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1   Title page

2   **Secondary school pupils' food choices around schools in a London borough: walls of**

3   **crisps and cheap food**

4

Secondary school pupils' food choices around schools in a London borough: Fast food and walls of crisps

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8

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33   **Keywords**

34   Fast food, cold food takeaway, food clusters, stay-on-site policies, food

35   choice, school foodshed.

Abstract

52 **Abstract**
53 The objective was to observe and document food behaviours of secondary
54 school pupils from schools in a London borough. The research design
55 combined a number of methods which included geographic information
56 system (GIS) mapping of food outlets around three schools, systemised
57 observations of food purchasing in those outlets before, during and after
58 school, and focus groups conducted with pupils of those schools to gather their
59 views in respect to those food choices.

60 Results are summarised under the five 'A's of Access, Availability,
61 Affordability and Acceptability & Attitudes:

62 Access in that there were concentrations of food outlets around the schools.
63 The majority of pupil food purchases were from newsagents, small local shops
64 and supermarkets of chocolate, crisps (potato chips), fizzy drinks and energy
65 drinks. Availability of fast food and unhealthy options were a feature of the
66 streets surrounding the schools, with 200m the optimal distance pupils were
67 prepared to walk from and back to school at lunchtime.

68 Affordability was ensured by the use of a consumer mentality and pupils
69 sought out value for money offers; group purchasing of 'two for one' type
70 offers encouraged this trend. Pupils reported healthy items on sale in school as
71 expensive, and also that food was often sold in smaller portion sizes than that
72 available from external food outlets.

73 Acceptability and Attitudes, in that school food was not seen as 'cool,'
74 queuing for school food was not acceptable but queuing for food from
75 takeaways was not viewed negatively; for younger pupils energy drinks were
76 'cool'.

77 In conclusion, pupils recognised that school food was healthier but provided
78 several reasons for not eating in school related to the five 'A's above.

79
80
81

3

Introduction

~~In previous work we explored the location of fast food outlets around secondary schools and the influence of food availability on food choice [1]. This paper further explored both location and food availability, adding to current knowledge from the perspective of secondary school pupils. The competitive food environment around schools and its links to child health, particularly weight, is an on-going discussion [2, 3]. The competitive food environment refers to any food or drink that can be accessed, purchased and consumed on the way to/from school or in school[i]. This can include energy or sugar sweetened drinks, crisps (potato chips), chocolate and sweets (referred to as cold food takeaway) and it can also include hot takeaway food [4, 5, 6]. Fast food has also been defined as burgers, chips/French fries, fried chicken and mass-produced pizza; we have used the extended description of both hot and cold food takeaway as a guide for this work [7, 8].~~

Work from the English National Obesity Health Observatory in 2012 displayed the relationship between density of fast food outlets and deprivation by local authority, and found a strong association, with more deprived areas having more fast food outlets per 100,000 population (Public Health Observatories, 2012) [9]. A report in the BMJ Burgoine et al (2014)[10] showed that exposure to takeaway food outlets was positively associated with consumption of takeaway food; the domains of '*home, at work, and along commuting routes*' combined was associated with marginally higher consumption of takeaway food, greater body mass index, and greater odds of obesity. The evidence clearly points to an effect of easy access and concentrations of fast food outlets on both food choice and outcomes such as increases in obesity. Forsyth et al (2012)[2] demonstrated that living near fast food restaurants has an effect on food choice, and this pattern of effect is further emphasised by work on deprived areas where the number of takeaways can be greater and access easier [3]. Concentrations of outlets in deprived or low-income areas reflect a complicated business model where operational and overhead costs are lower (Smith, 2006) [7]. At a community level the impact of concentrations of takeaway and fast food outlets are clear more chronic disease, poorer diets and increases in obesity(Caraher, Lloyd and Madelin, 2014; Forsyth et al 2012; Patterson, Risby & Chan, 2013; Winkler and Sinclair, 2008: Dunn, Mohr, Wilson. & Wittert, 2011; Ennis, Holt and Cheater, 2014; Smith, 2006; Schlosser and Wilson, 2006).[1-9]. Concentrations and use of these outlets around schools is a more contentious issue and can be dependent on school policies and the closeness of such outlets to the schools. [2, 10]. Whilst school pupils are unlikely to be consuming the majority of their calories from these outlets, there is emerging research which shows that the contribution of such outlets to calorie and sugar intake

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[i] They are competitive in that they are in competition with school food - purchase and consumption can divert pupils away from eating school food.

117 can be considerable (Forsyth et al 2012; Winkler and Sinclair, 2008; Ennis, Holt and Cheater,
118 2014; Burgoine et al 2014)[2, 4, 6, 10]. Schlosser and Wilson (2006)[8] talk about fast food being
119 essentially a '*youngster business*' with the primary focus on attracting young people. The area
120 around schools, often called the 'school fringe' or 'school foodshed', can be influenced by local
121 policy on fast food concentration and by school policies, which control access to the streets
122 surrounding schools at key times of the day (Caraher, Lloyd and Madelin, 2014; Burgoine et al
123 2014). [1, 10].

124

125 What the work on exposure to fast food outlets does not do is explore the mindset of pupils using
126 the food outlets or observe *how* the food outlets are used. Young people use food products and
127 brands to project a desired identity, to signal their belonging, reinforce friendship and
128 distinctiveness and to judge others (Adamson, Stead, McDermott and MacKintosh 2011;
129 Ludvigsen & Sharma, 2004). [11, 12]. They also access and purchase food to express identity and
130 reinforce friendship and distinctiveness and there is an assumption among young people that
131 food which is prohibited is better tasting (Glassner, 2007; Ludvigsen & Sharma, 2004) [12, 13].
132 Adamson [11] and colleagues noted that for young people and healthy food choices, making the
133 '*wrong'* social food choices when with their peers can expose them to ridicule and ostracism
134 (Adamson, Stead, McDermott and MacKintosh 2011). What has not been explored, to our
135 knowledge, are the views and behaviours of young people in situ. The issue of attitudes, locality
136 and exposure of secondary school pupils to takeaway outlets around schools is explored in this
137 article. The focus decision to focus on secondary post primary schools wais informed by the
138 perspective thatbased on the knowledge that secondary school pupils, compared to primary
139 school pupils, have more access to food outside of schools. This is due related to their spending
140 power and their ability to access food on the way to school, during the school day and after
141 school.

142

143 In previous work we explored the location of fast food outlets around secondary schools and the
144 influence of food availability on food choice (Caraher, Lloyd and Madelin, 2014) [14]. This paper
145 further explored both location and food availability, adding to current knowledge from the
146 perspective of secondary school pupils. The competitive food environment around schools and
147 its links to child health, particularly weight, is an on-going discussion (Forsyth, Wall, Larson,
148 Story& Neumark-Sztainer, 2012; Patterson, Risby & Chan, 2013). [15, 16]. The competitive food
149 environment refers to any food or drink that can be accessed, purchased and consumed on the
150 way to/from school or in school [ii]. This can include energy or sugar sweetened drinks, crisps
151 (potato chips), chocolate and sweets (referred to as cold food takeaway) and it can also include
152 hot takeaway food (Winkler and Sinclair, 2008: Dunn, Mohr, Wilson and Wittert, 2011; Ennis,
153 Holt and Cheater, 2014) [17, 18, 19]. Fast food has also been defined as burgers, chips/French fries,

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[ii] They are competitive in that they are in competition with school food - purchase and
consumption can divert pupils away from eating school food.

