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Expanding the concept of parental control: a role for overt and covert control in
children's snacking behaviour?

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Abstract

The existing literature on parental control and children's diets is confusing. The present paper reports two studies to explore an expanded conceptualisation of parental control with a focus on overt control which 'can be detected by the child' and covert control which 'cannot be detected by the child'. In study 1, 297 parents of children aged between 4 and 11 completed a measure of overt control and covert control alongside ratings of their child's snacking behaviour as a means to assess who uses either overt or covert control and how these aspects of parental control relate to a child's snacking behaviour. The results showed that lighter parents and those with children perceived as heavier were more likely to use covert control and those from a higher social class were more likely to use overt control. Further, whilst greater covert control predicted a decreased intake of unhealthy snacks, greater overt control predicted an increased intake of healthy snacks. In study 2, 61 parents completed the same measure of overt and covert control alongside the three control subscales of the Child Feeding Questionnaire (Birch et al, 2001) to assess degrees of overlap between these measures. The results showed that although these five measures of control were all positively correlated, the correlations between the new and existing measures indicated a maximum of 21% shared variance suggesting that covert and overt control are conceptually and statistically separate from existing measures of control. To conclude, overt and covert control may be a useful expansion of existing ways to measure and conceptualise parental control. Further, these constructs may differentially relate to snacking behaviour which may help to explain some of the confusion in the literature.

Key words: obesity, children, snacking, parental control

Introduction

With the increase in childhood obesity (Troiano & Flegal, 1998; Chinn & Rona, 2001) researchers have focused their attention on the role of the environment to explain its etiology. Such research has highlighted the importance of factors such as the food industry, food advertising, food labelling, the availability of energy dense foods and an environment which has been increasingly designed to encourage a sedentary lifestyle through the use of cars, computers and television (Hill & Peters, 1998). In addition, researchers have turned their attention to the child's more immediate environment and have highlighted the role of parental feeding practices (Birch & Fisher, 1998; Birch & Fisher, 1995; Hecker, Martin & Martin, 1996) which is reflected in the development of family based interventions employing psychological strategies to change how parents manage what and when their children eat (eg. Epstein, 1996).

As a means to measure parental feeding practices The Child Feeding Questionnaire (CFQ) was designed to capture parent's perceptions and concerns regarding child obesity as well as their child-feeding attitudes and practices (Birch, Fisher, Grimm-Thomas, Markey, Sawyer & Johnson 2001). The CFQ was founded upon Costanzo and Woody's (1985) small cross-sectional study designed to measure parental restraints over their children's eating behaviour. The results showed that parental restraints were significantly associated with overweight in girls but not boys and the authors proposed that parents are more likely to apply external control over a child's eating practice when the parent has concerns about the child's development. The CFQ was based upon this theoretical perspective and was designed to measure different parenting styles and parents concerns. Birch et al (2001) tested three

different versions of the questionnaire and after extensive pilot studies and analysis the third version finally became the CFQ which measures seven different dimensions. The first four focus on parental perceptions and concerns, which may in turn prompt the use of controlling child-feeding practices (Birch et al, 2001). These are: i) perceived parent weight ii) perceived child weight iii) parental concerns (e.g. How concerned are you about your child eating too much when you are not around him/her?) iv) parental responsibility (e.g. When your child is at home, how often are you responsible for feeding her/him?). The final three factors assess parental control attitudes and practices. These are: v) parent's use of restriction (e.g. I have to be sure that my child does not eat too many sweets (candy, ice-cream, cake or pastries) vi) parental pressure on their child to eat (e.g. My child should always eat all of the food on his/her plate) vii) parental monitoring (e.g. How much do you keep track of the sweets (candy, ice-cream, cakes, pies, pastries) that your child eats?).

