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**The Effect of Social Identity Salience  
on Healthy Eating Intentions  
and Behaviour**

**by**

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The University of Edinburgh  
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## DECLARATION

I, Katarzyna Banas, declare that this thesis has been composed by me and that this is my own work, except as specified. I further declare that this work has not been submitted for any other degree or professional qualification.

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## ABSTRACT

**Background.** Self-categorisation theory and the identity-based motivation perspective suggest that people's motivation to engage in a particular behaviour is stronger when that behaviour is congruent with their salient social identity. In situations where a certain social identity is made salient, or where people identify strongly with a particular group, the social norm associated with that group may have a strong effect on individual behaviour. This perspective can be used to enhance the understanding of health-related intentions and behaviour. The aim of this thesis is to investigate the usefulness of adding concepts related to social identity to existing social cognitive models of healthy eating. The prediction being made is that members of groups that value healthy eating might be more likely to engage in healthy eating when their membership in that particular group is made salient. Five experimental studies tested the effect of social identity salience and group identification on healthy eating intentions and behaviour. Both intentions and behaviour were measured in each of the five studies, to allow for investigating the existence and potential causes of the intention-behaviour gap for healthy eating.

**Methods and Results.** All five studies included random assignment of participants to conditions, and an experimental manipulation of social identity salience or social image healthiness. In Study 1 (n = 149), conducted among female university students, participants' female, family, or personal identity was made salient. The results showed that increasing the salience of female or family identity led to stronger healthy eating intentions, but did not increase the likelihood of picking a healthy snack over an unhealthy one. Study 2 (n = 115) did not include a successful

manipulation of salient social identity, but it showed a positive association between female identification, measured as a trait, and healthy eating intentions, even after controlling for attitude, subjective norm and perceived behavioural control. Study 3 (n = 156) included a manipulation of social identity salience (female or student) and a manipulation of social image healthiness (images presenting in-group members engaging in either healthy or unhealthy behaviour). The results corroborated the earlier finding that female identification is positively correlated with healthy eating intentions. Also, the results indicated that when participants were shown social images of their in-group members engaging in healthy or unhealthy behaviour, they expressed intentions in line with the social images only if they did not express strong identification with the in-group. Study 4 (n = 87) was conducted in the context of Australian identity and included a manipulation of social images healthiness. The findings provided evidence for the existence of a vicarious licensing effect for healthy eating. Namely, for participants who highly identified with their social group, exposure to pictures of other in-group members engaging in healthy behaviour resulted in choosing less healthy food items from a restaurant menu. Study 5 (n = 117) demonstrated the existence of a vicarious licensing effect in the context of female identity, where participants' food intake during a taste test was predicted by the interaction of the social image healthiness and their group identification.

**Conclusions.** By examining the predictors of both healthy eating intention and behaviour, the research presented in this thesis sheds light on some of the phenomena potentially underlying the intention-behaviour gap for healthy eating, particularly among women. It appears that the healthy eating norm is internalised by women and translated into healthy eating intentions, to the extent that women who identify more

highly with their gender group, and those whose female identity is made temporarily salient, also express stronger healthy eating intentions. The association between female identification and healthy eating behaviour, however, appears to be much less consistent, and in most studies the correlation between healthy eating intentions and eating behaviour was poor, even though a variety of measures of behaviour was used. These findings suggest that actual eating is often not predicted by intentions, but depends on contextual factors, such as being given an opportunity to reinforce the healthy eating goal, or the availability of information about in-group members' eating behaviour. The results also have implications for health-psychological interventions, in suggesting that people's response to health-related content (such as social images that may be used in health promotion interventions) may be different depending on their level of group identification. In line with the vicarious licensing effect, individuals who report high levels of group identification might be less likely to respond to interventions aimed at their specific social groups.

## LAY SUMMARY

Belonging to social groups is an important part of being human- most of us belong to and identify with a number of social groups, including our families, circles of friends, our ethnic, gender or professional groups. The social groups we belong to often dictate norms and standards about how we should behave: the company you work for might impose a certain dress code, your gender comes with social expectations about what you should and should not do. These social influences have a powerful role in many aspects of our lives, including our health.

