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Exploring the links between unhealthy eating behaviour and heavy alcohol use in the social, emotional and cultural lives of young adults (aged 18–25): A qualitative research study

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ABSTRACT

Alcohol use peaks in early adulthood and can contribute both directly and indirectly to unhealthy weight gain. This is the first qualitative study to explore the links between unhealthy eating behaviour and heavy alcohol use in the social, emotional and cultural lives of young adults. We conducted 45 in-depth interviews with 18–25-year-olds in North-East England to inform development of a dual-focused intervention to reduce health risk due to excess weight gain and alcohol use. Data were analysed thematically, following the principles of constant comparison, resulting in three intersecting themes: (1) how food and alcohol consumption currently link together for this population group; (2) influences upon linked eating and drinking behaviours and (3) young adults' feelings and concerns about linked eating and drinking behaviours. Socio-cultural, physical and emotional links between food and alcohol consumption were an unquestioned norm among young adults. Eating patterns linked to alcohol use were not tied only to hunger, but also to sociability, traditions and identity. Young adults conceptualised and calculated risks to weight, appearance and social status, rather than to long-term health. This study is the first to evidence the deeply interconnected nature of food and alcohol consumption for many young adults. Findings have important implications for intervention development, UK public health policy and practice, and point to a need for similar research in other countries.

1. Background

Excess body weight and heavy alcohol consumption are two of the greatest contributors to global disease burden (World Health Organisation, 2009, 2014). Heavy alcohol use is the leading risk to health and wellbeing in young people, accounting for 7% of disability adjusted life years in 10–24-year-olds globally (Gore et al., 2011), whilst the number of children and adolescents (aged 2–19 years) overweight or obese in developed countries is estimated to be 24% of boys and 23% of girls (Ng et al., 2014). Further, obesity and alcohol-related mortality and morbidity are high in socioeconomically disadvantaged populations compared with individuals from advantaged areas, characterized in terms of occupation, income or educational attainment (Burgoine et al., 2016; Katikireddi, Whitley, Lewsey, Gray, & Leyland, 2017). Liver disease is linked to both alcohol use and obesity and incidence is rising rapidly in the UK (Leon & McCambridge, 2006; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011), particularly in those aged below 44 years (Leon & McCambridge, 2006). Over the past thirty years, the UK has seen a fourfold increase in liver disease mortality, which is now the third most common cause of premature death, with 62,000 years of working life lost each year (Williams et al., 2014). Most of these deaths are alcohol-related (Jewell & Sheron, 2010). However, Non-Alcohol Fatty Liver disease (NAFLD) is becoming increasingly common, and it is now the most prevalent liver disorder in

Abbreviations: BMI, Body Mass Index; COREQ, COnsolidated criteria for REporting Qualitative research; IMD, Index of Multiple Deprivation; NAFLD, Non-Alcohol Fatty Liver disease; NEET, Not in Employment, Education or Training; SES, Socio-economic status; UK, United Kingdom; US, United States

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children and young adults with overall prevalence of between 2.6% and 9.8% in overweight individuals which rises to between 42% and 77% in those who are obese (Williams et al., 2014). Body mass index (BMI) and alcohol consumption interact, with a steeply elevated risk of liver disease observed for those with both high BMI and alcohol consumption (Hart, Morrison, Batty, Mitchell, & Davey Smith, 2010). Heavy drinking is associated with greater waist-hip-ratio in mid-life even when taking other lifetime influences into account (Pinto Pereira, van Veldhoven, Li, & Power, 2016).

Both drinking behaviours and eating behaviours in young adults have been widely studied (Clare et al., 2017; Jones, Andrews, & Berry, 2016; MacArthur, Jacob, Pound, Hickman, & Campbell, 2016; Thompson, Cummins, Brown, & Kyle, 2016; Wills & Lawton, 2014; Østergaard & Andrade, 2014), albeit largely as standalone behaviours. There has been far less focus on understanding how drinking and eating behaviours interact and potential implications arising for interventions. A growing body of quantitative, epidemiological data has identified that energy intake from alcohol, type of beverage and drinking pattern (i.e. high volume, high frequency) contribute substantially to total energy intake and are associated with excess body weight and weight gain amongst young adults (Fazzino, Fleming, Sher, Sullivan, & Befort, 2017; Kwok, Dordevic, Paton, Page, & Truby, 2019; White, Richardson, Mair, Courcoulas, & King, 2019; Wymond, Dickinson, & Riley, 2016). Further, regular and/or heavy episodic drinking in young adults is associated with higher risk of transitioning to being overweight or obese (Fazzino et al., 2017). There are a number of ways in which drinking and eating behaviours may interact in young adults. Some may eat and drink to excess and without regard for whether they become intoxicated or gain weight. Excess food intake may be more likely during and directly after a drinking occasion (Yeomans, 2010) which could be partly due to the disinhibiting effect of alcohol - a psychoactive substance that can alter decision making and so behaviour. Others may choose not to eat prior to socialising, so that they can drink alcohol and avoid weight gain, a phenomenon that has been termed 'Drunkorexia' (Eisenberg & Fitz, 2014; Knight, Castelnuovo, Pietrabissa, Manzoni, & Simpson, 2017; Lupi, Martinotti, Di Giannantonio, & Drunkorexia, 2017; Wilkerson, Hackman, Rush, Usdan, & Smith, 2017). Practices such as the restriction of calorie intake prior to alcohol consumption (sometimes deliberately) increase the likelihood of intoxication, result in blood alcohol levels rising sharply affecting the brain and subsequent behaviour, which in turn steeply increases the risk of acute harm such as from accidents. Unhealthy weight-control methods linked to heavy alcohol use can emerge as early as mid-adolescence (Patte, Laxer, Qian, & Leatherdale, 2016), with some individuals conflicted by a wish to stay slim but also to drink alcohol as part of developing a social identity (Barry, Piazza-Gardner, & Holton, 2015; Eisenberg & Fitz, 2014; Schlissel & Skeer, 2015). Some (Cummings, Ray, & Tomiyama, 2017; Farhat, Iannotti, & Simons-Morton, 2010; Pasch, Nelson, Lytle, Moe, & Perry, 2008) but not all (Peralta & Barr, 2017) studies suggest that such weight control behaviours are particularly prevalent amongst females. Further, whilst linked, there are key differences when considering any change in eating behaviours and alcohol use. Food is essential for survival whilst alcohol is not. Alcohol contains energy (calories), but it is nutritionally poor and does not stimulate satiety (Sayon-Orea, Martinez-Gonzalez, & Bes-Rastrollo, 2011). Nevertheless, for many, both food and alcohol are a source of pleasure and a valued component of social life.

