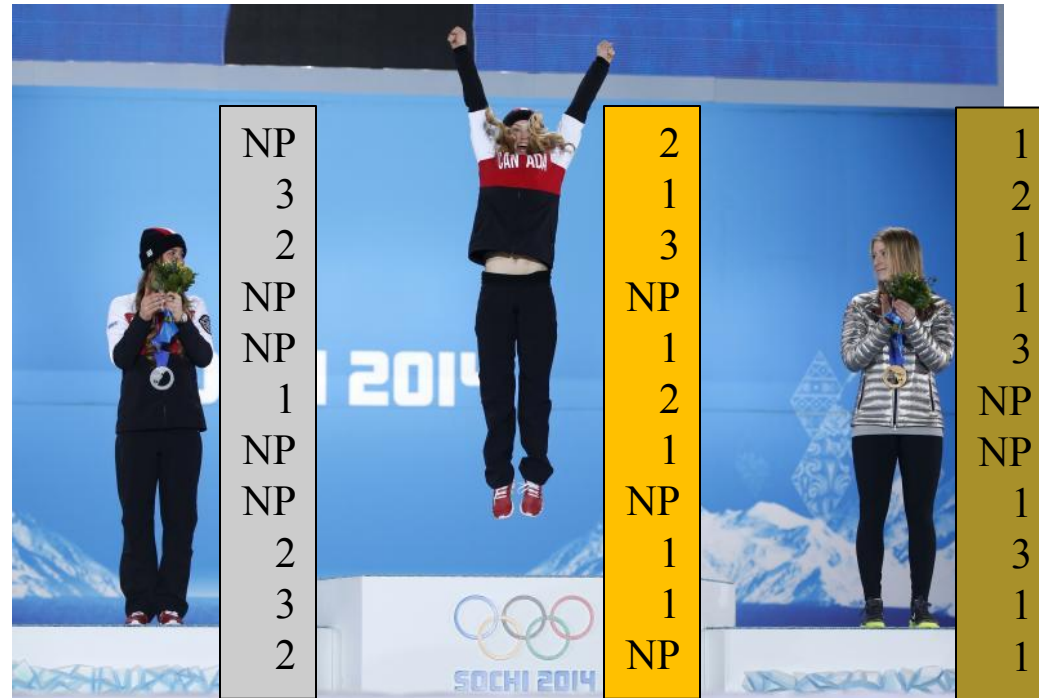
**ALLIANCE**  
SPORT-ÉTUDES  
ENSEIGNEMENT SUPÉRIEUR

# Traditional Definition of Performance



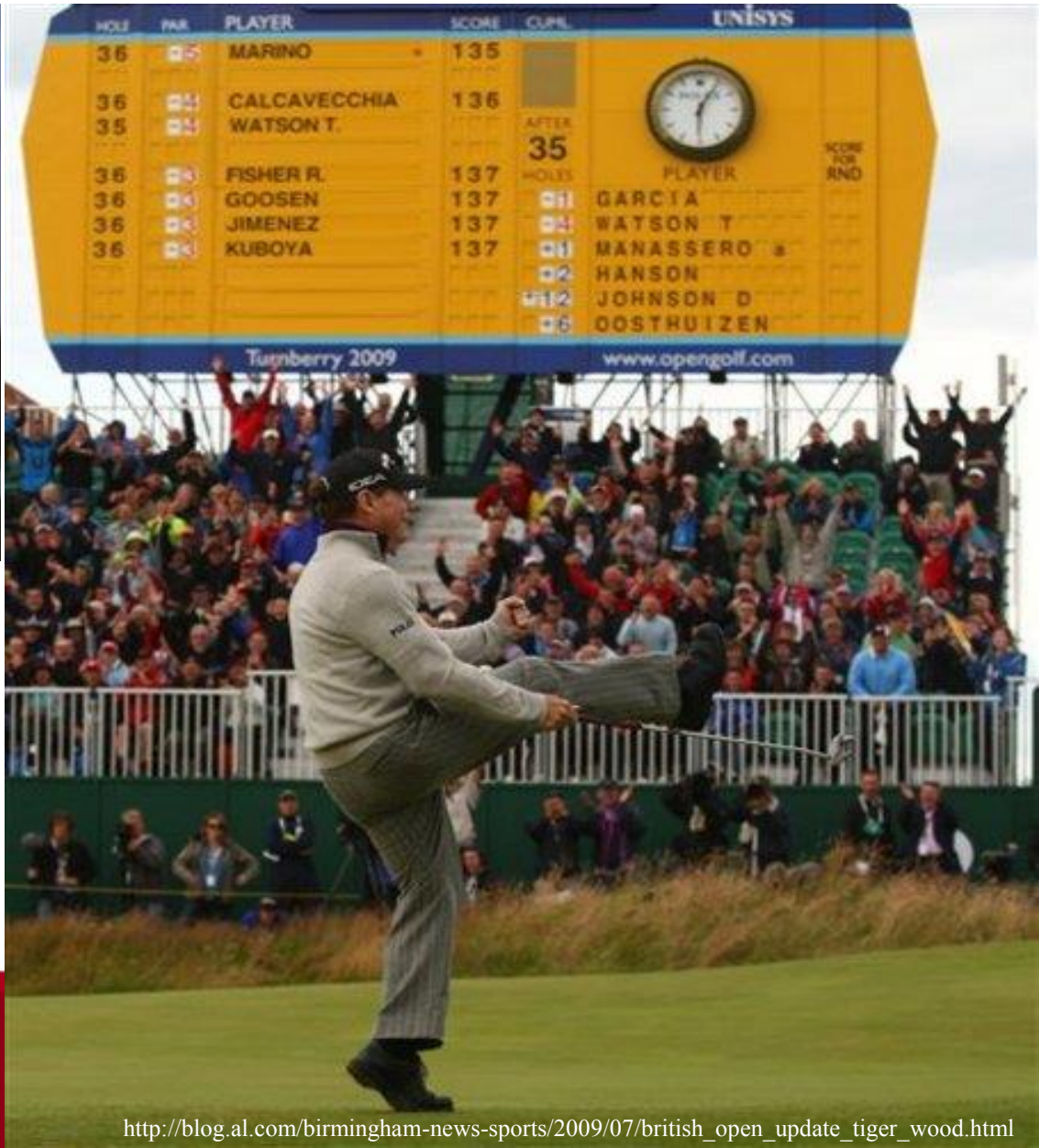
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# Another Way to Look at Performance



<http://www.ibtimes.com/sochi-problems-2014-winter-olympics-have-plenty-ups-downs-1554317>

# Within-Person Variability in Performance



# Within-Person Variability in Performance

*“Why does our timing seem just right on some days when we appear to be playing over our heads but on other days we are awkward and off balance? It is a wonderful experience when everything we do seems to be right. Many of us who engage in competitive sports, even those of us who are mediocre, wonder what accounts for these performance variations.”*

(Lazarus, 2000, p. 236)

# An Episodic Multilevel Analysis of Sport Performance

Career > Years > Months > Weeks > Days > Matches > Points

**Q1: Are you more likely to win the next point after winning the previous point?**

**Meta-analysis of 22 studies (Avugos et al., 2013)**

- No significant “*hot hand*” effect both within and across games

**Study of Raab et al. (2012)**

- *Positive serial dependency* for 12/26 volleyball players.
- *Stationarity* for 14/26 volleyball players.

Win  
Lose  
Win  
Lose  
Win  
Lose  
Win  
Lose  
Win  
Win  
Lose  
Win  
Win  
Win  
Lose  
Lose  
Win  
Win  
Win

# An Episodic Multilevel Analysis of Sport Performance

Career > Years > Months > Weeks > Days > Matches > Points

## Q2: Why Do We Win Some and Lose Some Points?

- **Beal et al. (2005) episodic model of performance**
  - Variations is not random.
  - Performance variations can be predicted
  - Self-regulation and affective states
- **Empirical studies in sport are rare**
  - Between-game variations (Gaudreau et al. 2010)
  - Within-game variations (Schantz & Conroy, 2009)

