

Effects of Outdoor Motor Education on Preschoolers' Motor and Social Behaviors - *An Observational Study* -

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Why promoting outdoor play ?

Many critical reasons to promote children outdoor play and outdoor education at (pre)school

Outdoor play especially in the nature (Johnston et al, 2023)

- ✓ ↑↑ Physical activity levels and motor development
- ✓ ↑↑ Connectedness to nature
- ✓ Affordance offers many opportunities for movement, exploration and learning (Gurholt & Sanderud, 2015)
- ✓ Yet outdoor play is mostly considered as recreational activity and not so much as a powerful tool for children learning and development.



Research questions & Methods

Can brief outdoor interventions influence preschool children's free play behaviours and stimulate motor and social learning ?

2 types of interventions

1) Changes in the environment

New affordance
12 tyres



2) 2 Short pedagogical interventions (3 games/school)

School 1

Cimbing like a
monkey



Frogs games
with Tyres



Landart & animals
imitation



Chasing game

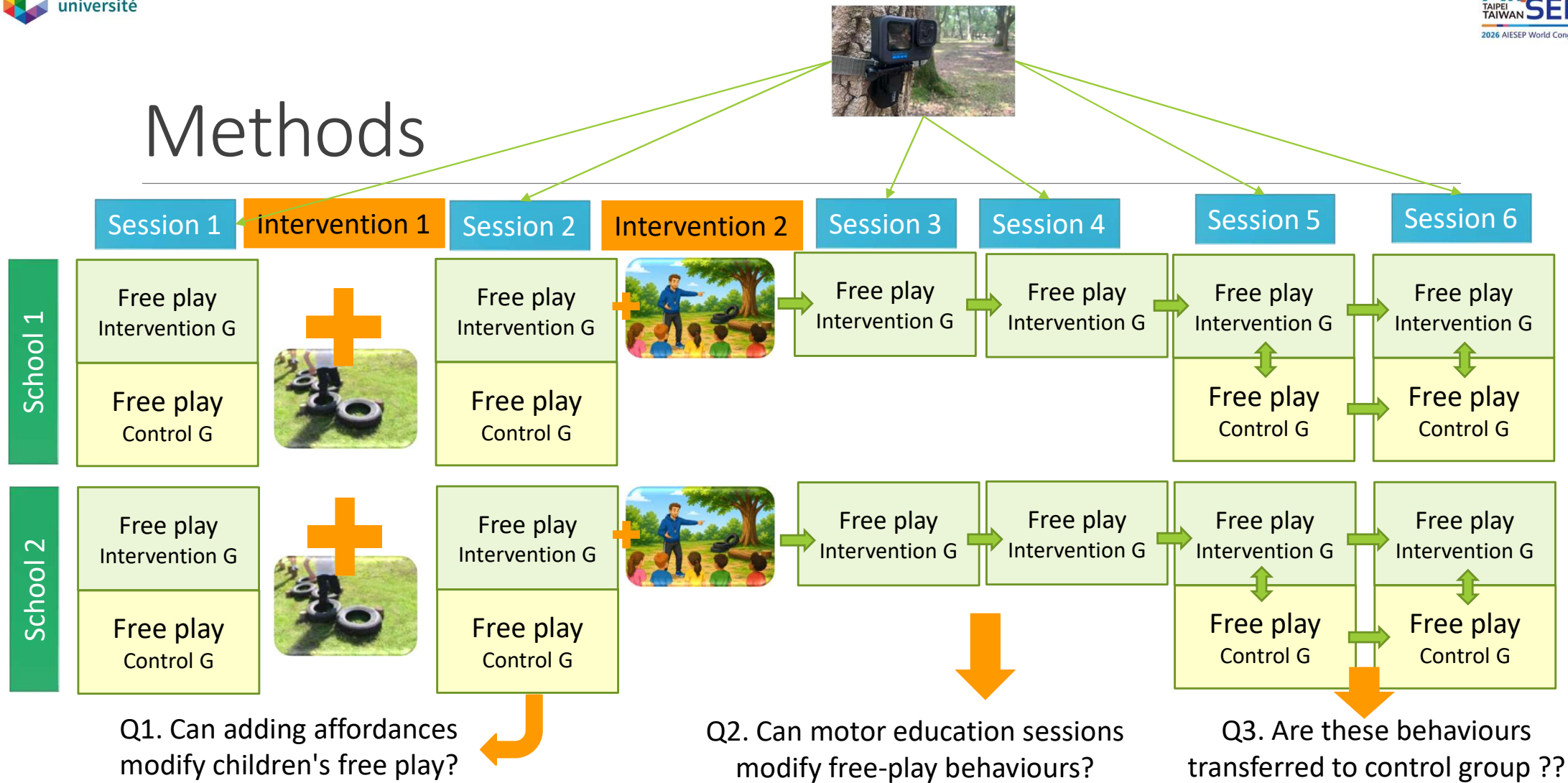


School 2

Q1. Can adding affordances modify children's free play?

Q2. Can motor education sessions modify free-play behaviours?

Methods



School 1



- ✓ 16 children (7♂ 9♀)
- ✓ A large play area (1ha) with
 - ✓ wooded areas,
 - ✓ Grass
 - ✓ Slopes
 - ✓ plenty of opportunities for climbing
- ✓ Fairly permissive rules

School 2



- ✓ 19 children (11♂ 8♀)
- ✓ A medium play area (0,18ha) with
 - ✓ Main central grass