A number of influences on diet and drinking behaviours in young adults have been identified. These include food and alcohol environments, peers, family, and the search for identity and/or social status. For student populations in New Zealand, Hartman et al. (Hartman, Wadsworth, Penny, van Assema, & Page, 2013) found that flatmates or partners were key social influences on dietary behaviours, and that cost or availability were major factors in food choice. Butler et al. (Butler, Black, Blue, & Gretebeck, 2004) report significant gains in body weight, BMI, body composition and fat mass during the first year of university among female US college students. Whilst lack of physical activity appeared to be the driving force in this change, the authors note significant increases in percentage energy from fat and alcohol, and an increase in the number of alcoholic beverages consumed per day, with a similar pattern of weight gain in university students reported in Europe (Chourdakis et al., 2011; Deliens, Clarys, Van Hecke, De Bourdeaudhuij, & Deforche, 2013). In the UK specifically, weight gain appears to occur in the first year of university, but this appears to be small and transitory (Finlayson, Cecil, Higgs, Hill, & Hetherington, 2012), with female students attributing weight gain to academic stress and consumption of convenience or ready-meals (Barker, 2017); whilst dietary quality is demonstrably poor within student populations (Cooke & Papadaki, 2014). Identity is particularly important for young adults at key transition periods in life such as starting and completing further education, moving away from the family home, and beginning employment or unemployment. Young adults may also become parents, co-habit or marry, particularly later in this life-stage. A recent UK longitudinal study of young adults found that, contrasting with a recalled lack of concern in mid-adolescence, body-consciousness and weight-related concern generally increased around the time of school-leaving (Sweeting, Smith, Neary, & Wright, 2016). The authors suggest that this change resulted at least in part from increased autonomy and control over their own diet and the acknowledgement of health as personal responsibility.

To our knowledge, no previous research has utilised qualitative data to examine the influences on *linked* eating and drinking behaviour. Whilst recent focus groups with Belgian university students touch upon alcohol use within their narratives about eating behaviour (Deliens, Clarys, De Bourdeaudhuij, & Deforche, 2014), this work does not explore concurrent behaviour, and alcohol use is mentioned only in the context of independence from parents and the 'student lifestyle'. Thus, the aim of this study was to use in-depth qualitative interviews to explore the relationship between unhealthy eating behaviour and risky alcohol use in the social, emotional and cultural lives of young adults (aged 18–25), including their perceptions of risks, benefits, costs and consequences of these behaviours in early adulthood.

2. Methods

2.1. Sampling and participant information

Our approach to data collection, coding and analysis was guided by COREQ (COnsolidated criteria for REporting Qualitative research) (Tong, Sainsbury, & Craig, 2007). Our full COREQ checklist is shown in Appendix 1. Data were derived from qualitative enquiry situated within a broader research project focused on understanding the links between unhealthy eating and alcohol use in early adulthood in order to establish if dually focused interventions could help to reduce health risk and social inequalities due to excess weight gain and alcohol consumption. In-depth interviews (n = 45) were conducted with young adults aged 18–25 resident in North East England. Whilst there are competing definitions of young adulthood (the term 'young people' can cover the age range 10–24 years), we chose to focus on 18-25-year-olds; 18-years is the age at which young people in the UK are categorised as an adult by law, and therefore transition from children's to adult services. In addition, this is the age bracket during which, for some, major life transitions will occur, with those over the age of 25 often categorised as 'middle' rather than 'young' adults; 18 is also the legal drinking age in the UK. All but one of the interviews were conducted on a one-to-one basis, with one dyadic interview carried out at the request of the participant. Interviews were conducted between July 2016 and March 2017. Average interview length was approximately 35 min.

