« The great live and move challenge » and the promotion of physical activity toward children and their parents: Results from a controlled trial

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Introduction: benefits of physical activity practice in childhood

- Benefits of regular physical activity (PA) practice on :
  - ✓ Physical health (e.g., decrease in obesity rate)
  - ✓ Psychological health (e.g., increase in well-being)
  - ✓ Social health (e.g., positive interactions) (Janssen & Leblanc, 2010)

- Adopting an active lifestyle during childhood is a key determinant of :
  - ✓ Health in adulthood (e.g., decrease rate in coronary heart disease)
  - ✓ PA practice in adulthood (Sallis et al., 1992)

- However, youth PA level is globally insufficient:
  - ✓ In France, 69% of the school-aged children are not sufficiently active to meet the international guidelines of PA (Godeau, Navarro, & Arnaud, 2012)

How promoting PA in school-aged children?

- **Some evidence exist** concerning the **beneficial impact on PA practice** of interventions promoting PA among children (Metcalf et al., 2012; Methälä et al., 2014; van Stralen et al., 2011)

- **However**:
  - ✓ Significant but **modest impact** (Cohen's *d* = 0.07; 95% CI = 0.01-0.14) (Metcalf et al., 2012)
  - ✓ **Important variability** in term of effectiveness between programs (Methälä et al., 2014)
  - ✓ Few data exist concerning the **psychosocial mechanisms** implicated in the efficacy of such programs (van Stralen et al., 2011)

How promoting PA in school-aged children?

- **Multicomponent** interventions that include both **school**, **family**, and **community** involvement have the potential to generate considerable increase in PA of school-aged children (van Sluijs, McMinn, & Griffin, 2007)

- Multicomponent intervention:
  - ✓ Both based on education and environment modification (van Sluijs et al., 2007)
- School involvement:
  - ✓ Ensure promotion of PA among all children, including those from lower socioeconomic classes (Simon et al., 2011)
- Family environment:
  - ✓ Key role of both parental support and shared family PA (Cleland et al., 2011)
- Community involvement:
  - ✓ Importance of the physical environment in which children and their family live (Sallis et al., 2006)

How promoting PA in school-aged children?

- The interests of implementing a theory-based intervention:
  - ✓ Orientate components of interventions toward some of the key variables hypothesized to be causally related to behavior (Michie & Prestwich, 2010)
  - ✓ Help to understand the mediators of behavior change (Michie & Abraham, 2004)
- Theory-based interventions are efficient to promote PA (Cohen's *d* = 0.31) (Gourlan et al., 2015)

The present study

Based on the theory of planned behavior (TPB; Ajzen, 1991), the Great Live and Move Challenge is a PA promotion multicomponent intervention implemented among 7-11 years old French children and their parents

2 objectives:

- To assess the impact of the **Great Live and Move Challenge** on the PA practice of children

- To assess the impact of the intervention on some **psychosocial determinants** of PA practice of the children proposed by the TPB

A playful project to promote PA

- Duration = 1 month and a half (Mid April-May)
- A playful method to help children to quantify their PA : the **energy cube**
  - ✓ An energy cube = **15 minutes of PA**
  - ✓ Children monitor and report their “energy cubes” on a diary

The Great Live and Move Challenge: a theory-based intervention

The theory of planned behavior (Ajzen, 1991)

- Provide information about PA benefits

Attitudes (instrumental, affective)

- Encouragements of significant others
- Identification to a model

Norms (injunctive, descriptive)

- Monitoring energy cubes
- Information about where, when, how and with whom practicing PA

Perceived control

Implementation intention

Action planning

Intentions

Goals setting

Perceptions of active opportunities

« Great Challenge Events »

Rhodes & Dickau (2013)

Behavior (PA)

(Mc Eachan et al., 2011)

Motivation phase **Action phase**

(French et al., 2013)

Participants

- ✓ **977 children** from **31 classes** (10 public school)
- ✓ **466 Girls**, **511 boys**
- ✓ Children from primary school-**year 2** (CE1) to **year 5** (CM2)
- ✓ Mean age = **8.57 years old** (SD = 1.5)

