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Department of Health Promotion

Early childhood overweight from an ecological perspective

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Science is built up of facts, as a house is with stones. But a collection of facts is no more science than a heap of stones is a house.

Henri Poincaré

Childhood overweight and the childcare setting

- Childhood overweight is increasing rapidly
- Childcare use is an important determinant of childhood overweight
- Various childcare environmental determinants linked to physical activity and diet
 - E.g. Play equipment, group size, staff behaviour, ...

But....

... we have just been collecting a huge pile of stones.



$$X_1 \rightarrow Y$$

$$X_2 \rightarrow Y$$

$$X_3 \rightarrow Y$$

$$X_4 \rightarrow Y$$

$X \rightarrow Y$

$C \nearrow$

$X \rightarrow M \rightarrow Y$



Map 0

Full Generic Map



Aim

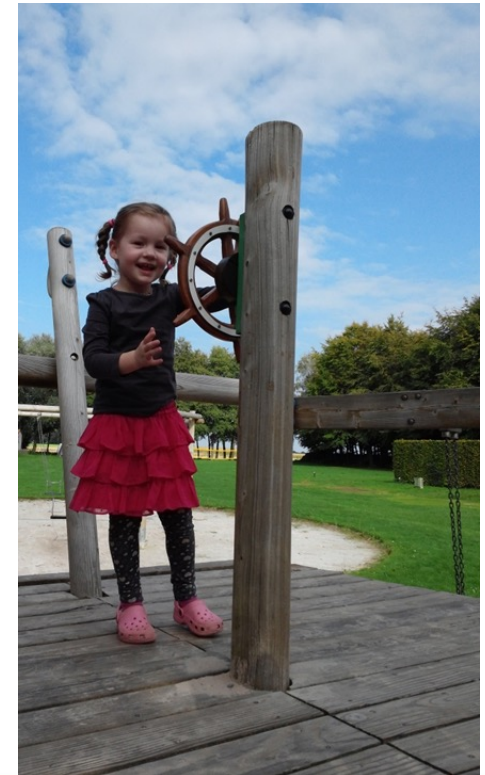
To apply an ecological view on environmental influences on behavior was adopted to examine the interactive impact of several ecological systems on children's energy balance-related behaviors at childcare.

Aim



Ecological approach: Assumption

Interaction between environmental determinants of behavior



Hypotheses

1. Interaction between environmental factors and child characteristics;
2. Interaction between types of childcare environment (physical, social, political, economic);
3. Interaction between micro-systems (the childcare and home environment) in meso-systems,

...in determining children's behavior at childcare

Review: Interaction between environment and child characteristics

- All examining influences on physical activity
- Moderators:
 - age
 - Physical environment: activity-promoting playground intervention -> older children increase VPA, younger children increase MVPA
 - Social environment: Older children more negatively affected by number of peers present, younger children more by number of staff present
 - gender
 - Physical environment: Boys responded more strongly to physical environment
 - Social environment: girls more negatively affected by group size and more compliant to prompts

Review: Interaction between types of environment

- Interaction between social and physical environment
- Positive influence of activity opportunities on PA was only present when children were playing in groups (compared to solitary and one-to-one play)
- No studies examining interaction between other types of childcare environment (political, economic)

Review: Interaction between childcare and home

- No quantitative studies found
- Some indications from qualitative studies*:
 - Communication between parents and childcare important for healthy diet and PA at childcare
 - Importance of parental support (e.g. limiting time spent outdoors, expressing other priorities)
 - Importance of continuity between both settings (e.g. having the same practices)

* e.g. Copeland et al. *Societal values and policies ...child care centers. Pediatrics*, 2012. 129:265-274; O'Connor & Temple. *Constraints and facilitators... day care. Austr J Early Childh*, 2005. 30:1-9.; Tucker et al. *The influence of parents... perspectives. BMC Public Health*, 2011. 11:168; Wilke et al. *Factors influencing child care...qualitative study. Early Years*, in press.

Conclusions review

- Empirical studies supporting an ecological view on diet and physical activity at childcare are scarce
- No studies on dietary intake
- Importance for intervention development



Observational childcare study

- 1-4 years old, using preschool or childcare (N=480)
- Child outcomes
 - BMI z-scores
 - Physical activity (Actigraph GT3X+ Accelerometers)
 - Dietary intake (Questionnaire parents, diaries parents and staff)
- Environmental factors in both settings
 - Parenting practices (CFPQ*, PPAPP**, and CFAPQ***)
 - Play equipment and opportunities (based on EPAO****)

* Musher-Eizenman, et al. 2007. *J of Ped Psychology*, 32(8): 960-72.