We focused efforts on the recruitment of young adults in areas of deprivation. Participants were recruited from community organisations that support young adults into employment, young apprentice schemes, residential care for the recently homeless or those not in employment,

Table 1
Characteristics of interviewees.

Demographics		***N*** (45)	%
Age	18	7	16
	19	7	16
	20	6	13
	21	10	22
	22	4	9
	23	6	13
	24	2	4
	25	3	7
Gender	Female	24	53
	Male	21	47
Ethnicity	White British	41	92
	Chinese	1	2
	Asian	1	2
	Arab	1	2
	Dual	1	2
IMD decile	1	16	37
	2	4	9
	3	2	4
	4	1	2
	5	4	9
	6	0	0
	7	1	2
	8	5	11
	9	6	13
	10	6	13
Employment/Education	Employed	13	29
	In Education	14	31
	Trainee	8	18
	NEET	9	20
	Unknown	1	2

education or training (NEET) as well as from university and further education colleges. Participants were sampled primarily according to age, gender, socio-economic status (SES), and ethnicity. Socio-economic status was classified by using the Index of Multiple Deprivation (IMD) deciles (where 1 is 'most deprived') and determined initially by postcode of recruitment site; participant postcodes were then collected at the end of the interview. Sampling continued until no new themes or perspectives emerged from the interviews and there were indicators of 'data saturation', later confirmed during data analysis (Romney, Batchelder, & Weller, 1986). Participants were predominantly white British individuals (92%), reflecting the principal demography of the study area (North East England). Using the crude measure of an IMD decile of between 1 and 4 (as the most deprived deciles), 52% of interviewees were of low SES. 4% (n = 2) of the sample were non-drinkers. Participant characteristics (age, gender, level of deprivation and employment/education status) are presented in Table 1.

2.2. Data collection

A semi-structured approach was undertaken, with a topic guide used to inform but not direct the interviews. This topic guide was developed iteratively throughout data collection and explored four broad areas: (1) general eating behaviour plus patterns of behaviour or food choices linked to alcohol use before, during and after drinking activity; (2) perspectives on social, inter-personal, structural and commercial influences on food and alcohol choices; (3) possible trade-offs that occur between eating and drinking and the potential consequences; and (4) whether or not participants feel there is positive scope for an intervention that focuses on both reducing unhealthy eating and minimising heavy alcohol use– and if so, what the most salient issues or messages might be. Whilst we explored other behaviours, such as physical activity and drug use during the interviews, our primary interest was to explore the links between eating behaviours and alcohol use. All interviews were conducted by the first author (SS), who, at the time of the study, was a female early career researcher (educated to PhD level), aged 32 years, highly trained and experienced in qualitative interviewing and analysis.

Interviewees were recruited in person, via strategic snowballing, online, and via advertisements in key locations. Online and paper advertisements included a contact telephone number and email address for the research team. We also sought the support of local organisations and community groups during recruitment. No one approached for interview refused to take part and there were no drop-outs during the interview process. Interviewees received a £10 gift voucher to compensate them for their time. Interviews took place at the recruiting site or public buildings i.e. community centres or business/college/university premises. Only the researcher and participant(s) were present during interviews. All young adults consented to their interview being audio recorded. Interviews were transcribed verbatim, with observational field notes maintained in a research diary. Ethical approval for the study was provided by Newcastle University (REF 01084/2016, April 01, 2016). No relationship between the interviewer and participants was established prior to study. All participants received a study information leaflet, which included details about the interviewer's credentials and reasons for conducting the study. Participants provided written informed consent before taking part and anonymity was assured.

2.3. Data coding and analysis

Data collection and analysis took place concurrently, in order to continually re-evaluate emergent findings. Verbatim interview transcripts and field notes were analysed thematically (Silverman, 2005), following the principles of constant comparison (Charmaz, 2006) to enhance internal validity (Barbour, 2001). NVivo Qualitative Research software (QSR International, Melbourne, Australia) was employed to support the organisational aspects of data coding and analysis. Transcripts were first coded line by line and then systematically indexed into data tables to generate descriptive themes. Descriptive themes were then compared to identify patterns, similarities and differences in the data in order to generate analytical themes, and a consistent interpretation of the dataset as a whole. Coding and analysis were undertaken by the researcher who conducted the interviews (SS) and reviewed by several other researchers within the wider project team (MS, NF, CM). To maximise analytic potential, emergent themes were discussed and challenged within the entire study team, a process described by Barbour as pragmatic double coding (Barbour, 2003). Themes were also presented in later co-design workshops with young adults, and policy and practice partners for authenticity checking.

3. Findings

Analysis yielded three intersecting key themes: (1) how food and alcohol currently link together for this population group; (2) influences upon linked eating and drinking behaviours and (3) young adults' feelings and concerns about linked eating and drinking behaviours. The findings presented below include quotations to provide rich description and faithful accounts of the views and experiences of young adults in this study. All data were coded anonymously to ensure that participants were not identifiable from their accounts.

