



## Is it still a real treat? Adults' treat provision to children

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## Is it still a real treat? Adults' treat ~~food~~-provision to children

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# 1                   **Is it still a real treat? Adults' treat food provision to children**

## 2   **Abstract**

3   Consumption of high-energy foods in the absence of hunger has been identified as a key target to  
4   address in the area of obesity. For children, such foods are often provided by adults as treats.

5   There is limited understating of adults' treat giving. The present study aimed to understand

6   adults' provision of treat ~~foods~~ to children on the Island of Ireland. A total of 1039 participants,

7   including parents, grandparents, child minders and education practitioners completed a face-to-

8   face survey in their home. Participants defined their treats for children primarily as 'something

9   nice', 'deserved/earned' and 'something special'. The top three motivations for treat foods

10   provision were 'to reward for good behaviour' (42.3%), 'because the child(ren) ask' (42.2%) and

11   'to make the child(ren) feel better' (29.4%). Almost all participants would provide treat foods at

12   celebrations and 52.5% always did so. In addition, 68% participants had structured weekly

13   and/or daily treat for children. Treats provided to children were dominated by energy-dense

14   foods. The top three were sweets, chocolates and ice-creams, being used by 45.2%, 45.1% and

15   38.8% participants. Variations were observed across different adult groups, in terms of their treat

16   giving behaviour. The main observation was that adults' treat foods provision has become

17   habitual. The findings can help develop targeted strategies to encourage the reduction or

18   replacement of food treats for children.

19   **Keywords:** snacking, obesity, children, child feeding, parenting

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1   **INTRODUCTION**

2   Childhood obesity is one of the most serious public health challenges of this century, and needs  
3   to be addressed on multiple levels, including the role of the environment and children’s access to  
4   unhealthy foods (World Health Organization, 2012). Consumption of energy-dense, nutritionally  
5   poor foods in response to external stimuli and in the absence of hunger has been identified as a  
6   key target to cope with this challenge (Bellisle, 2014). For children, such foods are often  
7   provided by adults as treats (Bugge & Lavik, 2012). The general public are often advised to keep  
8   treat food intake to a minimum (Safefood, 2016). Yet, health professionals’ understanding of the  
9   term ‘treat’ may be quite subjective; therefore it is important to investigate adults’ own definition  
10   and treat giving behaviour.

11   ‘Treat’, ‘sometimes foods’ and ‘junk’ are the three most common terms parents used to describe  
12   ‘not-everyday’ foods (Petrunoff, Wilkenfeld, King, & Flood, 2014). Parents’ descriptors of  
13   ‘treats for children’ are dominated by foods not recommended by healthy eating guidelines, such  
14   as chips, ice-cream, chocolates, cakes, doughnuts, biscuits, takeaway and soft drinks (Curtis,  
15   James, & Ellis, 2010; Petrunoff et al., 2014), although some parents also identified expensive  
16   healthy foods in limited supply (e.g. strawberries), as treats (Pescud & Pettigrew, 2014).

17   Despite recognising that treat foods are less healthy and should be consumed infrequently, many  
18   parents provide them daily (Pescud & Pettigrew, 2014), triggered by multiple motivations and  
19   social contexts, including behavioural rewards and control, expressing love, social network  
20   effects, peer-pressure, classroom celebrations, birthday parties, cultural events, such as  
21   Christmas, Halloween, and Easter and other out-of-the ordinary occasions (Curtis et al., 2010;  
22   Davison et al., 2015; Fisher et al., 2015; Herman, Malhotra, Wright, Fisher, & Whitaker, 2012;  
23   Larson et al., 2017; Moore, Goodwin, Brocklehurst, Armitage, & Glennly, 2017; Pescud &

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115 24 Pettigrew, 2014; Porter & Grills, 2013; Sabey, Rauer, Haselschwerdt, & Volling, 2017). Treat  
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117 25 foods can also be routinized, for instance, dessert, after-school, Fridays, and weekends (Bugge &  
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120 26 Lavik, 2012; Pescud & Pettigrew, 2014).

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122 27 Health professionals have encouraged the reduction of treat foods for children, and the use of  
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124 28 non-food alternatives, for instance, extra play/story time, a trip to the play-ground, disco-dancing  
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126 29 at home, etc. (Sharry, 2014). Instead of food, teachers could recognize children's efforts by  
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128 30 giving them special opportunities (e.g. selecting a song/game/story book for the play group,  
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130 31 having first choice of equipment for gross motor play) (Eliassen, 2011). There is very limited  
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132 32 research about how non-food treats could be used and received by children in practice. A  
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134 33 qualitative study exploring expressions of parental love showed that, parents sometimes use toys  
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136 34 and gifts (e.g. a new book, some new playdoh) as alternatives to treat foods (Sabey et al., 2017).  
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138 35 An experimental study suggested that children were just as likely to choose a cheap toy as sweets  
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140 36 at Halloween (Schwartz et al., 2003).

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144 37 While the literature sheds some light on the practice of adults' treat giving to children, studies  
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146 38 related to this topic are dominated by qualitative research work; there is a lack of quantitative  
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148 39 understanding about the extent to which treats are given to children in different contexts.

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150 40 Moreover, most of the studies focused on parents only. Other adults, such as grandparents,  
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152 41 childminders, nursery practitioners, school teachers and sport coaches have received scarce  
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154 42 attention about their treat provision behaviour. Childminders are those who mind children in  
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156 43 childminders/children's home; they are self-employed, agree their own terms, fees and  
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158 44 conditions with parents (O'Hagan, 2012).

