



Descriptive peer norms, self-control and dietary behaviour in young adults

Eric Robinson, Roy Otten & Roel C.J. Hermans

To cite this article: Eric Robinson, Roy Otten & Roel C.J. Hermans (2016) Descriptive peer norms, self-control and dietary behaviour in young adults, *Psychology & Health*, 31:1, 9-20, DOI: [10.1080/08870446.2015.1067705](https://doi.org/10.1080/08870446.2015.1067705)

To link to this article: <http://dx.doi.org/10.1080/08870446.2015.1067705>



Accepted author version posted online: 02 Jul 2015.
Published online: 28 Jul 2015.



[Submit your article to this journal](#)



Article views: 612



[View related articles](#)



[View Crossmark data](#)



Citing articles: 4 [View citing articles](#)

Descriptive peer norms, self-control and dietary behaviour in young adults

Eric Robinson^{a*}, Roy Otten^{b,c} and Roel C.J. Hermans^b

^a*Department of Psychological Sciences, University of Liverpool, Liverpool, UK;* ^b*Behavioural Science Institute, Radboud University Nijmegen, Nijmegen, The Netherlands;* ^c*Trimbos Institute, Netherlands Institute for Mental Health and Addiction (NIMHA), Utrecht, The Netherlands*

(Received 30 June 2014; accepted 25 June 2015)

There is evidence that perceived peer eating norms can influence dietary behaviour. This cross-sectional study examined whether certain personality traits increase the likelihood that personal eating habits are similar to perceived peer eating habits. We assessed frequency of consumption of sugar-sweetened soda (SSS) and sweet pastries (SP), as well as perceived peer descriptive eating norms for SSS and SP in a group of 1056 young adults. We examined whether individual differences in the need for social acceptance and self-control moderated whether participants were likely to display similar dietary habits to their peers. Perceived peer eating norms for SSS and SP predicted frequency of consumption; believing that one's peers frequently consumed SSS and SP was associated with increased personal consumption for both. Individuals with low self-control, as opposed to high self-control, were more likely to adhere to peer norms for SP, but not for SSS. Trait social acceptance needs did not significantly moderate similarity between peer norms and personal consumption for either SSS or SP. The extent to which young adults adhere to descriptive peer dietary norms may depend upon self-control, whereby individuals with low self-control are less able to inhibit social influence of descriptive peer norms on dietary behaviour.

Keywords: food consumption; young adults; descriptive norms; eating norms; self-control; social acceptance

Introduction

A significant body of research has investigated the role of social influence on eating behaviour. In the laboratory, it has been consistently shown that the presence of others affects food choice and consumption (Cruwys, Bevelander, & Hermans, 2015; Robinson & Higgs, 2013). Studies on modelling of food choice and intake demonstrate, for example, that people's food intake is likely to decrease if one is eating with a person consuming a small amount of that food and that one's choice for a low-calorie food item over a high-energy dense snack can be influenced by what others tend to choose (e.g. Burger et al., 2010; Hermans, Larsen, Herman, & Engels, 2012; McFerran, Dahl, Fitzsimons, & Morales, 2010; Robinson & Higgs, 2013). In addition, longitudinal analyses have suggested that there is concordance in food choice among friends in

*Corresponding author. Email: eric.robinson@liv.ac.uk

social networks. That is, having peers who frequently eat snack food has been shown to be associated with increased snack food consumption (De la Haye, Robins, Mohr, & Wilson, 2013; Pachucki, Jacques, & Christakis, 2011).

Social influence effects on eating have also been observed when eating companions are not physically present and participants instead learn about others who have previously been eating in the same context (Prinsen, de Ridder, & de Vet, 2013; Robinson, Thomas, Aveyard, & Higgs, 2014). In these types of studies, participants are provided with ‘descriptive norms’ (what others have been doing). By invoking the heuristic of ‘what most people are doing is probably the correct thing to do’, people rely on this type of ‘informational’ social influence to identify adaptive behaviour. Descriptive norms are distinct to another type of social norm; ‘injunctive norms’, which relate to what other people tend to approve of (Cialdini, Reno, & Kallgren, 1990; Jacobson, Mortensen, & Cialdini, 2011; Kredentser, Fabrigar, Smith, & Fulton, 2012). There is evidence that perceived descriptive social norms may also influence people’s eating habits in daily life. According to health psychology models, perceptions of descriptive social norms, along with attitudes and beliefs about behavioural control shape one’s intentions and subsequent behaviour (Fishbein & Ajzen, 2010; Povey et al., 2000). Moreover, a number of studies have shown that the frequency by which individuals consume a variety of food types, including fruit and vegetables, snack foods, ‘fast foods’ and sodas, is associated with how often they presume their peers consume these foods (Ball, Jeffrey, Abbott, McNaughton, & Crawford, 2010; Lally, Bartle, & Wardle, 2011; Povey et al., 2000).

