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Research report

Diet-related restrictive parenting practices. Impact on dietary intake of 2-year-old children and interactions with child characteristics

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ABSTRACT

This study examined the relationship between diet-related parenting practices, parental characteristics, child characteristics, and 2-year-old child's dietary intake. Cross-sectional data ($N = 2578$) originated from the KOALA Birth Cohort Study. Principal component analyses revealed two restrictive parenting practice clusters: a cluster characterized by prohibition of the intake of various snacks and soft drinks, and a separate cluster characterized by prohibition of cookies and cake. Regression analyses showed that these clusters were related to the children's behavioural style (i.e. oppositional, depressive and/or aggressive behaviour) and to educational level, age and alternative lifestyle of the mother. The clusters also had a favourable influence on dietary intake (i.e. restrictive parenting practices were related to less consumption of the restricted (unhealthy) items and higher consumption of items considered to be healthy), which was moderated by child characteristics. The parenting practices showed a stronger association with dietary intake in children with a favourable behavioural style (i.e. non-depressed, low anxious, low overactive), a favourable eating style or a lower BMI. The findings suggest opportunities for preventive interventions focussing on parents of young children, and indicate that different approaches to parenting practice interventions are needed for different types of children.

Introduction

Childhood overweight and obesity are a growing problem worldwide. In 2005, at least 20 million of the world's children under the age of five were overweight, and it is expected that these numbers will continue to rise (World Health Organization, 2006). Moreover, overweight and obese children often develop into overweight and obese adults (Singh, Mulder, Twisk, van Mechelen, & Chinapaw, 2008).

One of the main risk factors for overweight in childhood is an unhealthy diet (Rennie, Johnson, & Jebb, 2005). Parents can have a strong influence on their child's health behaviour, including their dietary intake. For instance, parents control the availability of and exposure to food, act as role models, can provide their child with support and structure, and use specific parenting practices (Golan & Crow, 2004). These parenting practices appear to have a long-lasting impact on dietary habits and food intake, not only during childhood, but also throughout life (Puhl & Schwartz, 2003).

The term parenting practices refers to content-specific acts of parenting, for example food rules (Darling & Steinberg, 1993). Although several studies have examined the immediate influence of parenting practices on dietary intake and weight in children and adolescents, their results were not consistent. Some studies found favourable associations between diet-related parenting practices and children's dietary intake. Restriction of unhealthy food items was associated with lower consumption of those items (e.g., lower soft drink consumption, De Bruijn, Kremers, de Vries, van Mechelen, & Brug, 2007), and higher consumption of healthy items (more fruit and vegetable consumption, Zabinski et al., 2006). Such a favourable association was also seen for promotion or imposition of healthy foods, which was associated with lower consumption of unhealthy food items (e.g., lower soft drink consumption, De Bourdeaudhuij & Van Oost, 2000; less dietary fat intake, Zabinski et al., 2006) and higher consumption of healthy

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items (more fruit and vegetable consumption, Zabinski et al., 2006). Furthermore, high parental control was associated with higher intake of healthy snacks (Brown & Ogden, 2004). Other studies, however, found restriction to be paradoxically associated with increased intake and preference for the restricted foods, and with overeating and weight gain (e.g., Fisher & Birch, 1999; Liem, Mars, & De Graaf, 2004; Montgomery, Jackson, Kelly, & Reilly, 2006). Promotion of healthy foods or pressure to eat such foods (e.g., vegetables) was associated with lower preference for and intake of these foods (Matheson, Robinson, Varady, & Killen, 2006). Moreover, higher control over food intake in general was associated with higher unhealthy snack intake (Brown & Ogden, 2004). This paradoxical effect is assumed to arise because parental control impedes the development of self-control over food intake (Tiggemann & Lowes, 2002), a mechanism which was confirmed by the findings of Johnson and Birch (1994), who reported reduced ability to compensate food intake in children of parents who exerted high levels of control.

Several other findings complicate matters even more, but could also provide the key to explaining these conflicting findings. Van der Horst et al. (2007) reported that the influence of parenting practices depended on the parents' more general parenting style, with practices having the desired influence on child behaviour only when parents were moderately strict and highly involved. This is in line with the theoretical model proposed by Darling and Steinberg (1993), who argue that general parenting styles provide the context in which specific parenting practices operate. In line with this model, the influence of parenting practices has also been found to be moderated by the child's personality traits (De Bruijn et al., 2007) and gender (e.g., Fisher & Birch, 1999; Montgomery et al., 2006; Zabinski et al., 2006).