 - ✓ Wooded edges,
 - ✓ Small slopes
 - ✓ Wodden cabins
 - ✓ Limited opportunities for climbing
- ✓ Fairly restrictive rules

Contrasted « rules » environment

	School 1	School 2
Climbing, scrambling, climbing trees, etc.	✓	✗
Playing with branches and sticks.	✓	✗
Playing near the fence or boundary of the area.	✓	✗
Going beyond the boundaries of the natural environment.	✗	✗
Hiding in bushes or behind trees.	✓	✗
Running and playing at high speeds.	✓	✓
Playing with tools (including potentially dangerous tools).	✓	✗
Building, constructing, digging, etc.	✓	✗



Q4. Does school context influence intervention effectiveness?

Data collection and analysis

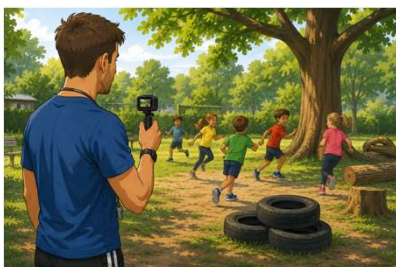
During free play session



3 fixed GoPro for each specific play area as part of the educational program

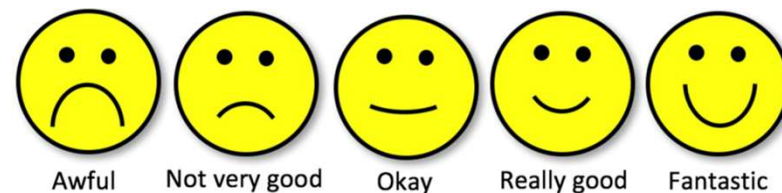


+ 1 mobile camera that follows the children around the rest of the play area



After pedagogical intervention

Level of enjoyment for each game



Awful

Not very good

Okay

Really good

Fantastic

→ Transcription
→ Coding
→ Analysis by categorie of motor behaviors and peer to peer transmission

Results : Q1 (adding affordance)

How adding affordances changes play



- ✓ Children are curious about the tyres
« Oh, tyres ! » « What are they doing there ? »
- ✓ School 1 : A few children show interest and manipulate the tyres
Play is not concentrated around tyres
- ✓ School 2 : A few children start to manipulate the tyres
Other children join this small group
Play become concentrated around tyres