Birch et al (2001) tested the internal consistency and validity of the CFQ in three independent studies which drew upon both white and Hispanic parents with children ranging in age from preschool to the end of middle childhood. The results indicated that the 7-factor CFQ model provided an acceptable fit to the data and that with minor modifications it was appropriate for use in a non white sample. Research using the CFQ has concluded that parental pressure is associated with the development of dietary restraint and disinhibition in young girls (Carper, Fisher & Birch; 2000) and that parental concern about a child's weight and parental restriction is associated with higher body fat in their children (Spruijt-Metz, Lindquist, Birch, Fisher & Goran; 2002). Carnell and Wardle (2004) modified the CFQ by adding items reflecting a 'concern about underweight' variable to the existing 'concerns about overweight'

variable but found that these two items loaded onto the same factor suggesting that they were not discrete constructs. Wardle et al (2002) also developed their own measure consisting of four separate aspects of parental feeding practice some of which find reflection in the CFQ. These were emotional feeding (ie feeding in response to emotional distress), instrumental feeding (ie using food as a reward), prompting / encouragement to eat and control over eating. They tested their new measure and explored differences in parental feeding style between obese mothers with young children and normal weight mothers with children similarly aged. Their results showed comparable parental feeding styles between the two groups for emotional feeding, instrumental feeding and prompting / encouragement. However, the obese parents reported less control over their child's food intake.

Central to the different measures of parental feeding practices and the associated research is the concept of parental control. The different studies, however, have yielded conflicting results. For example, much research suggests that higher levels of parental control may result in overeating and overweight (Birch & Fisher, 2000; Constanzo & Woody, 1985; Johnson & Birch 1994) and that when food is made freely available children will chose more of the restricted than the unrestricted foods particularly when the mother is not present (Fisher & Birch, 1999). In line with these studies, Birch (1999) concluded her review of the literature with the statement 'child feeding strategies that restrict children's access to snack foods actually make the restricted foods more attractive' (Birch, 1999; p.11). From this perspective parental control would seem to have a detrimental impact upon a child's eating behaviour. In contrast, however, some studies suggest that parental control may actually reduce weight and improve eating behaviour. For example Wardle et al (2002) suggested

that ‘lack of control of food intake [rather than higher control] might contribute to the emergence of differences in weight’ (p. 453). Similarly, Brown and Ogden (2004) reported that greater parental control was associated with higher intakes of healthy snack foods. Furthermore, other studies indicate that parental control may have no impact in some populations (Constanzo & Woody, 1985). There are several possible explanations for these conflicting results. First, the studies have been carried out using different populations in different countries. Second the studies have used different measures with Birch and colleagues using the CFQ (Birch et al, 2001) which operationalises control in terms of monitoring, restriction and pressure to eat and Wardle and colleagues using the Parental Feeding Style Questionnaire (PFSQ, Wardle et al, 2002) which operationalises control in terms of restriction and items such as ‘I control how many snacks my child should have’. Third, and related to the above, these contradictory results may reflect the contradictory nature of parental control with parental control being a more complex construct than acknowledged by any of the existing measures. In particular, it is possible that the different studies are accessing some aspects of control which are beneficial and some which are detrimental to a child’s eating behaviour. Existing measures of parental control focus on restriction and parents’ attempts to limit their child’s intake of unhealthy foods. For example, the CFQ (Birch et al, 2001) asks questions such as ‘I intentionally keep some foods out of my child’s reach’ and ‘If I did not guide or regulate my child’s eating she would eat too many junk foods’ and the PFSQ (Wardle et al, 2002) includes items such as ‘I control how many snacks my child should have’. These items seem to underestimate the complex ways in which parents may try to control their child’s eating behaviour. For example whilst it is possible to control food intake by monitoring and restricting what the child eats and by encouraging them to eat

healthily, it is also possible to control what a child eats by managing their environment through the avoidance of places which sell unhealthy foods and by only purchasing healthy options. The first type of control can be considered ‘overt’ control which involves limiting the child’s intake of unhealthy foods in a way that can be perceived by the child. Such overt control is reflected in many of the items contained within the existing measures (Birch et al, 2001; Wardle et al, 2002) and seems central to much of the literature on the relationship between control and overeating. Furthermore, it finds reflection in research exploring the consequences of dieting which indicates that the conscious attempt to restrict food intake can result in certain foods becoming more attractive resulting in increased rather than decreased food intake (eg. Ogden, 2003; Polivy & Herman, 1985, 1999). In contrast, the second type of control can be considered ‘covert’ control as it may remain undetected by the child but still results in restriction. This type of control is not measured by the existing scales but is central to the literature describing how the home environment can and is managed by parents (Wardle, 1995).

