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Research review

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Introduction

Eating often occurs in a social context and the food choices of others and the amounts that those around us eat have a powerful effect on our own consumption decisions. We model the eating choices of our dining partners and consume amounts similar to what they eat (Herman, Roth, & Polivy, 2003). Sometimes the presence of other diners may augment consumption compared with eating alone (De Castro & Brewer, 1992) and other times eating may be inhibited, even in the face of deprivation-induced hunger (Goldman, Herman, & Polivy, 1991).

One mechanism that may underlie the effects of social context on eating is the operation of social norms. Social norms are implicit codes of conduct that provide a guide to appropriate action. There is evidence that we use information about the eating behaviour...
of others as a guide as to what is the appropriate behaviour in a
given context (Herman et al., 2003). Dietary behaviours have also
been reported to be related to perceptions of normative behaviour
within peer groups (Ball, Jeffrey, Abbott, McNaughton, & Crawford,
2010; Lally, Bartle, & Wardle, 2011; Louis, Davies, Smith, & Terry,
2012) and food intake can be predicted by the eating behaviour of
socially connected peers (de la Haye, Robins, Mohr, & Wilson, 2010;
Fennekes, de Graaf, Meyboom, & van Staveren, 1998; Pachucki,

Studies on the effects on food intake/choice of providing nor-
mative information about the eating habits of others have been
reviewed elsewhere recently (Robinson, Benwell, & Higgs, 2013a;
Robinson, Blissett, & Higgs, 2013b; Robinson, Fleming, & Higgs,
2014a; Robinson, Thomas, Aveyard, & Higgs, 2014b). Studies on social
facilitation of eating, modelling and impression management are
reviewed elsewhere in this special issue. The aim of this paper is to
add to this literature by exploring why people follow eating
norms and how these norms influence eating. Consideration will
also be given to the factors that determine when people follow norms
and when other factors override the influence of norms.

What are social eating norms and where do they come from?

Social eating norms are perceived standards for what constit-
tutes appropriate consumption, whether that be amounts of foods
or specific food choices, for members of a social group. The social
group might be defined at the level of nationality, peer group, family
or friendship grouping. Social norms may be communicated di-
rectly via cultural practices and rules, actual behaviour in a given
situation, or indirectly via environmental cues such as portion size
norms. For example, a social norm might be avoidance of eating
insects, which is communicated by the group cuisine rules and re-
inforced by observation of disgust responses to (the prospect of)
eating insects (Looy, Dunkel, & Wood, 2013). Descriptive norms refer
to the perceptions of the prevalence or extent of a behaviour (what
other people do) and injunctive norms refer to perceptions about
what behaviour is expected (what other people endorse) (Cialdini,

Why do people follow social eating norms?

Two possible reasons why people follow eating norms are that
1) following a norm enhances affiliation with a social group and
being liked; and 2) following a norm results in eating that is correct
(Deutsch & Gerard, 1955). Many studies have been conducted to in-
vestigate the role of these motives in norm following in the context
of eating.

It has been reported that traits linked to the need for affilia-
tion, such as self-esteem and empathy, are associated with norm
following (Robinson, Tobias, Shaw, Freeman, & Higgs, 2011). Rob-
inson and colleagues found that participants were more likely to
follow the eating norm set by their eating partner when they scored
high on a measure of empathy and low on a measure of self-
esteeem. They concluded that social acceptance concerns play a role
in modelling of a food intake norm. Hermans and colleagues found
that the quality of a social interaction affects the degree of mod-
eling observed (Hermans, Engels, Larsen, & Herman, 2009). They
instructed a confederate to act either in a friendly or unsociable
manner and reported that less modelling occurred when the con-
 federate acted in a friendly manner than when the confederate acted
in an unsociable manner. One interpretation of the results of this
study is that under conditions where there is little need to ingra-
tiate oneself, because a social partner is already accepting, it is less
likely that a social norm inferred from his or her behaviour will be
followed. This hypothesis was tested explicitly in a study that
employed an experimental manipulation to alter feelings of social
acceptance before a social eating opportunity. Priming feelings of
social acceptance reduced the extent to which the participant
modelled the food intake of a confederate (Robinson et al., 2011).
The results of these studies are consistent with the idea that norms
are followed as a means of affiliating with others and gaining
acceptance.