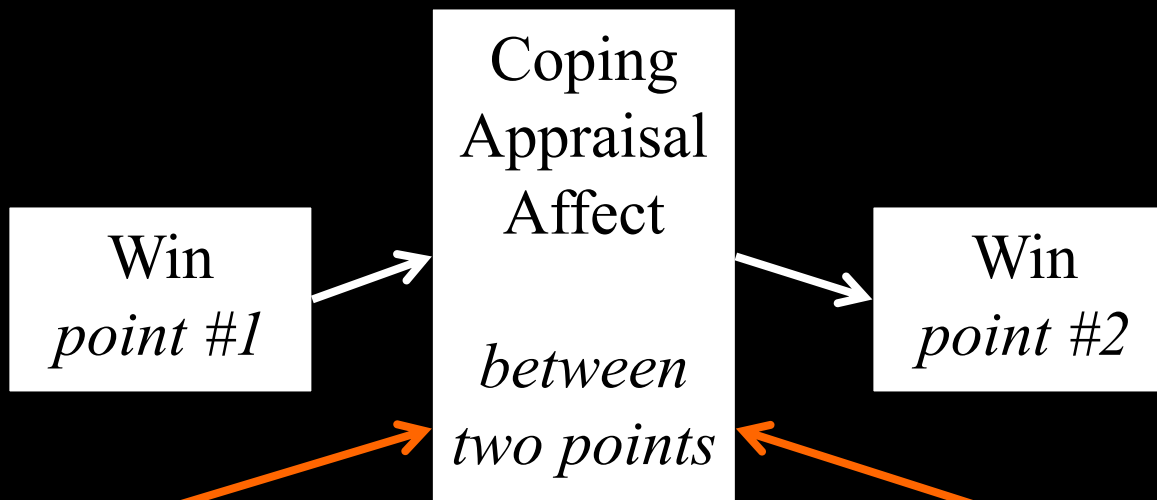
Win  
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Win



# An Episodic Multilevel Analysis of Sport Performance

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## Q2 & Q3 Reciprocal Determinism and Beyond