Location of the research

General scheme of the intervention

Method

- Measures
  - ✓ Instrumental and affective attitudes (Murtagh et al., 2012)
  - ✓ Injunctive and descriptive norms (Bélanger-Gravel & Godin, 2010)
  - ✓ Perceived control (Bélanger-Gravel & Godin, 2010)
  - ✓ Intention (Bélanger-Gravel & Godin, 2010)
  - ✓ PA practice (Janz et al., 2008)

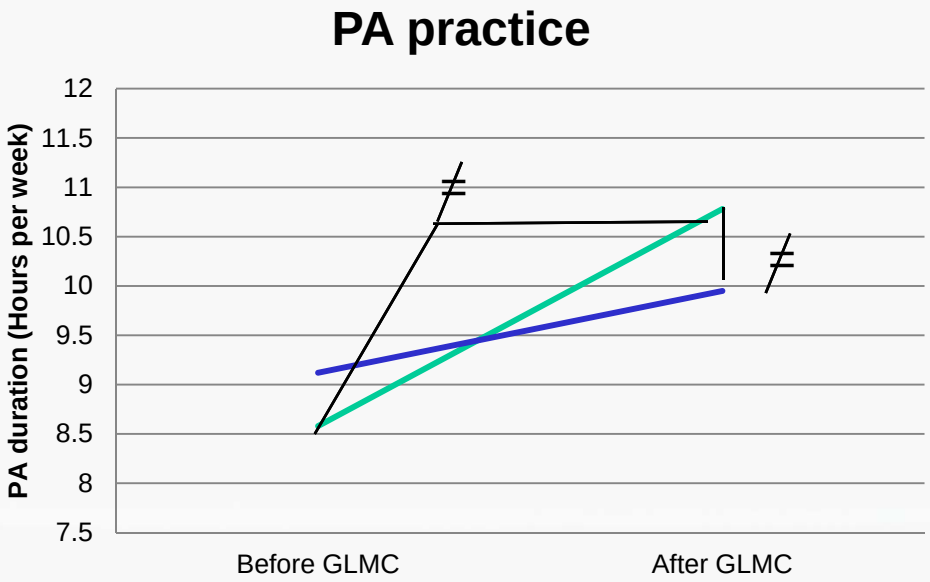
- Statistical analyses
  - ✓ Repeated measure ANOVAs
    - ➢ Comparison of the evolution of each group on each variable between the beginning and the end of the Great Live and Move Challenge
  - ✓ Effect size (i.e., Cohen's *d*) of the difference of evolution between groups
    - ➢ Cohen's d (Cohen, 1988) = 0.2 (small), 0.5 (medium), 0.8 (large)

Hypothesis 1

Children who have taken part to the Great Live and Move Challenge should have **enhanced their PA practice**

Results (1)

n = 567



Time X group: F(1, 564) = 4.65, *p* = .03

Cohen's *d* = 0.20 (95% CI = 0.03;0.37)

Intervention group (n = 360) =

Control group (n= 206) =

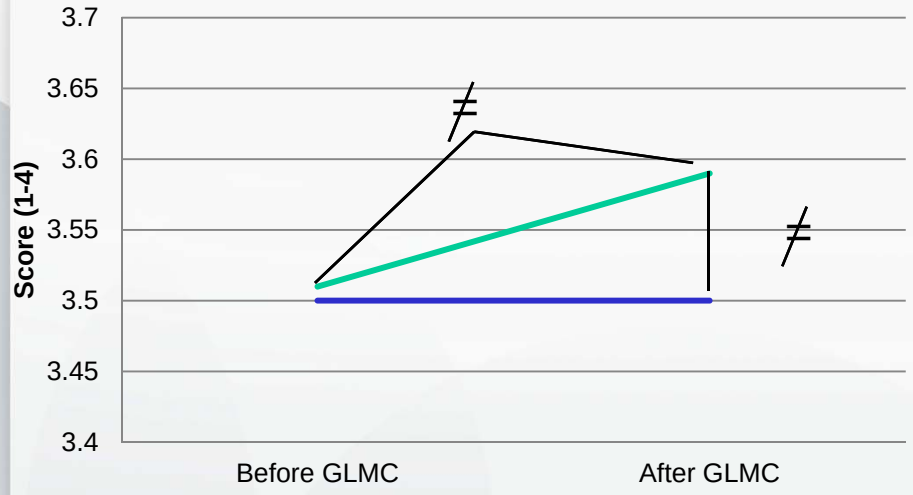
Hypothesis 2

Children who have taken part to the Great Live and Move Challenge should have **enhanced their scores on TPB variables** (i.e., intention, attitude, subjective norm, perceived control) and on **additional variables** (i.e., planning, perceptions of active opportunities)