Several studies have examined how people adjust their eating
behaviour to manage their public image and create a certain im-
pression on others. In reviewing this literature, Vartanian, Herman
and Polivy concluded that we make use of stereotypes about con-
sumption patterns to convey an image of ourselves in accord with
that stereotype (Vartanian, Herman, & Polivy, 2007). Eating a small
portion conveys a feminine and otherwise positive image, which
may be used to create a favourable impression on a fellow diner
who values those characteristics (Pliner & Chaiken, 1990). These data
are in line with evidence from the broader social psychology liter-
ature that adopting normative behaviour achieves a goal of affiliating
with others that is driven by our strong desire to be liked (Baumeister
& Leary, 1995).

Other studies have examined whether people follow norms con-
veyed by messages about how other people have behaved in a
specific situation, rather than norms set by another present per-
son’s eating (see Robinson et al., 2014a, 2014b for a review). These
types of norms are usually referred to as informational norms
(Deutsch & Gerard, 1955). In the remote confederate design, par-
ticipants are exposed to fictitious accounts of the amount of food
consumed by previous participants in that study (Feeley, Polivy,
Pliner, & Sullivan, 2011; Pliner & Mann, 2004; Roth, Herman, Polivy,
& Pliner, 2001). If remote confederates eat a lot, this signals a high
intake norm, whereas if they eat only a little then this signals a low
intake norm. A high norm increases food intake relative to a no norm
control condition whereas a low intake norm decreases intake
relative to a no norm control condition (Feeley et al., 2011; Pliner
& Mann, 2004; Robinson et al., 2011; Roth et al., 2001). Amounts
consumed by previous participants in a study can also be commu-
nicated via cues such as empty food wrappers. There is evidence
that participant choices are affected by such cues. People are more
likely to choose a “healthy” versus “unhealthy” food item if they see
evidence that previous participants have chosen “healthily” (Prinsen,
der Riddet, & de Vet, 2013). Furthermore, text-based descriptive norm
messages conveying information about the eating behaviour of others
affect subsequent food choices (Robinson et al., 2014a, Stok, de
Ridder, de Vet, & de Wit, 2012; Stok, Riddet, de Vet, & Wit, 2014a;
Stok, Verkooijen, Ridder, Wit, & Vet, 2014b). In these instances,
following the norm does not serve to promote affiliation or a sense
of belonging because there is no other person present. Hence, it
might be concluded that the motive to behave correctly explains
why people follow eating norms. Taking the example of studies using
a remote confederate, the intake of the fictitious participants indi-
cates the “right” way to behave in terms of how much to eat or
what foods to choose, and so that norm is adopted (Cialdini & Trost,

Clearly, there is evidence that on occasion people might follow
an eating norm to satisfy a desire to be liked but there is also evi-
dence that in the absence of direct social interaction, people still
follow eating norms, perhaps because they desire to behave cor-
rectly. Traditionally these motives have been conceptualised as being
independent (Cialdini & Goldstein, 2004). However, a more de-
tailed consideration of the evidence suggests that affiliation and
correctness concerns are not so easy to disentangle as it might at
first seem. Although the use of the remote confederate design may
minimise the extent to which people alter their behaviour to create
a good impression, there remains the possibility that the partici-
pants may follow the norm to impress the experimenter, assuming
that they are aware that their food intake/choices are being moni-
tored by the experimenter. In addition, adhering to the norm may

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make the individual feel as if s/he is a more socially-responsive individual and therefore perhaps more likely to be accepted by others. Given that affiliation and correctness motives seem difficult to dissociate, it may be that rather than considering them as separate and independent, we should consider the possibility that they are interdependent.