There are a number of mechanisms that may explain similarities in diet and eating behaviours among young people. As discussed, one explanation is that the behaviours of others can act as a form of descriptive norm and this in turn affects people’s food choice and intake. However, the exact mechanisms explaining why descriptive peer norms might influence eating behaviour remain unclear. Based on the premise that there are two main forms of social influence, descriptive norms could influence behaviour via ‘informational’ or ‘normative’ social influence (Deutsch & Gerard, 1955). Descriptive norms may provide individuals with ‘informational’ cues about how they might behave – otherwise known as informational influence (Deutsch & Gerard, 1955; Robinson, Thomas, 2014). Conversely, individuals may be motivated to adhere to descriptive norms in order to be liked and accepted; ‘normative social influence’ (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955), as perceived peer norms, could act as a proxy for what is deemed to be a socially acceptable way to behave.

There is a growing awareness that informational social influence may be the main underlying reason why descriptive norms influence behaviour. This is because descriptive norms have been shown to activate the goal to make accurate and efficient decisions (Jacobson et al., 2011) and because peer descriptive norms act as a form of social proof (Cialdini et al., 1990), which helps individuals to make better-informed decisions about their behaviour (Cialdini & Goldstein, 2004). This suggestion has also received some support in eating behaviour research. For example, if descriptive norms do exert their influence by acting as a decisional shortcut (‘what most people are doing is probably the correct thing to do’), then depleting cognitive resources should make participants particularly likely to fall back on this cue and be influenced by descriptive norms. Indeed, (Salmon et al., 2014) recently demonstrated this using a hypothetical food choice task. Under conditions of low self-control, people made more healthy choices

when healthy food choices were described as being common (Salmon et al., 2014). In addition, if descriptive norms about eating behaviour do act as a form of informational influence, then descriptive norms set by similar peers are hypothesised to be particularly influential on one's eating behaviour, as their behaviour is most likely to be relevant to follow. In support of this, Cruwys et al. (2012) found that an eating norm set by a peer from the same social group had a stronger effect on food intake than an eating norm set by a dissimilar peer. This effect was observed when participants were eating alone, and therefore normative concerns were minimal (Cruwys et al., 2012).

A factor related to informational influence that might be important in explaining why descriptive eating behaviour norms influence dietary behaviour is self-control. Individual differences in self-control have been shown to be associated with eating behaviour, whereby individuals with high self-control display healthier dietary habits (e.g. less sweets, fast food and soda) than those with low levels of self-control (Armitage & Conner, 2006; Junger & van Kampen, 2010). An explanation for this observation is that individuals with high-trait self-control are able to inhibit short-term impulses encountered when faced with 'unhealthy foods' (Baumeister, Vohs, & Tice, 2007). An untested possibility in the eating behaviour literature is that self-control also affects dietary behaviour by moderating whether or not a person is influenced by descriptive peer eating norms. This may be of importance, as some work has suggested that descriptive eating norms may act as a form of informational cue that individuals use to inform their own behaviour and that people who are low in self-control are more subject to this type of social influence (Salmon et al., 2014). Moreover, in other areas of research, whether or not social norms are influential may depend on whether individuals have the cognitive resources necessary to inhibit such a cue (Burkley, Anderson, & Curtis, 2011; Wills, Pokhrel, Morehouse, & Fenster, 2011). Given that individuals with low self-control may be less able to inhibit the influence of social cues on their behaviour, one prediction is that their eating behaviour should be more similar to descriptive peer norms, in comparison to individuals with high self-control. On the other hand, there is also evidence that similarities in food intake are enhanced when people are less impulsive (Hermans et al., 2013). Given the lack of research on this topic, however, it is difficult to draw firm conclusions on the role that self-control may have in explaining peer norm influence on eating behaviour.