Results (2)

Attitudes

Instrumental attitude



Affective attitude

Time X group: F(1, 977) = 5.15, *p* = .02

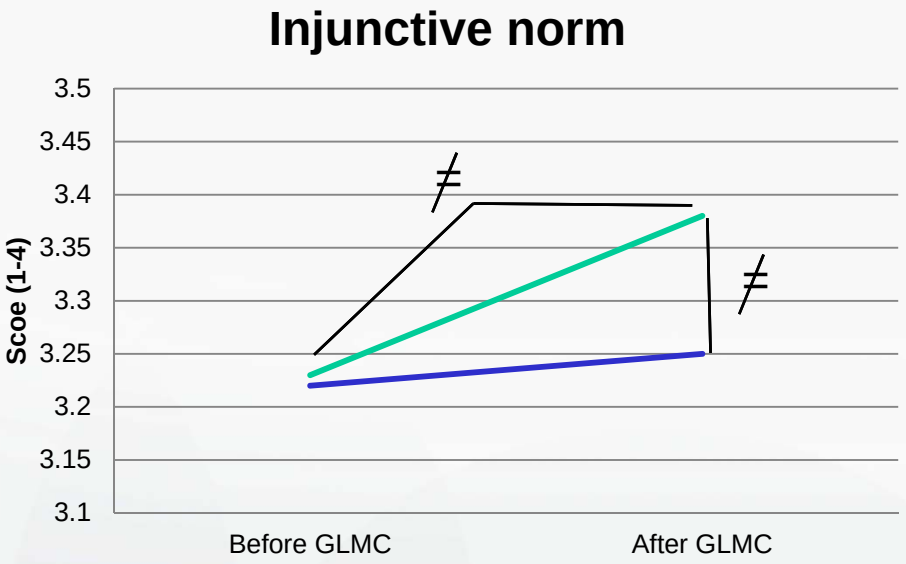
Cohen's *d* = 0.13 (95% CI = 0.01;0.26)

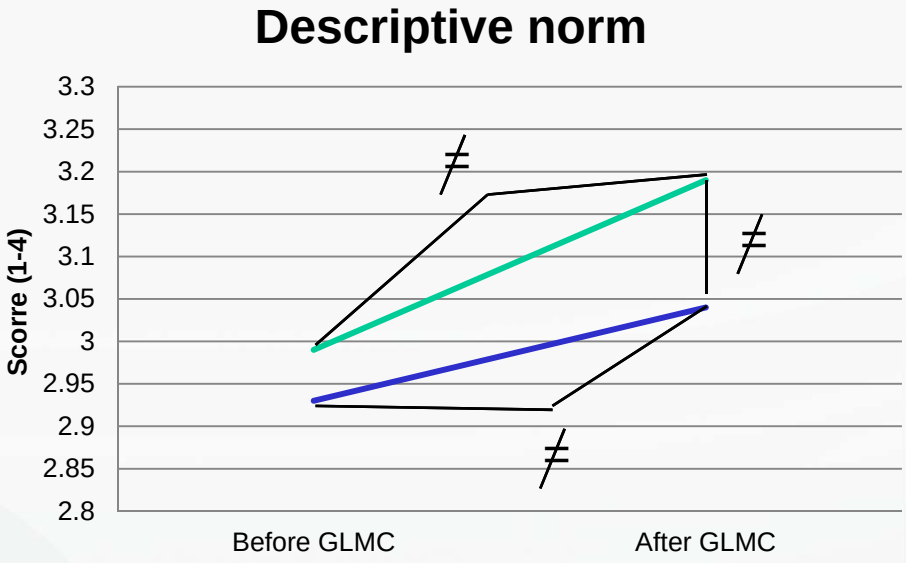
Time X group: F(1, 977) = 0.97, *p* = .23
Time : F(1, 977) = 8.82, *p* = .003
Cohen's *d* = 0.09 (95% CI = -0.03;0.22)