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161 45 It is important to include grandparents because they still remain a popular form of childcare in  
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163 46 many countries including China, Australia, the US, the UK, Ireland and a few Mediterranean  
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171 47 countries (Aassve, Meroni, & Pronzato, 2012; Chambers, Rowa-Dewar, Radley, & Dobbie, 2017;  
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173 48 Chen, Liu, & Mair, 2011; Share & Kerrins, 2009). They normally feel entitled to indulge  
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175 49 children with food treats (Knight, O'Connell, & Brannen, 2014). It is also crucial to consider  
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177 50 childcare and education practitioners, given that treats are commonly employed for the  
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179 51 management systems of schools and early childhood settings, for the purposes of rewarding,  
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181 52 fundraising and classroom celebration (Causton, Tracy-Bronson, & MacLeod, 2015; Eliassen,  
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183 53 2011).

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187 54 The current study aims to provide quantitative data of adults' treat giving understanding and  
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189 55 behaviour on the Island of Ireland (IOI), with the focus on: 1) their definition of 'treats'; 2) the  
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191 56 contexts or situations in which treat foods are provided to children and 3) the types of treats  
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193 57 (including both food and non-food options) being used. This study will also compare the treat  
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195 58 ~~food~~ provision among parents, grandparents and education practitioners (e.g. nursery  
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197 59 practitioners, school teachers, sport coaches), so that targeted strategies can be developed to  
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199 60 encourage different groups to employ alternative strategies to their habitual treat food behaviour.  
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## 202 61 **METHODS**

### 204 62 **Sampling and participants**

207 63 A cross-sectional survey was conducted with adults (aged 18 and above), who had lived on IOI  
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209 64 for the past 3 years and who had child rearing responsibilities. Grandparents were eligible to  
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211 65 participate if they saw one or all of their grandchildren at least fortnightly. Quota sampling was  
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213 66 employed. The quotas included: area (Republic of Ireland 75%, Northern Ireland 25%), which  
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215 67 was in line with the population distribution between these two areas (Central Statistics office of  
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217 68 Ireland, 2016; UK Office for National Statistics, 2017); roles (parents 60%, grandparents 20%,  
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219 69 Crèche/pre-schooler carers, childminders, teachers and sports coaches 20%), gender (female

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227 70 60%, male 40%) and social class (ABC1 40%, C2DE 60%). Parents and females were moreover  
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229 71 recruited/sampled, because they usually have a higher level of involvement in child rearing than  
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231 72 other adults. Participants from a lower social class (i.e. C2DE) were purposively slightly  
232  
233 73 oversampled, compared to around 50% in the whole population (Central Statistics Office of  
234  
235 74 Ireland, 2017a). The rationale was over-consumption of extra foods is more common among  
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237 75 children from a lower social class (Campbell et al., 2002). Participants were recruited from 104  
238  
239 76 sampling districts across the IOI. A power calculation (Noordzij et al., 2010) was conducted. It  
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241 77 suggests that to estimate the proportion of the population that has a certain treat giving behaviour,  
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243 78 a minimum sample size of 134 is required to achieve 95% power with a significant level (alpha)  
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245 79 of 0.05. A sample size of 1000 (around 10 participants per sampling point) was considered to be  
246  
247 80 sufficient to estimate the behavioural patterns of the whole population and sub-groups (i.e.  
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249 81 parents, grandparents, and other adults).

253 82 The survey was ~~administrated~~ administered by professional fieldworkers through face-to-face  
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255 83 interviews in participants' homes. Computer assisted personal interviewing (CAPI) technology  
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257 84 was employed: the questions were displayed on a touch-screen tablet computer (one question per  
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259 85 screen); the field worker read them to the respondent, and entered the respondent's answers  
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261 86 directly into the computer. CAPI has unique advantages of ensuring responses to mandatory  
262  
263 87 fields, automatically bypassing questions not relevant to the respondent, randomising the order of  
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265 88 options when needed, and validating the sampling points using GPS coordinates (Caviglia-Harris  
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267 89 et al., 2012). Each interviewer was given one or multiple sampling districts. They selected a  
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269 90 street within that district and attempted to interview at every third house until the quotas were  
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271 91 filled and they had completed the ten interviews. The fieldwork was conducted between October  
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273 92 2017 and January 2018. The study was conducted according to Declaration of Helsinki  
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283 93 guidelines and received approval from the first author's university research ethics committee.

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285 94 Written informed consent was obtained from all participants.

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288 95 **Research instrument**

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290 96 The questionnaire had three main sections: context/motivations for treat food provision, type of  
291 97 treats used, and definition of treats. Cognitive interviews with eight volunteers were conducted to  
292 98 assess the clarity of the questionnaire. The CAPI system was tested with a small sample ( $n=30$ )  
293 99 of the target population.

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295 100 For parent and grandparent participants, if they had more than one child or grandchild between 2  
296 101 and 17, they were asked to focus on the child whose birthday came next, and this child's name  
297 102 was referred to in all questions. The purpose was to avoid confounding factors, in light of the  
298 103 practice used by Vereecken, Keukelier, and Maes (2004) and Gevers, Kremers, de Vries, and van  
299 104 Assema (2015)'s study design.