3.1. How food and alcohol currently link together for this population group

Most interviewees felt that their eating and drinking behaviours were linked for themselves and their peers ("*I probably didn't realise before I started actually speaking about it, but the fact that generally if you go out for food, somebody at the table will probably order alcohol. If you go out for alcohol, somebody will get food. They kind of seem to come together.*" – Female, aged 21, employed, alcohol drinker, IMD decile 10). A number of different types of eating practices linked to alcohol consumption were identified, structured into different phases – grouped

here as before, during and after alcohol consumption. Firstly, in the context of heavier drinking occasions such as parties or evenings out, for most young adults interviewed, it was important for them to 'line their stomach' with food prior to drinking alcohol. Reasons for doing so included: to avoid being sick later in the evening; to not become intoxicated too quickly; and to be able to drink a greater volume of alcohol across the night. For some, this was a balancing act so as not to become 'bloated' for the evening ahead ("*Because I'm not one of them that won't eat before a night out. If I'm hungry I'm going to eat, but I wouldn't want something too big just because then you just feel horrid for the rest of the night then. You just feel a bit too full and uncomfortable and then once you start having a drink you get a bit bloated and you just feel even worse. I suppose I just wouldn't want to feel like that."* – Female, aged 21, employed, alcohol drinker, IMD decile 5) or eating whatever was at hand when pressured for time ("*I used to get microwave pastas, because I was like, they're dead quick, I can get ready afterwards, and I've had plenty to eat*" – Female, aged 21, employed, alcohol drinker, IMD decile 10). Others reflected on putting more thought into this meal or deliberating eating more such as 'carb loading' for the night ahead, a practice usually associated with eating high amounts of carbohydrates for endurance purposes ("*My housemates, some of them, when they go out they will eat a high carb meal like pasta before drinking. Then they'll drink and then they often get back and have bread or something. I think it's something that would just soak it up so you don't feel the effects the next day perhaps. I think carbohydrates seem to be the go to thing when you're a bit drunk, I don't know"* – Female, aged 19, student, alcohol drinker, IMD decile 8).

A smaller number of interviewees told us that they deliberately did not eat prior to drinking alcohol, primarily to become intoxicated quicker (*"When I did used to drink* [more] *I never used to eat. I just used to want to be drunk. I used to think, "Oh, well if I don't eat, it'll hit me faster and I'll get drunk." Like the food's soaking up all the alcohol."* – Male, aged 24, NEET, alcohol drinker, IMD decile 1) or to save money ("*If I know I'm drinking on a Saturday, I won't eat all Saturday so that I get drunk faster and won't spend as much money*". – Female, aged 18, employment status In Training, alcohol drinker, IMD decile 1). Paradoxically, some of the reasons for not eating were similar to those for deliberately eating, such as to avoid being sick later in the evening (*"I make sure that I've eaten at lunchtime and I don't eat until the next day. I did that last week as well. We went for food and then we went out for drinks and I got to my boyfriends and I spewed all over his floor. I was like, ooh, there's my dinner."* – Female, aged 19, in training, alcohol drinker, IMD decile 1).

Secondly, almost all interviewees recounted changes to their eating behaviour during or after drinking alcohol. Of particular significance was takeaway food, which held social and cultural meaning to young adults interviewed. On a basic level, interviewees described being hungrier immediately after drinking alcohol, and some recounted cravings for unhealthy, heavy or starchy food (*"I don't know if it's the same for anyone else but you almost get the munchies."* – Male, aged 19, NEET, alcohol drinker, IMD decile 1). Some felt that alcohol lowered their inhibitions and altered their restraint when it came to food (*"Sometimes, when you're in that mood, you'll say, "Oh, I'll get a takeaway … Just splash out."* – Female, aged 20, NEET, alcohol drinker, IMD decile 1). Related to restraint, was the concept of 'having a 'blowout', that is, continuing on to consume unhealthy food due to feeling that the damage to health has 'already been done' after heavy alcohol use ("*My sister's boyfriend … He's a proper gym freak, healthy constantly but as soon as he has a drink he goes downhill. All he wants is greasy food, like* [name of popular fast food establishment] *and all that, and then the next day he'll be like, "Well I've ruined it now" so then he'll just have fatty foods until he's back to normal.*" - Female, aged 18, in training, alcohol drinker, IMD decile 1). However, others planned to lose control in advance, and the decision to buy and consume takeaway food was made ahead of time. Interviewees described looking forward to 'falling off the wagon' for the evening ("*Last week we went out and my friend and I were saying, "We can't wait for the cheesy chips later" and we hadn't even started drinking yet. We were already in that mind-set to start with.*" – Female, aged 25, employed, alcohol drinker, IMD decile 8).