Intervention group = Control group =

Results (2)

Subjective norm





Time X group: F(1, 977) = 5.15, *p* = .02

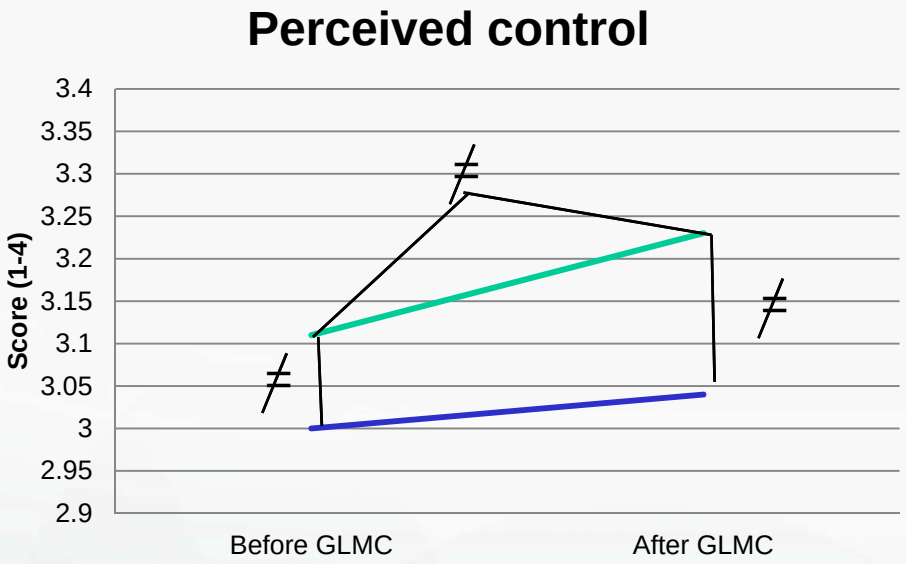
Cohen's *d* = 0.21 (95% CI = 0.08;0.34)

Time X group: F(1, 977) = 4.51, *p* = .04

Cohen's *d* = 0.15 (95% CI = 0.02;0.27)

Intervention group = Control group =

Results (2)



Time X group: F(1, 977) = 3.55, *p* = .048

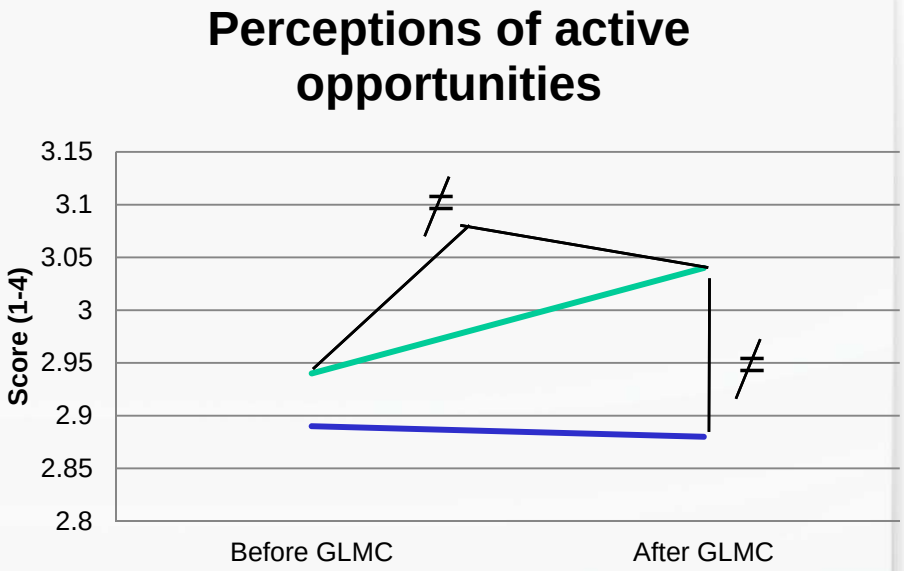
Cohen's *d* = 0.13 (95% CI = 0.01;0.25)