In addition to research linking the potential moderating role that individual differences in self-control have on the influence of descriptive norms, it is possible that individuals adhere to descriptive peer norms in order to ingratiate themselves or to gain social approval 'if everyone else is doing it, I should follow suit so that I am liked by everyone else' (Hermans, Engels, Larsen, & Herman, 2009; Robinson & Tobias, 2011), otherwise known as normative social influence (Deutsch & Gerard, 1955). Based on this proposal, we would hypothesise that individuals with high desires to be liked by others and to 'belong' would be particularly likely to follow peer dietary norms. It is possible that the influence of injunctive norms would be more likely to be moderated by social acceptance needs than descriptive norms (Jacobson et al., 2011; Kredentser et al., 2012), but we are unaware of any eating behaviour research which has tested whether individual differences in the need for social acceptance moderate the influence of descriptive peer eating norms on dietary behaviour.

As little research has examined the role of individual differences in peer descriptive norm effects on dietary behaviour, the aims of the present work were to test whether

personality variables (trait self-control and trait social acceptance needs) increase the likelihood that individuals display similar dietary patterns to what they perceive their peers typically eat. We selected these variables based on the main two proposed mechanisms (Deutsch & Gerard, 1955) for why peer descriptive norms may influence behaviour; informational social influence (trait self-control) and normative social influence (trait social acceptance needs). We also reasoned, examining for the first time, whether some individuals (e.g. high vs. low self-control and high vs. low social acceptance needs) are more likely to eat in line with peer descriptive norms may provide us with important theoretical information.

In the present study, we opted to focus on the relationship between descriptive peer norms and eating behaviour because the majority of dietary studies to date have shown there is a clear relationship between descriptive norms and personal dietary behaviour (e.g. Ball et al., 2010; Lally et al., 2011). We examined dietary habits and perceived descriptive peer norms for two food/beverage types; sugar-sweetened soda (SSS) and sweet pastries (SP), as previous research has suggested these foods are influenced by descriptive peer consumption norms (Ball et al., 2010; Lally et al., 2011) and both are also of public health relevance, as their consumption is likely to be implicated in weight gain (Blundell & Macdiarmid, 1997; Ludwig, Peterson, & Gortmaker, 2001).

As descriptive norms may act as a form of informational cue that individuals use to inform their own behaviour and people who are low in self-control would be poor at inhibiting this cue, our main hypothesis was that peer descriptive norms would be associated with personal consumption for both food types and that trait self-control would moderate relationships between peer descriptive norms and personal consumption. More specifically, we predicted that individuals with low-trait self-control would be more likely to regularly consume SSS and SP if they believed their peers also frequently consumed these foods, in comparison to individuals with high-trait self-control. We also hypothesised that individuals with a high need for social acceptance may be more likely to adhere to descriptive peer norms in order to be liked by others.

Method

Participants

One thousand and fifty-six young adults participated in a large online study on lifestyle habits of university students. The study was advertised as an online study about drinking and lifestyle habits on electronic bulletins and email lists in a UK university and participants were able to be entered into a small monetary prize draw as compensation for their time. The study protocol was approved by the University of Liverpool research ethics committee.

Procedure and materials

Participants first provided informed consent and then completed a series of questionnaires in a randomized order, which included demographic information. The current study was part of a large longitudinal lifestyle cohort study with multiple research hypotheses. Therefore, participants also completed other measures (e.g. the Depression, Anxiety and Stress scale (Lovibond & Lovibond, 1995; short-form Drinking Motives

Questionnaire, Kuntsche & Kuntsche, 2009; and AUDIT C scale, Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). Because these measures were not relevant to the present study's aims, they were not incorporated in the current analyses. All of our measures of relevance to the present research are outlined below in detail.