This thesis focuses on how social influences can be used to encourage people to eat a healthy diet. A central assumption is that people usually belong to many different social groups and those groups may have different ideas about whether healthy eating is important. When people are reminded about their membership in a social group that considers healthy eating important, they may become more likely to eat healthy. For example, consider a student whose family really cares about healthy eating. When out with her university friends, she may be inclined to eat unhealthy snacks, if it is encouraged in that particular group. When she is at home cooking, though, she may be reminded of her family's priorities, and may be more likely to choose to cook a healthy dish. Study 1 tested a similar idea. We reminded women of one of three identities (female, family, or personal identity), then asked about their healthy eating intentions, and finally told them that they could choose a snack to take home: an apple or a pack of Oreo biscuits. What did we find? The intentions to eat healthy food were stronger when women were reminded of their female or family identity, but actual healthy choices were more likely in the personal identity condition. Study 2 showed that women for whom their female identity is more

important also express stronger intentions to eat healthy, but are not necessarily more likely to choose healthy foods.

Studies 3-5 looked at another concept, namely identity content. Even though it is known that women generally have healthier diets than men, different individuals will have different opinions about whether or not women as a group eat healthy food. Identity content captures those opinions: it is the image that an individual has about what is typical for a particular social group. Studies 3-5 showed that people's healthy eating intentions and behaviour depend on an interplay between how strongly they identify with a specific social group and what image they were given of typical behaviour in that group. Surprisingly, we found that when people feel very strongly connected to a particular group and we showed them images of others in that group behaving in healthy ways, they became less healthy, for example, they ate more snacks.

In conclusion, appealing to people's sense of belonging changes their intentions to eat a healthy diet. However, it is much more difficult to change actual behaviour and we need to conduct more research before we can confidently make recommendations about how to use people's social identities to improve health.

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## CHAPTER 1

### GENERAL INTRODUCTION

In recent years, overweight and obesity have reached the status of a global pandemic and are particularly prevalent in the Western world (Bell, Walley, & Froguel, 2005). Overweight and obesity have been identified as risk factors for a number of health problems, including type 2 diabetes, hypertension, coronary heart disease and stroke (Kopelman, 2007). In recognition of the fact that reducing the burden of obesity and overweight has the potential to decrease mortality and disease worldwide, the World Health Organisation established that promoting healthy diets and physical activity is now a public health priority (World Health Organisation, 2014).

The causes of obesity include genetic predispositions (Bell et al., 2005), living in an urbanised environment with easy access to food ('obesogenic' environment; French, Story, & Jeffery, 2001), and lifestyle factors such as unhealthy dietary habits and lack of physical exercise (Martinez, 2000). It is believed that obesity can be prevented by leading a lifestyle where the amount of energy consumed through food is balanced by the amount of energy spent on activity and physical exercise. Current guidelines published by the National Health Service in the United Kingdom specify that adults should eat a varied diet that limits fat and sugar content, and also engage in moderate physical activity for 150 minutes every week (NHS Choices, 2013). However, not all people adhere to these guidelines, and a recent report based on data from England revealed that only 31% of adults met the 'five portions of fruit and vegetables per day' recommendation in 2012, while 67% of men and 55% of women

met the physical activity guidelines (Health and Social Care Information Centre, 2014).

Many existing behavioural interventions to prevent obesity are delivered at an individual level and include a change in diet or exercise habits, or a combination of the two (Jain, 2005). Evaluation research shows that these interventions have been only moderately effective (Jepson, Harris, Platt, & Tannahill, 2010): there is evidence to suggest that behavioural interventions can indeed change eating and exercise habits, but results are inconclusive as to which behaviour change techniques are the most effective and whether their effects are lasting (Dombrowski et al., 2010). It is worth noting that the majority of existing behavioural interventions aimed at promoting healthy eating target the individual, using techniques such as facilitating intention formation, providing feedback, or prompting self-monitoring (Michie, Abraham, Whittington, McAteer, & Gupta, 2009). However, following a recent finding that obesity spreads in social networks, it has been suggested that behavioural interventions might benefit from taking advantage of social network phenomena (Christakis & Fowler, 2007). In other words, it may be beneficial to develop interventions that are aimed at individuals within their social context. This may include delivering interventions for families, schools or work places, but also encouraging individuals to build social networks where their efforts to maintain a healthy diet would be supported. The focus on networks and social groups resonates well with existing research in the social psychology of eating, which has demonstrated that social factors exert a powerful influence over what and how much people eat. It is therefore important to improve our understanding of the role of social

factors in healthy eating, with a view to developing more effective healthy eating interventions.

