Novel Ways to Analyse Behaviours in Coaching Research

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Presentation Outline

1. Background Research
2. Relationships and Positive Youth Development in Sport
3. Current Projects
4. New Contributions

Background Research

1. The Developmental Model of Sport Participation (Côté, 1999; Côté & Abernethy, 2013; Côté, Lidor, & Hackfort 2009)
2. Positive Youth Development (Fraser-Thomas, Côté & Côté, 2005; Strachan, Côté, Deakin, 2009; MacDonald, Côté, & Eys & Deakin, 2011; Vierimaa, Erickson, Côté, & Gilbert, 2012)
3. Coaching effectiveness and excellence (Côté & Gilbert, 2009; Côté, Young, Duffy, & North, 2007; Côté, Bruner, Strachan, Erickson, & Fraser-Thomas, 2010)

Coaching Effectiveness

The consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes’ competence, confidence, connection, and character in specific coaching contexts.

Côté & Gilbert, 2009

Coaching Effectiveness

1. Sport participation should lead to positive and measurable outcomes for the participants.
2. There are common behavioral patterns among effective coaches that contribute to athletes’ outcomes.
3. Coaches’ behavioral patterns are context specific.

Coaches’ Behaviours

1. Descriptive studies of coaching effectiveness (e.g., Claxton, 1986; Lacy & Davi, 1984)
2. The pedagogy of coaching (Cushion et al., 2012; Trudel & Gilbert, 2006)
3. Coaching expertise (Leas & Chi, 1993; Ford, Yates, & Williams, 2010)
4. Coaching behaviors and psycho-social outcomes (e.g., Smith, Smoll, & Hunt, 1977; Smith & Smoll, 2007)
Limitations of Observation

1. Examine one direction of communication (e.g., coach) that is not representative of an interactive process (e.g., coach-athlete).
2. Heavy focus on content of coaches’ pedagogical behaviors (e.g., instruction, reinforcement, etc.) as opposed to other communication indicators such as tone and emotion.
3. Behaviours are assessed through frequency or duration counts as opposed to a more dynamic approach (e.g., sequences, variability, consistency).
4. Shortage of theories necessary to drive important research questions and knowledge transfer.

What Leads to Positive Outcomes in Sport?

Positive Outcomes in Sport

- Larson’s (2000) 3 criteria of initiative development:
  • Intrinsically motivated (voluntary)
  • Effort directed towards a goal (attention)
  • Engagement over time

- Lerner’s (2004) big 3 program design elements:
  • Positive and sustained adult-youth relations
  • Skill building opportunities
  • Participation and leadership opportunities

General Research Question

What are the interactive features of organized sport that best promote positive development through sport and long-term participation?

Working Model

Dynamic of Coach-Athletes Interaction: State Space Grids

- Construct a “state space” for illustrating interactions between coaches and athletes
  • Grid encompassing all possible states in which the relationship could function
  • Represented by 2 categorical variables (i.e., coach and athlete interactive behaviours) forming x- and y-axes
• Record coach-athletes interactions in real time.
• Track behaviours of coach and athletes and the duration of these behaviours over time.
• Patterns and structures emerge and can be quantified.
  • Stabilizing in a limited area (stability, attractor states)
  • Tendency to function in more than one area (flexibility)
    • Number of areas
    • Frequency of transitions between areas
  • Patterns over time (sequences)

**Project 1**

Examining coach-athlete interactions using state space grids: An observational analysis in competitive sport


**Project 1**

• Participants: Two youth synchronized swimming teams w. female head coach and athletes
  
  **Team A** (n = 10 athletes): ‘Successful’ (+)
  
  *Performance – Highly successful at national level*
  
  *Athletes’ Personal development – High*

  **Team B** (n = 7 athletes): ‘Less successful’ (-)
  
  *Performance – Moderately successful at provincial level*
  
  *Athletes’ Personal development – Low*

• Teams did not differ on athlete age (range 11-17; M = 15, SD = 1.6) or previous experience (M = 6.5 yrs, SD = 1.5)
Project 1 - Results