Measures

To measure frequency of consumption of SSS and SP, participants completed a shortened adapted food frequency questionnaire, developed by Pliner and Saunders (2008). Using this measure, participants reported the frequency of consumption of common sugar-containing sodas (e.g. coke) and cakes/pastries, alongside 15 other food types, on a 'never' to 'daily' (1–9) response scale for each food item. To measure peer norms for these two food types, participants were asked how often they thought other students have cakes/pastries and sugar-containing soda separately, responding on a 'never' to 'daily or almost daily' (1–5) response scale (see Ball et al., 2010). Participants did not complete peer norm measures for any of the other 15 food types. Trait social acceptance needs were measured using the 'need to belong scale, which is a 10-item scale (e.g. 'I want other people to accept me'), with good construct validity (Leary et al., 2013). Cronbach's alpha in the present study was .83. To measure trait self-control, participants completed the self-control scale, which consists of 13 items (e.g. 'I usually think carefully before doing anything') with good internal consistency and reliability (Tangney, Baumeister, & Boone, 2004). Cronbach's alpha in the present study was .81. Participants also completed demographic measures: ethnicity, age, gender, weight and height.

Analytic strategy

Descriptive analyses were conducted to provide information about the sample and the consumption of SSS and SP. To examine whether peer dietary norms were associated with personal consumption of SSS and SP, we used regression analysis in SPSS 18. To simply test the main effects of social acceptance and individual self-control on the consumption of SP and SPP, both variables were added to the model and so were peer dietary norms and confounding variables (i.e. gender, age, ethnicity and BMI).¹ However, to test for moderation, interaction terms were added to the model in a second step (i.e. peer dietary norms x social acceptance and peer dietary norms x self-control). Significant interactions were plotted and then interpreted.

Results

Sample characteristics

The majority of the sample had a BMI within the normal weight range, with an average self-reported BMI $M = 23.34 \text{ kg/m}^2$, $SD = 4.68$. Participants' mean age was 21.68 years ($SD = 4.49$). The sample consisted 749 female and 307 male participants (71% vs. 29%). The majority of participants were Caucasian (82%), with a small number of Black (2%), Asian (10%), mixed race (4%) and 'other race' (2%) respondents. The sample consisted mainly of undergraduate students (90%), with a small numbers of postgraduate students (10%).

Sweet pastries and sugar-sweetened soda consumption

The most commonly reported frequency of SP consumption was once a week (26%), although participant consumption frequency was variable, with participants reporting daily consumption and never consuming SP. The most commonly reported frequency of SSS consumption was two to three times a month (17%), although participant consumption frequency was variable, with participants reporting daily consumption and never consuming SSS.

Main analyses

Results showed that females were less likely to drink SSS than males ($\beta = -.22$, $p < .001$) and that perceived peer eating norms for SSS ($\beta = .08$, $p = .007$) and SP ($\beta = .33$, $p < .001$) predicted frequency of consumption. Young adults believing that their peers frequently drank and ate SSS and SP were more likely to consume SSS and SP than young adults who did not believe their peers frequently drank and ate SSS and SP (see Table 1).

Social acceptance was positively related to SSS ($\beta = .08$, $p = .006$). That is, individuals with higher social acceptance needs consumed more SSS. Social acceptance was not related to the consumption of SP ($\beta = .05$, $p = .097$). The interaction between peer dietary norms and social acceptance was not significant for SSS ($\beta = -.05$, $p = .083$) or SP consumption ($\beta = -.01$, $p = .812$).

Regarding self-control, we found a negative main effect for the consumption of SSS ($\beta = -.14$, $p < .001$). That is, high self-control was associated with a lower consumption of SSS. This main effect was not found for the consumption of SP. No significant interaction between peer dietary norms and self-control on SSS consumption was found ($\beta = .01$, $p = .654$).

Table 1. Personal consumption of SSS and SP predicted by peer norms of SSS and SP, the need for social acceptance, self-control and their interaction (standardised estimates).

Independent variables	<i>b</i>	Personal consumption of SSS				Personal consumption of SP			
		β	S.E.	<i>p</i> -value	<i>b</i>	Beta	S.E.	<i>p</i> -value	
Step 0									
Sex	-1.15	-.22	.16	.000	.13	.04	.10	.200	
Age	-.07	-.13	.02	.000	-.01	-.03	.01	.301	
Ethnicity	.02	.01	.07	.765	.04	.02	.05	.434	
BMI	.00	-.01	.00	.722	-.00	-.04	.00	.163	
Peer norms for SSS or SP	.35	.08	.13	.007	.77	.33	.07	.000	
Step 1a									
Social acceptance	.03	.08	.01	.006	.01	.05	.01	.097	
Step 2a									
Peer norms*social acceptance	-.04	-.05	.02	.083	-.00	-.01	.01	.812	
Step 1b									
Self-control	-.04	-.14	.01	.000	-.01	-.05	.01	.093	
Step 2b									
Peer norms*self-control	.01	.01	.02	.654	-.02	-.06	.01	.027	

Notes: Step 0 includes the model with only the potential confounders; steps 1a and 2a refer to the regression models that include social acceptance; steps 1b and 2b refer to the regression models that include self-control (i.e. these refer to separate regression models).