### **The Individual Perspective: Theory of Planned Behaviour**

Traditionally, psychological research on health has been predominantly individual-oriented, focussing on socio-cognitive factors such as attitudes, health beliefs or risk perception as predictors of health behaviour. The theory of planned behaviour (TPB; Ajzen, 1991; Ajzen & Madden, 1986) is currently one of the most commonly used models of health behaviour, and it is the basis of many interventions aimed at improving health (Armitage & Conner, 2001). TPB focuses on the role of intentions as predictors of behaviour: the stronger the intention, the more likely it is that the individual will perform the behaviour. According to this theory, intentions are influenced by three factors: attitude towards the behaviour, subjective norm, and perceived behavioural control. The attitude component is a reflection of how the person evaluates or appraises the behaviour in question. Subjective norm indicates the perceived social pressure to perform or not to perform the behaviour. Perceived behavioural control refers to the perceived ease or difficulty of performing the behaviour.

Empirical research shows that intentions are indeed a strong predictor of behaviour: a meta-analysis of meta-analyses indicated that, on average, intentions explain 28% of the variance across different types of behaviour (Sheeran, 2002). In a later meta-analysis of prospective studies, McEachan et al. (2011) reported that behavioural intention and perceived behavioural control accounted for 19.3% percent of variance in health-related behaviour. When meta-analytical techniques were used to predict dietary behaviour alone, the correlation between intention and prospective

behaviour was large, with an average  $r = .38$ . This evidence indicates that attitudes, subjective norm and perceived behavioural control are successful in predicting behavioural intention, and that intention is a strong predictor of dietary behaviour.

While predictors specified by TPB explain a substantial proportion of variance in health-related behaviour, there is scope for other predictors to be identified. A new perspective in studying health behaviour postulates that at the basis of many health problems lies a conflict between immediate impulses and goal-directed, intentional behaviour (Hofmann, Friese, & Wiers, 2008). In the context of obesity, this might be a conflict between the temptation to eat a tasty chocolate bar and the resolution to persevere with a low-fat, low-sugar diet. While TPB offers a compelling account of the intentional, reasoned side of this conflict, it contributes relatively little to the understanding of non-intentional factors, such as impulses, and their influence on behaviour. Dual processing approaches allow for an integration of models that focus on intention with perspectives that investigate more automatic influences. An example of a dual processing model that has been used to predict health behaviour is the model of “reflective and impulsive determinants of social behaviour” by Strack and Deutsch (2004, p. 220) .

### **Reflective and Impulsive Determinants of Behaviour**

Dual processing models have been developed to help explain why people do not always act in line with their goals and intentions (Strack & Deutsch, 2004). The notion that human behaviour is multiply determined and that some of those determinants occur automatically and outside of human awareness is useful for accounting for the differences between what people state as their values and goals, and how they behave.

Dual processing models distinguish between two kinds of processing: reflective and impulsive. The reflective system operates through processes akin to those described by the economic model of expected utility. Choices between different behaviours are made on the basis of their expected outcomes and their probability. In the context of eating, this might mean considering the expected outcomes of eating a particular food item (e.g. gaining weight, or immediate mood boost) and how likely they are. Decisions are then translated into intentions, and followed by appropriate behaviour. Due to the nature of this decision-making process, the reflective system requires a high amount of cognitive capacity and is relatively slow. In addition, its processes are easily disturbed if the person is experiencing high levels of arousal or depletion of self-regulatory resources.

The associative system resembles a simple associative network. Elements in the network become linked if they are presented or activated in close temporal or spatial proximity. Links can also be created through reflective operations. Activation then spreads through the network: if one element becomes more salient, activation travels to the other elements that are connected with the first one. Thus, for a person who has always had a dessert after dinner, the concept of eating a dessert becomes associated with the concept of dinner, and they may automatically proceed to dessert after every dinner, without giving it much thought. This process is fast and requires little cognitive capacity, but it has low flexibility- when someone who habitually has dessert decides not to have dessert after dinner, it will require considerable effort and time to change the existing association.

In the domain of eating, there is increasing evidence that not all psychological influences are mediated by intention. For example, exposure to a positive descriptive

norm regarding fruit intake influenced fruit intake, but not the intentions to eat fruit (Stok, de Ridder, de Vet, & de Wit, 2014). In another study, under the conditions of self-control depletion, candy consumption was better predicted by implicit attitudes than by the more reflective dietary restraint (Hofmann, Rauch, & Gawronski, 2007). Thus, including non-intentional factors in models of eating behaviour is likely to improve their predictive power.