To date, therefore, the research on parental control is confusing and uses a narrow conceptualisation of the ways in which parents control what and when their children eat. The present paper reports the data from two related studies which aimed to expand the existing conceptualisation of parental control. Study one was designed to develop an expanded measure of parental control in terms of overt and covert control, to assess who uses overt and covert control and to assess the extent to which overt and covert control differentially predicted children’s snacking behaviour. Study two aimed to assess how this new conceptualisation of control related to existing measures. The studies focused on children’s snacking behaviour as this has been

hypothesised to explain the recent increase in childhood obesity. In addition, these are the foods which can be sources of either conflict or pleasure and ‘play an important role as the currency central to the interaction between parent and child’ (Brown & Ogden, 2004).

Study 1: Expanding the concept of control

Design

A cross sectional design was used.

Sample

Questionnaires were handed out to approximately 500 children aged between 4 and 11 to deliver to their parents from three primary schools in Southern England (two state run, one private). Completed questionnaires were received from 297 parents (response rate = 59.4%).

The measure

A new measure was designed to reflect overt control defined as ‘controlling a child’s food intake in a way that can be detected by the child’ and covert control that was defined as ‘controlling a child’s food intake in a way that cannot be detected by the child’. The items were derived from the literature and through discussions with mothers with small children. Parents were asked to consider the child who had given them the questionnaire.

Overt control

Parents were asked to rate 5 items designed to describe overt control over their child's eating behaviour using a 5 point Likert scale ranging from 'never' (1) to 'always' (5). These were derived from previous research (Brown & Ogden, 2004) and were: 'How often are you firm about what your child should eat?', 'how often are you firm about when your child should eat?', 'how often are you firm about where your child should eat?', 'how often are you firm about how much your child should eat?' and 'How often do you encourage your child to eat more if you feel that they haven't eaten enough that day or mealtime?'.

Covert control

Parents were also asked to rate 5 items designed to describe covert control using a similar 5 point Likert scale. They were asked 'How often do you.....' 'avoid going to cafes or restaurants with your children which sell unhealthy foods', 'avoid buying sweets and crisps and bringing them into the house', 'not buy foods that you would like to because you don't want your children to have them', 'try not to eat unhealthy foods when your children are around' and 'avoid buying biscuits and cakes and bringing them into the house'.

Snacking behaviour

Participants were also asked to complete a measure of their child's snack food intake which includes 7 unhealthy snacks (chocolate, crisps, pastries, ice cream, sweets, cakes and biscuits) and 5 healthy snacks (grapes, oranges, peaches, yoghurt and toast). This measure has been used previously (Brown & Ogden, 2004) and has been shown to have good reliability. The items were summated to create a total healthy snack score and a total unhealthy snack score.

Profile characteristics

Parents were finally asked to rate their own age, sex, ethnicity, social class, height and weight (to compute their BMI) and to describe the child who had given them the questionnaire in terms of their age and sex and to rate whether their child was overweight / just right / underweight.

Data analysis

The data were first analysed to describe the parents' and children's demographic characteristics and then to assess the reliability of the new measure using factor analysis for the overt and covert measures of control and Cronbach's alphas. The alpha for the measure of snack food intake is also reported. Second, the association between measures of overt and covert control and child's age, perceived weight and sex and parents' ethnic group, social class and BMI was assessed to explore who uses these different forms of control. Finally, the association between covert and overt control and the child's healthy and unhealthy snack food intake was assessed. These latter two analyses used Multiple Regression analysis.

Results

1. Participants' demographics

The majority of the parents were mothers (n=270, 92.8%), white (n=236, 80%) and described themselves as middle class (n=218, 88.7%). Their mean BMI was within the normal weight range (23.6, SD=4.2, range 16.7-46.7). In terms of the children, there was an equal split between boys (n=163, 54.9%) and girls (n=134, 45.1%), their

mean age was 7.4 years ($SD=2.2$) ranging between 4 and 11 and the majority of parents rated their child's weight as 'about right' ($n=239$, 80.5%).