154 fried chicken and mass-produced pizza; we have used the extended description of both hot and
155 cold food takeaway as a guide for this work (Smith, 2006; Schlosser and Wilson, 2006) [20, 21].
156
157 The borough area in which this research took place is one of the 32 London boroughs. The
158 following figures have been rounded off to provide anonymity for the schools and the borough
159 where the research took place. . It has a population of 260,000 and a school-going population of
160 45,000, with 29,000 attending secondary schools. The annual public health report showed that
161 there was a proliferation of fast food outlets in the boroughs with the highest levels of
162 deprivation. Like a lot of London boroughs it has a mix of deprivation and areas of affluence. The
163 local public health report indicated that nearly half of the residents and 80% of the school pupils
164 come from Black and Minority Ethnic (BME) communities; 150 plus different languages are
165 spoken in the local schools. An estimated 22,000 (36%) children live in poverty in the borough;
166 36% of children aged 10-11 years old are also either overweight or obese. The area or borough
167 obesity average was 21% for Year 6 pupils (10-11 year olds) with the higher rates above
168 occurring in the deprived east of the borough. Neither local nor national data is collected within
169 secondary schools on the levels of obesity, with the National Child Measurement Programme
170 (NCMP) only operating in primary schools collecting data on pupils in Reception (aged 4-5 years
171 old) and Year 6 (aged 10-11 years old) (Public Health England 2015). [22] The local public health
172 report indicated that nearly half of the residents and 80% of the school pupils come from Black
173 and Minority Ethnic (BME) communities; 150 plus different languages are spoken in the local
174 schools.
175
176 **Methods**

177 Multi-methods were used in this research including mapping of food outlets, in-depth
178 observations of pupil behaviour and focus groups with pupils on their attitudes to fast food. The
179 latter perspective constitutes what is called the *emic* perspective which is the insider's view of
180 reality, while the observations and mapping elements constitute an *etic* or external social
181 scientific perspectives on reality (Williams and Vogt, 2011). [23].
182
183 The methods adopted were chosen to allow for collection of data on the multiple dimensions of
184 issues surrounding food availability and choice, but also to ensure the validity of such wide-
185 ranging results to the same subject -(known as the triangulation of data (Williams and Vogt,
186 2011; Szostak, 2012; Richards, 2005). [14, 15, 24]).
187
188 The objectives of the research were:
189   • To map the location of fast food outlets around secondary schools.
190   • To observe and document food behaviours of secondary school pupils on the streets
191   around the schools at three designated time points, morning, lunchtime and after school.

192   • To gather and explore the views of pupils.

193   • To assess the impact of lunchtime stay-on-site school policies.

194   The methods encompassed four approaches:

195   1. Geographic information system (GIS) mapping of local data to produce maps of food

196   outlets in the borough using 200m, 400m and 800m isochrones around schools relative

197   to indices of multiple deprivation. We also mapped the percentage of Year 6 (10-11 year

198   olds/last year of primary school) pupils who were obese. As noted above the data was

199   not available for secondary school pupils.

200   2. We used the information from the mapping to identify three schools for more detailed

201   mapping work around the schools. Criteria for selection included:

202   • Schools which had a clustering of fast food outlets.

203   • Higher than average levels of free school meal (FSM) entitlement

204   (https://www.gov.uk/apply-free-school-meals) as a proxy indicator for

205   deprivation.

206   • Evidence of high prevalence of obesity in the local area based.

207   3. Observation and recording of pupils' activity in food outlets around the three schools.

208   For this we used an observation sheet, along with a map, which were used at three time

209   points - before school, lunchtime and immediately after school (see appendix).

210   4. Focus groups conducted with pupils in each of the three schools, with one younger group

211   (Years 7-9, 11-14 year olds) and one older group (Years 10-11, 15-16 year olds).

212

213   The GIS mapping involved a number of iterative stages. The first stage involved the use of local

214   Environmental Health data on registered food outlets that were categorised as 'takeaway/fast

215   food', retail and other, then mapping them in relation to schools for the whole of the area. To

216   calculate the number of shops selling '*junk food',* a term used by the School Food Trust (2008) [20],

217   we used the numbers of registered food outlets which were categorised as takeaway,

218   grocery/mini market, supermarket, sandwiches/snacks/confectionery and newsagent, whilst

219   secondary schools were taken to be all state-funded mainstream secondary schools. This could

220   have potentially underestimated the number of 'junk food' outlets, as a number of food outlets

221   which sold alcohol (known as off-licences) may also have sold sweets and confectionary and

222   many operate in a similar fashion to grocery/mini markets; additionally some takeaway outlets

223   might have been classified as restaurants if they had seating, leading to potential further under-

224   counting. The concentration of 'junk food' outlets were in the east of the local authority area, so it

225   is likely that the concentration of all outlets were much higher in that part of the borough. This

226   data was then over-layered with the indicators of free school meals (FSMs), local obesity figures

227   for Year 6 pupils and a United Kingdom-wide deprivation indicator called the Index of Multiple

228   Deprivation (IMD) 2010 (data for all areas of England can be found at

229   www.gov.uk/government/collections/english-indices-of-deprivation). Data from the National

230   Child Measurement Programme (NCMP) shows that obesity prevalence among pupils in both

Reception and Year 6 (10-11 year olds) increases with increased socioeconomic deprivation (measured, for example, by the IMD 2010 score). Likewise the same data sets shows that obesity prevalence of the most deprived 10% of the general population is approximately twice that of the least deprived 10%. From these issues it emerged that schools in the east of the borough had higher levels of FSM entitlement, and were located in areas of deprivation and had more fast food outlets (FFOs) clustered around them. Three schools were identified for more detailed mapping, with outlets mapped within 200m, 400m and 800m of the school (these are called isochrones). The map in Figure 1 below shows the spread of FFOs (note 'takeaway/fast food', retail and other) around the selected schools and their proximity to schools, combined with local deprivation data.

The three schools were approached and provided with information concerning the research and permission was sought from head teachers to run focus groups, along with their approval to conduct observations around the schools. Having gained their approval we then distributed information letters and consent forms to all pupils identified as likely to take part in the focus groups. Pupils in exam classes were excluded. At this point we asked for information on pupil numbers, FSM allocation, lunchtime stay-on-site policy and copies of any documentation on school food policy..

Observation and recording of pupils' purchasing activity in food outlets around each school occurred at three time points; before/after school and at lunchtime. Two groups of paired observers (MSc students with subject knowledge) were used to observe the pupil purchasing activity around each school, one group for each school; each school observed once. Paired observers ensured inter-coder reliability, with consistency in observations and reporting. Observers were provided with pictures of each school's pupil uniform to allow accurate identification of the school each pupil attended, alongside a structured observation data sheet (see appendix). Observers recorded the location of food outlets on the main streets around schools via a hand-drawn map and a paper copy of a Google map, and then recorded the numbers of pupils observed and the type of food outlet they entered. The combined data demonstrated how far pupils walked from the school premises to their preferred food outlet, and also provided an accurate number of FFOs around the schools.

Descriptions of special meal offers in food outlets were also noted along with prices and any distinguishing features such as specific targeting to pupils. All data was entered into NVivo (2014) [25] and analysed along with the data from the focus group interviews; the data was not treated separately but used as a whole body of evidence e.g. for each map a verbal description was entered, along with the map and the notes that the observers recorded. The maps and observations of the shops pupils used were also compared to the GIS data.