The development of dual processing models has allowed for a holistic view of health-related behaviour, whereby both planned and more impulsive processes can be accounted for. Apart from recognising the role of impulsive determinants in eating behaviour, another area that has received research attention is the contribution of social factors. The next section provides an introduction to the different ways in which social factors influence eating behaviour.

### **The Social Perspective on Eating and Weight**

Eating behaviour is influenced by a number of factors, including physiological processes (e.g. hunger level or food intolerances), social processes, and properties of the food itself (e.g. palatability or portion size) (Shepherd, 1999). Evidence suggests, however, that social influences may be particularly important. Social modelling of food intake is a well-established effect: people eat less when they are in a company of someone who eats little, and they eat more in a company of someone who eats a lot (Herman, Roth, & Polivy, 2003). A study by Goldman, Herman and Polivy (1991) tested the hypothesis that social modelling of food intake would be moderated by hunger: Goldman et al, (1991) predicted that food deprived participants would be less likely to model their food intake on the intake of their eating companion. Food deprivation was manipulated by asking participants to

refrain from eating for four, 12, or 24 hours prior to taking part in the experiment.

The results showed that social modelling was equally strong regardless of the level of food deprivation, suggesting that social modelling may override the effects of food deprivation on eating. Another line of research shows that social norms may override the effect of liking: adolescents who expressed a dislike for certain foods at home have been found to eat those same foods at their friends' houses (Bassett, Chapman, & Beagan, 2008), presumably not to seem impolite in front of the friends and their parents.

### **Eating and Identity**

The examples presented above illustrate the notion that “food is for more than eating” (Fernandez-Armesto, 2002, p. 62). Decisions about the types and quantities of foods eaten, where meals are taken, where one shops for food, who one eats with, whether one follows healthy eating guidelines, etc. have social functions. Many identities are shaped around eating, and people often describe themselves in terms of the foods they like the most, for example “I am a salad lover” (Bisogni, Connors, Devine, & Sobal, 2002, p. 128).

**Gender identity and eating.** Of particular interest to this thesis is how social perceptions of food are linked to the ideas of gender. While substantial differences exist between men and women in the attitudes they hold about food and the dietary choices they make (Beardsworth et al., 2002), evidence also suggests that femininity is associated with eating light foods and small portions, whereas masculinity is associated with hearty portions and meals rich in red meat and potatoes (O'Doherty Jensen & Holm, 1999). The psychological consequences of the gendered perception of food in the society are twofold. First of all, perceived masculinity and femininity

of targets is influenced by information about what they eat (Bock & Kanarek, 1995). More specifically, in Bock and Kanarek's study (1995) women who were described as eating smaller portions were perceived as more feminine, more concerned with appearance and more attractive than women who were described as eating larger portions. On the other hand, men who were described as eating larger portions were perceived as more masculine than men who were described as eating smaller portions. Similar observations were made in qualitative research: men believed that it was suitable for them to eat high-energy foods, because they needed to engage in 'masculine' activities. It was seen as typical of women to eat small portions and watch their weight (Newcombe, McCarthy, Cronin, & McCarthy, 2012).

The second consequence is that men and women strategically use the stereotypes associated with food and eating to construct and communicate their gender identities (Vartanian, Herman, & Polivy, 2007). For example, it has been found that heterosexual women eat less in the company of an attractive man than in the company of an unattractive man (Mori, Chaiken, & Pliner, 1987), presumably because they perceive the attractive man as a desirable potential sexual partner, and they want to be perceived as feminine to increase their own attractiveness in his eyes. This effect was not replicated among men, arguably because the link between masculinity and eating large portions is not as strong as the link between femininity and eating lightly. These findings suggest that through their eating behaviour, women can emphasise their femininity in situations where they perceive it as desirable.

**Ethnic identity and eating.** The strategic use of food to communicate desirable identities and distance oneself from the undesirable ones is not limited to femininity and masculinity. In the context of ethnic and national identity,

Guendelman, Cheryan and Monin (2011) found that Asian Americans used food choices to re-establish their American identity when it was threatened. Namely, after they were asked whether they spoke English (an experimental procedure used to threaten American identity), Asian Americans were three times more likely to report a stereotypically American food as their favourite, compared to Asian Americans who were not asked about their English ability (Study 1). Also, when they had the opportunity to order and then consume the ordered food, Asian Americans were more likely to order American (and thus less healthy and more fatty) dishes after their American identity was threatened directly, compared to no identity threat (Study 2). This evidence further illustrates that people make food choices that are congruent with the social identities that they want to emphasise, and that those choices have a direct impact on the nutritional value of their diets.

