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PERSPECTIVES OF UK CATERING STAFF ON ADOLESCENTS' FOOD CHOICES AT SCHOOL

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ABSTRACT

PURPOSE/OBJECTIVES

This study explores what school catering staff (nutrition program personnel) in the United Kingdom (UK) perceive to influence adolescents' food choices during the school day with observational research at school dining centers.

METHODS

Three middle schools in Wales, United Kingdom took part in the triangulated qualitative study. The research focused on pupils in Key Stage Three (aged 11 to 14 years old) enrolled at three schools. Data from interviews with the catering managers based at the schools (n=6), observations in school dining centers (n=3), and focus groups with catering staff (n=3) were thematically analyzed together.

RESULTS

Catering staff discussions and the observations revealed that the overall uptake of healthful foods was low in comparison to the number of pupils opting for unhealthful foods. Although healthful foods are available, pupils often avoided the most nutritionally balanced meal options. Catering staff perceived a multitude of factors as influencing adolescents' food choices at school: staff encouragement, peer pressure, parenting, education, health consciousness, vegan and vegetarianism, taste preferences, price consciousness, and convenience.

APPLICATION TO CHILD NUTRITION PROFESSIONALS

Exploring the perspective of catering staff or line level employees was a novel approach in better understanding the factors influencing adolescents' decision-making in the school food environment. These research findings are a beneficial starting point for further research or may potentially be used to influence how a healthful eating multifactorial policy could be implemented in middle schools. Of particular note, findings suggest a focus on ensuring that options are convenient and contain vegetables; avoiding overt labelling of vegetarian options; and introducing packed lunch regulations.

KEYWORDS: food choice, adolescents, school, healthful eating, focus groups.

INTRODUCTION

The foods consumed during the school day contribute substantially to adolescents' daily energy intake and eating habits (Winpenny et al., 2017). Upon starting middle school, pupils often consider the relatively extensive choice and a la carte options available to be a major perk, because at elementary schools choices are often limited (Brannen & Storey, 1998). For instance, when given free choice in what they can eat at a restaurant, many adolescents will opt for an unbalanced diet, choosing foods high in fat and carbohydrates rather than fruits and vegetables (McKeown & Nelson, 2018). Unhealthful dietary behaviours, such as excessive calorie intake during childhood, often lead to weight gain (Papoutsi et al., 2013). It is crucial to understand what factors potentially prevent adolescents' uptake and consumption of healthful foods because there are long-term health consequences. Weight status has long-term health implications because overweight or obese children are 74.9–88.2% more likely to stay so into adulthood (Ward et al., 2017). Being overweight may result in physiological problems such as early onset Type II Diabetes, hypertension, Obstructive Sleep Apnoea (OPA), musculoskeletal problems, and malnutrition (Childhood Obesity Foundation, 2015; World Health Organization, 2015). Secondly, obesity could result in psychological and mental health problems such as stigmatization, discrimination, being a victim of bullying, low self-esteem, and an increased risk of depression (Bucchianeri et al., 2013; Iannaccone et al., 2016).

Bronfenbrenner's Ecological Systems Theory (EST) purports that individual development and consequential behavior results from multiple levels of influence: microsystems, mesosystems, exosystems, and macrosystems. The 'microsystem' consists of immediate family and home environment; the 'mesosystem' includes the local neighborhood and school; the 'exosystem' features mass media and the community; and the 'macrosystem' encompasses the widely shared beliefs, cultural values and laws (Bronfenbrenner, 1994). These various levels can be used to explain how various socio-environmental factors influence adolescents' food consumption. For instance, mesosystem and exosystem will become more prevalent with the onset of middle school education. In particular, adolescents are vulnerable to peer pressure as food becomes a technique used to construct a desirable self-image and conform with peer groups (Stead et al., 2011). This is because when adolescents purchase food outside of the home and away from parental influence, their peers play a larger role than parents in purchase decisions (Salvy et al., 2012).