** O'Connor, et al. 2014. *IJBPA*, 11: 3.

*** Gubbels, et al. 2016. *PHN*, 19(11): 1964-75.

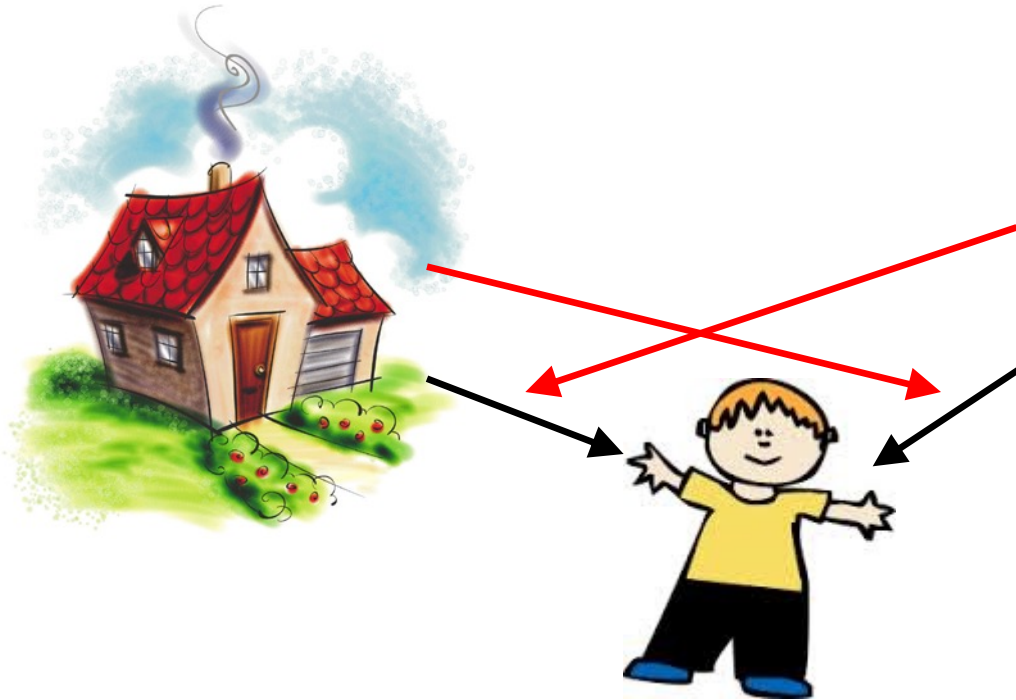
**** Ball, et al., 2005.

Preliminary results...



Hypothesis (1)

Based on an ecological perspective, interaction between *micro-systems* (the childcare and home environment) in *meso-systems* is expected



Hypothesis (2)

More specifically: Continuity between practices in both settings is important



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The importance of consistency

- Indications from qualitative studies*
- No quantitative studies regarding mesosystems
- Consistency between caregivers *within* the home setting (between parents) is important**
- Consistency over time within one caregiver is important (i.e. structure***)

* Gubbels et al. 2014. *IJBNPA*, 11: 52.

** Gevers et al. 2015. *Appetite*, 87: 184-91.

*** Sleddens et al. 2014. *IJBNPA*, 11: 15.

Results: consistency between settings

- (marginal) significant differences for almost all practices (19/20)
- Childcare staff scored more favorable than parents (18/20)
 - except for pressure to eat and restriction (parents use less pressure and restriction)

Results: associations of differences between settings on behavior

- Inconsistencies between settings have mostly undesirables associations with outcomes, e.g:
 - Inconsistent restriction with higher sweet drink and sweets intake
 - Inconsistent emotion regulation with lower water intake
 - Inconsistent encouragement of balance and variety with higher biscuit and cake intake
 - Inconsistent promotion of inactivity with less MVPA

Conclusions

- Childcare workers use more favorable practices
- Inconsistencies between caregivers' practices associated with undesirable child outcomes
- Mesosystem interactions exist: environmental influences cannot be studied in the isolation of one setting
- Implications for interventions



SuperFIT

- Focused on preschools in low SES neighborhoods in the South of the Netherlands
- Children with language and motor skill development delays
- Prevention of overweight
- Focus on fun and feeling fit
- Co-creation with preschool teachers



SuperFIT

- 12 intervention preschools, 12 control preschools
- Intervention group N=100, control group N=96
- Intervention March 2017-now
 - Some components still running
- Currently doing the first post measurement
- Second post measurement planned for May-June 2018
- Plans for regional and national dissemination

Preschool component

- Off the job training
- On the job coaching
- Play materials (general and location-specific)
- Activity cards
- Fruit and vegetable supply
- Policy revisions



Preschool component



Family component

- Parent sessions (positive parenting (Triple P), nutrition, physical activity)
- Child sessions (physical activity, preparing meals and snacks)
- Parent-child sessions (focussed on fun together during physical activity and cooking/eating)



Community component

- Media attention
- Connection with JOGG (Dutch version of EPODE)
- Connection to local sports and play offer
- Connection to activities at the primary school

Evaluation

- Effect evaluation:
 - Weight and height at preschool (BMI)
 - Actigraph accelerometer
 - 24 hour dietary recall by phone
 - Questionnaire for parents
 - Parenting practices
 - Family Health Climate
 - Physical home environment
 - Questionnaire for preschool teachers
 - Teacher practices
 - Observations
 - physical preschool environment



Evaluation

- Process evaluation:
 - Interviews
 - Parents
 - Preschool teachers
 - Implementers
 - Observations of all components



Some first findings..

- All intervention locations switched from sugar-sweetened beverages to water
- Very large differences between locations in the success of the vegetable and fruit supply
- Not the big equipment, but small, unexpected things are used a lot



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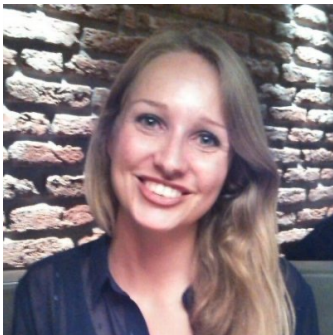
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ZonMw

MAG The logo for MAGW, featuring the letters 'MAG' in a bold, black, sans-serif font, followed by a stylized 'W' in a pink, cursive font with a brown swoosh above it.



Thank you for your attention!

Questions?

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Discussion points / questions

- Recruitment and drop out of parents
- Getting the teachers 'on board'
- Remaining equipment budget
- 'Fear' of preschool teacher (for parents, regulations/policies, ..)
- Control group
- Single setting interventions