

How do children experience their parents' feeding practices?

A study using the Dutch Child Feeding Questionnaire- child version

Aim: The Child Feeding Questionnaire (CFQ) is a self-report instrument that assesses the amount of parental control over child feeding. It is usually completed by parents but social desirability, feelings of shame, and inadequate introspection or self-perception may cloud parents' self-reports. Children's experiences of parental control could be quite different from their parents' reports. In the current study it was considered how school-age children (8-12 years) perceive parental feeding control. In particular, the role of overweight and the correspondence between perceptions of children and their parents were examined.

Methods: A child version of the CFQ was constructed and the relationship between weight status and the experienced parental control was investigated. It was hypothesised that overweight children and children of overweight parents experience more control over child feeding than do normal-weight children and children of normal-weight parents. Moreover, the correspondence between parents' reports and children's experiences of parental control was examined.

Results: Weight status of neither the child, nor the parent played an important role in perceived child feeding control; no differences were found with respect to attitudes and practices. Regarding parent-child differences, children's perceptions differed from their parents' reports of control with respect to two out of six subscales. Weight status of the child did not influence the agreement between parent and child scores.

Conclusions: As parents and children correspond well on the Child Feeding Questionnaire, the child version of this questionnaire should be further examined in order to determine its validity.

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Obesity is considered one of the most serious threats to public health. In the United States, one in three adults is obese (body mass index (BMI) > 30 kg/m²) (Ogden, Carroll, Curtin, McDowell, Tabak, & Flegal, 2006). Among children, the prevalence of overweight is increasing as well. In the United States, about 17% of all children and adolescents are overweight, whereas an additional 16.5% are at risk of becoming overweight (Ogden et al., 2006). As childhood overweight and obesity often track into adulthood (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997; Clarke & Lauer, 1993; Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993), it is of great significance to challenge this health risk at a young age. Parents are believed to have a substantial influence when it comes to the development of their children's weight status (Birch & Fischer, 1995). Besides acting as role models, being responsible for purchases and providing meals, parents may also influence their children's food preferences and intake by using control techniques. Parental control in the domain of eating can be subdivided into pressuring the child to eat healthy kinds of food and restricting the intake of unhealthy, palatable kinds of food (Birch, Fisher, Mackey, Grimm-Thomas, Sawyer, & Johnson, 2001). Nevertheless, overcontrolling children's intake might have adverse effects on food preferences and consumption. It has been hypothesised that parents who overcontrol their children's food intake may interfere with their children's ability to self-regulate intake. As a result, children would become more responsive to external cues (e.g. the smell and presence of food) as opposed to internal cues (e.g. hunger and satiety) (Faith, Scanlon, Birch, Francis, & Sherry, 2004; Jansen, Theunissen, Slechten, Nederkoorn, Mulken, & Roefs, 2003). This could lead to disturbed eating behaviours such as eating in the absence of hunger, restrained eating and eventually excessive weight gain (Birch & Fisher, 2000; Birch, Fisher, & Krahnstoever Davison, 2003; Robinson, Kiernan, Matheson, & Hailed, 2001). According to the 'obesity proneness' model (Constanzo & Woody, 1985), parents are likely to exert more control when they experience weight issues themselves or when they think their children are at risk for developing eating problems or overweight. So far, causal evidence for adverse effects of parental control is scarce. However, completely in line with the obesity proneness model, earlier research has found parental control in child feeding, as measured by the Child Feeding Questionnaire (CFQ; Birch et al., 2001), to be correlated with children's weight status: a higher level of reported control was associated with a higher BMI (Birch et al., 2003). The CFQ is an instrument for assessing parental control in child feeding and is administered to parents only. The