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302 105 *Contexts and motivations of treat foods provision*

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304 106 A list of contexts or motivations (see the second column of Table 3) for treat provision to  
305 107 children was generated from a prior focus group study ([McCafferty et al., 2018](#)) and literature  
306 108 (Bugge & Lavik, 2012; Davison et al., 2015; Moore et al., 2017; Pescud & Pettigrew, 2014;  
307 109 Petrunoff et al., 2014; Sabey et al., 2017). For each context, participants were first asked about  
308 110 whether they provided treat foods in the specified context. If the participant indicated doing so,  
309 111 they were asked about provision frequencies, using an eight-category scale adapted from the  
310 112 Food Frequency Questionnaire (MacIntyre, 2009): 1 = rarely or never; 2 = a few times a year; 3  
311 113 = once a month; 4 = 2-3 times per month; 5 = once a week; 6 = 2-4 times per week; 7 = daily; 8  
312 114 = more than once a day. The frequency was not asked after the 'daily treat' and 'weekly treat'



337  
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339 115 questions. For the question regarding celebration occasions, the pilot test showed that  
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341 116 participants found it hard to suggest a frequency on the eight-category scale, accordingly, a four-  
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343 117 point frequency scale was used: 1 = rarely or never; 2 = sometimes; 3 = often; 4 = always. In the  
344  
345 118 end, participants were asked about their overall frequency of treat giving (“*in general, how often*  
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347 119 *you would give [ ] treat foods*”), the previous same eight-category scale was used.

#### 350 120 *Type of treats*

353 121 From the focus group study, a list of all iterations of identified treats was developed. Foods and  
354  
355 122 beverages were put into categories based on food groups defined in the Irish National Nutrition  
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357 123 Pre-school Survey (Irish Universities Nutrition Alliance, 2011). In total, 23 food and non-food  
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359 124 items (see the first column of Table 5) were presented to participants in a randomized order.

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362 125 From the list, ‘chips’ means finger shaped cuts of potatoes that have been deep fried and served  
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364 126 hot; ‘crisps’ refers to thin slices of potatoes that have been deep fried until crunchy; and  
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366 127 ‘takeaways’ refers to cooked foods to be eaten off the premises. Participants were first asked to  
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368 128 select all items they used as treats for the child(ren). They were allowed to add any other treat  
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370 129 they used. Afterwards, participants were asked to indicate the most frequently used treat (single  
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372 130 answer only).

#### 375 131 *Definition of treats*

377 132 Based on the focus group findings and literature (Pescud & Pettigrew, 2014; Petrunoff et al.,  
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379 133 2014), 15 phrases were selected to test participants’ perception of the essence of treats (see the  
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381 134 first column of Table 2). Participants were asked to select up to three phrases they felt defined a  
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383 135 treat for the child or children.

#### 386 136 *Socio-demographics and background information*

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395 137 Standard socio-demographic questions were included in the survey regarding both the  
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397 138 participants and the children in their care.  
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### 400 139 **Data analysis**

402 140 All statistical analyses were conducted using statistical software package IBM SPSS Statistics 20  
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404 141 (SPSS Inc., Chicago, IL, USA). Participants were originally classified into three groups, namely,  
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406 142 parents, grandparents and education practitioners. Sensitivity tests showed that within the group  
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408 143 of education practitioners, childminders were different from the rest of the group in terms of the  
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410 144 pattern of answers. Accordingly, a four-group division was used for final analysis: parents (i.e.  
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412 145 parents/guardians), grandparents, childminders (i.e. childminders/baby sitters/nannies) and  
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414 146 education practitioners (i.e crèche/pre-schooler carers, primary school teachers, secondary school  
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416 147 teachers, and sports and leisure coach/leaders). Pearson  $\chi^2$  tests were employed to examine  
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418 148 differences across these groups. Monte Carlo estimate of the exact P value for the Pearson  $\chi^2$  test  
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420 149 was used when over 20% cells of the frequency table have expected counts less than 5.  
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## 424 150 **RESULTS**

### 427 151 **Description of the participants**

429  
430 152 In total, 1039 participants completed the survey (Table 1). ~~Three quarters of participants were~~  
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432 153 ~~from the Republic of Ireland (ROI), and one quarter from Northern Ireland (NI), reflecting the~~  
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434 154 ~~population distribution between these two areas on IOI (Central Statistics Office of Ireland, 2016;~~  
435  
436 155 ~~UK Office for National Statistics, 2017).~~ The study sample had good representation of both  
437  
438 156 males and females, and different types of adults who are responsible for children. The  
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440 157 urban/rural divide and the ethnicity distribution of the participants were close to the population-  
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442 158 level statistics (Central Statistics Office of Ireland, 2017**b**; Northern Ireland Department of  
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159 Agriculture Environment and Rural Affairs, 2017; Northern Ireland Statistics and Research  
 160 Agency, 2014).