Mean Cell Range = 88.50
Mean Cell Range = 119.17

Sig. difference p < .001

Project 1 - Conclusions

Take-Home Messages:
• Consistent, patterned mode of interaction across flexible situations
• Cycling between observation, positive reinforcement, and technical feedback/instruction

Project 2

An investigation of the content and structure of coach-athlete interactions in a model sport program for athletes with disabilities


Project 2

• Goal: To explore the content and structure of coach-athlete interactions as they occur in a highly successful program
• Participants:
  • Head coach (n = 1) and athletes (n = 24) from a swim team for athletes with disabilities and their able-bodied siblings
  • Unique and exceptional nature of this program has been recognized at the community and national level
• Videotaped multiple practice sessions
• Assessed coach-athlete interactive behaviours and developmental outcomes

Project 2 - Results
**Coach Behaviour (while athletes engaged)**

<table>
<thead>
<tr>
<th>Coach Behaviour</th>
<th>Mean Duration (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humour Team</td>
<td>8.09</td>
</tr>
<tr>
<td>Humour Athlete</td>
<td>24.74</td>
</tr>
<tr>
<td>Positive Reinforcement Team</td>
<td>4.04</td>
</tr>
<tr>
<td>Positive Reinforcement Athlete</td>
<td>32.23</td>
</tr>
<tr>
<td>Coach-Initiated Athlete Input</td>
<td>48.39</td>
</tr>
<tr>
<td>Technical Instruction with Modelling Team</td>
<td>30.88</td>
</tr>
<tr>
<td>Technical Instruction with Modelling Athlete</td>
<td>37.39</td>
</tr>
<tr>
<td>Organization Team</td>
<td>142.17</td>
</tr>
<tr>
<td>General Communication Team</td>
<td>8.15</td>
</tr>
<tr>
<td>General Communication Athlete</td>
<td>83.43</td>
</tr>
<tr>
<td>Observation Team</td>
<td>718.11</td>
</tr>
<tr>
<td>Negative Behaviours</td>
<td>3.5</td>
</tr>
</tbody>
</table>

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**Project 2 - Conclusions**

Take-Home Messages:
- Consistent patterns of coach-athlete interactions.
- Importance of considering recipient of behaviours (team vs. individual, etc.) and sequencing.
- Importance of acknowledging athletes' behavioural responses to coaches' specific behaviours.

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**Project 3 - Purpose**

- To develop a systematic observation behavioural coding system to capture the motivational tone of youth sport coaches' interactive behaviour
- Focused on the “how” rather than the “what” of coaches' behaviour

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**Project 3 - Results**

- Multiple tone categories represented by combined self-determination theory (SDT) and achievement goal theory (ACG) frameworks
  - Integration of major theories sharing common intersections
- General structure: behaviour content + tone modifier(s)

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**Content**

<table>
<thead>
<tr>
<th>Content</th>
<th>Autonomous Support</th>
<th>Evaluation Climate</th>
<th>Expect</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Uncodable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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*Erickson & Côté, (submitted)*
Project 3 - Discussion

• First valid and reliable tool for systematically capturing the motivational tone of observed coach interactive behaviour.

• Examination of motivational tone intended to extend, not replace, pedagogical understanding of observed coaching behaviour.
  • Allows for a more nuanced examination of primary interpersonal interactions in organized sport contexts.

Project 4

A season-long examination of the motivational tone of coach-athlete interactions in youth sport

Erickson & Côté, (submitted)

Project 4 - Purpose

• To examine the relationship between the motivational tone exhibited by competitive youth sport coaches in their individualized interactions with athletes and athletes’ developmental trajectories over the course of a competitive season.

Project 4 - Methods

• Participants
  • Athletes (n = 55) and coaches (n = 5) from 5 competitive youth volleyball teams
  • Ages 14-17

• Procedure
  • Data collection at 3 time points: beginning, middle, and end of season
  • At each time point, full training session video-recorded and athletes completed measures of the 4C’s (Vierimaa, Erickson, Côté, & Gilbert, 2012)

• Analysis strategy
  • Person-centred approach to both 4C’s and behavioural data.