Norm following as an adaptive behaviour

A new model of social eating norms is suggested here that emphasises the interdependence of both affiliation and informational motives in explaining the power of social norms. The suggestion is that norm following is most usefully conceptualised as an adaptive behaviour that makes it more likely that we will consume safe foods and might promote food sharing. According to this explanation, behaving correctly by following the group norm enhances evolutionary fitness. It is further proposed that the force of norms, the reason why they have such a powerful influence on us, lies in the emotional consequences of either following them (social approval) or not following them (social disapproval). More specifically, it is proposed that the adaptive function of social influence is supported by co-opting affiliation motives: I follow your lead on how to behave and this is reinforced by feelings of a sense of group belonging or the avoidance of social disapproval. Conceptualised in this way, affiliation concerns underpin the force of adaptive social eating norms. The model rests on three specific arguments that will be examined in turn.

Norm following is adaptive in ensuring the selection of safe foods

The selection of safe and nutritious foods is critical for survival but presents a challenge to humans who are omnivores born with few innate flavour preferences (Rozin, 1976). We have to acquire knowledge about which foods are edible and non-toxic and one way that we learn about the foods that are good to eat is by associating food flavours with consequences and adjusting our behaviour accordingly: we learn to like foods that provide energy and avoid items that make us sick (see Brunstrom, 2007 for a review). However, we are also able to take advantage of the learning of others by following their lead. Following a social norm shortcuts the need for learning on a trial-and-error individual basis and so reduces the costs associated with this learning, such as the time taken to learn and the likelihood of error (Boyd, Richerson, & Henrich, 2011). This may be especially important when it comes to learning about food-stuffs because of the potentially lethal consequences of consuming the wrong substances. In support of this notion is the fact that young children are more likely to try a novel food if they see a familiar adult eating the same food (Addessi, Galloway, Visalberghi, & Birch, 2005) and will avoid drinks that are paired with an expression of dislike on the face of someone else (Baeyens, Vansteenwegen, De Houwer, & Crombez, 1996). Indeed, there are numerous examples of young children using social information to guide their eating (for a review see Shuts et al., 2012). Such social learning accumulates across generations in the forms of cultural practices around food (Rozin, 1996). Hence, following social eating norms increases evolutionary fitness because eating what others eat is a good guide to food safety and nutrition.

Norm following is adaptive in promoting cooperation and food sharing

Another reason why we tend to eat what others eat might be that it is a behaviour that evolved to support cooperation between members of a group. Indeed, it has been argued that the human disposition to cooperate developed in the context of cooperation around foraging for food (Tomasello, 2008). Evidence for this tendency to cooperate can be seen in experimental game playing studies in which people demonstrate a sense of fairness in dividing resources relatively equally between anonymous game playing partners, even when there is no chance for punishing unfair distribution (Dawes & Thaler, 1988). In the context of food foraging, hunter-gatherer societies engage in cooperative food gathering and sharing to the extent that some food resources are shared among a group regardless of who actually made the kill (Hill, 2002). Such cooperative behaviour would be supported by a social norm that one should not eat more than other members of a group, as has been reported on in experimental studies of social eating (Herman et al., 2003). Therefore, norm following may have had an additional evolutionary benefit in promoting food sharing and cooperative behaviour.

Social norms have force because they are associated with social judgement

The end point of eating what others do could be achieved by directly copying what they do or by observing the behaviour of others and then changing one’s own behaviour on the basis of observations (observational learning). In fact there is evidence that this kind of copying occurs around food. For example, studies of eating and drinking in humans show that consumption behaviour may be imitated directly by a person taking a sip or reaching for food directly after an observed person performs the same behaviour (Hermans et al., 2012; Koordeman et al., 2011; Larsen et al., 2010). This behaviour may be underpinned by basic neural processes that link perception with action, the so called “mirror neuron system” (Rizzolatti & Craighero, 2004). Similarly, rats and chimpanzees display a tendency to copy the behaviour of conspecifics and this tendency increases with the number of animals demonstrating the behaviour (Chou & Richerson, 1992; Haun, Rekers, & Tomasello, 2012). Monkeys will copy the food choices of another monkey when they migrate into a new environment, even if that choice goes against their own learned preferences (van de Waal, Borgeaud, & Whiten, 2013). However, conformity via imitation or observational learning is not the same as adopting a group norm. A critical difference is that there are emotional consequences when we follow (or do not follow) a social norm. We derive a sense of belonging by adopting the norms of a group and this may provide us with a sense of self-worth and esteem that might be considered rewarding (Deutsch & Gerard, 1955). But we also know that there are social sanctions or punishments that arise from not following a norm (Baumeister & Leary, 1995; Fehr & Fischbacher, 2004). A consequence of not following a social eating norm might be embarrassment or the disapproval of others. Indeed, given that stereotypes associated with overeating are generally negative and overeating and obesity are stigmatised (Vartanian et al., 2007), it may be that following an intake norm is primarily motivated by a desire to avoid social sanctions associated with appearing to eat excessively (Herman et al., 2003). Regardless, while following an eating norm might be underpinned by processes such as imitation, mere imitation does not constitute socially normative behaviour in and of itself. Norms have force because deviations are discouraged by social judgement (approval or disapproval) and the emotions that accompany such judgements (Tomasello, 2008).