Table 1 Characteristics of the participants (*n* 1039)

Characteristic	<i>n</i>	%
Area of Ireland		
Republic of Ireland (ROI)	789	75.9
Northern Ireland (NI)	250	24.1
Sex		
Female	634	61.0
Male	404	38.9
Other	1	0.1
Age (years)		
18-24	25	2.4
25-34	215	20.7
35-44	374	36.0
45-54	201	19.3
55-64	109	10.5
65 and above	115	11.1
Role		
Parent/guardian	651	62.7
Grandparent	210	20.2
Child minder, baby sitter, nanny	61	5.9
Crèche/pre-schooler carer	25	2.4
Primary school teacher	27	2.6
Secondary school teacher	15	1.4
Sports, leisure coach and leader	50	4.8
Living area		
Urban/sub-urban	703	67.7
Rural	336	32.3
Education completed		

Primary or lower	61	5.9
Secondary*	491	47.2
Apprenticeship/trade certificate	107	10.3
Primary degree/nursing qualification	201	19.3
Postgraduate/higher degree	170	16.4
Other	9	0.9
Ethnicity		
White Irish	806	77.6
White British	126	12.1
Any other white background	72	6.9
Black, Asian and other including mixed background	33	3.2
Don't know/refused	2	0.2
Age range of child(ren) being reported		
Pre-school age (year 2-4)	231	22.2
Primary school age (year 5-12)	580	55.8
Secondary school age (year 13-18)	228	21.9

164 \*For ROI participants, secondary-level education includes 'leaving certificate or equivalent' and 'leaving  
 165 certificate applied'; for NI participants, 'GCSE or equivalent', 'GCE A level or equivalent', and 'leaving  
 166 certificate applied'.

167

## 168 **Definition of Treats**

169 To define a treat for the child(ren) in their care, participants were invited to select up to three  
 170 terms from a list. Almost all selected three terms (81.7%), most frequently 'something nice'  
 171 (45.2%), 'deserved/earned' (35.1%), 'something special' (32.7%) or 'fun' (27.6%) (Table 2).  
 172 Treats were less frequently defined by cost ('affordable', 'expensive'), size ('big', 'small') or  
 173 nutrition ('sweet', 'healthy', 'unhealthy/bad for you'), although 22% considered a treat must be  
 174 'sweet', and 16.6% selected 'healthy'. Terms indicating spoiling, bribery, and low frequency  
 175 ('usually forbidden', 'rare') were chosen by less than 13% of participants.

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176 Adult groups' definitions of treats varied. Education practitioners favoured 'deserve/earned'  
177 (42.7%), were less likely to define treats as 'something nice' (23.1%), and more likely to  
178 consider them 'rare' (21.4%). Interestingly 'to spoil' was among the top four terms used by  
179 childminders (27.9%), but was less frequently selected by other participants, including  
180 grandparents (18.6%).

181 Table 2 Terms participants selected to define a treat for children (*n* 1039)

Definition of treats	Total ( <i>n</i> 1039)		Parent ( <i>n</i> 651)		Grandparent ( <i>n</i> 210)		Child minder ( <i>n</i> 61)		Education practitioner ( <i>n</i> 117)		Group differences†
	%*	Top 5	%*	Top 5	%*	Top 5	%*	Top 5	%*	Top 5	
Something nice	45.2	1	48.2	1	46.7	1	50.8	1	23.1	5	<i>P</i> <0.001
Deserved/earned	35.1	2	36.7	2	29.5	3	23.0	5	42.7	1	<i>P</i> <0.05
Something special	32.7	3	32.0	3	35.7	2	36.1	2	29.9	2	
Fun	27.6	4	27.6	4	26.2	5	29.5	3	29.1	3	
Affordable	23.1	5	24.3		27.1	4	16.4		12.8		<i>P</i> <0.05
Sweet	22.7		24.6	5	22.4		21.3		13.7		
Small	20.9		20.1		22.4		18.0		23.9	4	
Healthy	16.6		14.9		20.5		11.5		21.4		
Usually forbidden	12.7		13.7		7.1		19.7		13.7		<i>P</i> <0.05
To spoil	12.5		10.3		18.6		27.9	4	6.0		<i>P</i> <0.001
Rare	8.3		6.5		6.2		9.8		21.4		<i>P</i> <0.001
Bribery	5.8		6.8		5.2		1.6		3.4		
Unhealthy/bad for you	4.1		5.4		1.0		1.6		4.3		<i>P</i> <0.05
Expensive	3.0		3.5		3.8		0.0		0.0		
Big	1.4		2.0		1.0		0.0		0.0		

182 \* The proportion of the participants (within the specified participant group) who selected a given term to define a treat for the child(ren) they were  
 183 caring for. Participants were allowed to select up to three terms. The 'Top 5' ranks were based on the percentages.

184 †Levels of significance from Pearson  $\chi^2$  tests of differences between four groups (i.e. parents, grandparents, child minders and education  
 185 practitioners) in terms of the proportion of participants who selected a given term.

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661 **186 Contexts/motivations of treat foods provision**  
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664 187 Participants primarily offered treat foods to reward good behaviours (42.3%) and because  
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666 188 children asked (42.2%), followed by emotion control (29.4%) and encouragement of the intake  
667  
668 189 of dinner/healthy foods (26.2%) (Table 3). Treat foods were least used for occupying the  
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670 190 children (14.4%), and gaining affections (12.8%). Nearly all participants (92.0%) would give  
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672 191 treat foods to children at celebrations, and 52.5% always did so. More than two thirds of  
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674 192 participants had structured weekly (64.7%) and/or daily treat foods (22.6%) for children.  
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677 193 Adult group's treat giving behaviour varied. Education practitioners did far less treat giving than  
678  
679 194 other groups. Parents were more likely to provide structured weekly treats (75.7%); and  
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681 195 childminders were more likely to provide treat foods to reward the child (67.2%) and to make the  
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683 196 child feel better (41.0%). In addition, childminders (37.7%) and grandparents (33.8%) were more  
684  
685 197 likely than parents (22.3%) to use treat foods to show love and care. Overall, a majority of  
686  
687 198 parents (78.5%), grandparents (58.1%) and child minders (60.7%) would give children treat  
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689 199 foods at least once a week (Table 4).  
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200 Table 3 Contexts and frequencies of the treat foods provision among participants (n 1039)