Yet, there was a significant interaction between peer dietary norms and self-control on SP consumption ($\beta = -.06, p = .027$). To examine this interaction, we followed the stepwise approach by Dawson (2014) based on Aiken and West (1991). Specifically, parameters derived from the regression analysis (i.e. unstandardised regression coefficients for independent variable, moderator and interaction; intercept/constant; as well as means and SD's for the independent variable and moderator) were used to plot the interaction depicted in Figure 1. The pattern of this interaction indicates that the association between perceived norms and SP consumption is stronger among individuals with lower levels of self-control, as opposed to high self-control, although the positive association observed between perceived norms and SP was significant in participants with high and low self-control ($ps < .05$). See Figure 1.

Discussion

Perceived descriptive peer dietary norms for SSS and SP predicted personal frequency of consumption; believing one's peers frequently consumed SSS or SP was associated with increased personal consumption for both food types. These findings are in line with other studies showing that perceived peer descriptive eating norms are associated with personal dietary behaviour (Ball et al., 2010; Lally et al., 2011; Povey et al., 2000). The present study also examined if trait measures of social acceptance needs or self-control increased the likelihood that individuals display similar dietary habits to what they perceive their peers to consume. Trait social acceptance needs did not significantly moderate similarity between perceived peer and personal consumption for SSS or SP. However, participants with lower levels of self-control, as opposed to high self-control, were more likely to adhere to perceived peer dietary norms for SP but not for SSS.

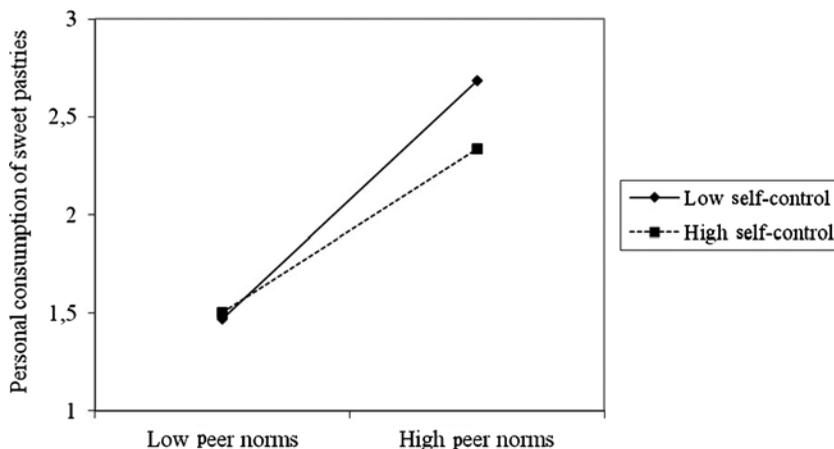


Figure 1. Interaction between perceived peer norms and self-control on personal consumption of SP. Notes: Higher personal consumption scores indicate a higher frequency of consumption. Peer norms and self-control are treated as continuous variables.

The finding that individuals with low self-control were particularly likely to display similar SP consumption patterns to what they perceived their peers to consume is in line with recent experimental work, suggesting that depleting self-control resources may moderate social influence on food choice (Salmon et al., 2014). This is also in line with suggestions that social influence may depend on whether individuals have the cognitive resources necessary to inhibit external cues on their behaviour (Burkley et al., 2011; Wills et al., 2011). However, individual differences in self-control were not found to moderate the relationship between personal and perceived peer consumption of SSS and this finding did not support our hypotheses. Why self-control moderated the association between personal dietary behaviour and perceived peer behaviour for SP, but not SSS is unclear. It is well established that individuals with an ineffective response inhibition are more vulnerable to the temptations of tasty high-caloric foods, and consequently eat more after exposure to these foods (e.g. Guerrieri et al., 2007; Nederkoorn, Jansen, Mulken, & Jansen, 2007). Thus, it may be the case that because SP are an ‘indulgent’ high-calorie food, self-control resources are of particular importance in controlling the influence of peer norms on their consumption, more than with the consumption of SSS. However, this is a *post hoc* suggestion and is speculative, so it will now need to be empirically tested. Further work could examine this proposition by examining whether self-control mediates the effect that peer norms have on consumption of other high-calorie ‘indulgent’ food types, as well as whether self-control is less influential on peer effects for less indulgent foods, such as fruit and vegetables.