In each school we ran two focus groups, one with Year 7-9 pupils (11-14 year olds) and one with Year 10-11 pupils (14-16 year olds). In total we interviewed 36 younger and 36 older pupils. All

271 pupils were self-selected and permission from parents/guardians to speak to the pupils was
272 obtained. All focus groups lasted 50 minutes (during class time). The age range was chosen in
273 order to gather data about differing health-related behaviours in different age groups. All of the
274 groups were of mixed ethnicity with representation from more than ten ethnic backgrounds
275 including Caribbean, Turkish, Somalian, Bangladeshi, Saudi Arabian, Polish, Brazilian, White
276 British and mixed race. The groups were overall equally split between girls and boys.
277
278 The focus group sessions were split into two activities, mapping and discussion. For the first
279 activity each group was asked to put crosses on a map to indicate the location of shops they or
280 their friends purchased food. They were then asked which food outlets they used on the way to
281 school, at lunchtime and on the way home. This allowed the cross-check with the GIS mapping
282 and the observational data.
283 The topic guide for the focus group discussion included the following:
284   • Food-related activity at three points across the school day (before school, lunchtime
285   and after school).
286   • The types of food purchased before school and on the way home.
287   • What food could be taken into school and eaten on the school premises.
288   • Their experiences and stories of eating either a school-purchased or packed-lunch
289   (pre-prepared cold lunch) in the school grounds.
290   • The purchase of food and drink outside school at lunchtime.
291   • Attitudes to food, healthy eating and takeaway foods.
292   • The amount of money spent on purchasing food inside and outside of school.
293
294 The responses were recorded, transcribed and analysed using the data analysis software package
295 NVivo, through which themes were drawn out (Richards, 2005; NVivo, 2014). [26, 17]. There was
296 an iterative relationship between the in-depth observational data and the focus groups. The focus
297 groups helped shed light on the pupils' reasons for using certain types of food outlets and their
298 food choices. The lead author (MC) undertook the initial analysis, which was then agreed with SL
299 before being circulated to the rest of the group for further comments and refinement. Both the
300 maps and discursive accounts from the focus groups were used to check the data from the GIS
301 and observational mapping processes. Techniques associated with thematic content analysis and
302 grounded theory were used to analyse the data within this framework first round analysis
303 involved the use of open/in-vivo coding based on the respondents' own words; emerging themes
304 and make interconnections across accounts from the focus groups including the maps produced
305 by students in the focus groups and the observational study notes and observations of
306 purchasing behaviour. Second round analyses focused on more detailed coding to interpret the
307 meaning of, and relationships between, the initial themes and patterns between schools. We
308 found that the data could be incorporated within the 5As of **A**ccessibility, **A**vailability,
309 **A**ffordability and **A**cceptability and **A**ttitude, which can be applied to the choices pupils make.

310 The content analysis of responses and observations mapped well onto these five key headings. It
311 is important to note that these were not predetermined headings but emerged as useful ways of
312 summarising the analysis.
313
314 The final structure of the article involved incorporating the findings from the various aspects into
315 a coherent structure which allowed the data from the various approaches to be combined so that
316 there was an interaction and a sense of different perspectives (etic and emic), which could
317 contribute to a complete picture of pupil behaviour.
318
319 Ethical approval was obtained from the School Research Ethics Committee for both the focus
320 groups and observational data collection processes. As part of this approval permission was
321 sought and granted from parents of all those taking part in the focus groups as well as the
322 permission of head teachers. We have removed identifying details from the borough and the
323 schools to preserve anonymity, as this was a condition of the ethical approval from the
324 University.
325
326 **Findings**

327 Themes from the data emerged under the five headings of Access, Availability, Affordability and
328 Acceptability and Attitudes, these which categories have been used in previous research on food
329 deserts to describe the issues from access through to consumption (Caraher, Lloyd and Madelin,
330 2014; Handy and Niemeier, 1997). [1, 16, 17]. These themes are addressed below.
331

332 *Access – school stay-on-site policies*
333 The observed schools provided detailed background information on pupil numbers, stay-on-site
334 policies and the percentage of pupils eligible for free school meals; used in the UK as a measure of
335 disadvantage and poverty (Gorard, 2012)[27]. Information is presented in Table 1.
336

337 **Table 1: School Food information**

School Food	School A	School B	School C
School pupil numbers	1050	1200	1250
Free School Meal (FSM) ** allocation	39% of pupils eligible	60% of pupils eligible	50% of pupils eligible
Stay-on-site policy	Year 7-10 closed gate Year 11 open gate	Year 7-9 closed gate Year 10 – 11 open gate	Year 7-11 closed gate (entire school)

338 *the London average for FSM entitlement is 22% and the UK average 13% (London's Poverty Profile.) [28].
339 **FSM is used as a proxy indicator of deprivation in an area
340
341 All three schools reported stay-on-site policies operating at lunchtime for Years 7-9 (11-14 year
342 olds) and whilst School C did not permit any pupil to leave the school grounds, Schools A and B
343 gave varying permissions for older pupils. Our observations of the schools confirmed that pupils
344 from School C did not leave the premises during lunchtime. Older pupils from School B did leave
345 the premises but many of the fast food outlets were not within easy walking distance and the

346 pupils reported from the focus groups *'not being bothered to walk to a fast food outlet'* if it was
347 too far away from the school gates. Some pupils reported staying on-site at lunchtime for that
348 reason. In contrast older pupils from School A left the premises and were observed using fast
349 food outlets; particularly takeaways in large numbers. Analysis of the pupils accounts and
350 mapping from the focus groups combined with the observational mapping of their activities
351 showed that 300m was the maximum distance they could reasonably walk to and from school at
352 lunchtime, our observations found that 200m was a more favoured distance, which allowed
353 pupils sufficient time to walk, socially engage, queue for food, eat it and walk back to school. This
354 distance was confirmed by combining observational data with feedback from pupils in the focus
355 groups and the formal GIS mapping data. 400m Four Hundred metres is the distance used by
356 industry as the maximum people will walk (estimated at 15 minutes with shopping) to access
357 food; this is without the limitation of a lunch hour (Handy and Niemeier, 1997)[29].
358

359 There was lunchtime buying activity around the two schools that operated more lax stay-on-site
360 policies and where takeaways and other shops were close to the school gates. There was less
361 buying activity around the school where shops were at least 300m away. The focus groups
362 backed these observations. Pupils in one of the focus groups said:

363   *Because it's closer to the school and students really can't be bothered to walk that far to get*
364   *food.*
365   *Focus group leader: Right so it is quite close. If there was something else close do you think*
366   *you would go there?*
367   *Yeah Sainsbury's* [a national supermarket chain] *or the corner shop.*
368

369 In the focus group sessions, some younger pupils reported asking older pupils to purchase food
370 for them outside the school, and explained that older pupils '*tax*' younger pupils when they buy
371 food by eating a proportion of the food or charging a price above the food purchase price. The
372 food was then not perceived as good value for money. Unlike other research we found little
373 widespread evidence of a 'black market' in junk food [30], as the 'tax' levied by the older pupils
374 made it a less attractive option (Fletcher, Jamal, Fitzgerald-Yau and Bonell, 2013).
375

376 ***Availability – concentrations of outlets and links to deprivation***
377 In the whole of the borough there were 518 fast food outlets, which comprised of 183 takeaway
378 outlets and 335 other retail food outlets e.g. grocery stores, supermarkets and newsagents. Using
379 the methodology from the School Food Trust this provided a ratio of 39.8 outlets per school;
380 higher than the ratio of 38.6 for the 10 *worst* English local authorities and the average 25 outlets
381 per school. It is in excess of the London ratio of 36.66 outlets per school, which the observed
382 borough was part ofincluded the borough but which provided no breakdown at the borough level
383 (School Food Trust, 2008) [31]. Figure 1 shows how the outlets were clustered around the schools.
384

385 Figure 1: Selected secondary schools showing fast food concentrations (stylised map to remove
386 identifying features).