School education and interventions have the potential to increase healthful food consumption amongst pupils (Pem & Jeewon, 2015). Yet, being well-educated nutritionally is not always conducive to healthful eating habits, as other factors often override adolescents' nutritional knowledge (Nga et al., 2019). Schools in Wales are required to promote healthy eating amongst pupils. The Welsh Government introduced *The Healthy Eating in Schools (Nutritional Standards and Requirements)* regulations in 2013. These state that at least two portions of vegetables or salads and one portion of fruit should be available daily and that co-educational middle school lunches should provide pupils with about 646 calories. Shaped meat products containing other ingredients are not permitted and fried foods can only be offered up to twice a week. Confectionery items (chewing gum, mints, cereal bars, chocolate, and frostings on cakes), savoury snacks, and additional salt are not allowed while cakes and cookies should not contain over the maximum stated saturated fat (<7.9g), non-milk extrinsic sugars (<18.9g) (sugars not

contained within cell walls, apart from lactose in milk) or sodium (<714mg) values (Welsh Local Government Association, 2009, 2013). Fizzy school-regulation drinks have been formulated for sale in schools and catering staff (nutrition personnel) are able to bake brownies, cakes, and other snacks that comply with the regulations.

Catering staff need to consider costings because the government provides £2.30 (U.S. $2.97) per lunchtime meal for each low income pupil eligible for Free School Meals (FSM) (Mackley & Long, 2018). Opting for a nutritionally balanced school meal over a packed lunch has the potential to significantly contribute to an adolescents' diet (Taylor et al., 2019). Avoiding dishes that are 'too bland, boring, and beige' and providing sufficient choice and good quality food should increase school meal participation (Dimbleby & Vincent, 2013). In Wales, there are no regulations for packed lunches brought into school, but most schools ban nuts and nut products for allergy reasons (Welsh Government, 2018).

In developing policy interventions to promote healthier choices and potentially improve the long-term health of individuals, it is crucial to understand what prevents adolescents from choosing healthful options at school. Line level school catering staff are an important group of research participants because the school environment has a substantive impact on the development of adolescents' eating habits. Currently, there is insufficient UK-based research considering the perspectives of school catering staff regarding adolescents' food choice. The aim of this study was to explore the perceptions of catering staff concerning the factors that influence Welsh adolescents' food decision-making in the school food environment. This research is part of a broader study, which involved data collection from parents and Welsh adolescents (findings reported elsewhere).

METHODS

A triangulated approach including interviews and focus groups with school catering staff (line level and managers), and observational research enabled cross-data validity checks. The research was conducted between March 2018 and June 2019.

Sample and School Recruitment

The authors' university Ethics Committee approved the study protocol prior to data collection. School catering staff and managers participating in the study received an information sheet outlining the purpose of the study and ethical considerations; they were required to provide signed informed consent before the research commenced. Head teachers acted in *loco parentis*, giving permission for observations to take place in school dining centers.

The participation of three middle schools in South Wales allowed access to a larger sample of participants with a similar socioeconomic status. FSM eligibility can be used to measure low parental income and socioeconomic status. The FSM rates in the participating schools were below the most recent calculated National Average for middle and high schools in Wales of 20%, as they were 3.5%, 11.6% and 5.6%, respectively. Thus, it is presumed that the socioeconomic status of the three schools was comparatively 'middle-class' as they were below the average figure (Gorard, 2012; The Children's Society, 2018). Moreover, all three schools were conveniently located in South Wales and pupils were prohibited from leaving the school site during break times and lunchtimes. Pupils used swipe fobs at one school while the other two