CFQ is a valid and widely used measure of parental beliefs and practices regarding child feeding (Kaur, et al., 2006; Keller, Pietrobelli, Johnson, & Faith, 2006). Although CFQ scores and weight status indeed seem to be correlated, it can be questioned whether these CFQ data are reliable. After all, CFQ scores are self-reported. It is unknown whether parents have sufficient insight into their own behaviours to provide dependable answers. In addition, factors such as social desirability and feelings of shame and guilt may be involved when inquiring about child feeding. Further, the *perception* of parental control by the child itself might be extremely relevant for eating behaviour. Apart from children's responses being less sensitive to social desirability (Gonzales, Cauce, & Mason, 1996; Paulson, 1994) and feelings of shame and guilt (Tagney, Wagne, Gavlas, & Gramzow, 1991), the perception of *experienced* control might be a more important determinant of eating behaviour than the actual control or parents' perceptions of their control. After all, children are expected to act upon how they experience control, not upon parent's reports of control or the control that is objectively exerted. For the purpose of the current study, a child version of the CFQ was constructed. The first aim of the study was to test the relationship between children's experiences of parental control and weight status. In line with the obesity proneness model (Constanzo & Woody, 1985), it was hypothesised that overweight children would experience more parental control over child feeding than normal-weight children would. In addition, children of overweight parents were expected to experience more parental control than children of normal-weight parents. A second aim of the current study was to examine to what extent congruence existed between children's perceptions about parental control over child feeding and their parents' reports. Good agreement between children's experiences and parents' reports was expected. However, it was hypothesised that overweight children and their parents agreed less on parental control than normal-weight participants. This was expected to be the result of the fact that parents of overweight children use ineffective parenting practices such as inconsistent discipline (Decaluwé, Braet, Moens, & Van Vlierberghe, 2006; Johnson, Brownell, St. Jeor, Brunner, & Worby, 1997). For example, higher adaptability (e.g. constantly changing rules) is associated with an early onset of obesity and disturbed eating behaviour. With respect to child feeding, parents might restrict intake at one occasion, but may be permissive at another occasion. As a result, children do not know where they stand, possibly resulting in a discrepancy between parent and child with respect to CFQ scores.

Method

Participants

Ninety-four school-age children (45 boys) participated in this study. The age of the participating children ranged from eight to twelve years (mean age = 9.60, $SD = 1.30$). Forty-eight children had a normal weight (mean BMI percentile score of 48.49), 46 children were overweight (BMI percentile score > 90; $M = 97.40$). See also Table 1 for participant characteristics. The overweight participants were recruited from a waiting list for multidisciplinary weight loss treatment in an ambulant setting. The normal-weight participants were recruited from two primary schools in the same community. Their BMI percentile scores had to be between .15 and .85. Response rates for both groups was 100%. The parent who spent the most time with the child (in 87.8% of the cases this was the mother, in 12.2% it was the father) was approached and invited to fill out a questionnaire about her/his child's feeding behaviour. Their children were requested to fill out the child version of the questionnaire. Permission for participation was obtained from the children's parents. The study was approved by both the Atrium Medical Centre in Heerlen, and the ethics committee of the Faculty of Psychology and Neuroscience, Maastricht University, the Netherlands.

Table 1 Participant characteristics: normal-weight versus overweight children

	Normal-weight children (n=48)	Overweight children (n=46)
Age (mean (SD))	9.02 (.96)	10.20 (1.34)
Gender (boys/girls)	22/26	23/23
Parents with normal weight	68.8%	21.7%
Overweight parents	31.3%	76.1%

Measurements

Child Feeding Questionnaire

Parents filled out the CFQ (Birch, et al., 2001). The original version of the CFQ was translated into Dutch with permission of the authors. The CFQ is a measure of parental attitudes, beliefs and practices of child feeding and obesity proneness. It is based on the above-mentioned obesity proneness model (Constanzo & Woody, 1985). The CFQ comprises 31 items on seven subscales. These seven subscales can be classified into two categories. The category 'risk factors and concerns' includes the subscales 'perceived feeding responsibility', 'perceived parent overweight' (how parent classifies own weight), 'perceived child overweight' (how parent classifies child's weight) and 'concerns about child overweight'. The category 'control in child feeding: attitudes and practices' comprises the subscales 'restriction',

'pressure to eat' and 'monitoring' (keeping track of child's eating behaviour). Every item is scored on a scale from '1' to '5'. Subsequently, subscale scores are calculated by averaging the corresponding item scores. The higher the score, the more parental control is exerted.

