Associations between environmental factors and childhood eating behaviours in 5-year-old children: Findings from the ROLO longitudinal birth cohort study

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Introduction

A child's food choice and exposure will be influenced by their environment. The extent to which maternal socio-economic status (SES), screen time exposure and childcare exposure are associated with childhood eating behaviours has not yet been fully established. Evidence suggests that children from more disadvantaged backgrounds are at higher risk of overweight and obesity[1].

The current study examines if three key environmental factors; maternal socio-economic status (SES), children's screen time and childcare arrangements are associated with eating behaviours in children aged 5-years-old**.**

Methods

This is secondary analysis of data from the ROLO study (Randomised cOntrol trial of LOw glycemic index diet in pregnancy)[2] longitudinal birth cohort study. Mothers and children born into this study have been followed-up at multiple time points since the primary study with this analysis using data from the 5 year old follow-up (n=401). At 5 years old, childhood eating behaviours were measured using the Children's Eating Behavior Questionnaire (CEBQ). Socio-economic status (SES) was measured using maternal education level and Pobal Haase & Pratschke deprivation index (HP index). The CLASS questionnaire collected parental-reported measures of children's screen time exposure. Lifestyle questionnaires obtained information on childcare. Statistical analysis involved One-way ANOVA and multiple linear regression analysis. Regression models were adjusted for maternal age at delivery, maternal BMI, RCT group, breastfeeding exposure, child solids introduction, child age and child sex.

Results

- In the current analysis, 401 mother and child pairs were included, with CEBQ data available for 306 children.
- Mean age of the children was 5.1 years old.
- 23% of children had a BMI in the overweight or obese range.
- 51% of mothers were considered in the highest SES group – had attained 3rd level or more education and lived in an advantaged area (Figure 1).
- Mothers in the highest SES group were older at age of delivery and had a lower BMI than those in the lowest SES group (p=0.003, p=<0.001).
- Children spent a median time of 10.92 hours per week engaged in screen time.
- 89% of children attended childcare at some point in their first 5 years with mean duration spent in childcare of 3.41 years.
- In adjusted analysis, children from the lowest SES group had lower mean 'Food Fussiness' scores and higher 'Desire to Drink' scores when compared to the highest SES group (Table 1).
- After controlling for confounders, including SES, child screen time (minutes) was positively associated with 'Food fussiness' (Table 2)
- In adjusted analysis, longer childcare exposure (yrs) was positively associated with 'Food Responsiveness' and ' Emotional Overeating' Table 2).

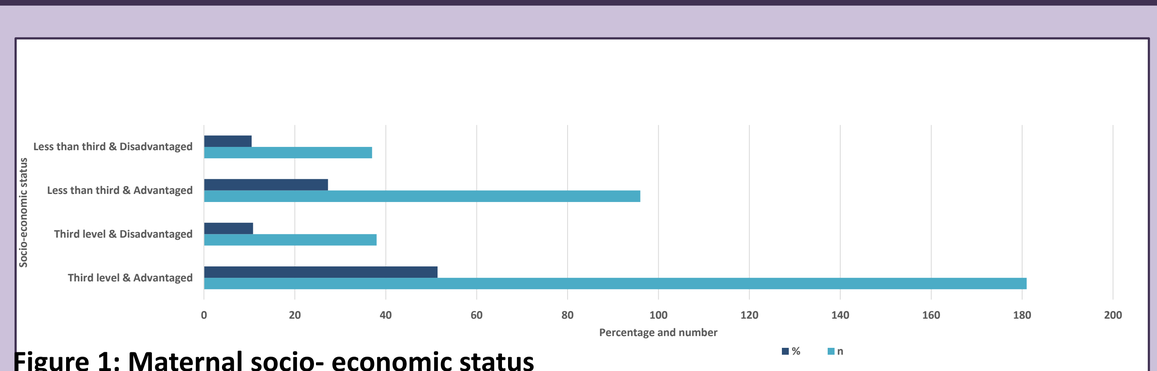

Figure 1: Maternal socio- economic status

Table 1: Association between maternal socio-economic status and children's eating behaviours at aged 5 years old

		Education-deprivation category as a marker of SES			
		Third level and Advantaged	Third level and Disadvantaged	Second level and Advantaged	Second level and Disadvantaged
Food Fussiness	B (95% CI)	Ref	-0.34 (-2.64, 1.97)	0.64 (-1.06, 2.34)	-2.49 (-5.00,0.01)
	P-value		0.77	0.46	0.05
	Adj R^2			0.031	
Desire to Drink	B (95% CI)	Ref	0.68 (-0.41,1.78)	0.65 (-0.15,1.46)	1.26 (0.07,2.45)
	P-value		0.22	0.11	0.04
	Adj R^2			0.02	

Third level and Advantaged was used as reference to which other SES categories (Third level and Disadvantaged; Second level and Advantaged; Second level and Disadvantaged) were compared. All multiple regression models adjusted for maternal BMI, breastfed ever, age child introduced to solids, child age at 5 years, child sex, original RCT allocation group; Statistically significant (p- value < 0.05)

Table 2: Association between children's screen time exposure and duration of time spent in childcare and children's eating behaviour at 5 years old

	Screen time exposure (hours)				Length of time spent in childcare (years)			
	B	95% CI		P-value	B	95% CI		P-value
		Lower	Upper			Lower	Upper	
Food Responsiveness	0.045	-0.031	0.120	0.243	0.481	0.063	0.898	0.024
Emotional Overeating	0.003	-0.036	0.041	0.891	0.271	0.060	0.481	0.012
Enjoyment of Food	-0.016	-0.072	0.040	0.577	0.119	-0.191	0.430	0.450
Desire to Drink	0.031	-0.019	0.082	0.227	-0.037	-0.319	0.245	0.795
Satiety Responsiveness	0.052	-0.008	0.113	0.088	-0.268	-0.605	0.068	0.117
Slowness Eating	0.014	-0.043	0.071	0.632	-0.081	-0.399	0.237	0.615
Emotional Undereating	-0.015	-0.078	0.049	0.643	-0.234	-0.590	0.115	0.186
Food Fussiness	0.175	0.070	0.280	0.001	0.374	-0.223	0.970	0.218

Multiple linear regression; All models adjusted for maternal BMI, breastfed ever, age child introduced to solids, child age at 5 years, child sex, original RCT allocation group, maternal SES. Statistically significant (p- value < 0.05)

Conclusion

This study adds valuable insight into how environmental and social factors have an important role to play in both food avoidant and food approach eating behaviours. A child's early relationship with food will have long lasting impact as it tracks into their older years and into adulthood. Therefore, it is vital that we understand how the environment impacts eating behaviours so that the most appropriate supports and timely interventions can be implemented.

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