**Identity signalling.** Interesting insights into the role of social identity in eating come from the research on identity signalling, which explores the notion that people avoid engaging in behaviours associated with undesirable identities (Berger & Rand, 2008). Berger and Rand (2008) demonstrated this effect among undergraduate students: they chose fewer unhealthy items when they were told that postgraduate students were “the largest consumers of junk food on campus” (p. 511), presumably because they did not want to be associated with the undesirable out-group of postgraduate students. A similar result was obtained in a more ecologically valid study, where students picked healthier foods in a university cafeteria after they read an article about online gamers (an undesirable out-group) who tend to consume unhealthy foods (Berger & Rand, 2008; Study 3) Interestingly, while in Study 1 participants were told that their food choices would be the basis for others’

impressions of them, in Study 3 participants were told nothing about the social consequences of their choices, but they still responded to the manipulation in the predicted way. This suggests that people are generally aware of the fact that their food-related choices communicate certain information about them, and that they make those choices strategically even when they are not explicitly told that someone will be judging them on the basis on what they eat.

### **Theories of Social Influence**

Since social influences on eating behaviour seem strong, it is appropriate to investigate whether social psychological interventions have the potential to make people eat healthier diets, and possibly contribute to a decrease in the prevalence of obesity. Social psychological theories provide an important insight into how and why social factors influence behaviour. The next section offers a review of two classic social psychological theories: social identity theory (SIT; Tajfel & Turner, 1986) and self-categorisation theory (SCT; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). It also provides an overview of Identity-Based Motivation (IBM; Oyserman, 2007; Oyserman, Fryberg, & Yoder, 2007) which is a newer theoretical development, applying the concepts developed by SIT and SCT to understand the motivation to engage in a variety of behaviours, including those relevant to health.

#### **Social Identity Theory**

SIT originated as a theory of intergroup behaviour. It explains intergroup phenomena using the concept of social identity, which has been defined as the part of the self-concept that arises from “the individual’s knowledge that he belongs to certain groups together with some emotional and value significance to him of this membership” (Tajfel, 1972, p. 292). The early research on SIT used a ‘minimal

group paradigm': an experimental setup where participants were assigned to arbitrary or entirely random groups (Tajfel, Billig, Bundy, & Flament, 1971). As part of the study, participants were then asked to assign resources (points or money) to individuals, and the only piece of information they were given about the other person was whether they were a member of their own group or a member of the out-group. As the participants themselves did not benefit from assigning the resources to members of the in-group, it would be plausible to expect that they would assign the resources fairly: half to the in-group members and half to the out-group members. The results, however, showed that participants tended to assign more resources to in-group members and less to out-group members: a phenomenon known as in-group favouritism. Explaining in-group favouritism in the context of minimal groups was challenging for earlier theories, but SIT developed an explanation based on the notion of social identity. According to this theory, when social group membership is salient, individual self-concept becomes closely linked to the social group: people achieve a positive self-concept if their group is different from and fares better than other groups. Thus, in the minimal group paradigm studies, even though the individual participant received no material benefit from assigning resources to a member of the in-group, there was a psychological benefit from knowing that the in-group as a whole received more resources. SIT can be usefully employed for explaining in-group favouritism, but also other group phenomena, such as social mobility or social change.

### **Self-Categorisation Theory**

SCT (Turner et al., 1987) was developed shortly after SIT and it uses many of the same assumptions and ideological perspectives. Its focus, however, is different: it

emphasises the intra-individual aspect of group membership and explores the ways in which belonging to particular social groups influences individual cognitions and behaviour. According to SCT, when a social identity associated with a particular group is salient, group members see themselves less as individuals, but more as “interchangeable exemplars of the group prototype” (Hornsey, 2008, p. 208), who adopt the group’s attitudes, norms, values and ways of behaving. As people typically possess multiple social identities, their attitudes and behaviour are likely to change with changing social identity salience.

### **Identity-Based Motivation**

The identity-based motivation framework (IBM) draws on the theorising developed by SIT and SCT. IBM recognises that social identities are capable of providing a motivation for specific behaviours (Oyserman, 2009; Oyserman et al., 2007). For example, if someone belongs to a social group where healthy eating is valued, they will be motivated to act in accordance with the values of the group, and thus eat a healthy diet themselves.