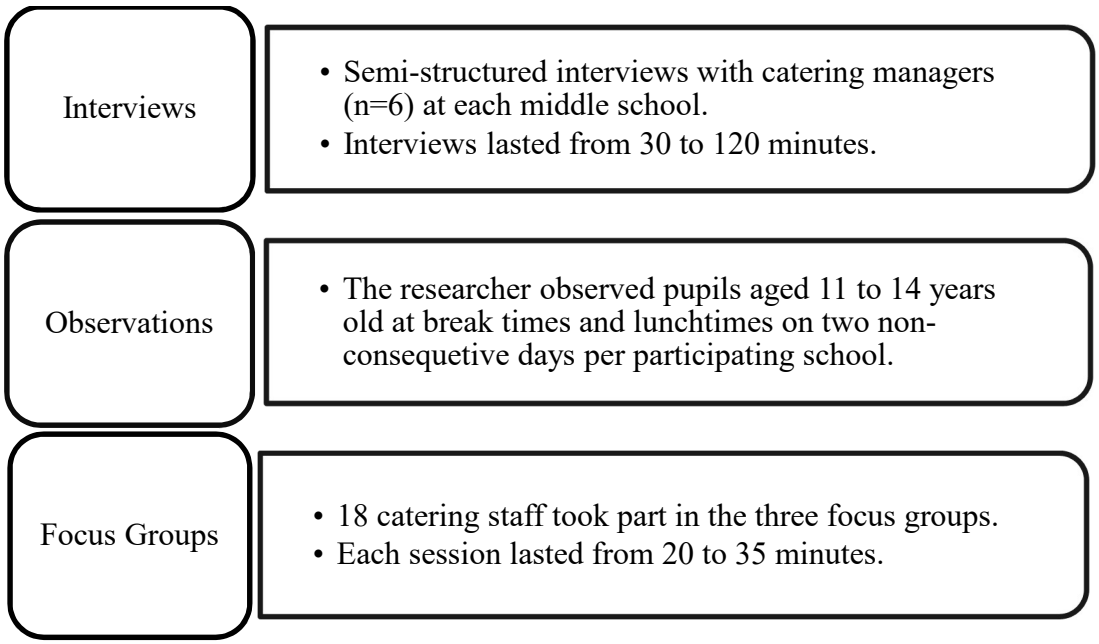
schools used biometric thumb prints of students to pay for their food and parents added money to their adolescents' accounts online.

All the catering staff at one school participated in the focus group, but at the other two schools, purposive sampling was used. It was acknowledged that participating in the research was an inconvenience because focus groups took place during the workday, so catering managers recruited staff members that they could spare from production and service. All catering staff worked in the kitchen to prepare and cook school foods. During break times and lunchtimes, up to four members of staff worked at the checkouts while others served food from the kitchen. Teaching staff were on a rotation for supervising of pupils in the dining centers. Each focus group consisted of three to eight participants; this ensured a greater opportunity to talk and allowed for in-depth conversation (Krueger & Casey, 2014). In total, there were 18 participants and at one of the schools, two catering managers partook in the focus group. At this school all members of staff appeared relaxed and comfortable voicing their opinions and teasing one another; thus, there was minimal concern that participants felt restrained in the presence of their supervisors. The sample was predominantly female with one male participant. No incentives were provided to the participating schools or individuals.

Data Collection

The data collection process is shown in Figure 1. Interviews, observations, and focus groups were conducted.

Figure 1. *The Three Phases of Data Collection*



Interviews

Semi-structured interviews with catering manager interviews took place on each middle school premises (n=6). As aforementioned, at one school the catering managers took part both in the interviews and the focus groups. The interview schedule was developed following a review of the literature about the factors influencing adolescents' decision-making concerning food. Questioned topics included: menu items, popular dishes and menu items, the perceived

healthiness of school food, packed lunch occurrence, whether pupils purchase fruits, vegetables and salads. Handwritten notes were made throughout the interviews by the interview facilitator. The data collected in catering manager interviews provided a basis for the observations and focus groups.

Observations

Next, covert observation of pupils at break time and lunchtime in the school dining center occurred on two non-consecutive school days at each school. Photographs of the foods available and the dining environment were taken prior to service beginning. One researcher observed the pupils, taking notes narratively and using a prompt sheet developed following the catering staff interviews and literature review. The 27-point prompt sheet included: social interactions, foods and drinks offered, packed lunch prevalence, what foods pupils brought in, prices, staff supervision, the speed of service, ambience in the dining center, displays, seating availability, cutlery usage, food combinations and food waste. Personal reflections and preliminary analyses were documented shortly after the observation period. The researcher conformed with the attire of supervising staff by wearing business casual clothes and kept a low profile to avoid inadvertently influencing pupils' behaviors (Holtzblatt et al., 2005).

Focus Groups

Lastly, the semi-structured questions asked in the focus groups explored the perceptions of catering staff regarding the factors that influence adolescents' food choices at school. The semi-structured question schedule included: popularity of certain vegetables, whether 'stealth' vegetables was a good idea, healthy eating being a driver for parents / pupils / the school, parenting, ideas concerning what would make healthful food consumption easier for adolescents. Additionally, factors influencing pupils' food choice such as convenience, taste preferences, parenting, cost, social media and peer pressure. The lead author transcribed verbatim the audio-recorded data within twenty-four hours of conducting the focus groups, omitting any participant's identifying features.