2. Reliability of measures

i) Covert and overt control

A factor analysis of the new covert and overt measures of control produced a two factor solution with two factors above the elbow of the scree plot. The factor loadings are shown in table 1.

-insert table 1 about here-

The results showed that the 5 items relating to covert control all loaded onto factor 1 with a factor loading greater than 0.4 indicating that it was justified to summate these into a single construct. The Cronbach's alpha for this covert control variable was 0.79. For the 5 overt control items, 4 of these loaded onto factor 2 with a factor loading greater than 0.4. The fifth item did not load satisfactory suggesting that this item should be removed from the scale. The four items for overt control had a Cronbach's alpha of 0.71. These two new scales were used in all subsequent analysis.

ii) Snacking behaviour

The reliability of the unhealthy and healthy snacking behaviour was assessed using Cronbach's alpha. The scores were acceptable (unhealthy snacking = 0.53; healthy snacking=0.6).

3. Predicting the use of different forms of control

The results were then analysed to assess the role of child characteristics (age, sex, perceived weight) and parental characteristics (social class, ethnic group, BMI) in predicting both covert and overt control. Ethnicity was recoded to create a dichotomous variable (white / other).

i) Covert control

The results showed that parental BMI ($B=-0.24$, $p=0.0001$) and perceived child's size ($B=0.2$, $p=0.002$) significantly predicted the use of covert control and accounted for 10.3% of the variance. Child's sex ($B=-0.06$, $p=0.4$), age ($B=-0.07$, $p=0.3$), social class ($B=0.12$, $p=0.07$) and ethnic group ($B=0.04$, $p=0.5$) were not predictive. This indicates that increased covert control is used by parents with lower BMIs and by those with children who are perceived as heavier.

ii) Overt control

The results showed that only social class ($B=0.19$, $p=0.008$) significantly predicted overt control accounting for 6.3% of the variance. Parental BMI ($B=-0.12$, $p=0.09$), child's sex ($B=-0.006$, $p=0.9$), child's age ($B=-0.05$, $p=0.47$), ethnic group ($B=-0.09$, $p=0.15$) and child's perceived size ($B=0.04$, $p=0.6$) were not predictive. This indicates that the increased use of overt control relates to higher social class.

4. Predicting snacking behaviour

The results were finally analysed to explore the role of overt and covert control in predicting healthy and unhealthy snacking behaviour.

Child's unhealthy snacking behaviour was predicted by covert control ($B=-0.36$, $p=0.0001$) but not by overt control ($B=0.03$, $p=0.6$) accounting for 11.9% of the variance. In contrast, child's healthy snacking behaviour was predicted by overt control ($B=0.19$, $p=0.001$) but not by covert control ($B=0.08$, $p=0.2$) accounting for 4.3% of the variance. This suggests that whilst more covert control is associated with the intake of fewer unhealthy snacks, more overt control is associated with the intake of more healthy snacks.

To conclude from study one, the results show that the new measure which differentiates between covert and overt control is reliable and that these two forms of parental control are discrete constructs. The results also show that parents with lower BMIs and those with children who they perceive as heavier are more likely to use covert control whilst those from a higher social class are more likely to use overt control. Further, whilst covert control relates to decreased unhealthy snacking, overt control relates to increased healthy snacking. Study 2 aimed to assess the relationship between overt and covert control and existing measures.

Study 2: The expanded concept of control and existing measures.

Design

A cross sectional design was used with participants completing the new measure of covert and overt control alongside the 'restriction', 'monitoring' and 'pressure' subscales of the CFQ which are deemed to reflect aspects of parental control (Birch et al, 2001).

Participants

Questionnaires regarding their children's snacking behaviour and their attempts to control what and when their child ate were given to 125 parents from a primary school and holiday camp in the South of England. Completed questionnaires were received from 61 parents (response rate = 49%).

Measures

Participants completed the following measures. Reliability was assessed using Cronbach's alphas.