Visiting a takeaway shop at the end of a night out was an accepted, regular occurrence for the majority of young adults interviewed. Some stated they simply 'went along with the crowd' whereas others described it as a social activity or norm, a natural extension of the evening, and as their preferred way to end the night ("*It is often you come to the end of the night, you don't really want the night to end and everyone is still raring to go. It is definitely a social thing I think.*" – Female, aged 21, employed, alcohol drinker, IMD decile 9). Many interviewees felt that consumption of fast food immediately after drinking alcohol helped to lessen their hangover the next day ("*I've sort of worked out over the years, I've got a less worse hangover in the morning if I've eaten and had a big glass of water before I'd gone to bed. You must digest it easier … If I go straight to sleep drunk, I wake up feeling horrendous.*" – Female, aged 20, student, alcohol drinker, IMD decile 5). However, there were mixed opinions about cooking when returning home from a night out. Some felt that cooking when they returned home was healthier, cheaper and quicker. Others felt that they were too busy having fun to cook, that home-cooked food was not as exciting or that they did not trust themselves to cook when intoxicated (*"I guess I usually do have leftover dinners from when I have cooked, so I could have gone back and had it, but then, the idea of something from a kebab joint appeals to you a little bit more …Something like a jacket potato – it's nice, I'd have it for lunch on the weekend and stuff, but it's not something I'd have after a night out."*- Male, aged 23, student, alcohol drinker, IMD decile 3).

Thirdly, irrespective of food consumption at the end of a night out, almost all interviewees who consumed alcohol felt that they ate differently the next day. For most this constituted eating a larger volume of food and/or more unhealthily, described by several participants as 'binge-eating' *("It sounds stupid but you crave grease, you just want like a big fat burger, or pizza or kebab, you just want rubbish. It's weird, but that's what you crave, you don't want healthy food. If someone gave you a salad, you would just think, "Oh." The next day we'd always go for a fry-up or if you are feeling a bit groggy, you don't want smoothies and avocado for breakfast, you want a fry-up or we go to* [name of popular fast food establishment] *for breakfast."* – Female, aged 20, student, alcohol drinker, IMD decile 5). Several interviewees felt unable to stomach food the day after consuming alcohol ("*I probably wouldn't eat because I'd just feel hungover and sick … my friend said she could eat a parmo* [fast food dish consisting of deep-fried breaded chicken, or other meat, covered with béchamel sauce and cheese and then grilled] *the next day… I'm like, "Oh, I don't even know how you could." But she says it's to cure her hangover."* – Female, aged 22, NEET, alcohol drinker, IMD decile 3). Only a very small number of young adults interviewed discussed drinking lots of water and eating healthier foods to try and 'undo' the wrongs of the previous day and 'replenish' or 'detox' their system (*"I try and eat really healthy the next day, as if I'm trying to counteract what I've put into my body. I get* [brand name] *smoothies… And try and have lots of fruit and try and eat well and drink loads of water."* – Female, aged 21, employed, alcohol drinker, IMD decile 10). For most interviewees, it was the consumption of unhealthy or 'heavy' foods the day after a drinking occasion that enabled them to sober up and stop them from feeling sick. Other reasons for doing so were similar to those discussed for purchasing food at the end of a night out, that is, that eating more and/or unhealthier foods is an acceptable norm or practice and that home-cooked food isn't as exciting (*"I've never known one person to* [have been] *on a heavy drink and say, "Oh, shall we make a salad?"* – Male, aged 20, NEET, alcohol drinker, IMD decile 1). Added to these were accounts of lethargy, tiredness and low mood the day after drinking alcohol, leading to convenience and fast food choices (*"There's a lady in [name of city] called the Hangover Angel … you call her and she brings you back whatever you want. So* [name of popular fast food establishment] *breakfast, a fry-up and you pay her the money"* – Female, aged 20, student, alcohol drinker, IMD decile 5).

3.2. Influences upon linked eating and drinking behaviours

Whilst the practical ways in which eating and drinking behaviours were linked in everyday life of young adults were diverse, both behaviours tended to be influenced by factors such as cost and/or convenience, peers, family or partners and ability to appraise risk to health. Cost, resources and access were continually cited as a 'deal breaker' in both food and alcohol choices, and young adults reported finding it difficult at times to source healthy food options, particularly after consuming alcohol (*"After six o'clock, you're very limited to what you can go out and buy. So the only places that are open are* [popular fast food establishments]. *There's no healthy places to go and eat and that would make a difference to me … it irritates me, especially when I'm with my boyfriend and it's during the night and we're hungry … There's nowhere to go for healthy food at all, unless you go to a supermarket."* – Female, aged 20, student, alcohol drinker, IMD decile 5). All interviewees looked for special offers, and this extended to eating out at bars and restaurants. Often, special offers linked alcohol and food together ("*The weekend before last, we went to* [name of chain restaurant] *because I had a free bottle of Prosecco because I had the birthday thing … Then it makes it a little less naughty to go out and buy it.*" – Female, aged 23, employed, alcohol drinker, IMD decile 10). For most young adults, eating practices and linked alcohol use were pleasurable, social activities, and were used to cement friendships. Interviewees also made distinctions between 'a big night out' and a few drinks with a meal, primarily on the basis of becoming 'too full' to drink after a heavy meal or that the 'environment' or 'vibe' for the evening was different, less relaxed, when going to pubs and clubs *("I feel like when I am going out and having a drink at the weekend I can be wild but then if I am having a meal with a drink it is a bit more sophisticated, isn't it? You have to keep your shoes on and stuff."* – Female, aged 25, employed, alcohol drinker, IMD decile 8). Thus, young adults assigned social rules to the expected behaviour of their peers while eating and drinking together. Behaviours such as binge eating or blowouts in conjunction with heavy alcohol consumption and hangovers were expected and allowed young adults to 'fit in' within their social circles. Further, young adults seemed to create social environments where they could all take part (*"That's when I socialise, that's when I meet up with my friends. So it's probably better to say, "Do you want to go out for some food?" Than to say, "Do you want to come around to mine and let's make something?" And probably because you are out drinking as well."* – Female, aged 20, student, alcohol drinker, IMD decile 5).