The value of the proposed model lies in providing a single framework for understanding the role of affiliation and informational motives in norm following behaviour and highlighting the evolutionary benefit of norm following and the power of norms. Further evidence in support of the model may be gathered from a consideration of the factors that affect whether a norm will be followed (or not), which will be considered next.
What factors affect whether an eating social norm is followed?

Several factors have been identified that moderate norm following in the context of eating. However, relatively few studies have been conducted and so it is possible that important moderators have yet to be identified.

Norm uncertainty

An evolutionary approach to understanding the following of social eating norms suggests that norms will be more likely to be followed when there is uncertainty about the consequences of food choice (Laland, 2004). If individuals’ personal experience means that they are not sure of how to behave then they should be more likely to follow the lead of others, because that will be the safest choice. In support of this idea, modelling of food intake is less likely in eating situations where there are already clear expectations about how much one should eat, for example at habitual eating occasions such as breakfast, versus snack sessions where intake norms are more uncertain and variable (Hermans, Herman, Larson, & Engels, 2010a, 2010b). It should be more adaptive to follow a norm when there is a clear consensus about that norm (Morgan, Rendell, Ehn, Hoppitt, & Laland, 2012). In support of this suggestion, it has been reported that when communicated intake norms are ambiguous participants are less likely to follow them (Leone, Pliner, & Peter Herman, 2007). In general these data are in line with the results from studies of other types of social influence, such as conformity to the perceptual judgements of others (Asch, 1955). In a classic series of experiments, Asch asked participants to make a judgement about the length of a series of lines. In the Asch paradigm participants are shown one line on a card which serves as the standard line and then three lines on another piece of card. The task is to match one of the three lines to the standard. The participant is unaware that the other “participants” in the study are actually confederates of the experimenter and have been instructed to give a specific answer that is sometimes correct, but sometimes incorrect. Asch reported that the majority of participants were not swayed in their judgements even when the confederates were unanimous in reporting incorrect responses about the line. Thirty-eight per cent of participants could be persuaded to give the wrong answer to the question when the confederates were all providing the wrong answer but there was even less conformity to the group when the participants had an ally who was consistent in providing the correct answer (Asch, 1955). Hence, social influence on both eating and perceptual judgements is affected by uncertainty about the norm.

Asch also found that conformity was less likely when there was a bigger discrepancy between the standard line and the comparator lines, presumably because participants were more confident of the “correct” answer when the discrepancy was large (Asch, 1955). There have been few studies of modelling of eating in groups but it would be interesting to examine how food choices are affected by group norms and the extent to which these effects depend upon the certainty with which personal choices are made. We have reported that modelling of food choices in a buffet line was rather limited insofar as the presence of one “unhealthy” or “healthy” eating confederate did not affect total calories selected at the lunch (perhaps because the participants had a clear sense of what constitutes an appropriate lunch), but the presence of the “unhealthy” confederate did liberate the participants to choose fewer low energy dense buffet items (Robinson & Higgs, 2013). These data suggest a modest influence of the presence of a healthy eating dining companion on food choices in a context where there is free choice for a range of palatable food items, but it remains to be investigated whether greater modelling would be observed in the presence of a group of “healthy eaters”.