Indices of Multiple Deprivation 2010
Rank of IMD

Selected Secondary
School

Secondary Schools

Fast Food Establishents

200m secondary
school buffer

400 m secondary
school buffer

800 m secondary
school buffer

Indices of deprivation 2010
IMD rank

Amongst 5% most deprived SOAs in England
5-10% most deprived
10-20% most deprived
20% + most deprived
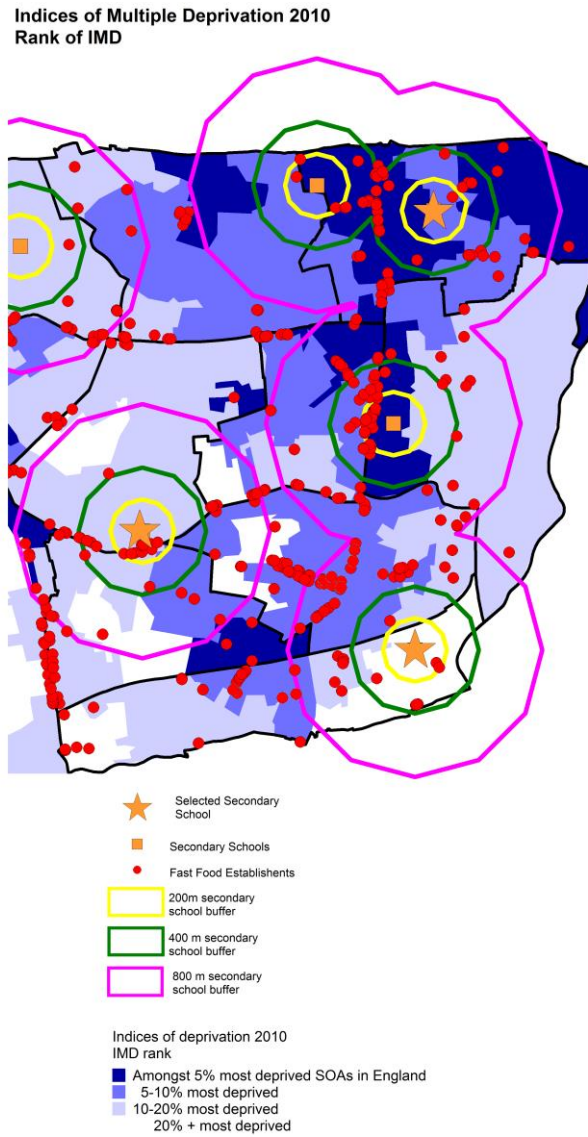
387
388
389 The data reflects similar findings in other areas of the UK where a relationship between
390 deprivation, fast food outlets and obesity has been found. The fast food outlets tend to be located
391 in areas of higher deprivation as shown by Figure 1 above, which details the location of schools
392 and fast food outlets overlaid on a map of Super Output Areas (SOAs), coloured according to the
393 national ranking of the Indices of Multiple Deprivation 2010 (IMD).
394
395 Mapping and observations around the three schools showed several food outlets to be within
396 300m of the school gates. School A had 3 outlets within 200m and an additional 15 within 400m;

397 School B had 2 outlets within 200m and an additional 3 within 400m, finally School C had 7

398 outlets within 200m and an additional 5 within 400m. Discrepancies between the formal GIS

399 mapping and observations can be accounted for by local authority databases not being up-to-

400 date: some outlets selling food as well as a range of other goods such as 'bargain' shops

401 (commonly called 99p or £1 shops, due to their offer of a variety of goods at a reduced price)

402 were not registered as food premises.

403

404 ***Affordability – consumer mindset and bargains***

405 An issue that arose across all the focus groups was that those interviewed operated within a

406 framework of a consumer with choice. In this respect school food, for those who paid for it, was

407 viewed as poor value when they could have a meal from nearby takeaways for half the price.

408 Choice and convenience was exercised in a number of ways:

409 • Skipping breakfast to buy food on the way to school, without having to queue or go to

410 the school breakfast club.

411 • Skipping lunch at lunchtime, to save money for after school, which provided more time

412 to engage with peers.

413

414 The following responses from a Year 7-9 focus group displayed some of the concerns with price,

415 quantity and value:

416 *Focus Group Leader: Can I ask, how much are the burgers at XXX?*

417 *Two for £2.*

418 *And chips.*

419 *Focus Group Leader: How much are the chicken and chips?*

420 *Sometimes £1.50.*

421 *Or £1.20.*

422 A similar response was received from another school's Year 7-9 focus group:

423 *A kebab shop, XXX they do meat and chips at lunch for us for £1.50. On a normal day it would*

424 *be £3.*

425 *But they reduce it for us.*

426 This was the school with the fully operational stay-on-site policy, so this special offer was for

427 after school.

428

429 As consumers, value mattered to the pupils and another way this was judged was by amount and

430 size of portions. One Year 10-11 focus group participant said of food available from nearby

431 takeaways '*they have these massive cookies and they're 50p so I like that*'. Another student said

432 when buying bags of sweets that the supermarket offered better value and that '*I usually buy the*

433 *big ones in Tesco* [a national supermarket chain].... *so we pay together, 25p each*'. This was of

434 course related to the amount of money they had available and various stories emerged in the

435 focus groups; many pupils reported being given a specific food allowance for meals alongside a

436 more general pocket money allowance. It seemed to be the norm that pupils received from
437 parents about £2/day for meals and between £10 and £12/week for general pocket money. The
438 following extract from a focus group with younger pupils illustrates this:
439   *Well my dad gives me and my brother both money, normally it's £2 a day sometimes he gives*
440   *us £5 to share, sometimes £10 to use for two days.*
441   *Well I'm free school meals but my Dad normally gives me like £10 a week just as...*
442   *I usually have £5 or £10 a day.*
443   *I don't really get money on week days but every Saturday I get like £10.*
444   *Like on Monday in the morning I usually put £10 on my account and then like somewhere in*
445   *the week I'll bring like an extra £2 to get something.*
446   *Right so about £12 a week maybe, something like that.*
447 In another group in another school one pupil said '*the less I spend on food the more I got'*. Some
448 reported buying food bargains so they could add their food allowance to their general one.
449
450 All of this was usually bounded by knowledge that such options were not healthy, which was a
451 feature of feedback in the focus groups. One Year 10-11 focus group talked about the changes to
452 school food since the introduction of the school nutrition standards as resulting in less value:
453   *And the drinks were bigger before.*
454   *They're like that much.* [Indicating with their fingers how small the portion is].
455   *A little cone.*
456   *Even the water bottles, they changed it. They now made it smaller.*
457   *They made the water bottles were 500ml now they're like 330ml and they're 60p so it's*
458   *cheaper in like a corner shop. So the school's ripping us off. They're taking advantage of us.*
459   *Cos they know that we have to buy it from them.*
460
461 A key aspect of how many of the pupils operated as consumers was their concern with special
462 offers. Meal deals and some of the '*buy two for one'* offers were targeted specifically at pupils.
463 This encouraged some pupils to buy in groups, as well as reinforcing the consumer mindset of
464 'value for money'. The buying of two for one drinks and three packets of crisps (potato chips) for
465 £1 encouraged pupils to buy and share. One observer commenting on the inside of a newsagent
466 shop which offered various crisps as a 'three packets for £1' offer, with crisp boxes stacked one
467 on top of another and going from floor to ceiling, recorded in her notes as '*truly a wall of crisps'*.
468 There was also some indication of smaller portions being targeted at pupils as in the advertising
469 offer of a Turkish pizza (lahmachun) for £1.50 or 'chips and meat for £2'.
470
471 ***Attitudes and Acceptability - pupil's purchasing behaviours***
472 *Purchasing before school.*
473 Observations around the three schools found that there were purchasing activities in the
474 morning around all schools, and less than anticipated purchasing activity during the lunch hour
475 period, except at the school with the most relaxed stay-on-site policy. After school there was