The internal consistency of the seven subscales is good; all subscales have a Cronbach's alpha above .70. The CFQ has been proven valid in non-Hispanic Whites and Hispanic samples (Birch et al., 2001).

Child Feeding Questionnaire: child version

For the current study, the original CFQ was converted into a child version. All items were rephrased in such a way that the questions were asked from the child's perspective. For example the original item: 'I intentionally keep some foods out of my child's reach' was rephrased into 'My parents try to keep some foods out of my reach'. The subscale 'perceived parent overweight' was excluded from the child version of the CFQ, since children do not have insight into their parents' weight history. Considerable effort was put into preventing affection of the tenor of the original questions. See also Appendix A for the modified version of the CFQ. Although the original CFQ is also useful for parents of very young children (from the age of two onwards), the child version is suitable for children with sufficient reading skills. The reliability of the CFQ child version is good, Cronbach's alphas for the six subscales being .72, .74, .85, .69, .66 and .88 respectively in our sample.

Body mass index

Weight and height of the overweight children and their parents were measured (after completing the CFQ) by a research worker. Weight (kg) was measured by means of a digital scale. Height (cm) was assessed with a measuring tape which was applied to the wall. The research worker had undergone a short training in collecting this kind of information correctly.

Weight and height data of the normal-weight children and their parents were provided by the parents. BMIs and BMI percentiles were calculated subsequently (Children's BMI-percentile-for-age Calculator, USDA/ARS Children's Nutrition Research Center).

Procedure

Parents and children received an original (parent version) or a child version of the CFQ, respectively. The overweight children and their parents received their questionnaires during the interview on admission to the weight loss treatment. They were instructed to individually fill out the questionnaire in situ. The normal-weight participants and their parents received their questionnaires at

school, and were instructed to complete the questionnaires at home, without consultation of the other participating family member. It was stressed that participants should base their answers on their own experiences.

Data analyses

A one-way analysis of variance (ANOVA) on BMI percentile was performed to confirm that the two groups (overweight children versus normal-weight children) actually differed with respect to BMI percentile. In addition, one-way ANOVAs on age and gender distribution were performed to preclude group differences at the start of the study. To test whether the weight status of the children influenced their experiences of parental control (Hypothesis 1), and whether weight status of the parent influenced their children's experiences of parental control (Hypothesis 2), a multivariate analysis of variance (MANOVA) (child CFQ subscale scores as dependent variables, both child's weight status and parental weight status as factors) was carried out. Both factors were entered into one analysis to examine possible interaction effects of child weight status and parental BMI on CFQ scores. Finally, to test agreement between the children and their parents (Hypothesis 3), a repeated measure design with parent CFQ scores at Time 1, child CFQ scores at Time 2, and weight status of the child as between-subjects factor was carried out for every subscale of the CFQ.

Results

One-way ANOVA showed that the overweight children had significantly higher BMI percentiles than the normal-weight children ($F = 128.39, p < .001$). In addition, the group of overweight children did not differ from the group of normal-weight children regarding gender distribution ($F = .16, p = .69$), but the groups differed with respect to age ($F = 24.01, P < .001$), the overweight children being slightly older than the normal-weight children (10.20 versus 9.02 years).

Hypotheses 1 and 2

Overweight children perceive more parental control over child feeding than normal-weight children do and children from overweight parents perceive more parental control over child feeding

than children from normal-weight parents do. In general, overweight children had higher child CFQ total scores than normal-weight children. In addition, results of the MANOVA showed that overweight children scored significantly higher than normal-weight children with respect to 'perceived child overweight' [$F(1, 90) = 38.47, p < .001$], and 'concerns about child overweight' [$F(1, 90) = 40.88, p < .001$]. There were no significant differences on the other four subscales. Parental weight status did not influence perceived parental control scores. With respect to interaction effects, no child weight status \times parental weight status effects were found on child CFQ scores. For the significant results, see also Table 2.

