



## Research report

Family characteristics predicting favourable changes in 10 and 11-year-old children's lifestyle-related health behaviours during an 18-month follow-up<sup>☆</sup>Carola Ray<sup>\*</sup>, Eva Roos

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## ARTICLE INFO

## Article history:

Received 26 November 2010  
 Received in revised form 2 September 2011  
 Accepted 19 October 2011  
 Available online 25 October 2011

## Keywords:

School children  
 Food intake  
 Sleep duration  
 Screen time  
 Physical activity  
 Family characteristics  
 Parenting practices  
 Family involvement  
 Family meals

## ABSTRACT

Lifestyle-related health behaviours such as screen time, physical activity, sleep duration, and food intake tend to change into non-favourable directions when children become young adolescents. Cross-sectional studies show that family characteristics are important determinants for children's health behaviours. This study examined whether family characteristics such as parenting practices at meals and family involvement predict a more favourable change in children's lifestyle-related health behaviours during an 18-month follow-up. 745 children in school grades 4 and 5 (response rate 65%) filled in a baseline questionnaire in the autumn of 2006. A follow-up was conducted in the spring of 2008 (91%). Several health behaviours had changed in a non-favourable direction. Baseline parenting practices at meals and family involvement predicted some of the changes in the lifestyle-related health behaviours in 2008. Parenting practices at meals predicted a smaller increase in TV, DVD viewing time, and a smaller decrease in fruit intake. Amongst family involvement determinants, less time alone at home after school predicted a smaller increase in screen time, a smaller decrease in sleep duration, and a smaller increase in soft drink intake. For conclusion several family characteristics predicted favourable changes in children's lifestyle-related health behaviours.

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## Introduction

Diet, physical activity, sedentary behaviour, and sleep are all daily routines related to health and are therefore called lifestyle-related health behaviours. Because these behaviours are important determinants of children's weight is important to study what determines these behaviours (Davison & Birch, 2001; Patel & Hu, 2008; World Health Organisation, 2004). Davison and Birch (2001) propose in their socio-ecological model of children's overweight and obesity that children's dietary intake, physical activity, and sedentary behaviour are affected by family characteristics. Family characteristics include parenting practices and family involvement.

Darling and Steinberg (1993) defined parenting practices as actions through which parents perform their parental duties and the practices are related to specific behaviours. Several cross-sectional studies have found associations between parenting practices and children's lifestyle-related health behaviours (Haerens et al., 2008; Hesketh, Ball, Crawford, Campbell, & Salmon, 2007; Jago et al., 2008; van der Horst et al., 2007; van Zutphen, Bell, Kremer,

& Swinburn, 2007; Vereecken, Legiest, De Bourdeaudhuij, & Maes, 2009). Nearly all studies have examined associations between parenting practices in a certain behavioural domain, such as a parenting practice related to certain health behaviour and children's health behaviour in the same domain. Thus, food-related parenting practices have been associated with frequent intake of fruits and vegetables, eating breakfast (De Bourdeaudhuij et al., 2008; Haerens et al., 2008; Vereecken et al., 2009) and lower intake of soft drinks and sweets (van der Horst et al., 2007; Vereecken et al., 2009). In the same manner, practices limiting TV viewing time in general or during meal times have been associated with less screen time, less TV viewing or computer use, and less sedentary behaviour in general (Hesketh et al., 2007; Jago et al., 2008; Norman, Schmid, Sallis, Calfas, & Patrick, 2005; Salmon, Timperio, Telford, Carver, & Crawford, 2005; van Zutphen et al., 2007).

Parents who are present and involved in their child's daily lives have the opportunity to encourage their children to engage in healthy behaviours. In this study family involvement is defined as having family meals together, a parent being physically active with the child, and children spending less time alone without an adult in the afternoons after school. Several studies have found associations between family involvement and children's lifestyle-related health behaviours. Having family meals seem to be important for children's meal patterns and food intake (Gillman & et al., 2000; Keski-Rahkonen, Kaprio, Rissanen, Virkkunen, & Rose, 2003; Neumark-Sztainer, Hannan, Story, Croll, & Perry, 2003; Pearson,

<sup>☆</sup> Acknowledgements: We thank the participating children, their parents, the schools, and all the staff who have worked on the Hälsöverkstaden project. This study has been funded by Folkhälsan Research Center and Victoria foundation.

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Atkin, Biddle, Gorely, & Edwardson, 2009). Associations have been found between family meals and the number of main meals eaten, more frequent intake of fruits and vegetables, and less frequent intake of soft drinks. Parents' participation in physical activity with the child has been associated with children's higher levels of physical activity (Dowda, Dishman, Pfeiffer, & Pate, 2007; Trost et al., 2003). In turn being less alone at home has been associated with higher fruit and vegetable intake (Young, Fors, & Hayes, 2004).

Children's lifestyle-related health behaviours tend to change in a non-favourable direction when children reach adolescence. Physical activity has been shown to decrease at age 12 or 13 (Caspersen, Pereira, & Curran, 2000; Kahn & et al., 2008; Telama & Yang, 2000). Similar non-favourable changes have been found in food intake: soft drink consumption increases from ages 12 to 17, and fruit and vegetable intake decreases at age 12 (Lien, Lytle, & Klepp, 2001; Nelson, Neumark-Sztainer, Hannan, & Story, 2009; Rasmussen & et al., 2006).