Parental control

Participants completed the restriction (8 items, $\alpha=0.79$), monitoring (3 items, $\alpha=0.87$) and pressure (4 items, $\alpha=0.63$) subscales of the CFQ (Birch et al, 2001) which describe the ways in which parents control their child's food intake. In addition they completed the new measures of overt control (4 items, $\alpha=0.78$) and covert control (5 items, $\alpha=0.83$).

Snack food intake

Participants also completed the measure of their child's snack food intake used in study 1 (Brown & Ogden, 2004). The items were summated to create a total healthy snack score (5 items, $\alpha=0.65$) and a total unhealthy snack score (7 items, $\alpha=0.5$).

Demographic characteristics

Parents were asked to rate their own age, sex, ethnic group, social class, height and weight (to compute BMI) and to describe child who had given them the questionnaire

in terms of their age and sex and to rate their perception of the child's weight on a 5 point Likert scale ranging from 'very underweight' (1) to 'very overweight' (5).

Data analysis

The data were analysed to describe the participants' demographic characteristics and to assess how the CFQ subscales 'restriction', 'monitoring' and 'pressure' and the new measures of overt and covert control were related to each other using correlations analysis.

Participants' demographics

The results showed that all the parents were mothers (100%), all were white (100%), the majority described themselves as middle class ($n=38$, 71.%) and the average age was in the late thirties (38.6, $SD=5.5$). In terms of the child being considered, slightly more were boys ($n=41$, 67.2%), they were aged between 4 and 7 (mean=5.7, $SD=0.9$) and the majority were perceived to be of normal weight ($n=54$, 88.5%).

Relationship between measures

The correlation matrix for the new covert and overt control measures and the three subscales from the CFQ are shown in table 2.

-insert table 2 about here -

The results indicate that all five measures of control are significantly positively correlated. The new scales of overt and covert control showed correlations with the existing measures accounting for between 7%-21% shared variance. The existing measures showed correlations with each other accounting for between 10% and 28% shared variance. This indicates that the new measures of covert and overt control are

no more highly correlated to the existing measures of restriction, monitoring and pressure than these existing measures are with each other. Further, no one scale accounts for more than 28% of the variance in any other scale suggesting that they reflect separate constructs.

Discussion

The present paper aimed to expand the existing conceptualisation of parental control with a focus on covert and overt control as a means to explain some of the confusion in the existing literature. It also aimed to assess who uses these different forms of control and to explore the extent to which covert and overt control differentially predict children's snacking behaviour.

The results from study one illustrated that covert and overt control were conceptually distinct constructs and that the new measures were reliable. The results from study two provide some evidence that these new measures are distinct from existing measures of control. This indicates that differentiating between overt and covert control may be a useful way to reconceptualise parental control and that rather than either replicating or supplanting existing measures they could be used as an additional means to explore this complex set of parental behaviours.

The results also provide some insights into who uses these different aspects of control with lighter parents and those with heavier children being more likely to use covert control and those from a higher social class being more likely to use covert control. This suggests that the type of control used is influenced by both parental and child factors and that the use of one form of control does not automatically result in the use

of the other form; parents are not either controlling per se or not. In addition, the results provide some tentative insights into the issue of causality between parental control and body weight which has been much discussed in the literature (eg. Wardle et al, 2002). It is possible that overt control is part of a higher social class norm of worrying about a child's food intake and seeing it as a central part of parental responsibility to manage what and when a child eats. Similarly, covert control may also be a stable form of management used by thinner parents as it may reflect their own food preferences and ways of managing their own diets. In addition, however, it is possible that covert control is a reaction to the perception that a child is becoming overweight, particularly in a family where thinness is considered the norm. From this perspective both overt and covert control may pre date either having children, or having children with weight problems suggesting that they may have a causal influence in promoting healthier diets in children. However, covert control may also be a corrective mechanism introduced when parents perceive a weight problem to be developing. Longitudinal research is needed to test these possibilities.