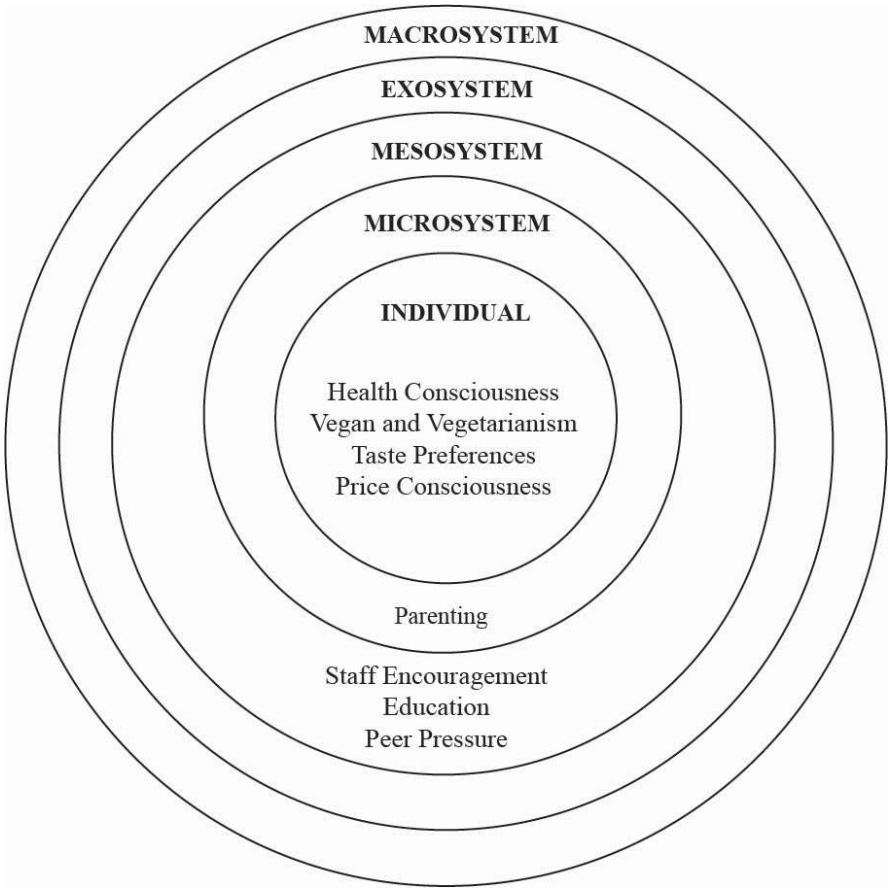
Data Analysis

A deductive, open coding thematic analysis approach was employed to analyze the interview and observational notes as well as the verbatim focus group transcripts. This deductive technique allowed the emergent themes from the combined research methods to be established through a categorization process following data collection (Clarke & Braun, 2013). The interview notes, observation notes, and focus group transcriptions were coded by manually identifying appropriate codes that were developed and modified throughout the analysis process, rather than being predetermined. Codes were then grouped into three main themes with QSR NVivo10 (Copyright® QSR International Pty Ltd) qualitative analysis software used concurrently to assist the coding and categorization of the data (Bazeley & Jackson, 2013). The lead author facilitated the data collection and the initial thematic analysis. Members of the research team discussed the themes resulting from the thematic analysis process in order to reach a consensus.

RESULTS AND DISCUSSION

The application of thematic analysis resulted in three themes and additional subthemes as shown in Figure 2. The first theme was perceived quality of school foods; the second theme was, mesosystem and microsystem factors such as staff encouragement, peer pressure, parenting, education; and the

Figure 2. *Factors Influencing Adolescents' Food Choice at School, based on Bronfenbrenner's EST*



third theme was , individualistic factors of health consciousness, vegan and vegetarianism, taste preferences, price consciousness, and, convenience as shown in Table 1.