Abbreviation	Item*	Total (n 1039)		Parents (n 651)		Grandparents (n 210)		Childminders (n 61)		Education practitioners (n 117)		Group differences†
		Yes	At least weekly	Yes	At least weekly	Yes	At least weekly	Yes	At least weekly	Yes	At least weekly	
Reward	Use treat foods to reward [ ] for good behaviour	42.3%	30.6%	43.6%	33.8%	42.9%	25.2%	67.2%	52.5%	21.4%	11.1%	<i>P</i> <0.001
Child ask	Give [ ] treat foods because they ask	42.2%	28.4%	47.2%	34.1%	45.7%	25.2%	45.9%	27.9%	6.0%	2.6%	<i>P</i> <0.001
Emotion control	Use treat foods to make [ ] feel better	29.4%	14.3%	30.4%	15.2%	33.3%	16.2%	41.0%	21.3%	10.3%	2.6%	<i>P</i> <0.001
For eating dinner/fruit/vegetable	Give [ ] treat foods for eating their dinner or for eating fruits and vegetables	26.2%	19.8%	28.6%	23.3%	26.2%	17.1%	31.1%	21.3%	10.3%	4.3%	<i>P</i> <0.001
Show affection	Use treat foods to show your love or care for [ ]	23.5%	13.2%	22.3%	12.7%	33.8%	18.1%	37.7%	21.3%	4.3%	2.6%	<i>P</i> <0.001
Child nagging	Give [ ] treat foods because they kept requesting/nagging you for it	21.8%	15.2%	24.1%	17.5%	22.9%	14.3%	31.1%	19.7%	1.7%	1.7%	<i>P</i> <0.001
Peer pressure	Give [ ] treat foods because they say/you know other children are given it	19.3%	10.1%	21.2%	11.1%	19.0%	9.5%	31.1%	18.0%	3.4%	1.7%	<i>P</i> <0.001
Occupy child	Use treat foods to occupy [ ]	14.4%	8.9%	15.1%	9.1%	16.2%	10.0%	24.6%	16.4%	2.6%	1.7%	<i>P</i> <0.001
Gain affection	Use treat foods so that [ ] will love/like you	12.8%	8.9%	11.8%	8.4%	17.6%	11.4%	27.9%	18.0%	1.7%	1.7%	<i>P</i> <0.001
		Yes	Always	Yes	Always	Yes	Always	Yes	Always	Yes	Always	



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Celebrations	Provide [ ] treat foods at celebrations (e.g. birthday, Christmas, Halloween, Easter)	92.0%	52.5%	96.2%	60.2%	90.0%	49.5%	93.4%	27.9%	71.8%	27.4%	<i>P&lt;0.001</i>
Structured treat provision‡		68.3%		79.4%		64.8%		54.1%		20.5%		<i>P&lt;0.001</i>
Weekly treat	Normally give treat foods to [ ] each week (e.g. Friday treat or weekend treat)	64.7%		75.7%		59.0%		54.1%		18.8%		<i>P&lt;0.001</i>
Daily treat	Normally give treat foods to [ ] everyday (e.g. when the child comes home from school, after meal)	22.6%		26.7%		20.5%		18.0%		6.0%		<i>P&lt;0.001</i>

\*For parents and grandparents, the child’s name was inserted in “[ ]”. If they had multiple children or grandchildren, only one child was selected. For childminders and educational practitioners, “*children/pupils you are caring for*” was inserted in “[ ]”.

†Levels of significance from Pearson  $\chi^2$  tests of differences between four groups (i.e. parents, grandparents, child minders and education practitioners) in terms of the proportion of participants answered ‘yes’ on a given treat giving behaviour.

‡“Structured treat provision” was computed from “weekly treat” and “daily treat”, i.e. a participant who answered yes to either the weekly treat question or the daily treat question, was considered as having structured food treats for children.

207 Table 4 The overall frequencies of participants' treat foods provision to children (n 1039)

Treat food provision in general	Total (n 1039)	Parents (n 651)	Grandparents (n 210)	Childminders (n 61)	Education practitioners (n 117)	Group differences*
Rarely/never	8.8%	3.8%	9.0%	3.3%	38.5%	<i>P&lt;0.001</i>
Less than once a month	7.1%	2.5%	8.6%	9.8%	29.1%	<i>P&lt;0.001</i>
1-3 times a month	17.7%	15.2%	24.2%	26.3%	14.5%	<i>P&lt;0.01</i>
1-4 times a week	57.2%	66.2%	53.8%	54.1%	14.6%	<i>P&lt;0.01</i>
At least once a day	9.4%	12.3%	4.3%	6.5%	3.5%	<i>P&lt;0.001</i>

208 \*Levels of significance from Pearson  $\chi^2$  tests of differences between four groups.