Hypothesis 3

In general, parents and children agree well on (perceived) parental control over feeding, but there is more agreement between normal-weight children and their parents than between overweight children and their parents.

As hypothesised, the agreement between children and their parents was good. No differences were found between the parent CFQ total score and child CFQ total score [$F(1, 90) = 2.45, p = .12$]. In addition no interaction effects were found between questionnaire version and weight status of the child; that is, overweight children did not differ from normal-weight children in the agreement with their parents scores [$F(1, 90) = .047, p = .83$]. With respect to the subscales, significant differences between parent and child scores were found on the subscales 'perceived feeding responsibility' and 'pressure to eat'. Regarding 'perceived feeding responsibility', parents score significantly higher than their children do [$F(1, 92) = 6.17, p < .05$]. Regarding 'pressure to eat', parents score significantly lower than their children do [$F(1, 92) = 24.89, p < .001$]. No significant differences were found on the other four subscales. As for any differences in agreement between normal-weight children and overweight children, a significant questionnaire \times weight status interaction was found with respect to 'concerns about child overweight'. Overweight children scored significantly lower than their parents, whereas normal-weight children scored significantly higher than their parents. See also Table 3.

Table 2 Mean (SD) child CFQ total score and subscale scores: normal-weight children versus overweight children

	Normal-weight children (n=48)	Overweight children (n=43)	F value	P value
Perceived child overweight	2.94 (.32)	3.45 (.33)	38.47	<.001**
Concerns about child overweight	2.16 (1.20)	3.87 (.89)	40.88	<.001**
CFQ total score	19.65 (2.40)	21.66 (2.64)	9.16	<.01*

Data presented as mean (SD); * $p < .05$; ** $p < .001$.

Table 3 Differences between child CFQ scores and parent CFQ scores

	Main effect: differences between parent CFQ scores and child CFQ scores		Interaction effect: questionnaire version x child weight status	
	F value	P value	F value	P value
Total CFQ score	2.44	NS	.05	NS
Feeding responsibility	6.17	<.05*	.008	NS
Perceived child overweight	.11	NS	2.33	NS
Concerns about child overweight	.87	NS	9.84	<.01*
Restriction	.008	NS	.92	NS
Pressure to eat	24.89	<.001**	.84	NS
Monitoring	.11	NS	.01	NS

Data presented as mean (SD); * $p < .05$; ** $p < .001$. NS = not significant.

Discussion

The aim of the current study was to investigate how children perceive their parents' control over feeding, and whether child and parent weight status influences perceived control in children. Moreover, the agreement between perceptions of children and their parents was examined. In addition, a possible interaction with weight status of the child was tested. For this purpose, a child version of the CFQ was constructed and administered to 48 normal-weight children, 46 overweight children and their parents. In general, overweight children scored higher on the CFQ than normal-weight children. However, these differences were, for the greater part, found in the subscales 'perceived child overweight' and 'concerns about child overweight'. It seems just plain logic that parents of overweight children are more concerned about their children's weight statuses as opposed to parents of normal-weight children. In fact, when looking at the subscales in the category 'control in child feeding: attitudes and practices', no differences at all were found between the perceptions of overweight and normal-weight children. Therefore, from this study, it cannot be concluded that overweight children experience more control over feeding than normal-weight children. In addition, parental weight status did not influence children's perceptions of parental control. However, in order to draw firmer conclusions about the causal relationship between parental control and overweight, experimental research is badly needed. Future research might focus on manipulating the level of control in normal-weight children, to examine its effects on eating behaviour and weight status. A second aim of the study was to examine the possible differences between parents' reports and children's experiences concerning parental control. In general, children's perceptions correspond well

with their parents' reports. Therefore, it might be useful to administer the child version of the CFQ in the future. However, with respect to the subscales 'perceived feeding responsibility' and 'pressure to eat', significant differences were found between child CFQ and parent CFQ scores. Children score lower than their parents do with respect to feeding responsibility, and they score higher than their parents with respect to pressure to eat (they experience more pressure than their parents claim to exert).