More generally, IBM postulates that the motivation to perform actions that are congruent with people’s social identities should be stronger than the motivation to perform actions incongruent with their identities. This can be applied to health-relevant behaviour (Oyserman et al., 2007): if a certain healthy behaviour is also incongruent with someone’s social identity, their decision whether or not to engage in that behaviour may be influenced less by the health consequences of the behaviour, and more by the identity-relevant consequences. Oyserman et al. (2007) have shown that some healthy behaviours, such as eating salad, brushing teeth or exercising daily, were more likely to be identified as in-group-defining by White

participants than by ethnic minority participants. This suggests that ethnic minority members may be less motivated to engage in some healthy behaviours because they do not see them as in-group-defining. In addition, it has been shown that experimentally priming race-ethnicity among racial-ethnic minority participants negatively influences health-related cognitions (Oyserman et al., 2007). In particular, priming race-ethnicity increased health fatalism, reduced access to health knowledge and reduced the perceived efficacy of health-promoting activities.

### **Applying the Social Identity Perspective to Self-regulation**

Self-regulation is of importance in eating behaviour, because many of the choices that are pleasant in the short-term (such as eating sweet and fatty foods), are also unhealthy and have undesirable long-term consequences (such as obesity, high cholesterol levels, heart disease, etc.). Thus, self-regulation of eating behaviour involves the weighing of what is enjoyable in the short term versus what is sustainable and beneficial in the long term. Even though self-regulation is an intrapersonal process, social factors influence when and how people exercise self-control by affecting knowledge, norms and goals regarding healthy eating. Firstly, information about what healthy eating is and why it is important comes from other people- parents, doctors, health authorities, etc. The degree to which this information will be accepted and acted upon depends on social processes such as persuasion and trust. Secondly, knowledge often becomes translated into norms, and creates an environment where people may be expected to behave in specific ways, in order to be in line with the norms and values of their social groups. These two phenomena will be discussed in turn.

## **Role of Social Information**

While people are bombarded with information about the nutritional value of different foods and with guidelines about what they should be eating, the pieces of advice are often contradictory and leave people confused about what constitutes healthy eating (Chamberlain, 2004). The literature on persuasion suggests that people are more likely to be convinced by a piece of information if it comes from a source who shares an important group membership with them (Mackie & Queller, 2000). Research from the social identity perspective corroborates this finding. For example, members of ethnic identities in the USA have less positive attitudes towards a healthy lifestyle and less faith in the success of health-related campaigns after their ethnic identity is made salient, because they see a healthy lifestyle and health-related campaigns as incongruent with their ethnic identity (Oyserman et al., 2007). In line with this reasoning, it is safe to assume that information and campaigns coming from the out-group are not trusted as much and have a lower probability of being translated into behaviour change than information and campaigns developed in and for the in-group.

Similar findings have been reported by Balaam and Haslam (1998), who looked at attitudes towards eating among female secondary school students. The results suggested that the students' attitudes were more influenced by messages from a source that they identified with (a sportswoman or a journalist) than from a source they perceived as an out-group member (a radical feminist). All in all, the literature on persuasion and attitude change suggests that group membership is an important factor moderating the impact of messages aimed at promoting healthy eating, and that information coming from an in-group member is more likely to be effective.

## **Role of Social Norms**

Social processes may also be involved in eating behaviour through the influence of social norms. Self-categorisation theory (Turner et al., 1987) suggests that group norms are an important influence on behaviour, because people are motivated to behave in ways that are congruent with their social groups. The literature introduced a distinction between injunctive norms (what other people say that one should do) and descriptive norms (what other people actually do) (Cialdini, Kallgren, & Reno, 1991). Both types of norms influence behaviour, but their exact effects may be different.

In the context of eating, recent evidence suggests that exposure to descriptive norms regarding healthy eating may be more likely to result in behaviour change than exposure to injunctive norms (Stok, de Ridder, et al., 2014). In the study by Stok et al. (2014), exposure to a descriptive norm message led to a marginally significant increase in fruit intake in the following two days, even though there was no increase in healthy eating intentions. In contrast, exposure to a message containing an injunctive norm about fruit intake did not influence fruit consumption among adolescents, and it led to lower fruit intake intentions. The authors suggested that adolescents are particularly sensitive to the opinions of their peer group, and so manipulating the perceived descriptive norm might be an effective strategy of promoting healthy eating. The lack of effect of injunctive norms on fruit intake and the ironic effect on intentions may have been caused by a reactance effect (Hong, Giannakopoulos, Laing, & Williams, 1994): participants' reluctance to comply with what they are told they 'should' do.