No evidence was found that trait social acceptance needs moderated the association between peer norms and dietary behaviour. One possible explanation as to why we did not observe this relationship is because of the trait social approval measure we used (the need to belong scale; Leary et al., 2013). Moreover, it could be argued that implicit measures (e.g. Bevelander, Anschutz, Creemers, Kleinjan, & Engels, 2013) may be a more sensitive way to measure social approval concerns. Further work testing other measures of social acceptance needs in explaining peer effects on dietary behaviour would now be valuable. The finding that trait social approval concerns did not moderate the association between perceived peer descriptive norms and personal dietary behaviour may indicate that peer descriptive norms do not exert their influence on dietary behaviour through social approval concerns. There is now a growing body of research which suggests that descriptive norms act as decision-making cues and are therefore a form of informational social influence or denote ‘social proof’ (Cialdini & Goldstein, 2005; Jacobson et al., 2011; Robinson, Thomas, Aveyard, & Higgs, 2014; Salmon et al., 2014), as opposed to influencing behaviour via social desirability. Thus, the lack of influence that social approval concerns had in the present study may not be too surprising. That said, social approval concerns may play an important role in moderating any influence that injunctive peer norms have on dietary behaviour. Injunctive norms refer to perceptions of what others approve of and because of this it seems likely that individuals with high social acceptance needs may be more likely to change their behaviour to conform to injunctive norms. The influence that injunctive norms have on dietary behaviour has received less attention than descriptive norms. Some studies to date have found little evidence of injunctive norms influencing dietary behaviour. For example, (Lally et al., 2011) found that perceived descriptive peer norms predicted dietary behaviour in adolescents, but perceived injunctive peer norms did not. Likewise, messages formulated to lead participants to believe that there are positive injunctive

norms for fruit and vegetable consumption have not been shown to increase consumption of fruit and vegetables (Robinson, Fleming, & Higgs, 2014; Stok, de Ridder, de Vet, & de Wit, 2014). A more detailed examination of whether social approval concerns may interact with injunctive norms to explain dietary habits would now be informative.

Limitations and future work

The present work had some limitations. The data were cross-sectional, so it will be important to examine the longitudinal influence that peer norms, self-control and social approval concerns have on dietary behaviour in order to rule out backwards causation. For example, it could be that individuals select peers who display similar eating habits to themselves (McPherson, Smith-Lovin, & Cook, 2001) and this may account for some of the association between peer and own consumption, although this explanation seems less well suited to explain the finding that self-control interacted with peer norms to predict SP consumption. A limitation of our measurement of peer descriptive norms and personal eating habits was that we used single-item measures, which means that we cannot be certain our measures had good construct validity. Another caveat of the present work was that we only examined perceived *peer* norms and not norms set by immediate friends or other social contacts, such as siblings or other family members. The relationship between norms and behaviour may be strongest when people identify with the norm referent group (Terry, Hogg & White, 1999), so it is also possible that norms may only influence behaviour because of social acceptance needs when eating norms are set by more immediate peers. Future studies testing for contrasting different peer groups could further examine this. The current study relied on self-report dietary data (Ball et al., 2010) and focused on young adults, so it is not clear if the results observed here would be replicated in different populations. The present research also studied the role of peer norms and personality traits in relation to two specific food/beverage types. Now that the present work has identified a potential role for self-control in moderating peer norm effects on dietary behaviour, further research to understand whether a similar relationship is observed for other food types will be informative.

Conclusions

Perceived descriptive peer norms for consumption of SSS and SP were associated with personal consumption frequency. For some SP foods, the extent to which young adults copy the dietary behaviour of their peers may in part depend upon self-control, whereby individuals with low self-control are less able to inhibit the influence of descriptive peer eating norms on their dietary behaviour.