476 more extensive purchasing activity on the streets around the schools. Across all three time
477 periods but especially the lunch and after-school periods we observed that pupils tended to shop
478 in groups, some of which was in relation to buying and sharing meal deals, eg 'two for one' offers.
479 This behaviour links to the bargain seeking mindset already discussed. Observations of
480 individual time periods are discussed below in more detail. The majority of the activity was 'cold
481 food' from shops; few takeaways were open in the early morning although there was some
482 activity around restaurants and cafés by a small number of pupils. Observers noted that the
483 purchases appeared to be a substitute for breakfast in the form of rolls, muffins and sausage rolls,
484 which was supported in the focus groups. Pupils provided reasons for the purchases and our
485 analysis categorized them under three headings, 1) to substitute for breakfast, 2) to have some
486 food for later in the morning and 3) to buy lunch. A key feature of the morning purchases was the
487 amount of chocolate, crisps (potato chips), carbonated soft drinks and sport or energy drinks
488 purchased. Observations highlighted that apart from the purchases from the café/restaurant, the
489 majority of purchases were in groups, ranging from pairs to larger groups of eight to ten pupils.
490
491 Two points of interest arise. One 'bargain' shop (a so-called '*Pound shop*' selling household items)
492 sold energy drinks, no other drinks or food, and had a '*three energy drinks for £1*' offer. The shop
493 was very popular with pupils. Other multiple offers such as the three packets of crisps for £1
494 deal, already described above, were used by pupils to spread cost and share the goods. Such
495 offers were available throughout the day. Table 2 and Figure 2, below contain examples of the
496 notes taken during the morning observations.
497
498 **Table 2: Observations of food purchasing before school.**

Outlet	School A		School B		School C	
	Nos pupils observed	**Type of food / drink**	**Nos pupils Observed**	**Type of food / drink**	**Nos pupils Observed**	**Type of food / drink**
Restaurant/ Café/	9	Rolls Muffins/cakes	52	0	0	Rolls, sausage baguettes Muffins
Newsagent/ local super-market	140	Bags of Crisps Energy drinks and bags of sweets, crisps (potato chips) and energy drinks	0	Energy drinks sweets (large bag)	55	Sweets, lace-sweets and crisps (potato chips)

499
500 **Figure 2 Notes from the morning observation of purchasing behaviours**

15

> **School A**: Early in the morning pupils arrived by bus and by foot. They tended to use the shops located near the school, although some of the older pupils used the café. The vast majority of pupils used the XXX* Food Centre, the XXX Food Centre, XXX Supermarket, the Pound plus store and the Sainsbury Local all of which were within 200m of the school. Pupils mostly bought snacks such as crisps, soft/sports drink, and chocolate bars. Two of the premises used were off-licenses and so weren't included in the number as food outlets in our original count. There were two points of interest. The Pound Plus shop only sold energy drinks, this shop was very popular with pupils. The newsagents had a created a 'wall' of crisp boxes in the shop, bags of crisps were on offer 3 for a £1.
>
> **School B:** Early in the morning the vast majority of pupils arrived via the overland tube or bus stops to the north of the school on XXX Road. XXX was the only shop which was used, which is located outside the 200 metre zone around the school. Pupils were observed purchasing energy drinks and sweets, the energy drink section of the shop was restocked several times during the observation period; the shop also had special offers on sweets. Pupils could buy a large bag of sweets for £1. The numbers of pupils purchasing were less than at School A the possible reason that the shop is located 300m from the school. The walk from shop XXX to the school takes approximately five minutes and pupils generally made the walk in groups.
>
> **School C** Most pupils arrived by bus or on foot. The majority of food was purchased from newsagents and supermarkets but many of the pupils didn't make any purchases at all. Those who did buy food bought cans of drinks, crisps and 'laces' [liquorice strips]. There didn't seem to be any particular pattern of purchasing and less pupils purchased food going to School C than they did at School B, this may be due to the majority of shops being sited more than 200m from the school. As was observed outside the other schools pupils tended to be in groups of two or more.

501   * names of shops have been removed to avoid identification of the area and schools.
502

503   Crisps (potato chips) chocolate and drinks including energy/sport drinks were reported as the
504   most common purchases by pupils in the focus groups. Younger pupils reported buying more
505   energy drinks than older pupils, which were often a less expensive brand (e.g. Boost) than a
506   major brand such as Red Bull. Some of the reasons provided in the focus groups for the purchase
507   of energy or sport drinks included:

508   - '*To gain energy'*.
509   - To '*stop falling asleep'* in the late morning/early afternoon.
510   - As a brand image/to be '*part of the gang*'.

511   At one school pupils reported that energy drinks were confiscated if discovered, so those
512   purchased were consumed on the way to school. The other two schools operated a ban on the
513   consumption and outward display of energy drinks.
514
515   *Lunchtime purchasing.*

516   **Table 3: Observations of food purchasing outside the school during lunchtime**

Outlet	School A		School B		School C	
	Nos. pupils Observed	Type of food / drink	Nos. pupils observed	Type of food / drink	Nos. pupils Observed	Type of food / drink
Takeaways	80	Chicken and chips, Burger and chips, chips	30	Special offers on meat and pizzas	0	0
Restaurant cafe	55	Snacks and crisps	16		0	0

16

Newsagent/ local super-market			28	Energy drinks, crisps	0	0

What can be seen is the effect of a closed gate policy in School C with no observed lunchtime activity. The switch from the buying patterns in Tables 2 and 3 above shows two main themes - a shift from cold food takeaways to hot food and a move from sweet food such as muffins to more savoury foods. The use of outlets also shifted from cafés to takeaways over the period of the day and continued, as will be seen below in Table 4, to purchases after school. The move to hot food takeaways can be explained by the fact that in the morning period hot food takeaways were not open, so a lot of the activity was focused on cafes. All observers noted that at all sites and specifically at lunchtime the purchases of food by pupils tended to be in groups.

There was general recognition of the changes to the quality and healthiness of school food, that the food on offer was healthier than previously offered and certainly more healthy than that from the takeaways surrounding the schools. But such views were contrasted with a concern and consumer mentality in getting a bargain, these views were often expressed by references to the cost and portion sizes of some of the food on sale in the schools. A Year 7-9 focus group reported:

> *I mainly buy one of those, they're trying to promote these new drinks, these orange drinks and they're meant to be healthy for you, one of your five a day so they're better than drinking Lucozade so I try and drink them but they're so expensive. 80p for that.*
> *60p for like this* [indicating size with fingers] *and imagine you can get 50p for a whole can or something.*
> *It's only this big and you can finish it in one sip.*
> *Those juice boxes.*
> *60p?*
> *There used to be ones that were that big.*
> *They were nicer.*

Across all three schools the pupils reported dissatisfaction with the dining room environment as well as the taste of school food. Dining rooms were not judged to be conducive to sitting with friends and socialising '*with your friends'*. This was generally due to the numbers using the area and the lack of quiet areas in which to have a conversation. Additional reasons for eating out at lunchtime included seeking a bargain, as a sign of independence and for the older pupils, as mark of distinction from the younger pupils. One older group of pupils described it in the following ways:

> *You have to wait and queue, there are lots of younger ones and we have to wait to get served.*
> *Yeah and the noise is too much, you have to shout out loud.*
> *....... It is easier to go down the high street.*

554

555

556   *After school purchasing*

557   Our observations on purchasing after school confirmed that the majority of activity was at this

558   time. The total number of pupils at each of the schools respectively was 1050, 1200 and 1250 so

559   it was expected there would be broadly similar activity outside each school. Similarly it was

560   assumed that not using fast food outlets during the school lunchtime would increase pupils'

561   desire to eat from them after school, but these were not borne out by our observations. Overall

562   usage after school is shown in Table 4.