Those who shared a house suggested their living circumstances to be important, and that their own behaviour was likely to mirror the behaviour of those around them ("*It's the type of people you live with as a student, probably …if your friends are getting takeaways all the time and drinking loads, then you'll probably be going to get takeaways all the time and drink loads, but if your friends are cooking then you might be more like, "Oh, I should cook, as well.*" – Male, aged 21, student, alcohol drinker, IMD decile 9). Nevertheless, young adults' accounts of whether their partner was influential within dietary and drinking practices were diverse. Partners were described by some as having a positive influence on their behaviour ("*We rarely get takeaways or anything like that*" – Female, aged 19, in training, alcohol drinker, IMD decile 1). Indeed, heavy episodic drinking appeared to reduce in long-term relationships ("*I think being in a relationship has probably changed that, just because you're more inclined to stay in than go out. I don't know why. It wasn't like that was your motivation to go out, but I think it has had an impact.*" – Female, aged 22, student alcohol drinker, IMD decile 10). However, it is feasible that some aspects of consumption switch to a home environment ("*It's become a lot more regular* [linked drinking with food consumption] *because he's very much into getting a bottle of wine on a night and having a glass with dinner…*" – Female, aged 21, employed, alcohol drinker, IMD decile 5). Finally, interviewees suggested that most young adults struggle to appraise risk to health from alcohol as well as food. For example, many did not visualise the impact of alcohol on their body and do not afford alcohol calories and food calories equal weighting ("*Because people look at food and they know that cake is bad, so they'll think, "Oh I might not have a cake today." But they are more likely to have a glass of wine, because like I said before, they don't visualise that it's the same. I don't visualise it the same and I know it's just as bad, but I still don't look at it and think, "Oh…" To me, I would think having a cake would be worse than having a glass of wine."* – Female, aged 20, student, alcohol drinker, IMD decile 5). Thus, young adults suggested that some of their peers are health-conscious when it comes to food but care far less when it comes to alcohol consumption ("*I've got so many different friends who are so healthy but then drinking is another matter. They'll just drink and they don't really care … they don't care about being healthy in terms of alcohol … Within my house, I'd say the ones who eat the healthiest, would probably drink some of the most.*" – Male, aged 21, student, alcohol drinker, IMD decile 9).

3.3. Young adults' feelings and concerns about linked eating and drinking behaviours

Most young adults tended to conceptualise and calculate risks arising from their alcohol and food consumption only in relation to their weight, appearance and social status, rather than to their long-term health. Whilst some of these norms, values and practices in relation to linked eating and drinking behaviours appeared to be gendered, for example, choice of drink ("*I feel like such an idiot asking for vodka and diet lemonade in clubs*" – Male, aged 22, student, alcohol drinker, IMD decile 9), being weight or body conscious was more nuanced. Taking note of calories was more common amongst female interviewees ("*I think girls are just a lot more conscious about their image, weight-wise … you'll rarely hear of boys being like, oh I shouldn't have that pizza tonight, it's too many calories*" – Female, aged 21, student, alcohol drinker, IMD decile 10). However, male participants also reflected on their appearance, and talked about exercise, going to the gym, and even being 'beach body ready' ("*When I was being really healthy before I went on holiday, it was like how I was going to look on holiday. It didn't make that much difference, but it is something that I think about.*" – Male, aged 21, student, alcohol drinker, IMD decile 9). Regardless of how interviewees chose to 'display' their gender identity, 'behind the scenes' young adulthood was described by many as a self-conscious time regardless of gender norms. Of particular note was the concept of tailoring alcohol consumption to suit a healthier lifestyle, rather than choosing not to drink alcohol at all, described here as 'weight-conscious drinking'. This term has been used elsewhere to describe behaviours to restrict calories in conjunction with consuming alcohol (Martin, Chaney, Vail-Smith, & Gallucci, 2016). Previous use of this term is quite narrow, focusing on the decision not to eat or to eat very little prior to alcohol consumption. Here, we use this term more broadly to denote tailored consumption practices to facilitate continued alcohol use i.e. 'saving up' calories, choosing slimline mixers or the decision to drink spirits rather than beer or wine (*"I know one of my friends, she's doing some diet where you have foods that aren't any points and foods that are points and the points ones are treats. She's allowed one treat a day all week, and a treat is a certain amount of alcohol, or a chocolate or something… she says that she's fine not having any of the chocolate or anything, and then she'll just save up all the alcohol and have it on one night … if it was ever to cross my mind in a calories and alcohol way, it would be more like, "What am I drinking it with?" to save a bit* [of calories]…" – Male, aged 22, student, alcohol drinker, IMD decile 9).