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857 **210 Type of treats being used**  
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860 211 Almost all the participants (98.3%) selected at least one item from the list as their treat for the  
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862 212 children. On average, each participant selected 5 items (mean 5.19, SD 3.65). Twenty seven  
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864 213 participants also specified other items they used as treats, such as cereal or cereal bars, yoghurt,  
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866 214 nuts, pancakes, football socks, clothes, extra playtime and makeup.  
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869 215 In general, participants' most used treats were unhealthy foods (57.8%), followed by non-food  
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871 216 treats (24.4%) and healthy foods (14.8%) (Table 5). Sweets (45.2%), chocolates (45.1%) and ice-  
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873 217 cream (38.8%) were the most popular treats, followed by time on screen, crisps, takeaways and  
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875 218 biscuits. In comparison, some healthy foods including berries, dried fruit, breadsticks and cheese  
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877 219 were least popular treats.  
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880 220 Significant differences were observed across the adult groups. For instance, money was  
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882 221 particularly favoured by grandparents (36.2%). In contrast to other groups, education  
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884 222 practitioners had less treats for children. Fruit (27.4%) and stickers/stationary (27.4%) were  
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886 223 among their top treats; however, unhealthy choices such as sweets (37.6%), chocolates (23.9%)  
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888 224 and time on screens (23.1%) were equally favoured by them.  
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225 Table 5 Items participants used as treats for children (*n* 1039)

Item	Total ( <i>n</i> 1039)		Parents ( <i>n</i> 651)			Grandparents ( <i>n</i> 210)			Childminders ( <i>n</i> 61)			Education practitioners ( <i>n</i> 117)			Group differences‡		
	Used as treat*		Most used†		Used as treat*		Most used†		Used as treat*		Most used†		Used as treat*			Most used†	
	%	Top 10	%	Top 10	%	Top 10	%	Top 10	%	Top 10	%	Top 10	%	Top 10		%	Top 10
Sweets	45.2	1	13.7	48.4	2	13.4	37.1	3	10.5	54.1	1	14.8	37.6	1	20.5	<i>P</i> <0.01	
Chocolates	45.1	2	13.0	49.5	1	13.8	42.4	1	12.9	49.2	2	14.8	23.9	4	7.7	<i>P</i> <0.001	
Ice-cream, ice-lollies	38.8	3	7.0	44.4	3	7.8	38.6	2	7.6	32.8	3	3.3	11.1	10	3.4	<i>P</i> <0.001	
Time on iPad/screens/TV/DVD/play station, etc.	31.2	4	8.5	35.8	5	9.5	23.3		2.9	24.6	4	13.1	23.1	5	10.3	<i>P</i> <0.001	
Crisps	31.1	5	5.0	36.1	4	6.6	25.2	8	3.3	23.0	7	0.0	17.9	7	1.7	<i>P</i> <0.001	
Takeaways, pizza, burgers, fast foods	29.3	6	6.9	34.9	6	7.1	24.3	10	8.6	21.3	10	6.6	11.1		3.4	<i>P</i> <0.001	
Biscuits	29.0	7	7.5	31.6	7	7.1	32.4	5	11.0	24.6	5	9.8	10.3		2.6	<i>P</i> <0.001	
Fruit (e.g. apples, bananas, oranges)	27.2	8	7.4	28.0	10	6.9	26.2	7	8.1	23.0	6	11.5	27.4	2	6.8		
Toys and gifts	26.5	9	3.3	28.9	8	3.5	31.9	6	4.3	13.1		0.0	10.3		1.7	<i>P</i> <0.001	
Trips out (e.g. beach, park, match, soft play)	25.9	10	3.6	27.8		4.0	24.8	9	3.8	21.3	9	1.6	19.7	6	1.7		
Popcorn	21.7		1.9	28.1	9	2.8	12.4		1.0	9.8		0.0	8.5		0.0	<i>P</i> <0.001	
Cakes, pastries, buns, apple tart	20.6		1.6	22.7		1.4	20.5		1.9	8.2		0.0	15.4	9	3.4	<i>P</i> <0.05	
Money	20.5		5.8	20.0		4.0	36.2	4	15.2	6.6		1.6	2.6		0.9	<i>P</i> <0.001	
Soft/fizzy drinks	18.2		2.3	19.5		2.5	17.1		1.0	23.0	8	6.6	10.3		1.7		
Fruit juices	17.7		2.2	17.8		2.5	17.6		0.5	18.0		3.3	17.1	8	3.4		

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Stickers, stationary	16.4	2.4	15.4	0.9	13.8	1.4	14.8	1.6	27.4	3	12.8	<i>P</i> <0.01
Chips	15.0	0.8	18.0	1.1	12.9	0.0	9.8	0.0	5.1		0.9	<i>P</i> <0.01
Berries	11.9	0.8	13.7	0.9	11.0	0.5	11.5	1.6	4.3		0.0	<i>P</i> <0.05
Fidget spinners, dabbling, collectable cards, Jojo Bows, etc.	10.3	0.4	12.9	0.5	7.6	0.5	1.6	0.0	5.1		0.0	<i>P</i> <0.01
Dried fruit	9.9	1.0	10.1	1.4	8.6	0.0	16.4	1.6	7.7		0.0	
Crackers, bread sticks	9.1	1.2	10.0	0.8	11.0	2.9	4.9	1.6	3.4		0.0	
Cheese	6.0	0.4	7.1	0.3	5.7	0.5	4.9	1.6	0.9		0.0	
Homework pass	3.9	0.5	3.4	0.0	1.9	0.0	3.3	0.0	11.1		4.3	<i>P</i> <0.001
<b>Most used treat§</b>												
Unhealthy foods		57.8		60.7		56.7		55.7			45.3	<i>P</i> <0.05
Healthy foods		14.8		15.5		13.3		21.3			10.3	
Non-food treats		24.4		22.4		28.1		18.0			31.6	

226 \*The proportion of the participants (within the specified participant group) who selected a given item as a treat for the child(ren) they were caring for. The ‘Top  
227 10’ ranks were based on the percentages.