Perceived Quality of School Foods

Catering staff acknowledged that pupils' acceptance depended on the quality of the food available. Thus, staff were committed to making the three-week rotating menu as appealing as possible whilst meeting *The Healthy Eating in Schools* policy guidelines (Welsh Local Government Association, 2009, 2013). The observations revealed that all three school dining centers offered full sit-down meals in addition to an a la carte menu, including vegetarian dishes, and "grab and go" meals that were both hot and cold. All schools had fruit bowls, but only a minority of students were observed purchasing or consuming fruit. No "junk food" was available, and food was "freshly done and made from scratch," rather than using pre-prepared frozen foods. Catering staff described school food as "healthy," "fresh" and "homemade." All the schools incorporated stealth vegetables disguised into a variety of dishes. For example, blending cauliflower into gravy; adding pureed kidney beans with tomatoes to create a pizza topping or beetroot chocolate cake; and, adding peas into a Bolognese. Staff explained that pupils were unaware of the hidden vegetables in most cases and that they were aware of all pupils attending the school with an allergy. Nuts were not used in any recipes, and bread made without soy was purchased for an individual with a soya allergy.

Table 1. *Themes and Quotations from Focus Groups with Catering Staff*

THEMATIC CATEGORY	SUBTHEME	ILLUSTRATIVE QUOTE
Perceived Quality of School Foods	N/A	There's not a lot here, like I said, a few cakes, isn't it? We don't do a lot of that. There's nothing here that isn't really good for them.
Mesosystem and Microsystem Factors	Staff Encouragement	'[We] try to encourage them, to eat their vegetables.'
	Peer Pressure	Well it's basically what everyone else has, isn't it? They like to be seen to be eating the same as everyone else.
	Parenting	Their mum's not there to tell them, 'No, you are not allowed it.'
		Because, you know, your Mum and Dad are going to give you what you are going to have for tea, whereas in the school they have got a choice of what they want for food, and if they are going to have vegetables or a pizza, they are probably going to pick a pizza if they have got to go home and have vegetables.
	Education	I just think it's down to discipline and education.
Individualistic Factors	Health Consciousness	The thing is, when they come from primary school at first, they tend to go for the veg option and that, because they are so used to it. I think once the novelty wears off and they think, 'Oh, I don't have to have this anymore, I can have what I want.' And I think that, obviously, that's when it is going to change.
	Vegan and Vegetarianism	… pupils went Vegan, probably because it was trendy.
	Taste Preferences	Yeah, because if they had the unhealthy option… they take that first, I think. At that age.
	Price Consciousness	And sometimes if they buy toast they don't have lunch… Because it's the cheapest option they have.
		I think a lot of them as well; they only have so much money, so they don't want to chance it. They think they might not like it.
	Convenience	They didn't want the dinner no more because they had to sit there with a plate.
		Yeah, like I find a lot with the boys then, they'll, they'll stay out for a lot of their break kicking a ball around and then they will rush in in the last ten minutes and will then normally grab something like a pizza or a panini. So then they have got five minutes to sit and eat it before they need to go again.

Mesosystem and Microsystem Factors Driving Food Choice

Staff Encouragement

Side portions of vegetables were optional for the full sit-down meals. Pupils eligible for FSM were allowed to spend their money at break time or lunchtime, selecting any items up to the value of £2.30 (U.S. $2.97). This can be problematic as students are able to consume foods of lesser nutritional density whilst at school. Of note, because the catering staff go to great lengths to make the school food as healthful as possible whilst being attractive to the adolescents' taste preferences, pupils selecting the doughnuts and pizza for example are unaware that the formulation of these products is very different to the more processed commercially available options.

Education

Before break time began, the researcher investigated the school dining center's environment and discovered that all three schools displayed healthy eating posters prominently. The consensus in the focus groups was that "better education from an earlier age" was required because many adolescents do not "know what half of it is" [referring to adolescents not knowing what certain vegetables were, or being suspicious of healthful dishes]. Anecdotal evidence at one school when pupils were highly skeptical of carrot cake and courgette cake was blamed on a lack of education. Home Economics lessons were discussed and some participants demonstrated nostalgia and reminisced over what they did whilst at school and how education has changed over the years.

Peer Pressure

Peer groups were observed standing in line, eating together, and sharing sweets, crisps, and biscuits. Whole tables of pupils eating the same meals was a common occurrence, particularly plates of plain chips. The influence of peer pressure on adolescents' food consumption was hard to decipher during the observations, yet was heavily debated during the focus groups. One catering manager described how when pupils come for an orientation prior to starting middle school, she is always asked, "Will I be allowed to sit with my friends?" She judged the common segregation to have contributed to the widespread decline in school meal uptake. This was congruent with other focus group research involving 165 11-year-old participants that found the main issue was related to who they were allowed to sit with whilst eating lunch (Fossgard et al., 2019). Whilst this finding does not appear directly linked to peer pressure, it does show the importance to young adolescents' of their ability to socialize with peers.