Norm referent group

Some evidence suggests that choice norms are more likely to be followed if the referent group belongs to a socially proximal group or “in-group” with whom an individual perceives shared identity (see review by Cruwys, Bevelander, and Hermans in this issue). For example, Cruwys et al. (2012) reported that a perceived eating norm affected behaviour when it came from a socially proximal group (fellow university students), but not when it came from a less proximal group (students from a rival university). A norm may be rejected if it comes from a social group with which a person does not wish to associate. For example, it has been reported that people are motivated to avoid the behaviour patterns of “out-groups” that are disliked, seen as lower status, or dissimilar, so as to distance themselves from that group (Berger & Heath, 2008; Berger & Rand, 2008). On the other hand, people tend to follow the norms of “out-groups” that are seen as aspirational (Englis & Solomon, 1995). The degree to which participants identify with a norm group also moderates the influence of an eating norm: participants who identify more strongly with the norm group are more likely to follow the norm (Stok et al., 2014a, 2014b). Hermans, Larsen, Herman, and Engels (2008) found that matching of food intake was less likely when a normal weight participant ate with an underweight confederate, possibly because the participants did not regard the underweight confederate as an appropriate model, or did not identify with the model. A similar effect has been reported by McFerran and colleagues whereby participants were less influenced by the choices of a confederate at a buffet when the confederate was overweight and the participant was normal weight than when both the confederate and participant were normal weight (McFerran, Dahl, Fitzsimons, & Morales, 2010). These data are consistent with the idea that norms provide a shortcut for learning about appropriate food choices, because in-group members would be expected to provide the most reliable information about the consequences of eating in the group environment.

People with whom we have an intimate relationship (e.g. friendship or family relationship) might be expected to provide the most reliable norms because we are likely to share the same environment. However, there is evidence of similar modelling of food intake among both friends and strangers (Howland, Hunger, & Mann, 2012; Kaisari & Higgs, this issue; Salvy et al., 2007). Moreover, there are reports that modelling effects on intake are greater when the eating partners do not know each other than when they are siblings (Salvy, Vartanian, Coelho, Jarrin, & Pliner, 2008). It may be that these results are dependent upon the type of “friendship” and factors relating to shared identity and/or the need to affiliate. For example, I may perceive a shared identity with people whom I have never met before because we are similar in some way (e.g. same gender, age, social group). I may follow the lead of these “strangers” because I consider them “in-group” members. I may also follow the lead of strangers because I have a desire for social approval, especially if I perceive them to belong to a desirable “out-group”. This suggests that studies on how intimate relationships affect social influence should focus on manipulating specific underlying processes such as shared identity to tease out some of these potential influences.

Individual characteristics

There has been no systematic investigation of the effect of gender on social eating influences. In fact, most studies have recruited only women. Two studies failed to find modelling effects on eating in men (Hermans et al., 2010b; Salvy et al., 2007), although the reasons why this might be the case are unclear. Men may have a greater drive for distinctiveness than women do, which may lead to non-conformity in eating (Cross & Madson, 1997). On the other
hand, it might be that women may possess a greater interest in facilitating positive social bonds than do men, perhaps due to higher empathic tendencies (Eagly & Carli, 1981). Evidence from studies of other types of social influence are consistent with the suggestion that women are more likely to follow social norms than are men (Bond & Smith, 1996; Eagly & Carli, 1981), but further investigation of gender differences in responses to eating norms and the underlying mechanisms is required before strong conclusions can be drawn.

Food type

Palatability considerations may override normative considerations. Pliner and Mann (2004) found that social norms did not influence participants to choose an unpalatable “healthy” cookie over a palatable “unhealthy” cookie. This may be in part because some people find it difficult to resist tempting foods and will go for the more palatable “unhealthy” cookie even if it is not the choice that other people are seen to make. It may be that social information cannot persuade people to consume foods that they dislike (or perhaps knowing to be potentially unsafe). However, evidence from Salmon, Fennis, de Ridder, Adriaanse, and de Vet (2014) suggests that a social norm message may persuade people to consume more of a “healthy” food but only if the participants are lacking in self-control. In this study the “healthy” items were cereal bars and fruit and nuts rather than unpalatable foods. More data are required on the issue of how food type interacts with norm information to affect food intake and choice, especially for healthy foods such as vegetables that people typically regard as unpalatable.

