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Social influences on eating

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Eating behaviour is strongly influenced by social context. We eat differently when we are with other people compared with when we eat alone. Our dietary choices also tend to converge with those of our close social connections. One reason for this is that conforming to the behaviour of others is adaptive and we find it rewarding. Norms of appropriate eating are set by the behaviour of other people, but also shared cultural expectations and environmental cues. We are more likely to follow an eating norm if it is perceived to be relevant based on social comparison. Relevant norms are set by similar others and those with whom we identify. If a norm is relevant then there may be matching of behaviour to the norm, but this will depend on other factors, such as how much attention is paid to the norm, how concerned we are about social acceptance and the presence of other competing norms such as personal norms and consumption stereotypes. Norm matching involves processes such as synchronisation of eating actions, consumption monitoring and altered food preferences. There is emerging evidence that social eating norms may play a role in the development and maintenance of obesity. Social eating norms constitute a novel target for interventions to encourage healthier eating.

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Introduction

Sharing a meal with friends, family or work colleagues is a common activity [1]. Given that much eating takes place in a social context it is important to understand how, and why, who we dine with affects what we eat. We know from decades of research that other people influence our food intake and choices in a variety of ways [2]. If we eat with someone who is eating a large amount then we are likely to model what they eat and consume more than we would eat if we were dining alone [3]. We are also likely to eat a large amount if we eat in a group rather than eating alone. Such 'social-facilitation' of eating has been well documented with evidence from food diaries, observational and experimental studies [4]. On the other hand, we might eat less than usual if we think that eating a small amount will create a favourable social impression [5]. One reason why other people have such an influence on our eating is that they provide a guide or norm for appropriate behaviour [6]. There have been a number of studies published recently that have contributed to our understanding of the conditions under which social norms affect intake and the underlying mechanisms. There has also been interest in the relationship between social norms, dietary patterns and obesity. The aim of this review is to highlight developments in these areas and assess the potential for social norms to be harnessed in the promotion of healthy eating.

Social norms and eating in the laboratory

According to a recent meta-analysis, modelling of eating is a robust phenomenon and the effect size on average is large [7•]. Modelling occurs when the norm is set by another present person (i.e. another diner), but also when the model is not present, such as when the norm is communicated by environmental cues (e.g. by leaving empty wrappers on display as a sign of what other people have eaten) or by textual information (e.g. by providing a list of amounts eaten by supposed previous participants in a study). People may also model culturally agreed norms such as the norm that we eat more when are in the company of friends than when we are alone [8].

Modelling occurs when co-eaters are known to each other or are strangers [9] and regardless of current hunger state, dieting status, current health goals or age [3,10]. Children model the eating of both their parents and peers [11,12] and the effects are similar to those seen for adults modelling other adults [7•]. Nevertheless, there is variability in the effect sizes across studies [7•] and the identification of potential moderators that might explain this variability has been a recent research focus.

Moderators of social influence on eating

Women scoring low in impulsivity modelled intake in a naturalistic eating situation but no modelling was observed for women scoring high on impulsivity [13]. On the other hand, individuals low in self-control were more likely to follow perceived peer eating norms [14,15]. These results appear contradictory, but the study methods differed in a number of ways making them difficult to compare. It is also possible that unmeasured variables that are correlated with impulsivity account for the results, such as concern with behaving in a socially appropriate manner, which has been shown to enhance social influence on

eating [8,16]. Intake monitoring is an important factor in modelling and may be affected by impulsivity. Indeed, high impulsive women were less accurate in their estimations of the amount eaten by the other person, perhaps explaining why they did not model [13].

Models affect eating by providing a norm of appropriate intake, but whether a norm is followed depends upon whether it is perceived as relevant. When a model ate a small versus a large amount, participants reported that a smaller amount of food was appropriate to eat in that situation and this perception accounted for the smaller portion eaten by the participants in the presence of the model who ate sparingly [17••]. When participants saw themselves as belonging to the same social group as the model, and strongly identified with the group, modelling was enhanced [18,19]. Complex social comparison processes underlie decisions about whether a norm is relevant [20••]. We know relatively little about how people make these judgements but it seems that physical similarity between the model and participant is not a prerequisite for modelling [21]. Whether we choose to follow the lead of a relevant model also depends upon the level of uncertainty we experience about what is 'normal' in that situation [22] and how much importance we place on 'fitting in' [23,24], which may be related to personality traits such as self-esteem and empathy. If we have a strong habitual or personal norm and are not terribly concerned about how others see us then we may be resistant to modelling effects [25].