228 †The proportion of the participants (within the specified participant group) who selected a given item as the most used treat for the child(ren) they were caring  
229 for. Participants were instructed to select only one item as the ‘most used treat’.

230 ‡Levels of significance from Pearson  $\chi^2$  tests of differences between four groups (i.e. parents, grandparents, child minders and education practitioners) in terms  
231 of the proportion of participants who selected a given item as a treat for children.

232 §To offer top line results regarding participants’ most used treats. The items were divided into three categories: unhealthy foods (sweets, chocolates, ice-  
233 cream/ice-lollies, crisps, takeaways etc., biscuits, popcorn, cakes etc., soft/fizzy drinks, and chips); healthy foods (fruit, popcorn, fruit juices, berries, dried fruit,  
234 crackers/bread sticks, and cheese); and non-food treats (time on digital devices, toys/gifts, trips out, money, stickers/stationary, fidget spinners etc., and  
235 homework pass). The division between unhealthy foods and healthy foods was based on food pyramid (The Irish Department of Health, 2016).

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237 **DISCUSSION**

238 **Significance of the results and implications**

239 The current research is the first quantitative study investigating treat-food definitions and  
240 practices of adults who care for, educate or coach children. This study can assist the development  
241 of target strategies to reduce the use of unhealthy foods.

242 Participants in our study primarily defined a treat as ‘something nice’, ‘deserved/earned’ and  
243 ‘something special’ – this is in contrast with two Australian studies (Pescud & Pettigrew, 2014;  
244 Petrunoff et al., 2014) showing that parents defined a treat as something infrequent, unhealthy,  
245 rare or expensive. Low-frequency or rarity was not essential to our participants’ definition of a  
246 treat, possibly because of cultural differences and the wide accessibility to unhealthy foods in the  
247 modern age.

248 ‘Reward for good behaviour’ was the participants’ primary motivation for treat food provision,  
249 in accordance with previous knowledge that the use of foods for behavioural control is a  
250 common practice among parents and teachers (Blaine et al., 2015; Kubik, Lytle, Hannan, Story,  
251 & Perry, 2002; Raaijmakers, Gevers, Teuscher, Kremers, & van Assema, 2014). Research has  
252 shown that using unhealthy foods as a reward or an emotion control instrument may reinforce  
253 children’s preference of those foods, and may increase the risk of dietary disorders, such as binge  
254 eating, emotional eating and dietary restraint (Benton, 2004; Farrow, Haycraft, & Blissett, 2015;  
255 Puhl & Schwartz, 2003). It was interesting to see ‘child asking’ ranked equally high as ‘reward’  
256 as a trigger for treat foods provision, highlighting the importance of empowering adults to  
257 navigate such requests.

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1053 258 According to our study, treat foods had become a norm at celebrations: 90% of adults would  
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1055 259 provide treat foods at celebrations, and 52% always did so. One may argue that Christmas,  
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1058 260 Halloween and the birthday only happen once a year. However, children might also receive treat  
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1060 261 foods at classroom celebrations, classmates' birthday parties, family events, graduations, fund  
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1062 262 raising, etc. The totality of these celebrations in a given year could be quite substantial for many  
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1064 263 children (Caparosa et al., 2014; Isoldi, Dalton, Rodriguez, & Nestle, 2012; Porter & Grills, 2013;  
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1066 264 Schwartz, Chen, & Brownell, 2003), therefore their overall significance on dietary behaviour  
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1068 265 should be recognised.

