



## Research report

# Relationships between parenting style, feeding style and feeding practices and fruit and vegetable consumption in early childhood

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## ABSTRACT

Despite substantial evidence suggesting that a diet high in fruit and vegetables (FV) is associated with reduced risk of cancer, only 21% of children in the UK consume the recommended 5 portions of fruit or vegetables a day. This review examines the role of parenting style, feeding style and feeding practices in FV consumption in early childhood. Whilst inconsistencies in concepts and terminology cloud this literature, overall the evidence suggests that the context of an authoritative parenting and feeding style is associated with better FV consumption in the childhood years. This context is typified by emotional warmth but high expectations for children's dietary adequacy and behaviour, accompanied by specific feeding practices such as modeling consumption of FV, making FV available within the home, covertly restricting unhealthy alternative snack foods, and encouraging children to try FV. Further longitudinal and intervention studies are required to determine the efficacy of modification of parenting style and feeding practice on children's FV intake.

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## Introduction

There is now substantial evidence that suggests that the consumption of a diet high in fruits and vegetables (FV) is associated with reduced risk of the development of some cancers (Bae, Lee, & Guyatt, 2008; Bae, Lee, & Guyatt, 2009; Lam et al., 2009; Pavia, Pileggi, Nobile, & Angelillo, 2006; Randi, Edefonti, Ferraroni, La Vecchia, & Decarli, 2010). For example, it has been estimated that each additional portion of FV consumed per day reduces the risk of oral cancer by 49–50% (Pavia et al., 2006), and consumption of vegetables during childhood years may predict a lower prevalence of cancer in adulthood (Maynard, Gunnell, Emmett, Frankel, & Smith, 2003). The evidence linking FV consumption to childhood obesity is more equivocal but encouragement of low energy dense, plant-based diets in an effort to tackle childhood obesity is still recommended (Newby, 2009). However, the evidence also suggests that, despite large public health campaigns and specific school based campaigns promoting the consumption of FV, only 21% of children in the UK consume five portions of FV per day (Health Survey for England, 2007).

Poor consumption of FV in children is directly linked to a number of family environment or parental factors, including little exposure to tastes in infancy (Birch, Gunder, Grimm-Thomas, & Laing, 1998), poor parental modeling and low parental consumption of FV (Pearson, Biddle, & Gorely, 2009), low socio-economic

status of parents and limited home availability of FV (Rasmussen et al., 2006). However, there is also evidence to suggest that it is not just the availability of FV or modeling of FV consumption within the home that facilitates or discourages a diet high in FV. The specific parenting style and feeding practices that parents use with their children may have a role to play in children's developing acceptance of FV from infancy, through childhood, into adolescence and then adulthood. This review will focus on studies that examine the relationships between parenting style, feeding style and feeding practices and FV consumption in young children. It will not closely examine literature covering adolescence (existing high quality reviews which include or focus on adolescence already exist: see Pearson et al., 2009; Rasmussen et al., 2006).

### A note concerning problems with definition and terminology

Problems with terminology abound in this field. Terms such as parenting style, feeding style and feeding practice are often used interchangeably but have very different meanings. These terms are described below.

### Parenting style

The term 'parenting style' has a broader meaning within developmental literature and refers to the emotional climate within which parenting practices are applied (Darling & Steinberg, 1993). Parenting style is usually classified into one of four typologies, which vary according to the dimensions of warmth

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or responsiveness, and 'demandingness', or degree of behavioural control, that the parent exhibits (Maccoby & Martin, 1983). Authoritarian parenting style is characterized by low warmth/responsiveness and highly demanding expectations and control of the child. Authoritative parenting is characterized by high warmth and responsiveness and also high demandingness. Indulgent-Permissive parenting is typified by high warmth and low demandingness, and uninvolved/neglectful permissive parenting is characterized by low warmth and low demandingness. A parent's parenting style characterizes the majority of their interactions with their children, across different contexts, and their parenting in the specific domain of feeding may reflect this more general style, although this is not always the case.

### *Feeding style*

Feeding styles are usually similarly referred to as authoritative, authoritarian or permissive, but are perhaps best thought of as referring to the specific emotional climate within which specific types of feeding interactions take place. Thus, whilst parenting style refers to a broad emotional parenting climate in which any parenting practices may occur, feeding styles are conceptualized as a specific subtype of parenting styles, with some characteristic feeding behaviours associated with them. For example, a mother with strict rules about food consumption, where mealtimes are focused on disciplinary encounters rather than harmonious interactions, would be described as having an authoritarian feeding style. (However, she may not necessarily have an authoritarian parenting style across other parenting domains). In contrast, authoritative feeding styles are typified by high expectations of the child's diet and eating behaviour, usually combined with parental modeling, communication, negotiation and a warm emotional feeding interaction. Permissive feeding styles are usually described as lax, lacking rules or expectations about the quality or quantity of diet, with limits on consumption only being those of availability. Permissive feeding styles may be indulgent (emotionally warm) or neglecting (emotionally cold or distant).