Winning streaks vs. Losing streaks vs. Non streaks

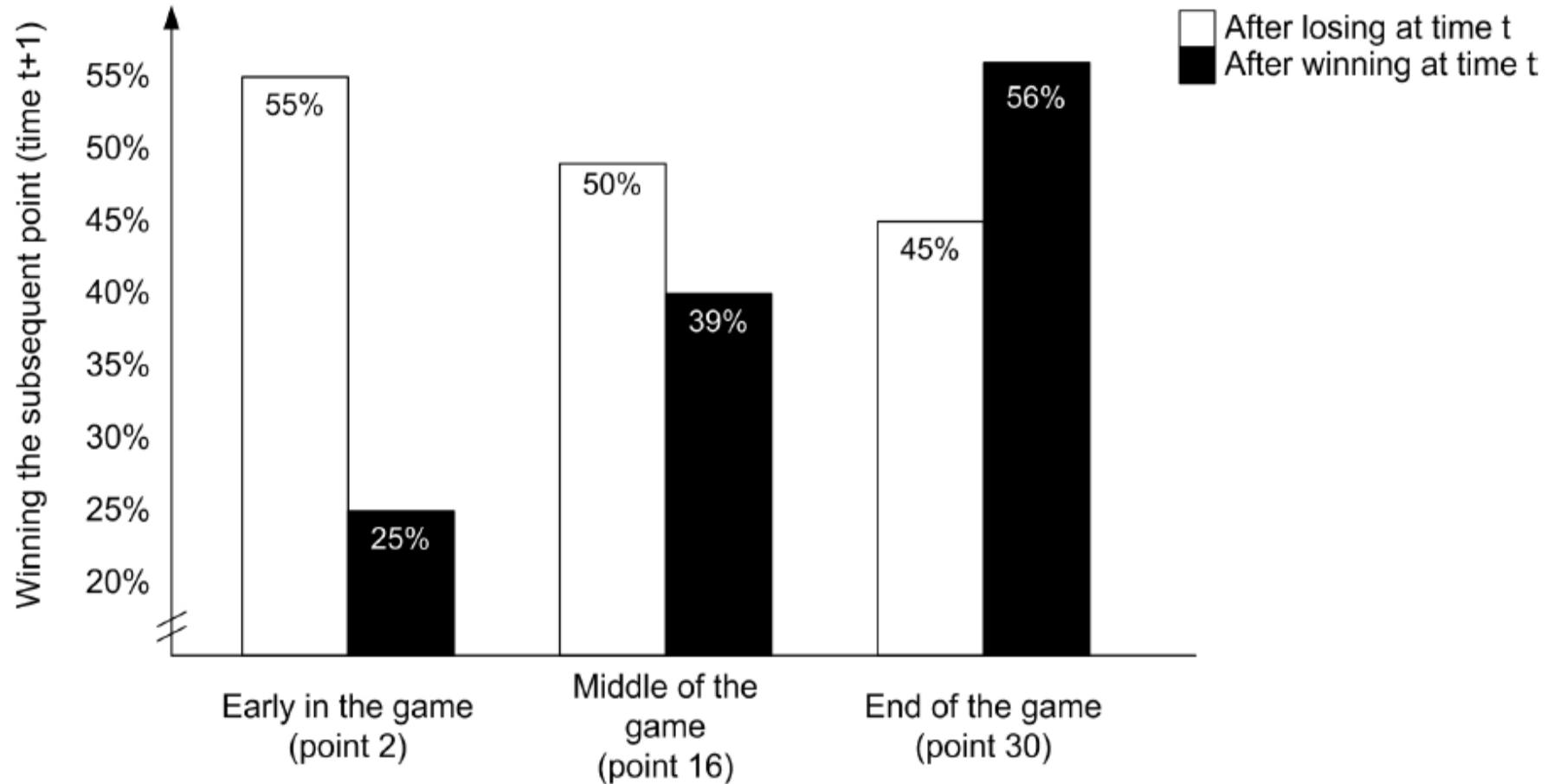
# Method

## Participants & Design

- **A sample of 16 elite women saber fencers**
  - 22.88 of average age (*from 16 to 24*).
  - Entire national team of one of the G8 countries.
  - In 2008 during the qualification phase for the summer Olympic Games in China.
  - All competed in major international championships.
- **Design**
  - Simulated fencing competition during a training session.
  - A fencing match is won when one of the two fencers has scored 15 points.
  - A match can range from 15 to 30 points.
  - **After each point (in between points)**, fencers completed a definitional item of...
    - Task-oriented coping (64% of variance is within-person)
    - Negative affect (43% of variance is within-person)
    - Perceived control (56% of variance is within-person)