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1071 266 The current study also revealed adults' choice of treats for children: they were dominated by  
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1073 267 unhealthy foods, with sweets and chocolates as the most popular options. ~~Unhealthy foods have a~~  
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1075 268 ~~cost advantage and usually satisfy children; however, they can be reduced or replaced in some~~  
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1077 269 ~~contexts. For instance, an experimental study showed that children were just as likely to choose a~~  
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1079 270 ~~cheap toy as sweets at Halloween (Schwartz et al., 2003). Unhealthy foods are usually widely~~  
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1081 271 ~~available and cheap, and generate hedonic experience (van den Bos & de Ridder, 2006).~~  
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1083 272 ~~Packaged unhealthy foods, takeaways, and time on screens have the advantage of convenience.~~  
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1085 273 ~~These factors partly explain their popularity as choices of treats, especially for those parents who~~  
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1087 274 ~~were facingare challenged with low income and/or time scarcity in their daily practice (Pescud &~~  
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1089 275 ~~Pettigrew, 2014). Certain non-food alternatives, such as trips out, gifts and toys could possibly~~  
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1091 276 ~~involve a higher time or financial cost, and a risk of being failed-failing to meet children's~~  
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1093 277 ~~expectations if the provision of unhealthy food treats has become habitual; thus they were less~~  
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1095 278 ~~popular than food treats according to our data. The promotion of non-food treats should be~~  
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1097 279 ~~carefully planned and tested. To our knowledge, the only study experimenting non-food~~  
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1101 280 ~~alternatives to sweets was carried out fifteen-years ago, and it focused on a particular social~~  
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1109 281 event – Halloween (Schwartz et al., 2003). More research should be conducted to examine the  
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1111 282 feasibility, facilitators and barriers of all those non-food treats suggested by health professionals  
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1114 283 (Sharry, 2014; Eliassen, 2011).  
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1116 284 By including a diverse range of adults, the present study compared the patterns of treat giving  
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1118 285 among different groups. Parents, grandparents and childminders were comparable on all  
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1120 286 measurements. Between these three groups, parents had a higher use of structured weekly and  
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1122 287 daily treats, and overall provided treats more frequently. Part of the reasons behind this  
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1124 288 phenomenon is parents usually see their children more frequently than other adults, such as  
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1126 289 grandparents and sports coaches. This group should be a key target group for intervention.  
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1129 290 Parents often complain that grandparents are over-indulgent, and give too many sweets and high  
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1131 291 energy-foods to children (Curtis et al., 2010; Knight et al., 2014). However, according to our  
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1133 292 study, grandparents were not more likely than parents to provide food treats in many contexts,  
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1135 293 neither did they have a higher tendency to choose unhealthy items as treats. The frequency these  
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1137 294 grandparents met their grandchildren, and the quantity of their treat giving should be taken into  
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1139 295 account to make a reliable judgment on grandparents’ use of food treats (as opposed to parents).  
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1142 296 The third group, child minders, ~~namely those who provide private childcare service and not~~  
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1144 297 ~~employed by a company or centre,~~ are barely reported in the literature. Our study revealed that  
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1146 298 this group demonstrated a substantial use of treat foods as a reward, and they were also more  
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1148 299 likely than parents and grandparents to use treat foods in some other contexts. On the IOI,  
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1150 300 informal childminding arrangements with childminders is a grey area: there is little regulation;  
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1152 301 most childminders are not registered with the Health Service Executive, and haven’t gained any  
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1154 302 formal training including nutrition education (O’Hagan, 2012). A very recent survey showed that  
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1156 303 30% of families in Ireland opted for childminders (Congress, 2016), thus this group should be  
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1165 304 included in children’s health intervention initiatives. The current study indicated that education  
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1167 305 practitioners provided much fewer treats than other groups. Healthier choices such as fruits,  
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1169 306 sticker and stationary were among their most used treats. This is expected because many schools  
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1172 307 and childcare centres on IOI (especially at primary level), have a formal healthy-eating policy  
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1174 308 and curriculum in place. However, there is still room to improve as 71.8% of education  
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1176 309 practitioners provided treat foods at celebrations, and sweets were their first treat choice. Calorie  
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1178 310 intake during classroom celebrations and rewards could contribute 20-35% of students’ daily  
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1180 311 estimated energy needs according to some observational studies (Caparosa et al., 2014; Isoldi et  
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1182 312 al., 2012).

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1185 313 It is worth mentioning that the study was carried out shortly after the Irish Department of Health  
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1187 314 published a revised Food Pyramid: the ‘top shelf’ (i.e. foods and drinks high in fat, sugar and salt)  
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1189 315 was separated from lower shelves (The Irish Department of Health, 2016). In line with this  
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1191 316 change, the ‘Health Promoting School’ program has encouraged schools to remove Treat Day  
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1193 317 Friday from their policies (Walsh, 2017). With this background in mind, the current study  
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1195 318 provided baseline data to set targets and to monitor progress for improvement.

### 1198 319 **Strengths, limitations and future research**

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1201 320 The current study included a diverse range of adults who had responsibilities in child rearing,  
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1203 321 providing a comprehensive picture of their perceived essence of treats, and their treat food  
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1205 322 behaviour. The questionnaire was well established ~~upon~~from the literature and a prior focus  
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1207 323 group study, and it was carefully tested. The sample had good geographical spread and  
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1209 324 resembled the characteristics of the research population. One limitation of this study is, in  
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1211 325 participant recruitment, for teachers, sports coaches, pre-school carers and child minders, there  
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1213 326 was no screening criteria regarding their frequencies of caring for children. There is a chance that  
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327 some ad-hoc teachers or coaches might have been included in the sample, and ‘diluted’ the treat  
328 giving practice we observed from this adult group. Another limitation ~~of this study~~ is this  
329 ~~survey~~ it is was based on self-reported responses to a face-to-face interview and it is possible that  
330 biases may have been introduced through memory errors and the natural tendency of under-  
331 reporting certain behaviours that are socially undesirable. A previous qualitative study shows  
332 that many parents give children treat foods on a daily basis (Pescud & Pettigrew, 2014). In our  
333 study, participants reported much lower frequencies. It is likely some participants under-reported  
334 their behaviour. The findings should be triangulated with diaries and observation studies to  
335 provide a more accurate estimation of adults’ treat giving. Future research should also be  
336 conducted to examine if the provision of treat foods varies across different social-demographical  
337 segments. Another interesting area to explore is children’s own perspectives on treats, for  
338 instance, do they define treats the same way as parents? What type of treats (other than unhealthy  
339 foods) they would like to receive?

340 **Conclusions**

341 In the current food environment, it would be naive to think that the use of food as a treat can be  
342 avoided altogether. However, there is merit in considering how their use could be recalibrated.  
343 Greater awareness needs to be created on the fact that adults in various contexts ‘treat’ children  
344 with unhealthy food and that it is no longer a ‘treat’ when this behaviour has become normalised  
345 into their daily or weekly routine. Strategies should be developed to support adults to reduce  
346 their current use of unhealthy foods as treats, taking into account the subtle differences between  
347 different types of adults.

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