Interview and focus group participants felt that adolescents sought to "go with the crowd" and "copy" their peers. Moreover, catering staff had observed a reoccurring pattern whilst working in schools. They thought that when pupils started middle school, parents had the greatest influence on pupils' food consumption. Yet, in the second year, it was believed that pupils began to "be sheep, be followers" and were much more heavily influenced by their peer group. Most catering staff judged peers to have a strong influence on adolescents' food choices. This is in concordance with the literature demonstrating that adolescents' food choice is influenced by their peers, as individuals seek to fit in with social norms (Salvy et al., 2012; Stead et al., 2011).

Parenting

There was a strong consensus that parenting also had a crucial influence on adolescents' food consumption. Several focus group participants mentioned the importance of introducing children to vegetables "at a young enough age" in order to improve acceptance of healthful foods in the long-term, and remaining disciplined as "it's up to the parent." However, it was acknowledged that whilst the adolescent was at school, it could be difficult to manage this and adolescents may rebel. This builds on Blaine et al.'s meta-analysis findings that showed authoritative parenting style can prove beneficial in that individuals eat more fruits and fewer unhealthy snacks, yet there is the risk that it prevents the development of self-efficacy. Consequentially, adolescents could view their autonomy whilst at school as a chance to rebel and consume relatively unhealthful foods (Blaine et al., 2017). Likewise, Eck et al.'s study of children aged 6- to 11-years-old found that a lack of parental presence was a barrier to healthful food consumption (2019). Hence, the lack of healthful foods purchased during the observational periods could be attributed in part to the lack of parental presence.

Individualistic Factors Driving Food Choice

Health Consciousness

Very few pupils were observed eating a nutritionally balanced meal purchased at school or from home. Packed lunches often contained fruit, but vegetables were seen fewer than ten times across all six observational periods. Some brought a packed lunch from home and purchased a fizzy school-regulation drink at school or a pastry. Catering staff perceived competitive sporting activities to influence food choice because "a lot of them are very sports driven" which led adolescents to "concentrate on their diet." It was stated that health consciousness "just comes with age" and older adolescents "need more filling" so "will go for the bigger, heartier meal then" rather than a single slice of pizza or only a pudding for lunch.

Vegan and Vegetarianism

It was remarked that veganism and vegetarianism were on the rise and "starting to lift up a bit" [referring to the numbers increasing]. Catering staff acknowledged that pupils could be covertly vegetarian, and go unnoticed if they chose something from the cold counter such as a cheese sandwich rather than specifically asking for a vegetarian hot meal. One catering manager described how labelling and promoting foods as 'vegetarian' dissuaded some pupils from trying it, particularly male adolescents. She found that explaining the ingredients was more successful at encouraging selection of vegetarian foods rather than simply labelling foods as 'vegetarian.'

Taste Preferences

The observations revealed that many pupils selected unhealthful, sweet foods rather than balanced main meals. This may be due to having taste preferences for the unhealthy options. Catering staff presumed in the interviews and focus groups that adolescents would always select the "unhealthy option" or the "sweeter snack." This was in line with previous research showing that when adolescents are given a choice, they will choose the unhealthful option (McKeown & Nelson, 2018). Participants stated that individuals need to persevere and try foods several times because "your taste buds just adapt to it anyway." It was acknowledged that taste preferences could and would change over the years, but adolescents are "not going to force it down their throats if they don't like it." As aforementioned, schools are able to offer somewhat unhealthful options such as brownies and cake as long as these meet *The Healthy Eating in Schools* regulations. These items are obviously not as healthful as full sit-down meals or fruit, yet

catering staff recognized that if all the unhealthful options were excluded from the menu, then this would severely affect sales and result in more pupils bringing a packed lunch to school.

Price Consciousness

The theme of whether or not adolescents were price conscious exposed the greatest disagreement among those in interview and focus groups. Several participants believed that pupils had "no concept of money whatsoever," particularly as cashless payments were taken at all three schools. On the other hand, two of the schools sold slices of toast very cheaply in comparison to the other break time foods available, with this item proving exceptionally popular as some adolescents selected three or four slices or even six slices. Some catering staff supposed that "the cheapest they are going to go for" and that pupils would purchase foods at break time rather than purchase the more expensive food at lunchtime "because it's less money" and they are "limited to a daily spend." Although a relatively low number of pupils were limited to spending their FSM allowance, catering staff were aware that many pupils had a set weekly allowance from their parents. This led staff to believe that price consciousness was a widespread concern amongst adolescents in the school dining center.