11 tyre-related behaviours observed
immediately after introduction



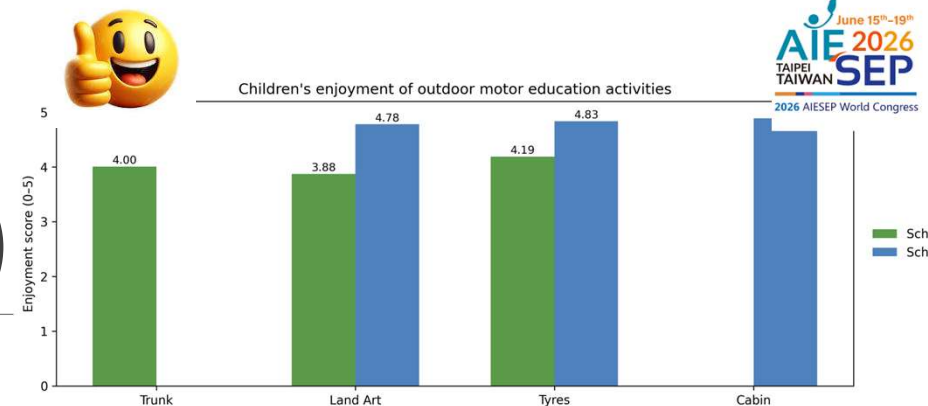
More active
forms of play

Results : Q2 (PE sessions)

Motor education sessions influenced later free play

1. Children spontaneously reused learned behaviours

- ✓ Balancing on logs
- ✓ Jumping between tyres
- ✓ Rolling tyres on the slope
- ✓ Nature-based constructions



2. Children reused the language of the sessions



Results : Q2 (PE sessions)

Beyond reproduction: children saw new possibilities for action



1. Children repeat behaviours from the sessions (standing on the trunk ; use wooden sticks to keep balance)
2. Children go further and adopt new play forms (climbing to the top of the tree, jumping down from the trunk) => adopt "Risky Play" (Sandseter, 2009)

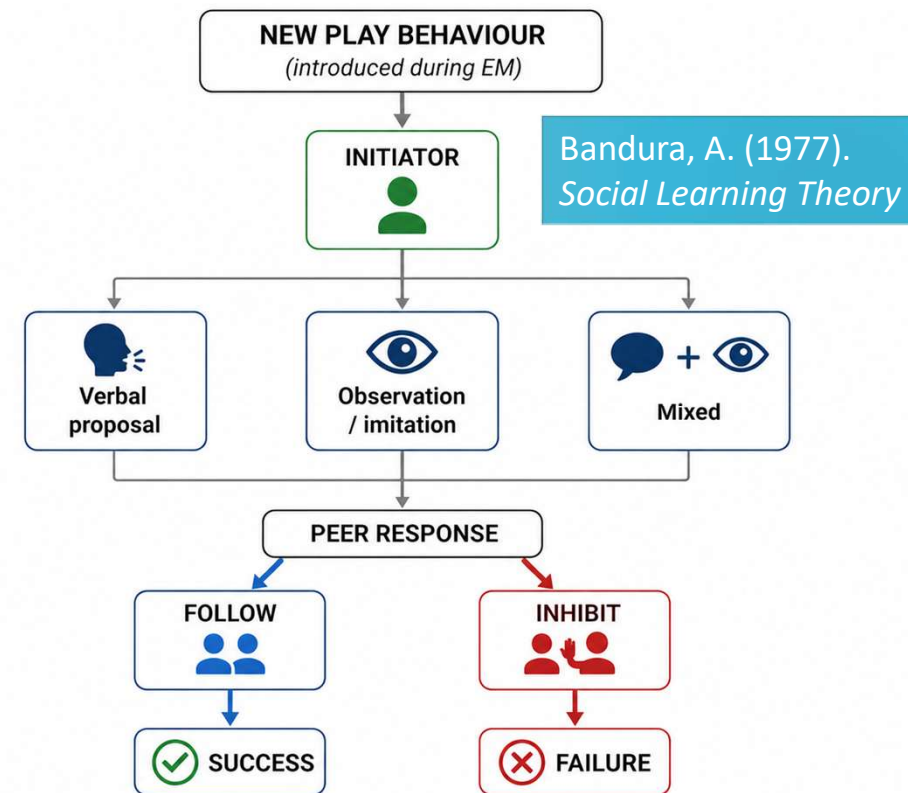


The intervention did not simply generate imitation. It changed how children perceived and used the affordances available in their environment.