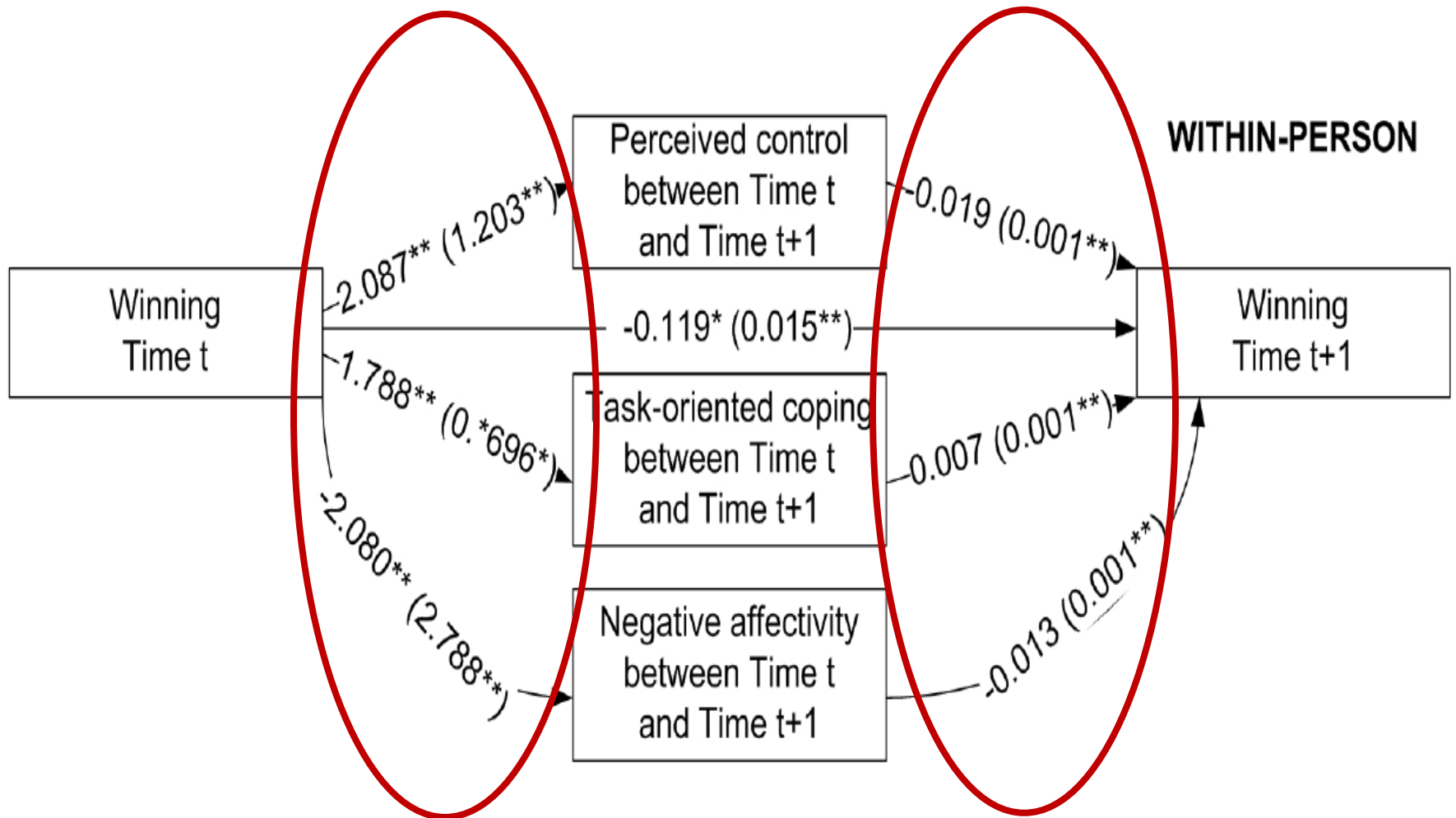
# Question #1

## More likely to win the next point?



# Question #2

## Reciprocal or not?



# Question #3

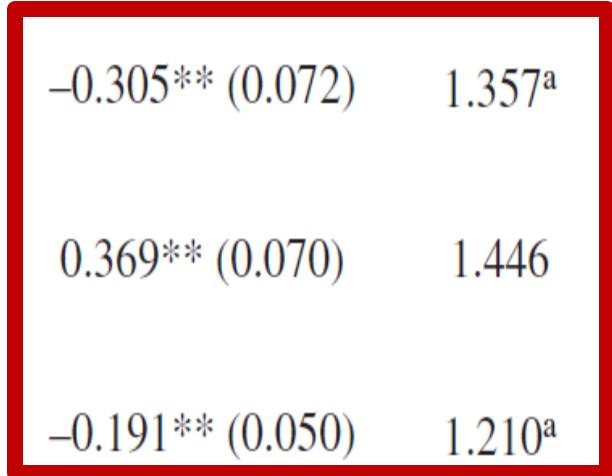
## Performance streaks

- **Winning streaks**
  - 24% of the points were won after winning the previous point(s).
- **Losing streaks**
  - 23% of the points were lost after losing the previous point(s).
- **Nonstreaks**
  - 53% of the points were won after losing or lost after winning the previous point(s).

# Question #3

## Are Streaks Different Psychologically?

	Losing Streaks vs. Nonstreaks			
	Intercept ( $\beta_{00}$ )		Predictor ( $\beta_{10}$ )	
	Estimate (SE)	OR	Estimate (SE)	OR
Model 1				
$\pi_1$ = Perceived control	-0.978** (0.193)	2.660 <sup>a</sup>	-0.305** (0.072)	1.357 <sup>a</sup>
Model 2				
$\pi_1$ = Negative affectivity	-1.029** (0.148)	2.793 <sup>a</sup>	0.369** (0.070)	1.446
Model 3				
$\pi_1$ = Task-oriented coping	-0.931** (0.185)	2.538 <sup>a</sup>	-0.191** (0.050)	1.210 <sup>a</sup>



*Note.* OR = odds ratio. Parameters are unstandardized.

<sup>a</sup>Reciprocal of the OR to facilitate interpretation of effect size.