563

564   **Table 4: Observations of food purchasing after school**

Outlet	School A		School B		School C	
	Nos. pupils observed	Type of food / drink	Nos. pupils observed	Type of food / drink	Nos. pupils Observed	Type of food / drink
Takeaways	145	Chicken and chips, Burger and chips , chips	2	Chicken and chips	33	Chicken and chips
Restaurant/café			0			
Newsagent/ local super-market	85	Crisps, chocolate	66	Sweets and Potato crisps (chips)	100	Crisps, chocolate

565

566   At School C (with the complete stay-on-site policy), only 33 pupils (3% of total school pupils)

567   were observed in fast food takeaways with another 100 pupils using local shops (11% of total

568   pupils). The schools with a partial stay-on-site policy had higher levels of use after school – in

569   one school 21% of the pupils were observed in fast food takeaways or local shops (Forsyth, Wall,

570   Larson, Story and Neumark-Sztainer, 2012; Patterson, , Risby, and Chan, 2013). [32, 33]. The most

571   common food purchased was chicken and chips. Pupils formed long queues and in the most

572   popular takeaway, a teacher from the school supervised the queue. This ensured that the pupils

573   behaved as good citizens, although it also potentially gave the purchases an air of respectability.

574   Large numbers of pupils were also observed in newsagents and supermarkets, where the main

575   purchases were soft/energy drinks, chocolate bars and crisps (potato chips). All outlets used

576   were within 200m of the school gates. Observations confirmed an absence of salads and fruits,

577   which in the focus groups were perceived as poor value for money. Instead, of all the purchases

578   observed, there was a clear desire for cheap, palatable and energy dense food; food known to be

579   of poor nutritional quality and high in calories (Caraher, Lloyd and Madelin, 2014, Wellard,

580   Glasson and Chapman, 2012) (1, 4).

581

582   Eating after school was discussed by many pupils in the focus groups as a snack to tide them over

583   before eating at home later on. Our observations only monitored food outlet use in the immediate

584   area around schools, but it is likely that many purchases were made on the way to school via

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585 unobserved routes. From the focus groups and observations the distance of a food outlet from
586 the school did influence the use of that outlet, but this was less of an issue after school when an
587 outlet might have been on the route home. This was outside the scope of our observations but
588 was reported in the focus groups.
589

Discussion

591 As noted earlier in the introduction there is a connection with obesity, life expectancy and fast
592 food outlets. The key is to look to determine how these obesogenic environments can be
593 controlled (Alcorn, 2012; Mitchell, Cowburn and Foster, 2011; Stevenson, 2011). [34, 35, 36]. The
594 National Obesity Observatory (in 2012) mapped fast food outlets for England and was able to
595 concluded that there is a relationship between the number of fast foods outlets per area
596 (density), the obesity status of children and areas of higher deprivation [9]. Deprived areas tended
597 to have both higher concentrations of fast food outlets and higher levels of childhood obesity
598 (Zenk, and Schultz, 2009; Burgoine et al, 2014). [11 37]. Understanding the motives and rationale
599 of secondary school studnets is important in helping inform policy. What this research adds is an
600 understanding of what and how pupils conceive the issues of distance, the foods on offer and the
601 wider values surrounding the sociability of food. Linked to these findings are the seeking of a
602 bargain (consumer mindset) and value for money, often equated with volume, differing age
603 attitudes as to what is 'cool' and buying goods in groups (Adamson, Stead, McDermott and
604 MacKintosh, 2011). The environment outside the school can be seen to take two forms; first the
605 existence and availability of '*competitive foods*', those foods which compete with food sold in the
606 school; secondly, the proximity of food outlets to schools. Across the borough there were
607 concentrations of fast food outlets around schools. However the majority of food purchases were
608 from newsagents, corner shops and supermarkets in the form of sweets, crisps (potato chips),
609 sandwiches, chocolate, carbonated soft drinks and energy drinks, not hot food from fast food
610 outlets. The majority of purchasing was 'cold food'. This in contrast to the body of existing
611 research where the focus is on fast food and take-aways, (Forsyth et al, 2012; Patterson, Risby
612 and Chan, 2013; Ludvigsen, and Sharma, 2004; Dimbleby and Vincent, 2013), the observations of
613 the young people's behaviours showed differences in purchasing at different times of the day and
614 the use of different outlets at different times. Much of the existing published literature uses
615 formal mapping systems and the data available from local government registration of fast food
616 outlets. There is clearly a case for looking at the nutritional content of fast food as it is nutrient
617 dense (Wellard, Glasson, & Chapman, 2012) but there is also a need to map secondary
618 school pupils' purchases of food from other outlets which can be as unhealthy as that from fast
619 food outlets.
620

621 Mapping such behaviours should also extend to soda and energy drink access and consumption
622 (Ennis, Holt and Cheater, 2014) Health-related behaviours associated with energy drink

19

623 consumption are use of alcohol and/or binge drinking, smoking and substance use (Azagba and
624 Sharaf, 2014; Petrova, Duleva, Dimitrov and Rangelova, 2013). The purchasing of energy drinks
625 by younger pupils (Years 7-9, 11-14 year olds) was based on assumptions about sport, energy,
626 keeping awake, branding and a concern with cost, with premium brands e.g. Red Bull being
627 passed over in favour of cheaper ones such as Boostbrands. These findings are similar to those of
628 Costa and colleagues whose research suggests that these drinks are 'normalised and perceived as
629 necessary to meet the demands of a busy lifestyle' (p.187) and that they are readily accessible
630 from local shops, supermarkets and vending machines in public places (Costa, Hayley and Miller,
631 2014). Older pupils in the focus groups considered energy drinks as not '*cool*'. The observed
632 outlets for energy drinks were often not ones we had considered e.g. 'bargain' shops selling
633 household items and toys and selling them in bulk. This was reinforced with stories from the
634 focus groups. Some of tThese shops are often not registered as food premises on local authority
635 databases and it was only through empirical observation that these sources were identified. Any
636 efforts to restrict openings of food outlets may need to address two points arising from this, the
637 fact that many shops selling energy and soda drinks are often not registered premises and may
638 also be within limits such as 200m or 400m of the school gates (Ennis, Holt and Cheater, 2014).
639
640 Recently, the term 'foodshed' or school fringe has been revived as a way of looking at and
641 thinking about local, sustainable food systems (Caraher, Lloyd and Madelin, 2014: Caraher,
642 O'Keefe, Lloyd, and Madelin, 2013; Winkler and Sinclair, 2008). [1] We use the term 'school
643 foodshed' to represent the area from which school pupils can obtain their food, it also draws on
644 the old notion of the 'school shed' where often illicit and frowned upon activities were conducted.
645 The foodshed for those living in urban areas has expanded to take account of developments such
646 as accessible shops, longer opening hours and fast food outlets on the way to school. There is
647 body of work on the location of shops and fast food outlets within 400m of a school or house,
648 based on the assumption that shoppers will not walk more than 400m from base to the nearest
649 shop or stop (Morland, Wing, Diez Roux, and Poole; 2002; Melaniphy, 2007; Public Health
650 England, 2013).[38] [39] In essence the foodshed has widened for young people; they now have the
651 power to source their food from a wider variety of outlets than in the past which were confined
652 to school and the home, their obesogenic possibilities have widened (Maher, Wilson, and Signal,
653 2005.). A pupil's foodshed is now like a series of tributaries which feed into their main food
654 stream and which they purchase from on the way to and from school. Such behaviours are aided
655 by their power as consumers and the fact that they have more money available via pocket money
656 and good food deals, to spend on food. This introduces a limitation to our work in that we only
657 observed the pupils' behaviour within a 400m radius of the school gates and not on their
658 'complete' trips to and from school. Some of the stories in the focus groups did relate to a wider
659 foodshed: on the way to school and after school pupils frequently mentioned McDonalds as a site
660 to eat and congregate. None of these McDonalds were within 400m of the schools.
661

662   The findings show that the key issues of food choice relate to the '5A's of **A**ccessibility,
663   **A**vailability, **A**ffordability and **A**cceptability and **A**ttitude, which can be applied to the choices
664   pupils make.