How do social norms affect eating behaviour?

An important question that has yet to be addressed in any detail is how social norms affect eating. Answering this question will have implications for the potential use of social norms in interventions aimed at changing dietary behaviour. A person may decide to choose a “healthy” food option because others do so, but if this behaviour is based purely on public acceptance of the norm (in other words, the choice is made only so that that person wishes to be seen to conform), then this type of conformity is unlikely to form the basis of an effective, long term intervention on behaviour change. On the other hand, if norms are changing underlying perceptions of oneself or of the food then this would suggest a private acceptance of the norm rather than mere public conformity, which might be more likely to sustain behaviour change in the long run.

Change in self-perception

It has been suggested that conforming to group norms may occur because it results in a positive change in self-perception and attitudes. If an observed norm is a “healthy” food choice and I identify with the norm referent group then I might see myself as the kind of person who makes “healthy” food choices and behave in a manner consistent with this self-identity (Bem, 1972). I might also feel that if other people like me are performing the behaviour then this means that I am capable of doing it, which could increase my feelings of self-efficacy for performing the behaviour (de Cremer & van Vugt, 1998). In the case of following healthy eating norms, Stok et al. (2014a, 2014b) have reported that the effect of an eating norm about vegetable consumption increased self-reported vegetable consumption and that this effect was partially but not fully mediated by changes in self-identification and self-efficacy leaving some variance unaccounted for.

Change in sensory/hedonic evaluation of foods

Another possible mechanism underlying how social norms affect eating is that they change the perception and evaluation of the foods. Asch suggested that participants may have conformed with the incorrect answer of the confederate because they experienced a perceptual distortion and perceived the incorrect stimuli as correct (Asch, 1955). In support of this hypothesis, Berns et al. (2005) reported that conformity to the incorrect group in an Asch-like perceptual judgement task was associated with increased activity in areas of the brain associated with early visual processing. Others have reported that changes in brain reward networks are associated with adherence to social norms (for a review see Izuma, 2013). For example, the provision of social information, in the form of reviews about a song, increased activity in brain areas associated with reward when the songs were heard (Campbell-Meiklejohn, Bach, Roeppstorff, Dolan, & Frith, 2010).

In the case of eating, one could hypothesise that the behaviour of others may affect sensory/hedonic responses to food cues and food consumption, thus affecting food-related decisions. This might be achieved by modulation of expectations about the consequences of consuming that food. A food might be expected to have positive rewarding consequences and taste good because other people whom we identify with are eating it and enjoying it. Moreover, it could be that social influence is accompanied by neural changes that align the liking of the food with others’ liking of the food, as has been shown for the effect of other external cues such as labels (Grabenhorst, Rolls, & Bilderbeck, 2008). In support of this idea, we have found that providing information about how much an in-group but not an out-group likes orange juice affects participants’ expected liking for orange juice (Robinson & Higgs, 2013). In addition, it has been shown that being in agreement with the preferences and decisions of others activates brain reward networks whereas being in disagreement has the opposite effect (Botvinick, Cohen, & Carter, 2004; Kluharev, Hytönen, Rijkema, Smidts, & Fernández, 2009). Thus, conformity to eating norms could be driven by increases in reward-related brain activity as behaviour comes in line with the group. Clearly, this hypothesis requires careful testing but it is consistent with the idea more generally that reward is at the core of social conformity (Zaki, Schirmer, & Mitchell, 2011).

Conclusions

Normative social influence on eating is potent and pervasive. The presence of other people at an eating occasion or when choices are made about food has a powerful effect on behaviour. This may be because humans have a highly developed capacity to learn from the behaviour of others and find the approval of others rewarding and disapproval aversive. It is proposed that eating norms are followed because they provide information about safe foods and facilitate food sharing. They are a powerful influence on behaviour because following (or not following) norms is associated with social judgements. Norm following is more likely when there is uncertainty about what constitutes correct behaviour and when there is greater shared identity with the norm referent group. Social norms may affect food choice and intake by altering self-perceptions and the sensory/hedonic evaluation of foods. The same neural systems that mediate the rewarding effects of food itself are likely to reinforce the following of eating norms.

References