Few studies have explored determinants that can predict a favourable change or a less non-favourable change in health behaviours. Some studies have indicated that having family meals at adolescent age predict a smaller, non-favourable change in healthy eating from adolescent age to young adulthood (Burgess-Champoux, Larson, Neumark-Sztainer, Hannan, & Story, 2009; Larson, Neumark-Sztainer, Hannan, & Story, 2007). In a similar way, family involvement in one study assessed as parent's participating in physical activity with the adolescence girls and encouraging their physical activity predicted a smaller decrease in the girls' physical activity (Dowda et al., 2007).

Lifestyle-related health behaviours are often clustered (Boyn-ton-Jarrett et al., 2003; Kremers, van der Horst, & Brug, 2007). Several associations between health domain-specific parenting practices or family involvement have been found, therefore, one can argue that the family factors examined here might be associated with children's lifestyle-related health behaviours in another health domain. This hypothesis was recently examined by Pearson et al. (2009), who found an association between parents who acted as role models for physical activity and their daughters' intake of fruits and vegetables. Also perceived parental norms about TV viewing and computer use have been related to adolescents' soft drink consumption (Kremers et al., 2007).

#### *Aim of the study*

This study examined whether family characteristics, here defined as parenting practices at meals and family involvement assessed in 2006 were associated with children's lifestyle-related health behaviours in 2008 and their changes from 2006 to 2008. The main aim of the study was to examine whether certain family characteristics in 2006 predicted a more favourable change in children's lifestyle-related health behaviours one-and-a-half year later. The hypothesis was that change in children's lifestyle-related health behaviours was more favourable if there were more parenting practices at meals and family involvement in 2006. Even though parenting practices at meals and family involvement are domain-specific they reflect an overall healthy lifestyle-promoting family atmosphere and will therefore also predict health behaviours in other domains.

## **Methods**

### *Data*

This study is part of the school intervention project "Hälsoverk-staden" (The Health Workshop), conducted by Folkhälsan in Helsinki, Finland. The study focuses on social and psychosocial

determinants of the lifestyle-related health behaviours of 10 and 11-year-old children. In 2006, 44 Swedish-speaking schools in Helsinki and its surroundings were invited to participate in the study of which 27 schools accepted (response rate 61%). Of these, 13 were randomly chosen to be intervention schools and 14 were designated control schools. The aim of the intervention was to promote fruit and vegetable intake, physical activity, and sleep duration in night. In this study it has been used data collected with baseline questionnaires in the autumn 2006 and again on follow-up in the spring 2008 in all 27 schools. The "Hälsoverkstaden" study was approved by the Ethical Committee of the Department of Public Health of University of Helsinki in 2006.

### *Participants*

Thousand hundred forty six children ages 10 and 11, in grades 4 and 5 were invited to take part in the study in 2006. Informed consent for participation in the study was given by 745 (response rate 65%) children and their parents. The follow-up was carried out in April and May of 2008, and 676 children participated (91% of the baseline participants). Both times data collection was carried out in a supervised classroom situation. Most of the children who did not participate in the follow-up were either absent from school on the day of the data collection or had moved to another school that was not participating in the study. In this study data is used only from children who participated in both the autumn of 2006 and the spring of 2008. In 2008, 344 of the participants were girls and 322 were boys; 343 of the participants were in grade 5 and 332 were in grade 6.

### *Assessments*

Family characteristics were in this study assessed as parenting practices at meals and family involvement. Family involvement was assessed as the frequency of family meals during weekdays, a parent being physically active with a child, and a child's time spent alone without an adult at home after school. Most of the questions have been used previously in the Health Behaviours of School-aged Children study (HBSC) amongst 11–15 year old children, but some of the questions have been used only in the HBSC study in Finland or Sweden, though (Currie et al., 2008).

In 2006 the children answered three questions about parenting practices at meals: There are rules at meals I have to follow; I have to eat all meals at the dinner table; and I have to taste the food that is served even if I don't like it. The answer options were: I do not agree at all, I do not agree, I agree, and I definitely agree. The scores from the three statements were summarised into a continuous variable with a minimum score of three and a maximum of twelve. Higher scores meant a higher level of agreement with all three statements. The internal consistency of parenting practices at meals, as measured as Cronbach's alfa was 0.54.

Having family meals together during weekdays was determined with two questions. In the first question children were asked to describe how they usually have breakfast on schooldays. Answer options were: no one in the family eats breakfast, no breakfast is served and everyone takes something to eat, breakfast is served, but usually the family does not eat together, and breakfast is served and usually the family eats it together. In the second question the practices at family dinners was asked in the same way. The answer options were the same as for family breakfasts except that there was no option no one eats dinner. A categorical family meal variable was formulated in which having zero points meant that the family usually had neither a family breakfast nor a family dinner on weekdays; one point meant that the family usually had a family breakfast or a family dinner; and two points meant that the family usually had both family breakfast and family dinner.

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