Finally, the results also illustrate how these new constructs impact upon snacking behaviour. Previous research exploring the role of parental control on children's diets has often produced conflicting results. For example, whilst some studies suggest that parental control can result in unhealthy food intake and overeating (eg. Birch, 1999; Fisher & Birch, 1999) other studies indicate that parental control may either have no impact in some populations (Constanzo & Woody, 1985) or at times be beneficial (Wardle et al, 2002). The results from the present study provide some insights into such contradictions and suggest that parental control may be more complex than previously assumed and that different forms of control may influence

different areas of eating behaviour. In particular, it would seem that whilst covert control may reduce unhealthy snacking behaviour, overt control may promote more healthy snack food intake. Covert control reflects a form of parental behaviour which is not apparent to the child and involves the micro management of the child's home and social environment. Such behaviour is described by studies that argue that parents should take control over the kinds and quantities of foods available to their children (Wardle, 1995) and it also supports research that suggests that parental control can have beneficial consequences (Wardle et al, 2002). Further, it reflects research which suggests that children model the eating patterns of their parents (Birch & Fisher, 1995; Brown & Ogden, 2004). The results from the present study provide empirical support for these suggestions and indicate that such micro management could be a useful parental strategy. In contrast, overt control is that which can be detected by the child. This is similar to measures of restriction, monitoring and pressure as identified by the CFQ which have at times been associated with disinhibition and overeating (Fisher and Birch, 1999). In the present study, however it was associated with increased healthy snacks. Further, although correlated with these existing measures it was shown to be conceptually separate. Perhaps, a form of overt control which simply involves managing food intake, without using food as a reward either for behaviour or healthy eating and which does not promote the intake of unhealthy food may also improve a child's food intake. Therefore both covert and overt control would seem to have beneficial consequences but on different aspects of what a child eats.

To conclude, the present study illustrates that parental control involves both covert and overt control of a child's diet and that these constructs are both separate to each

other and to existing measures of parental control. Further the results indicate that they are used by different parents with different children and may reflect both stable and situational factors. Covert control involves the management of a child's eating environment in a way that may not be recognised by the child and results in healthier food choices. This approach is similar to a 'do what I do not what I say' form of parental involvement (Brown & Ogden, 2004) and supports the important role of parents' own eating behaviour (Fisher & Birch, 1995). In contrast, overt control can be detected by the child and although some research indicates that it may result in over eating and disinhibition, the present study indicates that as long as it is only overt in a way that doesn't promote unhealthy food as a reward, it may also have beneficial consequences. Parental control, would therefore seem to be made up of a range of different behaviours which vary in the extent they can be detected by the child. If future research is to produce more consistent insights into how parental control impacts upon what children eat then perhaps it needs to include a broader conceptualisation of control and include both the existing measures and those specific to covert and overt control.

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Table 1: Factor analysis for covert and overt control items

Variable	Factor 1	Factor 2
	% variance=27.65	% variance=21.68
	Eigen value=2.77	Eigen value=2.67
Overt control		
How often are you firm about what your child should eat?	0.17	0.73*
How often are you firm about when your child should eat?	0.05	0.75*
How often are you firm about where your child should eat?	0.12	0.73*
How often are you firm about how much your child should eat?	0.002	0.65*
How often do you encourage your child to eat more if you feel that they haven't eaten enough that day or that mealtime?	0.02	0.07
Covert control		
Avoid going to cafes or restaurants with your children which sell unhealthy foods?	0.54*	0.28
Avoid buying sweets and crisps and bringing them into the house?	0.81*	0.12
Not buy foods that you would like because you don't want your children to have them?	0.77*	-0.06
Try not to eat unhealthy foods when your children are around?	0.76*	0.08
Avoid buying biscuits and cakes and bringing them into the house?	0.78*	0.1

* factor loading>0.5

Table 2: Correlations between covert and overt control and existing measures

	Restriction	Pressure	Monitoring	Overt	Covert
Restriction					
Pressure	r=0.53 p=0.0001				
Monitoring	r=0.32 p=0.01	r=0.30 p=0.02			
Overt	r=0.27 p=0.04	r=0.46 p=0.0001	r=0.39 p=0.002		
Covert	r=0.42 p=0.001	r=0.26 p=0.05	r=0.42 p=0.001	r=0.3 p=0.02	