Author contributions

ER was supported by the Wellcome Trust. ER designed the study and oversaw data collection. ER, RO and RCJH conducted the analyses, interpreted the data, wrote the paper and approved the final version prior to publication.

Disclosure statement

The authors declare that they have no conflicts of interest.

Funding

ER was supported by the Wellcome Trust.

Note

1. Study variables were centred before inclusion in the model. Main analysis results remain the same when potential demographic confounders (e.g. BMI) are not controlled for.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage.
- Armitage, C. J., & Conner, M. (2006). Distinguishing perceptions of control from self-efficacy: Predicting consumption of a low-fat diet using the theory of planned behavior. *Journal of Applied Social Psychology, 29*, 72–90.
- Ball, K., Jeffrey, W., Abbott, G., McNaughton, S. A., & Crawford, D. A. (2010). Is healthy behaviour contagious: Associations of social norms with physical activity and healthy eating. *International Journal of Behavioural Nutrition and Physical Activity, 7*, e86.
- Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16*, 351–355.
- Bevelander, K. E., Anschutz, D. J., Creemers, D. H. M., Kleinjan, M., & Engels, R. C. M. E. (2013). The role of explicit and implicit self-esteem in peer modeling of palatable food intake: A study on social media interaction among youngsters. *PLoS ONE, 8*, e72481. doi:10.1371/journal.pone.0072481
- Blundell, J. E., & Macdiarmid, J. I. (1997). Fat as a risk factor for overconsumption: Satiation, satiety and patterns of eating. *Journal of the American Dietetic Association, 97*, 63–69.
- Burger, J. M., Bell, H., Harvey, K., Johnson, J., Stewart, C., Dorian, K., ... Swedroe, M. (2010). Nutritious or delicious? The effect of descriptive norm information on food choice. *Journal of Social and Clinical Psychology, 29*, 228–242.
- Burkley, E., Anderson, D., & Curtis, J. (2011). You wore me down: Self-control strength and social influence. *Social and Personality Psychology Compass, 5*, 487–499.
- Bush, K., Kivlahan, D. R., McDonell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Archives of Internal Medicine, 158*, 1789–1795.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology, 55*, 591–621.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58*, 1015–1026.
- Cruwys, T., Bevelander, K. E., & Hermans, R. C. J. (2015). Social modeling of eating: A review of when and why social influence affects food intake and food choice. *Appetite, 86*, 3–18.
- Cruwys, T., Platow, M. J., Angullia, S. A., Chang, J. M., Diler, S. E., Kirchner, J. L., ... Wadley, A. L. (2012). Modeling of food intake is moderated by salient psychological group membership. *Appetite, 58*, 754–757. Epub 2011 Dec 8. doi:10.1016/j.appet.2011.12.002

- Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*, 1–19.
- De la Haye, K., Robins, G., Mohr, P., & Wilson, C. (2013). Adolescents' intake of junk food: Processes and mechanisms driving consumption similarities among friends. *Journal of Research on Adolescence, 3*, 524–536.
- Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgement. *Journal of Abnormal Psychology, 51*, 629–636.
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Guerrieri, R., Nederkoorn, C., Stankiewicz, K., Alberts, H., Geschwind, N., Martijn, C., & Jansen, A. (2007). The influence of trait and induced state impulsivity on food intake in normal-weight healthy women. *Appetite, 49*, 66–73.
- Hermans, R. C. J., Engels, R. C. M. E., Larsen, J. K., & Herman, C. P. (2009). Modeling of palatable food intake. The influence of quality of social interaction. *Appetite, 52*, 801–804.
- Hermans, R. C. J., Larsen, J. K., Herman, C. P., & Engels, R. C. M. E. (2012). How much should I eat? Situational norms affect young women's food intake during meal time. *British Journal of Nutrition, 107*, 588–594.
- Hermans, R. C. J., Larsen, J. K., Lochbuehler, K., Nederkoorn, C., Herman, C. P., & Engels, R. C. (2013). The power of social influence over food intake: Examining the effects of attentional bias and impulsivity. *British Journal of Nutrition, 109*, 572–580.
- Jacobson, R. P., Mortensen, C. R., & Cialdini, R. B. (2011). Bodies obliged and unbound. Differentiated response tendencies for injunctive and descriptive social norms. *Journal of Personality and Social Psychology, 100*, 433–448.
- Junger, M., & van Kampen, M. (2010). Cognitive ability and self-control in relation to dietary habits, physical activity and body weight in adolescents. *International Journal of Behavioural Nutrition and Physical Activity, 7*, 1–12.
- Kuntsche, E., & Kuntsche, S. (2009). Development and validation of the drinking motive questionnaire revised short form (DMQ-R SF). *Journal of Clinical Child and Adolescent Psychology, 38*, 899–908.
- Kredentser, M. S., Fabrigar, L. R., Smith, S. M., & Fulton, K. (2012). Following what people think we should do versus what people actually do. *Social Psychological and Personality Science, 3*, 341–347.
- Lally, P., Bartle, N., & Wardle, J. (2011). Social norms and diet in adolescents. *Appetite, 57*, 623–627.
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the nomological network. *Journal of Personality Assessment, 95*, 610–624.
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression anxiety stress scales* (2nd ed.). Sydney: Psychology Foundation.
- Ludwig, D. S., Peterson, K. E., & Gortmaker, S. L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *The Lancet, 357*, 505–508.
- McFerran, B., Dahl, D., Fitzsimons, G., & Morales, A. (2010). I'll have what she's having: Effects of social influence and body type on the food choices of others. *Journal of Consumer Research, 36*, 915–929.
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather in social networks. *Annual Review of Sociology, 27*, 415–444.
- Nederkoorn, C., Jansen, E., Mulken, S., & Jansen, A. (2007). Impulsivity predicts treatment outcome in obese children. *Behaviour Research and Therapy, 45*, 1071–1075.

- Pachucki, M. A., Jacques, P. F., & Christakis, N. A. (2011). Social network concordance in food choice among spouses, friends and siblings. *American Journal of Public Health, 101*, 217–227.
- Pliner, P., & Saunders, T. (2008). Vulnerability to freshman weight gain as a function of dietary restraint and residence. *Physiology and Behaviour, 28*, 76–82.
- Povey, R., Conner, M., Sparks, P., James, R., & Shepherd, R. (2000). The theory of planned behavior and healthy eating: Examining additive and moderating effects of social influence variables. *Psychology and Health, 14*, 991–1006.
- Prinsen, S., de Ridder, D. T. D., & de Vet, E. (2013). Eating by example. Effects of environmental cues on dietary decisions. *Appetite, 70*, 1–5.
- Robinson, E., & Higgs, S. (2013). Food choices in the presence of healthy and unhealthy eating partners. *British Journal of Nutrition, 109*, 765–771.
- Robinson, E., Fleming, A., & Higgs, S. (2014). Prompting healthier eating. Testing the use of health and social norm based messages. *Health Psychology, 33*, 1057–1064.
- Robinson, E., Thomas, J., Aveyard, P., & Higgs, S. (2014). What everyone else is eating: A systematic review and meta-analysis of the effect of informational eating norms on eating behavior. *Journal of the Academy of Nutrition and Dietetics, 114*, 414–429.
- Robinson, E., Tobias, T., Shaw, L., Freeman, E., & Higgs, S. (2011). Social matching of food intake and the need for social acceptance. *Appetite, 56*, 747–752.
- Salmon, S. J., Fennis, B. M., de Ridder, D. T., Adriaanse, M. A., & de Vet, E. (2014). Health on impulse: When low self-control promotes healthy food choices. *Health Psychology, 33*, 103–109.
- Stok, M., de Ridder, D. T., de Vet, E., & de Wit, J. B. (2014). Don't tell me what I should do, but what others do: The influence of descriptive and injunctive peer norms on fruit consumption in adolescents. *British Journal of Health Psychology, 19*, 52–64.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*, 271–324.
- Terry, D. J., Hogg, M. A., & White, K. M. (1999). The theory of planned behaviour: Self-identity, social identity and group norms. *British Journal of Social Psychology, 38*, 225–244.
- Wills, T. A., Pokhrel, P., Morehouse, E., & Fenster, B. (2011). Behavioral and emotional regulation and adolescent substance use problems: A test of moderation effects in a dual-process model. *Psychology of Addictive Behaviors, 25*, 279–292.