The influence of parental and child characteristics on parenting practices has been examined in several studies. While efforts to identify which parents use what practices can help to identify target groups for interventions, an examination of the interactions of parent and child characteristics with parenting practices may also help explain the above moderation effects. With regard to parental factors, stricter parenting practices have been found to be associated with higher parental level of education (e.g., Brown, Ogden, Vogele, & Gibson, 2008) and socio-economic status (Hupkens, Knibbe, Van Otterloo, & Drop, 1998), as well as with both lower (e.g., Brown et al., 2008; Liem et al., 2004; Montgomery et al., 2006) and higher (Keller, Pietrobelli, Johnson, & Faith, 2006) parental BMI, with dietary restraint by the parents (Birch & Fisher, 2000; Fisher & Birch, 1999; Tiggemann & Lowes, 2002), with parents who are older (Brown et al., 2008; Keller et al., 2006; Liem et al., 2004) and with parents who stay at home to take care of the children (Brown et al., 2008). Furthermore, the children's age (e.g., De Bruijn et al., 2007), gender (Stang, Rehorst, & Golicic, 2004) and weight (both measured and perceived; e.g., Birch & Fisher, 2000; Tiggemann & Lowes, 2002) were associated with parenting practices.

It is often not clear whether a child's dietary intake and weight are causes or consequences of certain parenting practices. In practice, however, both are probably true (Faith & Kerns, 2005). Birch and Fisher (2000) have therefore proposed and validated a cyclical model, in which the relative weight of the child is a predictor of restrictive parenting practices, as it influences the parents' perceptions of their child's overweight risk, but in which the child's weight is also a consequence of restrictive parenting practices, through the influence of these practices on energy intake regulation. Overweight children and their parents therefore find themselves in a vicious circle, in which child overweight leads to stricter practices, which in turn may lead to even more weight gain (Birch & Fisher, 2000).

A specific dietary behaviour that puts a child at risk for becoming overweight is a high consumption of energy-dense foods such as snacks and sugar-sweetened beverages (Rennie et al., 2005). It is worrying that such eating habits find their origin in early childhood (Savage, Fisher, & Birch, 2007), and track into later life (Kelder, Perry, Klepp, & Lytle, 1994). It is therefore crucial to study parental influences even in very young children. Note that it is not single behavioural acts, but combinations of multiple risk behaviours and the complex interplay between them that are expected to lead to excess weight gain (Rennie et al., 2005). 'Obesogenic' behaviours have repeatedly been shown to cluster (i.e. co-occur) at various ages (e.g., Kremers, van der Horst, & Brug, 2007; Lioret, Touvier, Lafay, Volatier, & Maire, 2008; Utter, Neumark-Sztainer, Jeffery, & Story, 2003). Nevertheless, previous studies have not used a clustering approach to examine diet-related parenting practices. Clusters of parenting practices could be indicators of a wider obesogenic parental context, and insights into the clustering of parenting practices could help inform the development of interventions aimed at improving diet-related parenting.

The present study examined whether diet-related parenting practices cluster in parents of 2-year-old children, and how these clusters are related to the child's dietary intake. We also examined associations of parental and child characteristics with the practice clusters, and whether these child characteristics influenced the impact of the parenting practices on the child's dietary intake. We hypothesized that restrictive parenting practices would indeed cluster, and that these restrictive clusters would be associated with less unhealthy dietary behaviour on the part of the children. We further hypothesized that the practices would be related to distinct parent and child characteristics, and that the impact of the practices was moderated by child characteristics (see Fig. 1).

Methods

Respondents and procedure

The KOALA Birth Cohort Study (The Netherlands) is a prospective cohort study which started in the year 2000. KOALA is the Dutch acronym for Child, Parent and health: Lifestyle and Genetic constitution. Pregnant women were recruited from an existing cohort for a study of pregnancy-related pelvic girdle pain, as well as through recruitment channels among 'alternative lifestyle' circles (e.g., anthroposophist midwives and general practitioners, Steiner schools and organic food shops; Kummeling et al., 2005). The latter group of women (17.9%) could have an alternative lifestyle in terms of dietary habits (e.g., preferring organic foods), child rearing, vaccination schemes or antibiotics use. All participants signed informed consent, and approval was obtained from the Maastricht University/University Hospital Maastricht medical ethics committee. In total, 2834 women participated and completed questionnaires during pregnancy, and when their child was 3, 7, 12 and 24 months old. At the time

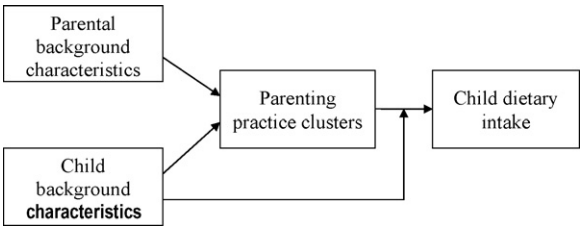

Fig. 1. Hypothesized model of the interaction between parent and child with respect to dietary intake, restrictive practice clusters and background characteristics.