Project 4 - Results

• Cluster analysis on developmental trajectories over the course of the season (combined 4 C’s measure)
  • “High and Increasing”
  • “Low and Decreasing”
  • “Moderate and Maintaining”

• Profile Analysis
  • Significant differences between all cluster mean trajectories (level and parallelism)

• Comparison across all C’s
  • Significant differences between all clusters
  • Interactive behaviour (analyzed via state space grids)
**Project 4 - Results**

- "Low and Decreasing" cluster
  - Experienced more individualized interaction from coach overall
  - More interaction with mastery and controlling tone
  - More positive performance-related interaction
  - More controlled athlete interactive behaviour toward coach

- "High and Increasing" cluster
  - Experienced more general non-performance-related interaction

- "Moderate and Maintaining" cluster
  - No distinguishing interaction profile

**Project 4 - Discussion**

- More not always better...
  - "Helpful" performance-related interaction may have reinforced differences between athletes and perpetuated negative trajectory

- Treat young athletes like people
  - Non-performance-related interaction may convey message of wider relationship

- Importance of motivational tone in coach-athlete interactions
  - The meaning conveyed by interactive behaviour, beyond simply content

**Limitations of Observation**

1. Examine one direction of communication (e.g., coach) that is not representative of an interactive process (e.g., coach-athlete).
2. Heavy focus on content of coaches’ pedagogical behaviors (e.g., instruction, reinforcement, etc.) as opposed to other communication indicators such as tone and emotion.
3. Behaviours are assessed through frequency or duration counts as opposed to a more dynamic approach (e.g., sequences, variability, consistency).
4. Shortage of theories necessary to drive important research questions and knowledge transfer.

**New Contributions**

1. Examine one direction of communication (e.g., coach) that is not representative of an interactive process (e.g., coach-athlete).
   - State Space Grid analyses of coach-athlete interactions allow us to highlight the important role of athletes’ behaviors when describing coaches' behaviors in practices or games.
2. Heavy focus on content of coaches’ pedagogical behaviors (e.g., instruction, reinforcement, etc.) as opposed to other communication indicators such as tone and emotion.
   - Behaviors such as humor, personal conversations with athletes, and motivational tone are predictive of positive outcomes in sport

3. Behaviours are assessed through frequency or duration counts as opposed to a more dynamic approach (e.g., sequences, variability, consistency).
   - Determined sequences and patterns of behaviors shed new light on coaching effectiveness and have practical implications.
4. Shortage of theories necessary to drive important research questions and knowledge transfer.
   - Motivation theories (e.g. self-determination) allow to establish relationships between motivational tone, coaching behaviours and athletes' outcomes as measured by the 4 C’s framework.

**Current Projects**

1. Continue to build our library of videos and the measurement of youth outcomes.
2. Development of a Transformational Leadership Coding System and intervention strategy based on:
   - Idealized influence
   - Inspirational motivation
   - Intellectual stimulation
   - Individualized consideration
3. System to code expression of coaches’ emotion (e.g., guilt, hope, pride, anger, etc.).
4. Stimulated recall interviews with coaches.
Thank You!

**Process-Person-Context-Time Model**

1. **Process:**
   - the regular “activities” of sport.
2. **Person:**
   - the “assets” or characteristics we (i.e. coaches, teachers, parents) want to transmit to the participants involved in sport.
3. **Context:**
   - the environment in which the activities are happening.
4. **Time:**
   - changes occurring over time (e.g. age and development).

(Bronfenbrenner, 1977; Côté, Strachan, & Fraser-Thomas, 2008)

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**A Development Framework**

Influences
- Individual Characteristics
- Social Agents
- Environment

Developmental Activities
- Contextual Factors
- Competence
- Confidence
- Connection
- Character

Growth of Personal Assets
- Developmental Activities
- Contextual Factors
- Competence
- Confidence
- Connection
- Character

Outcomes
- Participation
- Performance
- Personal Development

TIME