Time X group: F(1, 977) = 3.62, *p* = .04

Cohen's *d* = 0.11 (95% CI = 0.01;0.24)

Intervention group = Control group =

Results (2)



Time X group: F(1, 977) = 4.19, *p* = .04

Cohen's *d* = 0.17 (95% CI = 0.05;0.30)

Time X group: F(1, 977) = 5.60, *p* = .01

Cohen's *d* = 0.29 (95% CI = 0.17;0.42)

Intervention group = Control group =

Discussion

- The Great Live and Move Challenge is a multicomponent intervention based on the TPB (Ajzen, 1991) which aim to promote PA among children:
  - ✓ Significant impact on PA practice
  - ✓ Significant impact on the TPB variables
- Toward a better understanding of:
  - ✓ The efficient **behavior change techniques** to use to promote PA among youth (Methälä et al., 2014)
  - ✓ The **explicative mechanisms** implicated in the efficacy of interventions (Annesi & Whitaker , 2010)

Discussion

- However:
  - ✓ Low effect sizes (Cohen, 1988)
  - ✓ Higher impact on PA in the present study (Cohen's *d* = 0.20) than for interventions promoting PA among children (Cohen's *d* = 0.07) (Metcalf et al., 2012)
  - ✓ Lower impact on PA in the present study than for theory-based interventions promoting PA among adults (Cohen's *d* = 0.35) (Gourlan et al., 2015)
  - ✓ Impact of theory-based interventions on the PA practice children ?

Limits and perspectives

- Main limits:
  - ✓ Only a sub-sample for PA (n = 567)
  - ✓ No test of a **mediation effect**

- Perspectives:
  - ✓ Analyzing data related to objective PA measurement (i.e., actigraph GT3X)
  - ✓ Analyzing data related to the TPB variables and PA practice of parents
  - ✓ Implementing a **randomized controlled trial**
  - ✓ Evaluating the **long term impact** of the Great Live and Move Challenge (e.g., from school year 1 to school year 5)

Thanks for your attention

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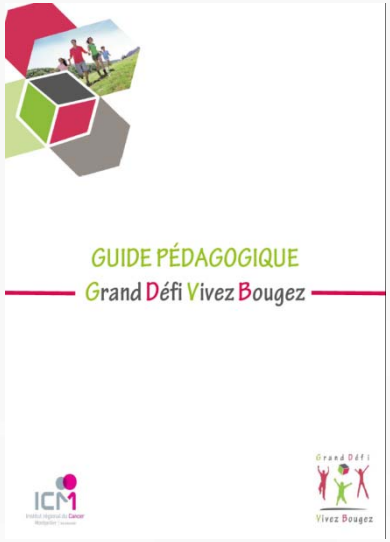
The pedagogical guide of the Great Live and Move Challenge

- Developping a scientifically and pedagogically valid guide

Phase	Session Number	Name of the session	Varaible targeted
Motivational phase	1	Presentation of the Great Live and Move Challenge	Attitude
	2	Collective construction of the PA notion	Subjective norm
	3	Learn to transform PA in energy cubes	Perceived control
	4	Learn to use the table to register energy cubes	Perceived control
	5	Encourage children to practice PA	Attitude
	6	How to regularly practice PA	Percieved control
	7	Invest the families and the community in the Great Live and Move Challenge	Subjective norm
Action phase	8	Goals setting and implementation intention	Intention & Planning
	9	Register energy cubes on the diary	Perceived control
	10	Implement « Great Challenge Events »	Perceptions of active opportunities



A playful project to promote PA

- Duration = 1 month and a half (Mid April-May)
- A playful method to help children to quantify their PA : the **energy cube**
  - ✓ An energy cube = **15 minutes of PA**
  - ✓ Children monitor and report their “energy cubes” on a diary

- Contribution of actors to help children to cumulate energy cubes:
  - ✓ **Teachers**: educational sessions to promote of PA, filling the diary, implementing “Great Challenge Events” in the schools
  - ✓ **Parents**: practicing shared family PA to cumulate some energy cubes
  - ✓ **Local policy stakeholders**: implementing “Great Challenge Events” for families in the cities