### *Feeding practices*

Finally, the specific feeding practices used by parents with different parenting or feeding styles may vary according to their concerns about child feeding (Costanzo & Woody, 1985). Feeding practices are specific techniques or behaviours usually used to facilitate or limit ingestion of foods. They include practices such as pressure to eat, restriction, monitoring of the child's food intake, or the use of rewards for food consumption. The two most commonly studied feeding practices are restriction and pressure to eat (Fisher & Birch, 1999; Galloway, Fiorito, Francis, & Birch, 2006). Restriction is the practice of restricting children's access to or intake of specific foods or amounts of foods. Pressure to eat involves enforcing or strongly encouraging consumption of specific foods or amounts of foods. Parental use of feeding practices such as restriction and pressure to eat appear to be related to a broad range of less desirable child eating and weight outcomes. Usually these outcomes are the opposite of the parent's intentions, with pressured foods being consumed and preferred less and restricted foods being consumed and preferred more (e.g. Galloway et al., 2006; Jansen, Mulkens, Emond, & Jansen, 2008). It is possible for a typically authoritative mother to use more 'authoritarian' practices such as pressure to eat if she is particularly concerned about her child's weight or dietary quality, for example. Her use of this feeding practice may be delivered in a different emotional climate than that of an authoritarian parent, however, and this may indeed moderate the outcome of the practice on child behaviour.

However, inevitably, these terminologies have significant overlap within the literature, and it is often particularly unclear what separates feeding style from feeding practice, with a practice such as pressure to eat being considered an 'authoritarian practice'. Some papers are published in this field that set out to investigate a link between parenting style and feeding or FV consumption when actually they measure a feeding style, and other papers are described as studies of feeding styles when they also describe elements of feeding practices. Greater clarity in terminology in the future may yield greater clarity and consistency within the literature.

### *Parenting style and children's FV consumption*

Overall, authoritarian and permissive parenting styles are considered to be less adaptive in a variety of developmental contexts (Darling & Steinberg, 1993). They have also been related to parental use of more controlling feeding practices with children (e.g. Blissett & Haycraft, 2008). A small number of studies have investigated whether broader parenting style, as a context for delivery of feeding practices, may be linked to preschool children's FV consumption (e.g. De Bourdeaudhuij et al., 2008). De Bourdeaudhuij et al. (2008) demonstrated, in a study of 4555 European parents and their 11-year-old children, that parenting style was related to FV availability at home and some parental feeding practices. Authoritative parents were reported by their children to make more FV available within the home than neglectful parents, but there were no significant differences in ratings of FV availability between children of authoritative parents and the children of authoritarian or indulgent parents. Children of authoritarian parents reported that they received more active parental encouragement and demands to eat FV in comparison to children of neglectful or indulgent parents. However, FV intake did not differ depending on parenting style in this study, and the authors concluded that general parenting style was 'of low relevance for F&V intake' (De Bourdeaudhuij et al., 2008, p. 264).

A second study from this group has also suggested that the role of general parenting style in the prediction of children's dietary intake, including FV consumption, was minimal. In this study of 1614 European parents and their 11-year-old children, parenting style did not predict children's dietary habits, but specific practices were associated with dietary quality (Vereecken, Legiest, De Bourdeaudhuij, & Maes, 2009). Parental use of 'encouragement through negotiation' predicted greater likelihood of consumption of vegetables daily, whereas the use of pressure to eat reduced the likelihood of consumption of fruit on a daily basis. Catering for children's preferences on demand predicted poorer consumption of daily vegetables. 'Permissive' food practices, such as allowing the child to decide when s/he wants to eat and allowing child to have sweets or biscuits when desired, were associated with reduced likelihood of consuming fruit and vegetables daily. Vereecken et al. concluded that firm but not coercive 'food parenting skills' were likely to have the greatest positive effect on children's healthy food intake.

Together, these studies suggest that general parenting style is not an important direct predictor of FV consumption in young children. However, this evidence adds some weight to the idea that some of the environmental predictors of good FV intake, such as higher availability of FV in the home, may be related to parenting style, and that parenting styles, where the parent has high expectations or demands regarding the child's behaviour, may ultimately facilitate FV acceptance. This is consistent with parenting literature in adolescence, which has previously demonstrated that fruit consumption is highest in adolescents with authoritative parents (e.g. Kremers, Brug, de Vries, & Engels, 2003; Pearson, Atkin, Biddle, Gorely, & Edwardson, 2010).

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