Mediators of social influence on eating

How people adjust their own eating to fit in with perceived norms has received recent attention. In a situation where the behaviour of another person communicates the norm, we may track their consumption and adjust our own intake accordingly [17••]. Other evidence points to behavioural mimicry processes that facilitate modelling [26–29]. In some studies, participants report being unaware of social influence despite evidence to the contrary [30,31], whereas others have found that participants report social influence accurately. It may be that modelling involves both monitoring of intake and behavioural synchrony (if another person is present), both of which may be open to verbal report depending on how awareness of social influence is assessed [32]. An interesting question that has yet to be addressed whether acknowledging social influence affects how we eat. Does being aware that we eat more in groups reduce our susceptibility to social facilitation of eating? Are we less likely to experience self-blame when we eat more than we would have liked if we attribute social influence?

Another way in which we might bring our eating in line with that of others is via changes in food liking and preferences [6]. Conforming to a group norm is a rewarding experience [33] and eating with someone else amplifies the hedonic aspects of the experience [34•]. Furthermore, positive social feedback from peers increases expected liking and positive attitudes towards a food [19,35] as well as the internal valuation of that food [36••]. These data suggest that we eat like other people because we find it a positive emotional experience and we use norms to inform our own food preferences.

Field studies

Social influence of eating is not restricted to 'artificial' laboratory situations [37]. The number of chocolates taken by visitors to a work lunchroom was higher when the norm (empty chocolate wrappers in a bowl) indicated that other people had eaten the chocolates, than when there was no visible evidence of consumption [10]. Placing a poster indicating the popularity of a product with others increased purchases of that product when participants had engaged in a task designed to deplete self-control resources [38], although the slogan may have increased purchases by increasing perceived scarcity of the item [39]. When observed in a fast food restaurant, women ate less in mixed sex groups than when with other women and men ate more in mixed groups than when in mixed pairs [40], which is consistent with reports that women tend to eat less in the presence of a desirable partner they wish to impress and that men may eat large portions to assert their masculinity [5,41]. Women did not match the intake of men possibly because they were following the stereotypical norm that women eat lightly rather than the competing situational norm of high intake set by the men. Which norm is followed when there are competing norms is a question that deserves further investigation.

Links between social norms and diet and obesity

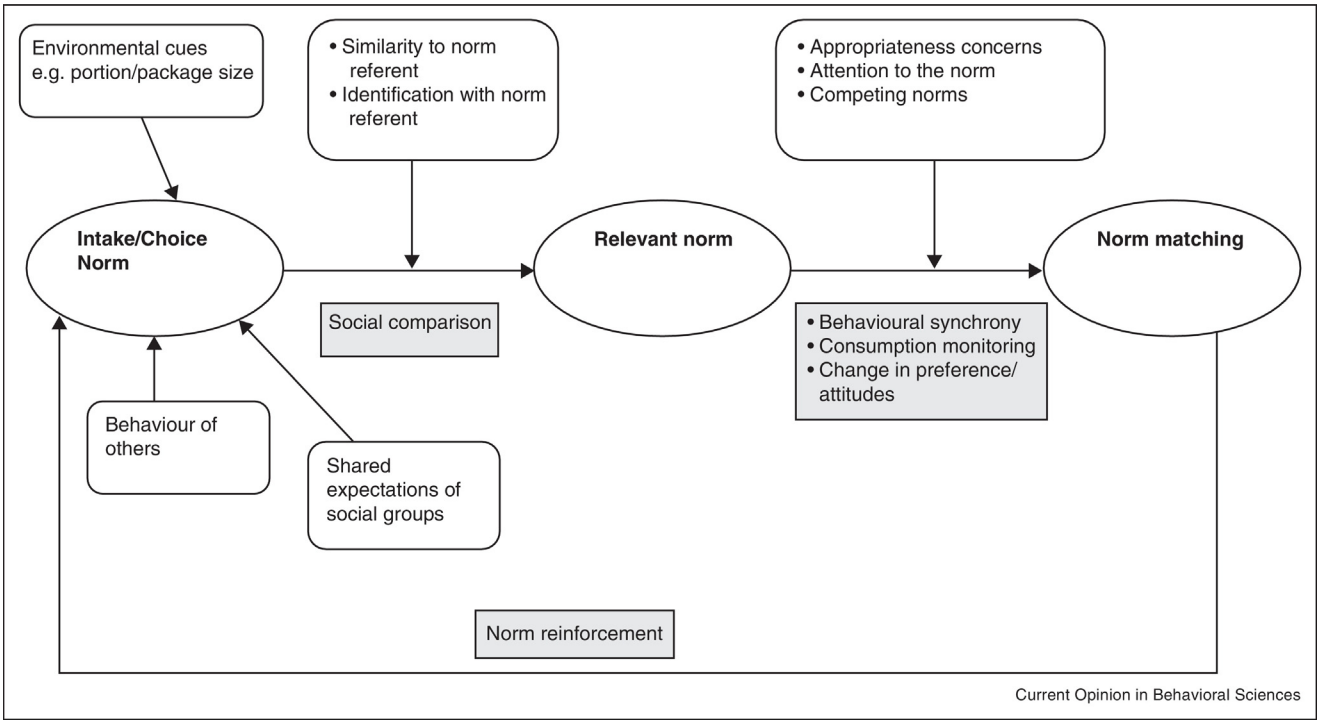
The diets of socially connected individuals are correlated [15,42–47], although the relatively modest associations observed in some studies [48] may be because diet similarity among friends and family is most likely when concerns with behaving 'correctly' are high [49]. Sophisticated social network analyses have been applied to try and tease out the influence of social norms from the effects of shared genetics and/or environment or homophily (similar individuals being more likely to develop social relations) in dietary resemblance. This is a difficult enterprise, in part because people may behave in a certain way to make social connections and then that behaviour might be reinforced once the relationship is established suggesting multiple dynamics at play [50]. People's eating choices appear to be influenced by the eating choices of those to whom they are socially connected [51–53] but future studies might address current methodological limitations by adopting an experimental approach to network analysis and improving methods of dietary intake analysis [54].