Weight status of the child did not influence agreement between child and parent scores as expected. Overweight children were expected to differ more from their parents than normal-weight children. However, no such differences were found. The only interaction effect of child weight status x questionnaire version was found with respect to 'concerns over child overweight'. Overweight children scored lower than their parents, whereas normal-weight children scored higher than their parents. The fact that overweight children score lower than their parents could possibly be explained by social desirability of the parent; when your child is overweight, you must be very concerned.

The question which version of the questionnaire correlates best with actual control behaviour is interesting. More research is necessary to determine whether the original CFQ or the child CFQ is more valid and reliable. Nevertheless, the question remains whether it is really necessary to know objectively to what extent parental control is exerted. It seems more relevant to examine how experienced control and disturbed eating behaviours are related.

A limitation of this study concerns the use of the CFQ. Although the CFQ is a valid and widely used

questionnaire, it has not yet been validated in an overweight sample. Further research should focus on validating the CFQ in a variety of large samples. Although further research is necessary to validate the CFQ Child version, the reliability of this

questionnaire in the current sample is high, which is a promising starting point.

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Appendix A

Instruction Please circle one number for each question which best corresponds to your answer.

	Never	Seldom	Half of time	Most of time	Always
1. When you are at home, how often do your parents feed you?	1	2	3	4	5
2. How often do your parents decide how much you eat?	1	2	3	4	5
3. How often do your parents decide whether you have eaten the right kind of food?	1	2	3	4	5

Instruction Please indicate how your weight was at each of these 6 periods. Circle only one number for each period.

	Serious underweight	Underweight	Average	Overweight	Serious overweight
4. Your first year of life	1	2	3	4	5
5. As a toddler	1	2	3	4	5
6. As a pre-schooler	1	2	3	4	5
7. From kindergarten through to 2nd grade	1	2	3	4	5
8. From 3rd to 5th grade	1	2	3	4	5
9. From 6th to 8th grade	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Unconcerned	A little bit unconcerned	Neutral	A little bit concerned	Concerned
10. How concerned are your parents that you eat too much when they are not around?	1	2	3	4	5
11. How concerned are your parents that you have to diet to keep a healthy weight?	1	2	3	4	5
12. How concerned are your parents that you will be overweight?	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Disagree	Disagree a little bit	Neutral	Agree a little bit	Agree
13. My parents want to be sure that I do not eat too many sweets (candy, ice cream, cake or pastries).	1	2	3	4	5
14. My parents want to be sure that I do not eat too many high fat foods.	1	2	3	4	5
15. My parents want to be sure that I do not eat too much of my favourite foods.	1	2	3	4	5
16. My parents try to keep some foods out of my reach.	1	2	3	4	5
17. My parents offer me sweets (candy, ice cream, cake, pastries) as a reward for good behaviour.	1	2	3	4	5
18. My parents offer me my favourite foods for good behaviour.	1	2	3	4	5
19. If my parents did not guide my eating, I would eat too many junk foods.	1	2	3	4	5
20. If my parents did not guide my eating, I would eat too much of my favourite foods.	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Disagree	Disagree a little bit	Neutral	Agree a little bit	Agree
21. I should always eat all of the food on my plate.	1	2	3	4	5
22. My parents have to be careful to make sure I eat enough	1	2	3	4	5
23. If I say 'I'm not hungry', my parents try to make me eat anyway.	1	2	3	4	5
24. If my parents did not guide my eating, I would eat much less than I should.	1	2	3	4	5

Instruction Please circle one number for each question which best corresponds to your answer.

	Never	Seldom	Sometimes	Most of time	Always
25. How much do your parents keep track of the sweets (candy, ice cream, cake, pastries) that you eat?	1	2	3	4	5
26. How much do your parents keep track of the snack food (potato chips, Doritos, cheese puffs) that you eat?	1	2	3	4	5
27. How much do your parents keep track of the high fat foods that you eat?	1	2	3	4	5