Irrespective of gender, most interviewees derived a sense of identity from linked eating and drinking behaviours. Most young adults identified with the 'traditional' norms and values described in themes 1 and 2, in other words, episodic drinking and linked fast food consumption ("*We're not cultured enough to go for a meal and then going out afterwards."* – Male, aged 23, employed, alcohol drinker, IMD decile 1). Others recounted different values and practices, such as matching alcohol to their food choices. Further, rather than remain static, often values and behaviours relating to linked food and alcohol consumption shifted in

different social contexts ("*If I was out for a nice meal with my girlfriend, then we'd possibly get a bottle of wine between us but more often than not, not. If I'm out for a meal with the boys, I generally don't drink because it would be drinking lager with your food and I don't really find that lager goes well with food.*" – Male, aged 23, student, alcohol drinker, IMD decile 9). Students tended to discount the consequences of their current behaviour as 'time limited' ("*I always have the idea that while I'm a student and while I'm young, this is what I do, but when I get older I'm not going to drink as much so it will be fine*" – Male, aged 21, student, alcohol drinker, IMD decile 9); whereas those nearing graduation/recent graduates tended to critique their previous behaviour as 'childish' in comparison to their current 'mature' approach ("*I don't enjoy it as much as I used to. In the first three years it was great but less and less people go out when you're doing your Masters*." – Male, aged 23, student, alcohol drinker, IMD decile 3).

Finally, taking into account the alternative perspectives above, most interviewees were disinclined to think about calories or alcohol units when intoxicated. Whilst some young adults told us that they had no knowledge whatsoever of the contents of their alcoholic drinks, interviewees were more likely to state that they *are* aware but that they never consider this to be important to their decisions, and that the extent of calories or units would not stop them from drinking. Thus, the 'opportunity cost' of not drinking alcohol was too high and, for young adults interviewed, thinking about calories or units 'ruined the fun' ("*I'm going to get drunk anyway. I've never bothered to look and see how much is in.*" – Female, aged 19, in training, alcohol drinker, IMD decile 1). Young adults suggested "everyone knows" that alcoholic drinks comprise 'empty calories' and some interviewees argued that the only time they would consider this more carefully would be if they were dieting or trying to lose weight ("*Nowadays with following Slimming World I try to count the Syns* [treat foods that have to be counted in the Slimming World diet plan]*.*" – Female, aged 25, employed, alcohol drinker, IMD decile 8). More widely, many interviewees felt that being healthy is about balance, and that you should not become obsessive or restrict yourself ("*I've tried now to do like 70/30 in the week. So eat healthy 70% of the time and then splash out a little bit 30% of the time.*" – Female, aged 21, employed, alcohol drinker, IMD decile 10). Often these young adults operated on a system of treats, rewards and incentives, describing 'blowouts' and 'cheat days' ("*Maybe go for a couple of gym sessions beforehand in the days leading up to it* [a drinking occasion]*, so you think, "I can have a cheat day" maybe, I've done well for the five days of the week and then I'll have a little off the rails on the weekend and go back on it on the Monday again.*" – Male, aged 23, employed, alcohol drinker, IMD decile 1). Part of this narrative related to the importance of holidays and weekends ("*I think you're in a different frame of mind … over here at 12 o'clock, I wouldn't consider getting a drink with my lunch"* – Female, aged 21, employed, alcohol drinker, IMD decile 10). Similarly, young adults described unhealthy 'phases'. Here, linked food and alcohol choices were dependant on mood ('*I can be healthy when I feel like it*'), with healthier decisions coming at a particular time in their life, or in fits and bursts ("*It depends how I feel, to be fair.*" – Female, aged 19, in training, alcohol drinker, IMD decile 1).

4. Discussion

This study shows that food and alcohol consumption come together in the lives of 18–25-year-olds in North-East England in a number of important ways. Food and alcohol were both part of the 'anatomy' of a pleasurable social occasion for those interviewed, and the eating patterns which encircled alcohol use were not necessarily tied only to hunger; but also to sociability, traditions and identity. Thus, young adults discussed extending social occasions via pre-drinks or parties, by visiting takeaway food shops, and by consuming larger amounts of, often unhealthier, food the next day, all of which tended to heighten the experience of a night out. This accords well with a large body of research focusing on alcohol use (Caudwell & Hagger, 2014; Wilson et al., 2018; Østergaard & Andrade, 2014). Whilst respondents from a recent Belgian study (Deliens et al., 2014) touched upon alcohol in their narratives, it was not a key focus, and the intention of Delien et al.'s team was to develop an intervention focusing upon healthy eating and nutrition only. To our knowledge, no previous qualitative studies explore concurrent eating behaviour and alcohol use in depth, and this unique focus is a key strength of this work. This work is also strengthened by diversity in recruitment and sampling - 20% of interviewees were categorised as Not in Education or Employment (NEET), and we focused our efforts particularly on the recruitment of young adults in areas of deprivation. Recent work suggests that socio-spatial patterning of outlets selling potentially health-damaging products such as fast food, alcohol, and tobacco tend to cluster in deprived areas (Macdonald, Olsen, Shortt, & Ellaway, 2018); thus, it can be anticipated that such health behaviours may be more likely to co-occur in such 'toxic' environments. Further, whilst the overarching narrative from young adults interviewed centred on episodic drinking and linked food consumption, we did find a level of social patterning in some responses, particularly current or ex university students, who articulated alternative perspectives such as matching their alcohol consumption to their social context i.e. wine with a meal or beer and spirits with friends.