Results : Q3 (peer to peer transmission)

Peer-to-peer transmission

School	Situation	Initiator	Followers	Inhibitor	Outcome	Mode of transmission
S1	Tyre game	Anne, Louise	Maurine	/	Success	Observation
S1	Tyre game	Aurélien	Miranda	/	Success	Observation
S1	Tyre game	Miranda	Gilles	/	Success	Verbal
S2	Tyre game	Thomas, Xavier, Charlie, Tom	Ali, Nathan	/	Success	Verbal
S2	Cabins	Eva, Sophie	Gaston, Vincent	/	Success	Verbal
S1	Tyre game	Myriam	/	5	Failure	Verbal
S1	Log activity	Eline	4	/	Success	Verbal
S1	Log activity	Nicole	Aline	4	Failure	Observation
S2	Cabins	Vincent	/	Xavier	Failure	Verbal
S2	Tyre game	Tom	Xavier, Vincent, François	/	Success	Verbal
S2	Tyre game	Tom	/	Xavier	Failure	Verbal
S2	Tyre game	Carole	Ornella, Sofia	/	Success	Verbal
S2	Tyre game	Carole, Vincent +2	/	Iris	Success	Verbal
S2	Tyre game	Carole, Vincent +3	/	Xavier	Success	Verbal
S2	Tyre game	Carole, Vincent +4	François	/	Success	Observation
S2	Tyre game	Xavier	Tom	/	Success	Verbal
S2	Tyre game	Xavier, Tom	Vincent, François	/	Success	Verbal
S2	Table activity	Tom	Xavier, Vincent +3	/	Success	Verbal
S2	Tyre game	François	Sophie	/	Success	Verbal
S1	Log activity	Charlie	Félix	/	Success	Verbal
S1	Log activity	Ethan	/	Albert	Success	Verbal
S1	Table activity	Gilles	Florence	/	Success	Observation / Verbal
S1	Tyre game	Maurine	/	Louise, Anne	Failure	Observation /
S1	Table activity	Eline	Florence	/	Success	Observation /
S1	Table activity	Eline	Florence	/	Success	Observation / Verbal
S2	Tyre game	François	5	/	Success	Observation /
S2	Tyre game	Xavier	4	/	Success	Verbal
S1	Log activity	Félix	/	Albert	Success	Verbal
S1	Tyre game	Myriam	Gilles, Anne	/	Success	Visual
S1	Tyre game	Teacher	Gilles, Miranda	/	Success	Verbal
S2	Tyre game	Tom	Vincent, Sophie, Thomas	/	Success	Verbal





Results : Q4 (school comparison)

School context matters => same intervention, different outcomes

School 1	School 2
Rich natural environment	Less affordant environment
Permissive rules	More restrictive rules
Very large area of play	Medium area of play
Frequent risky play	Less risky play
Lower uptake of intervention	Higher uptake of intervention

Actualized
affordances
Gibson, 1979; Heft,
1988; Kyttä, 2004)

- ✓ More transformation and diversification
- ✓ Less direct reproduction
- ✓ Tyres = one affordance among many

- ✓ Greater reproduction of EM activities
- ✓ Greater reuse of specific vocabulary
- ✓ More authentic reproduction of games
- ✓ Tyres = highly attractive ressource

Conclusion

How brief interventions can shape children's free play



SMALL INTERVENTIONS



SUPPORTIVE ENVIRONMENT & RULES



BIG AND SIGNIFICANT IMPACTS

Small interventions, big impact on children's free play

Outdoor motor education and environmental affordances
shape motor and social behaviours

1. CONTEXT

Natural outdoor
school environment

2. INTERVENTIONS

Addition of
affordances

Short guided
motor sessions

3. EFFECTS ON FREE PLAY



More diverse
and varied motor
behaviours



Greater use of
environmental
affordances

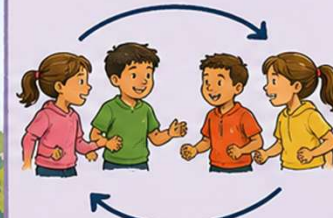


More social
interactions and
cooperation



Reinvestment of
learned skills in
free play

4. PEER-TO-PEER TRANSMISSION



New behaviours are observed,
imitated and adopted by
non-participating peers



**CHANGING THE ENVIRONMENT AND OFFERING GUIDED EXPERIENCES
CAN TRANSFORM CHILDREN'S PLAY AND LEARNING**

IMPACTS



Increased
physical activity



Better motor
development



Stronger social
skills



Connection with
nature



Positive influence
on playground
culture



TAKE-HOME MESSAGE

Simple, low-cost interventions
in natural settings can have
lasting effects that go beyond
the intervention itself.

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