665   **Accessibility** in terms of being able to access fast food off the school premises due to school stay-
666   on-site policies not being fully implemented; the range and number of food outlets within 300m
667   of the school. This also covers the issue of convenience where many pupils purchased food in
668   cafés as a substitute for breakfast. Closed gate/stay-on-site policies determine access to food on
669   the streets surrounding the schools especially at lunchtime. In the two schools with partial stay-
670   on-site policies the pupils reported not wanting to travel more than 200m at lunchtime to access
671   a shop or takeaway. The school with a policy of keeping pupils on site had less usage on the
672   streets surrounding the schools at lunchtime [40]. From morning to after school the type of food
673   premises open varied and student choice varies accordingly, the morning consisted of purchases
674   from shops and cafes, lunchtime and after school activity shifted to hot fast food. This
675   accessibility overlaps availability.

676   **Availability** in terms of fast food (hot and cold) and unhealthy options being a feature of each
677   street near the schools and especially within 200/300m of the school gates. The favoured
678   distance from the school was within 200m to allow time to walk there, queue, consume the food
679   and walk back.

680   **Affordability** in that the foods that are the focus of this research are marketed at pupils and
681   offered as meal deals e.g. 99p for a meal/three packets of crisps (potato chips) for £1, aligned to
682   the belief that school food represents poor value. The pupils operated with a consumer mentality
683   and sought out what they perceived as value for money offers. This often equated to more food
684   for less money.

685   **Acceptability and Attitude** in that school food is not seen as 'cool', queuing for school food is not
686   acceptable but queuing for fast food is. For younger pupils energy drinks were cool, and none of
687   the deals available from the takeaways emphasized healthy; the focus was on value for money.
688   Pupils reported as expensive healthy items on sale in the schools such as fruit juice and that it
689   was often in smaller portion sizes than that available from outside school. Aligned to this was the
690   fact that group purchasing and sharing was encouraged by the '3 for £1'/*'buy one get one free'*
691   offers. Pupils in the focus groups generally recognised that school food was healthier but
692   provided reasons for not eating in school dining rooms related to the lack of opportunities to
693   socialise and dissatisfaction with the general dining room environment. Likewise with sugar
694   sweetened drinks there was less awareness of the sugar content but a vague awareness of them
695   being less healthy than fruit juices or water [41].

696

697   Structural solutions lie in the control of the external environment through regulation of
698   competitive foods and the competitive food market around schools. Not only does public health
699   practice need to address these issues but also needs to work in a smarter way to provide 'nudges'
700   to healthier eating (Thaller and Sunstein, 2008) [42]. This should include incentives and removing
701   the pupils' tendency to view school food as bad value or non-competitive. The impacts of the

702 closed gate policy operated by the schools can be seen at lunchtime on nearby streets with fewer

703 groups of pupils wandering the streets where this applied. We also noted the ways in which

704 pupils circumvented these rules by asking others with permission to leave the school grounds at

705 lunchtime to buy food in for them, to buy on the way to school and by taking in food in their

706 lunchboxes. So closed gate policies while essential, are not on their own sufficient. Mintel

707 reported that children, on average, have around £6.50 weekly to spend. The older, more

708 independent school pupil who is able to travel to and from school alone thus has the means to

709 purchase snack items in addition – or as an alternative to – consuming snacks provided for them

710 at home (Mintel, 2013) [43]. Boys were more likely to spend their money on food and non-

711 alcoholic drinks, but both groups reported spending up to one third of their money on food and

712 drink outside of the home (National Statistics, 2002) [44]. This helps set the context for the

713 spending patterns of secondary school pupils and locates issues of availability and access in the

714 context of adolescent spending patterns, even in areas where greater levels of deprivation may

715 mean that pupils have less money available to them for the purchase of food. This can be

716 contrasted with the amount provided by parents to pay for school meals, which in 2012 was

717 £2.20 per day (National Statistics, 2002; Mintel, 2013)[35, 36]. What remains clear is that young

718 people as a group remain an important target group for the food industry for snack food and

719 remains, according to Mintel '*an untapped market'* (Mintel, 2013). [35]

720

721

722 The nutrient content of school meals are regulated and standards established (Dimbleby and

723 Vincent, 2013). [45] However it is clear that these standards can only be enforced within the

724 school premises, not in the wider school foodshed. We had accounts from focus groups of some

725 pupils avoiding school lunch altogether and waiting to eat from a hot food takeaway on the way

726 home. Others reported that they ate from hot food takeaways on the way home as they were

727 hungry due to the small portions served or consumed at lunchtime. Whilst we know that food

728 from home generally has a higher micronutrient density than food purchased outside the home

729 (Adamson, Rugg-Gunn, Butler, and Appleton, 1996)[46], there is a danger that this calorie intake is

730 additional and not a substitute. This raises concerns that the food consumed is high in calories,

731 fat and sugar and not replaced elsewhere in the diet by micronutrients. The new 'independent'

732 School Food Plan [37] will make changes to the food offered in schools and states that "*The*   **Formatted:** Highlight

733 *flagship schemes will also co-ordinate activity in the wider neighbourhoods: for example working*

734 *with local take-aways and fast food outlets to make their products healthier, and teaching parents*

735 *and people in the local community how to cook."* (Dimbleby and Vincent, 2013) But this only

736 applies to the flagship schemes of which there will be two in London. There is little joined up

737 thinking about using planning powers to help restrict new openings or of the use of local by-laws

738 to limit opening hours (British Medical Association, 2015; Alcorn, 2012: Caraher, O'Keefe, Lloyd,

739 and Madelin, 2013). [47, 48]. Pupils expressed dissatisfaction with the value for money of school

740 lunches and the overall dining room environment experience (Devia, Surendera and Rayner,

741 2012) [49]. The quality of the food was almost secondary to concerns about volume, value,

queuing, lack of adequate time to sit and eat and the noise in school dining areas. Some of these
743 may be addressed through the regulation and the setting of standards for school food on school
744 sites, but the environment surrounding schools needs to be addressed. Even if all schools invoke
745 stay-on-site or closed gate policies for lunchtime, there is a need to be cognisant of the behaviour
746 and purchasing behaviours of pupils on the way to and from school. An understanding of the
747 rationale for the behaviours, provided here in the accounts of the pupils is necessary for effective
748 public health action. Some of this behaviour is driven by what is available and on offer, for
749 example the group purchasing behaviour we observed was driven by the dual needs of seeking a
750 bargain and the fact that many of the food offers were sold as meal deals or buy one -or more-and
751 get one free.