Data for this study was collected as part of a multi-component project which aimed to work with young adults to co-design a dually focused intervention to help reduce health risk and social inequalities due to excess weight gain and alcohol consumption. Narratives from interviewees suggest that the biggest barrier to a dual-focus intervention would be that socio-cultural, physical and emotional links between food and alcohol consumption are an unquestioned norm among young adults. Behaving differently would be likely to incur social consequences, therefore young adults assigned social rules regarding expected behaviour while eating and drinking, such as that they should not drink alone, or should get a takeaway at the end of the night. Interviewees felt that even encouraging people to consciously consider a generally unquestioned relationship between food and alcohol, and the negative consequences of this relationship, would prove difficult. Young adults did not conceptualise and calculate health harm other than in an immediate sense such as in attempting to mitigate the extent of a 'hangover'. However, they did calculate risks to their weight, appearance and to their social status and identity. Nevertheless, we found no firm narrative relating to calorie restriction prior to alcohol consumption, in stark contrast to epidemiological work conducted among US students which suggests that young adults eat less prior to alcohol consumption in order to become intoxicated faster and avoid weight gain (Eisenberg & Fitz, 2014; Wilkerson et al., 2017). Instead, reflecting earlier narratives of 'conscious ignorance', interviewees suggested that recognition of consequences (weight gain, hangovers, health harm) ruins the fun, and that behaviour change would require motivation and commitment at a level that may not be possible during this particular period of life, particularly for students. Finally, we did not explicitly focus on policy interventions (such as pricing) in our interview work. Nevertheless, participants acknowledged cost, resources and access to be the most important factors in how they made decisions about both food and alcohol; with food establishments (pub, restaurant and takeaway) a fundamental part of the nightlife accessed by interviewees. Further, it is clear that links between food and alcohol are exploited in marketing based on price ('Dine in for 2 for £10', 'Beer and a burger') as well as branding ('https://www.shortlist.com/food-drink/walkers-beer-crisps-max-strong/341587').

4.1. Limitations

There are a number of limitations which should be outlined here. Firstly, this research was conducted with one sample of young adults aged 18–25 within one geographical area of the UK, which is a part of England with a strong industrial past. Parts of the North East, like many urban cities in the UK, have a traditionally heavy drinking culture, but one that now co-exists with cosmopolitan nightlife and culture.

Secondly, one interview was conducted as a dyad at the participants' request. Dyadic interviews may lead to socially desirable responses or boasting about particular behaviours in front of peers. Indeed, this interview included a large narrative on drug taking behaviours; which could be viewed as candour, but also as 'bragging'. Thirdly, we decided to include the accounts of non-drinkers, taking a view that such perspectives may offer a valuable steer relating to intervention content and a comparative understanding of young adult diets without the inclusion of alcohol. Finally, interviewees were not provided with a verbatim transcript of their interview for review. Nevertheless, whilst so-called 'member checks' are widely employed by researchers across numerous fields, the advantages of its use in relation to verifying accuracy have been described as relatively small (Thomas, 2017). However, findings were explored during subsequent intervention co-design workshops with young adults of the same age and background (*Muir* et al., *in preparation*). Future co-design work will advance the themes identified here and from other linked formative work within this mixed methods project to design prototype intervention strategies focusing on eating behaviours and linked alcohol use for young adults aged 18–25 (Albani et al., 2018; Scott et al., 2018).

5. Conclusion

For all interviewees, eating behaviours and linked alcohol consumption, as well as the values associated with them, were both shaped and reinforced by a nexus of influential factors such as friendships and family traditions, societal norms and wider cultural shaping such as cost, convenience and availability. Food and alcohol consumption takes place within a wider 'complex system' which can adversely shape health behaviours (Rutter et al., et al.), sometimes described as 'obesogenic' or 'intoxigenic' environments, where physical, urban spaces come together with social, cultural and commercial influences to shape behaviour but are not always consciously recognised as doing so (Elliott, 2014, 2017; McCreanor, Barnes, Kaiwai, Borell, & Gregory, 2008; Swinburn & Egger, 2002; Tyrrell, Townshend, Adamson, & Lake, 2015, 2016; Watts, Lovato, Barr, Hanning, & Masse, 2015). For young adults in our study, part of this architecture was takeaway food outlets, which operated as a place to consume high-calorie food products but also as a place to continue socialising with friends. Legislative interventions to tackle the price, availability and marketing of unhealthy commodities are endorsed by the World Health Organization and others and are likely to be both effective and cost-effective in reducing the harms from these linked behaviours (Health Excellence, 2010). Such population-level interventions are complemented by the provision of support for individuals who may benefit from behaviour change. This study is the first to evidence the deeply interconnected nature of food and alcohol consumption for many young adults. Findings from this study have important implications for intervention development, UK public health policy and practice, and point to a need for similar research in other countries.

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Declarations of interest

None.

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Appendix A. Supplementary data

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