Convenience

During the lunchtime observational periods, most pupils opted for pasta pots, sandwiches, and cakes that could be eaten without sitting down with cutlery. Pupils appeared rushed, particularly at one school where they had a lunchtime period of 25 minutes. The other schools had 60 minutes. Up to four cashier stands were operating in the dining centers and year groups came when a bell was rang. Wait time was up to ten minutes, so a large proportion of time was spent standing in line, particularly when there were fewer cashier stands in operation. There was a consensus across the interviews and focus group discussions that adolescents were in a hurry and "just want something quick" that they can "grab and go." One school found that whilst operating under an external catering company, takeaway options stopped and meals had to be served on a plate. However, by not offering takeaway options, the sales of school food "massively dropped" and continuation was not financially viable. At the time of data collection, all food programs in all the participating schools were managed by the school itself, rather than an external company.

CONCLUSIONS AND APPLICATIONS

To our knowledge, this is the first study to explore the experiences of catering staff and their perspectives on what factors influence adolescents' food consumption choices in the UK. The evidence indicates that catering staff are a valuable stakeholder to consider, as they are able to provide a unique insight into the multitude of factors that influence what adolescents eat. The importance of factors such as peer pressure, convenience, taste preferences, and nutrition education support the body of existing literature. In particular, the catering staff were well aware of the significant influence that the 'mesosystem' level of the school had on adolescents' dietary habits. Therefore, cooking foods that were fresh, homemade, and incorporated stealth vegetables was viewed as a fundamental way in which catering staff could improve adolescents' diets whilst at school. The parental practice of hiding vegetables has been previously researched, with findings that covertly disguising vegetables does not increase liking for the vegetable overall (Jønsson et al., 2019; Pescud & Pettigrew, 2014). Accordingly, whilst the strategy to prepare dishes containing hidden vegetables might increase pupils' vegetable consumption, they may not increase overall acceptance. Perhaps the currently appealing unhealthful options in the school

dining centers could be made covertly healthful to improve pupils' dietary intakes with guidance provided by governmental agencies. The government could provide information about how to educate and market the benefits of eating healthfully to appeal to the health consciousness of adolescent pupils. For instance, highlighting the 'fillingness' of certain foods, or how nutritional qualities of healthful foods can improve sports performance could be addressed.

Although catering staff were observed verbally encouraging pupils to take a portion of vegetables, this technique proved largely ineffective amongst adolescent pupils. It is commonplace for the catering staff serving students to let them choose whether to omit a portion of vegetables, because enforced vegetables would subsequently go to waste. Day et al. studied pupils aged 7 to 10 years-old, finding that verbal encouragement did not motivate the selection of more healthful options and generally went unacknowledged (Day et al., 2013). Thus, alternative methods of encouraging healthful eating must be applied, such as lengthening lunchtime periods, better marketing of items, or nutrition education.

The focus group participants thought that short lunchtimes resulted in adolescents choosing the more convenient food-to-go takeaway options rather than having a full sit-down meal. The influence of convenience on adolescents' food consumption is well established in the literature (McKinley et al., 2005). For example, whilst consuming a slice of pizza is convenient, it was unclear whether taste preferences influenced this food choice. Because many of the convenient options available at school were unhealthful as well, research with adolescents' should help clarify this. Increasing the convenience of salad bars in the school dining centers may help persuade pupils to eat more healthfully if they are able to access these options conveniently (Slawson & Rainville, 2019), as these options provide students with some element of control. Of course, parameters need to be in place to ensure that cut salad remains at the correct temperature and pupils are educated on food bar etiquette, such as correct use of utensils and not sampling items with fingers. As time constraints are an established factor leading to unhealthful food choice, it is recommended that food-to-go options are made more healthful. For example, all of the school dining centers offered food-to-go daily, such as pasta pots with mince or rice and curry. The inclusion of vegetables in meat-based dishes and serving composite dishes has the potential to help rectify pupils' low vegetable intake and improve the nutritional quality of the meal (Stevens et al., 2013). Composite dishes are encouraged as a way to increase vegetable consumption rather than relying on selection of side portions of vegetables.