752
753

754 Specifically what this research adds is that the issue of distance and location near a school does
755 matter, age group attitudes to food differ and what is 'cool' correspondingly differs. There is a
756 mindset of consumer value and choice amongst pupils; eating with friends and being able to
757 socialise does matter. Finally while distance matters it does not trump access and limiting access
758 to shops through the mechanism of stay-on-site/closed gate policies (at least at lunchtime). The
759 development of stay-on-site policies should be considered alongside working with outlets to
760 improve the food offer to pupils.

761

762 The findings show that the key issues of food choice relate to the '5A's of **A**ccessibility,
763 **A**vailability, **A**ffordability and **A**cceptability and **A**ttitude, which can be applied to the choices
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769 the streets surrounding the schools especially at lunchtime. In the two schools with partial stay-
770 on-site policies the pupils reported not wanting to travel more than 200m at lunchtime to access
771 a shop or takeaway. The school with a policy of keeping pupils on site had less usage on the
772 streets surrounding the schools at lunchtime (Glasgow Centre for Population Health, 2012). From
773 morning to after school the type of food premises open varied and student choice varies
774 accordingly, the morning consisted of purchases from shops and cafes, lunchtime and after
775 school activity shifted to hot fast food. This accessibility overlaps availability.

776 **Availability** in terms of fast food (hot and cold) and unhealthy options being a feature of each
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778 distance from the school was within 200m to allow time to walk there, queue, consume the food
779 and walk back.

780 **Affordability** in that the foods that are the focus of this research are marketed at pupils and
781 offered as meal deals e.g. 99p for a meal/three packets of crisps (potato chips) for £1, aligned to

782 the belief that school food represents poor value. The pupils operated with a consumer mentality
783 and sought out what they perceived as value for money offers. This often equated to more food
784 for less money.
785 **Acceptability and Attitude** in that school food is not seen as 'cool', queuing for school food is not
786 acceptable but queuing for fast food is. For younger pupils energy drinks were cool, and none of
787 the deals available from the takeaways emphasized healthy; the focus was on value for money.
788 Pupils reported as expensive healthy items on sale in the schools such as fruit juice and that it
789 was often in smaller portion sizes than that available from outside school. Aligned to this was the
790 fact that group purchasing and sharing was encouraged by the '3 for £1'/'buy one get one free'
791 offers. Pupils in the focus groups generally recognised that school food was healthier but
792 provided reasons for not eating in school dining rooms related to the lack of opportunities to
793 socialise and dissatisfaction with the general dining room environment. Likewise with sugar
794 sweetened drinks there was less awareness of the sugar content but a vague awareness of them
795 being less healthy than fruit juices or water (Ennis, Holt and Cheater, 2014).
796
Conclusion
797

798 Our research findings portray a situation where secondary school pupils have preferences and
799 these can be summarised as, if left to their own devices, eating virtually all of what they like 'a
800 lot', about half of what they like 'a little' and almost none of what they like 'at all' from school
801 lunch choices (Domel Baxter and Thompson, 2002) [50]. These preferences can be exaggerated by
802 the economic freedom of pupils to act as consumers without safeguards. In the focus groups
803 there was a reporting that pupils did not spend their own pocket money on food consumed to, in
804 and on the way from school; additional money of up to £3/day was given to pupils by their
805 parents to spend on food, distinct from their 'pocket money'. There is both a role for schools and
806 parents here, in that perhaps parents are not aware of the food decisions their children are
807 making. Key to the data is the issue of distance and time, as pupils factored in walking distance,
808 meal deals, queuing for food, eating and walking back to school as reasons for choosing where
809 and what to eat. Outlets more than 200m from the school gates were less likely to be used at
810 lunchtime.
811
812 Pupils expressed dissatisfaction with the value for money of school lunches and the overall
813 dining room environment experience [51]. The quality of the food was almost secondary to
814 concerns about volume, value, queuing, lack of adequate time to sit and eat and the noise in
815 school dining areas. Some of these may be addressed through the regulation and the setting of
816 standards for school food on school sites, but the environment surrounding schools needs to be
817 addressed. Even if all schools invoke stay-on-site or closed gate policies for lunchtime, there is a
818 need to be cognisant of the behaviour and purchasing behaviours of pupils on the way to and
819 from school. An understanding of the rationale for the behaviours, provided here in the accounts

820 ~~of the pupils is necessary for effective public health action. Some of this behaviour is driven by~~

821 ~~what is available and on offer, for example the group purchasing behaviour we observed was~~

822 ~~driven by the dual needs of seeking a bargain and the fact that many of the food offers were sold~~

823 ~~as meal deals or buy one- or more and get one free.~~

824

825 Individual decisions are of course only part of the picture. The food that is accessible, available,

826 affordable and acceptable to pupils is also partially determined by their surrounding

827 environment and the direct targeting of food to pupils. This makes a case for public health action

828 to regulate the environment and to work with existing outlets to help them improve their food

829 offer and to make it more healthy while still making a profit. Work within schools needs to be

830 matched by controls and changes to the school foodshed.

831

832 A strength of the current research was the triangulation of both research methods and findings

833 from the different approaches to develop an overall picture of behaviours, so comparing GIS

834 mapping with observational data alongside reports from focus groups. The research reported

835 here was limited by the observations around the schools and the fact that it did not track pupils'

836 behaviours from the time they left the home in the morning and their behaviours on the way

837 home. Future research should address the relationship of food from take-ways within the context

838 of the whole day and the possible displacement of healthy options by the competitive food on

839 offer around and on the way to and from school.

840

842 *OBSERVATION OF FAST FOOD OUTLETS/TAKEAWAYS*

843

844 **Please record the following information before conducting observations:**

845

846 **Name of school:**

847

848 **Observer names:**

849 **Date:**

850

851 **Time of observations:**

852 **From   08:00 - 09.00**

853   **12.00 - 13.30**

854   **15.30 - 16.30**

855

856 **Names of roads observed:**

857

858

Please sketch a rough map

859

860

861 **OBSERVATION NOTES**

862

863 **Which schools have you seen?**

864

865 **I – Please tick if you see pupils from the school, regardless of whether they enter a**
866 **takeaway.**

867

School	√
School A (XXXXXXXXXXXXXX coloured uniform with school logo on jacket pocket)	
School B (XXXXXXXXXXXXXX coloured uniform)	
School C (XXXXXXXXXXXXXX coloured uniform with XXXXXXX coloured tie)	
Other: please write which school	

Unknown	

868

869

870 **Did you see pupils entering a fast food outlet?**
871 **(fast food outlets can either offer hot food, eg chicken wings etc, or cold food, eg**
872 **sandwiches etc – please record both)**

873

874 **Please add bar of a five bar gate tick for each pupil you see entering a fast food outlet**
875 **and record the school that they attend**

876

School	Takeaway	Restaurant/ cafe	Newsagent/ Supermarket/ off-license (large or small)	Other Please note what type of food out let
School A (XXX coloured uniform)				
School B (XXX coloured uniform)				
School C (XXXcoloured uniform)				
Other: please write which school				
Unknown				

877

878

879 **What numbers of pupils did you see?**

880

School	One	Few (2-4)	Many (5+)
School A (XXX coloured uniform)			
School B (XXX coloured uniform)			
School C (XXX coloured uniform)			
Other: please write which school			
Unknown			

881

882

883 **Please list the name and type of fast food outlet which you see in the area that you are**
884 **observing, both open and closed.**
885 **Please also note if the outlet offers a pupil/school special, along with the price.**

886

887
888
889 **If you can take photographs, please do this. It would be great to have pictures of each**
890 **outlet.**

Name of fast food outlet	Type of fast food outlet - Takeaway, restaurant, supermarket, other	Does the outlet offer a student / school special? What is the price?

891 **Copies of menus or photographs of menus and special meal offers would also be**
892 **useful.**
893
894

895
896
897

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