The adoption of normative eating patterns that promote overeating, without later compensation for the additional intake, could explain clustering of obesity in social networks [55–57], although changes in physical activity norms and/or perceptions about acceptable body sizes might also explain social patterning of obesity [58]. Social norms may have had a role to play in recent rises in obesity by reinforcing new behaviour patterns associated with overeating and weight gain. For example, increases in average portion size may have created new consumption norms that are diffused through social networks [59]. It might also be that the social context of eating has changed recently in ways that favour overconsumption. For example, more people eating away from home in fast food restaurants with others might be associated with social facilitation of eating. Maybe inhibitory eating norms, such as the norm of not eating more than others, have been relaxed, resulting in greater responsiveness to environmental cues that promote eating [17••]. Research into the precise mechanisms that underlie social transmission of eating patterns in social groups and the contribution of social eating norms to recent rises in obesity is in its infancy but deserves further investigation.

Harnessing social norms to promote healthier eating and weight loss

The idea that social norms may be used to promote healthy behaviours is gaining traction [60], and there is evidence that social norms for healthy behaviours can aid healthy eating and weight loss attempts [61,62•,63]. Several studies (mostly lab based) have examined the effectiveness of norm based messages in promoting healthier eating intentions and behaviour. The results so far have been mixed with five studies showing positive effects [18,38,64,65•,66] but two reporting null effects [67,68], and so confirmation of the effectiveness or otherwise of social norm interventions on diet awaits the results of randomised clinical trials in the field. A practical issue that also needs addressing is whether social norm interventions can be devised to promote eating behaviours that are actually not the norm. If healthy eating patterns are not the norm in a population then interventions might be based on, firstly, the prevalence of healthy eating intentions, rather than actual behaviour; secondly, absolute numbers of people eating healthily to create a perception of normative behaviour; thirdly, targeting individuals with particularly unhealthy diets who believe that this

Figure 1



A model of normative eating behaviour. Norms of appropriate eating are set by the behaviour of other people, shared cultural expectations, as well as environmental cues such as portion size that imply socially normative consumption. People engage in social comparison to the norm referent to decide if the apparent norm is relevant to them, taking into account their similarity to and strength of identification with the norm referent. If a norm is relevant then there may be matching of behaviour to the norm but this will depend on other temperamental and contextual factors such as the attention paid to the norm, concerns about behaving in a socially appropriate manner and other competing norms such as personal norms (habitual intakes) and stereotypes (e.g. the norm that women eat 'lightly'). The process of behavioural adjustment may involve processes such as synchronisation of eating actions, consumption monitoring and changes in evaluation of the food. Matching to the norm will reinforce the norm.

is the norm; or lastly, the behaviour of influential role models.

Conclusions

Judging by the number of studies published on social influence on eating in the last two years, it is thriving research area. A picture is emerging of how norms of appropriate intake influence our own eating and the factors that moderate these processes (see Figure 1). Evidence is accumulating that social influences on eating are powerful and pervasive and that the social context of eating may be an important factor underlying the development and maintenance of obesity. Emphasising the healthy eating intentions and behaviours of others may be beneficial in bringing about dietary change.

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Conflict of interest

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