# Questions #3

## Are Streaks Different Psychologically?

### Winning Streaks vs. Nonstreaks

Model 1

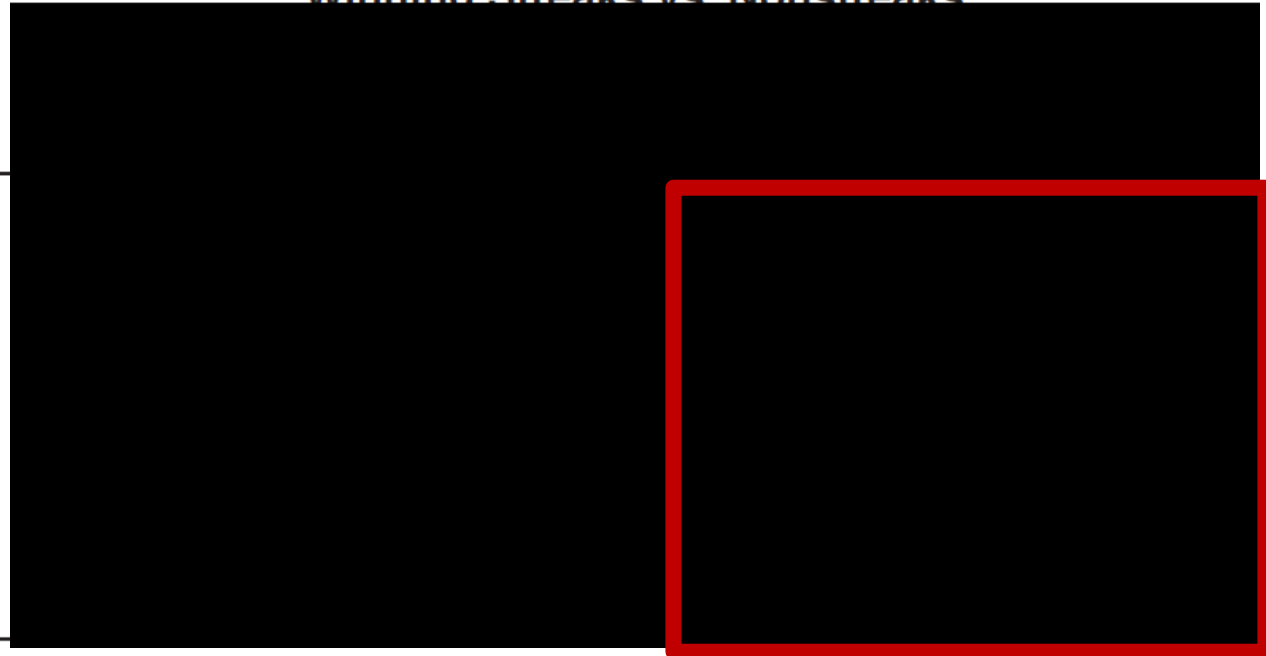
$\pi_1$  = Perceived control

Model 2

$\pi_1$  = Negative affectivity

Model 3

$\pi_1$  = Task-oriented coping



*Note.* OR = odds ratio. Parameters are unstandardized.

<sup>a</sup>Reciprocal of the OR to facilitate interpretation of effect size.

# A Few Things to Remember

- **Performance varies across points in a match (within-person)**
- **Serial dependency is complex**
  - It changed during the match
  - It varied across athletes
- **Performance influences subsequent coping, affect, and appraisals but they do not influence subsequent performance**
  - Effects varied across athletes
  - Psychological variables between points vs. during points?



# A Few Things to Remember

- **Two viewpoints on reciprocity of relationships**
  - **Causal reciprocity (e.g., Bandura)**
    - Performance > Mental processes > Performance
  - **Transactional reciprocity (e.g., Sameroff)**
    - Optimal mental processes might not always predict subsequent performance.
    - When it does happen, however, the performance streak creates a new unit of phenomenological experience.
    - Performance and mental states are now in a dialectical relation in which performance and mental states are experienced symbiotically.
    - Psychological momentum and flow states are potentially by-product of this dialectical fusion of performance and optimal mental states.

## A Point-by-Point Analysis of Performance in a Fencing Match: Psychological Processes Associated With Winning and Losing Streaks

Julie Doron<sup>1</sup> and Patrick Gaudreau<sup>2</sup>

<sup>1</sup>Paris-East Créteil University; <sup>2</sup>University of Ottawa

This study aimed to revisit the complex nature of serial dependency of performance during a match, examining the prospective associations between psychological processes and subsequent performance at the within-person level of analysis, and explore whether psychological processes are associated with the likelihood of winning series of points. A process-oriented sequential approach was used with 16 elite fencers during a simulated competition. Multilevel regression analyses revealed that serial dependency of performance fluctuates within a match. Results of a Bayesian multilevel structural equation model showed that prior performance subsequently influenced psychological processes. Although psychological processes did not predict performance in the subsequent point, successive winnings were associated with higher perceived control and task-oriented coping and lower negative affectivity compared with both losing streaks and nonstreaks. Overall, serial dependencies of performance are nonstationary during a match whereas psychological processes significantly differ in episodes of winning after winning versus losing after losing.

**Keywords:** serial dependency, performance streaks, coping, perceived control, negative affectivity

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*Legeus (2009, p. 276)*

# Merci

## Acknowledgments

**Sport Canada Sport Participation Research Initiative  
Teaching release award from Faculty of Social Sciences  
French Ministry Research Grant**

**Christine Le Scanff  
Yannick Stephan**

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