Conversely, participants recognized that the school dining center menu offering could not be wholly healthful because omitting all unhealthful alternatives would severely affect sales. This finding supported the literature, particularly Moore et al.'s case study involving 11 Welsh primary schools. In spite of national and Local Educational Authority (LEA) policy, tensions arose as external policy interventions differed from the need to meet pupils' preferences and ensure that the school catering remained viable (Moore et al., 2010). While some financial support is available for school dining centers to offer foods for sale during the school day, findings from this study showed that without revenue from the sale of marginally healthy foods preferred by most students, the centers would not be viable (Welsh Government, 2014). However, the underlying cause of the problem is that nutritional education at present does not address the issue of taste preferences amongst adolescents. As aforementioned, educating pupils with reference to the 'fillingness' of healthful foods in contrast to foods of lesser nutritional density in addition to focusing on the health consciousness of individuals driven by their sport could be a good stance.

Despite veganism and vegetarianism gaining traction in recent years, catering managers spoke of how vegetarian labelling can be off-putting for adolescents. Some could fear stigmatization amongst their peer group if they opted for vegan options (Markowski & Roxburgh, 2019). Consequently, policy-makers should make this more widely known so that school staff are aware that branding vegetable-based meals as vegan or vegetarian may have a negative correlation on sales. It is recommended that adolescents' perceptions are re-visited again as attitudes are likely to change, and the success of any application is regularly evaluated at the school level and by governmental agencies.

The price consciousness of adolescents when choosing foods to purchase divided opinion amongst the catering staff. One study found that adolescents are reluctant to spend their own pocket money purchasing healthy foods that are available whilst at home (Nørgaard et al., 2014). However, school lunch money from parents tends to not be viewed as pocket money and pupils eligible for FSM are allowed to select any foods that they want in the school dining center. Thus, discussions on the theme of price consciousness were unexpected. Perhaps hungry adolescents select options that are filling with healthful options such as fruit perceived to offer less satiety for greater expenditure, therefore there is a tendency to opt for the cheaper yet more satiating option. Research with adult participants has found that particularly for those with lower incomes, cost is a barrier to a higher consumption of fruits and vegetables (Chapman et al., 2017). If this was extrapolated to the pupils in the current study, the observed high consumption of toast noted by catering staff could be due to price consciousness. In spite of this, increasing the price of unhealthful foods in order to increase pupils' consumption of healthful foods is discouraged because, even though it might reduce temptations, it could potentially lead to pupils bringing their own snacks or packed lunches into school instead. Observations in this study indicated most home packed foods were not healthy and this is supported by recent research showing that packed lunches tended to be nutritionally inferior compared to school lunches (O'Keefe et al., 2020). Moreover, whilst packed lunches can be made under parental supervision, it is hard for parents to know how much of the meal has been eaten, swopped with peers, or thrown away (Eck et al., 2019).

The key strength of this study is that it contributes to the scant body of research concerning catering staff and individuals who work on the front lines of school food programs, with reference to what influences young adolescents' decision-making about food while at school. Furthermore, there is little research on the topic of adolescents' food choices in the geographical area of Wales. Two limitations were identified relating to the methods used in the study. First, it is acknowledged that the sample size is relatively small, which limits the applicability and generalizability of the findings. Nonetheless, these findings were congruent with previous studies and add to the literature for middle schools with similar socio-demographic profiles. Second, at two of the three participating schools, the entire catering staff cohort was unable to participate in the focus groups; therefore the catering manager chose individuals to take part in the study in an effort to minimize staffing issues. While the entire staff did not participate, there was representation from employees working in all phases of the foodservice including preparation, service, and cleaning

In conclusion, the interplay of the various factors implies that a multi-faceted approach is necessary for policy-makers seeking to inform practice in the middle school environment. This may include guidance on inclusion of stealth vegetables, composite dishes on the menu, convenient menu options, avoidance of vegetarian labelling, and maintenance of the current

pricing structure. Formal classroom nutritional education in combination with informal education in the dining center environment with posters is encouraged. Overall, the catering staff were keen to provide healthful food for pupils that were suitably appealing to increase take up, but guidance is needed at a governmental level to stimulate wider change across Wales. Perhaps a slow transition to eliminating all unhealthful menu offerings could be achieved if catering managers are provided with appropriate guidance from the government.

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