## **Strength of Identification**

While descriptive norms are an important predictor of health-related intentions and behaviour, there is both a theoretical argument and empirical evidence to suggest that the influence of descriptive norms depends on the strength of identification with the group that the norm refers to. For example, Louis et al. (2007) found that perceived healthy-eating descriptive norm was positively associated with healthy eating intentions, but only among those participants who highly identified with the referent group, i.e. students. Similarly, in a study where the descriptive norm and group identification were experimentally manipulated (Stok, de Ridder, de Vet, & de Wit, 2011), those participants who highly identified with the referent group (Dutch university students) and were exposed to information that most Dutch university students eat at least two portions of fruit per day (majority descriptive norm) significantly increased their fruit intake in the subsequent week. Highly identified participants who received information that only a minority of Dutch university students eat at least two portions of fruit per day (minority descriptive norm), did not change their fruit intake. In conditions where participants did not strongly identify with the referent group (the Dutch population), the normative information had no effect on subsequent fruit consumption. The finding that descriptive norms only affect high identifiers is consistent with self-categorisation theory, which posits that when a certain social identity is salient, individuals tend to adopt the norms and behaviours associated with that identity (Hornsey, 2008; Turner et al., 1987). Among those individuals who do not strongly identify with a social group, that particular social identity is unlikely to be salient, and thus the descriptive norm is unlikely to become translated into behavioural intentions or behaviour. Other studies reported a

similar effect, whereby high identifiers were influenced by the descriptive norm, but low or moderate identifiers were not (e.g. Smyth, Mavor, Platow, Grace, & Reynolds, 2013; White, Smith, Terry, Greenslade, & McKimmie, 2009).

### **The Individual and the Social**

While social influences on eating behaviour are robust, one of the important challenges in health psychology is to integrate those influences into established theories of health behaviour, such as TPB. In the original formulation of TPB, the role of social factors was recognised by including subjective norm in the model: the approval and support of significant others were hypothesised to contribute to the strength of behavioural intentions. However, it has been argued that subjective norm does not capture the entire scope of social influences on behaviour. For instance, Terry and Hogg (1996) postulated that subjective norm only captures interpersonal influences, and so other predictors should be added to TPB to account for group phenomena. There are three ways in which social influences can be further integrated into TPB: (1) adding social variables as additional predictors, (2) including social variables as moderators of the relationship between TPB variables and intention or behaviour, and (3) demonstrating that the effect of social variables on intention and behaviour is mediated by attitudes, subjective norm or perceived behavioural control. These three ways will now be discussed, together with the supporting evidence.

#### **Adding Social Predictors**

Including additional predictors is a relatively straightforward way of expanding a theory without dismissing its original formulation. For example, descriptive norm has now been recognised as an additional predictor within the normative component of TPB (Fishbein & Ajzen, 2010). In a recent meta-analysis, descriptive norm has

been shown to improve the prediction of behavioural intentions by 5%, compared to a model including attitudes, subjective norm and perceived behavioural control alone (Rivis & Sheeran, 2003). The meta-analysis included four studies of dietary behaviour, and the correlations between descriptive norm and behavioural intention ranged from  $r = .21$  for healthy eating intentions among adults (Povey, Conner, Sparks, James, & Shepherd, 2000b) to  $r = .50$  for intended bread and milk choice among teenage school pupils (Berg, Jonsson, & Conner, 2000). Rivis and Sheeran (2003) also found that the role of descriptive norms was stronger when predicting health-risk behaviour (such as binge drinking or drug use), as compared to health-promotion behaviours (such as healthy eating). A later meta-analysis examined the effect of descriptive and injunctive norms on behaviour, after accounting for TPB variables (Manning, 2009). Manning (2009) found a significant direct effect of descriptive, but not injunctive, norms on behaviour, which tended to be stronger for less socially accepted and more pleasant behaviours.

Another social variable whose predictive power over and above TPB variables has been explored is social identification. Rivis, Sheeran and Armitage (2011) looked at the role of prototype identification in predicting adolescents' engagement in 14 health behaviours. The authors defined prototype identification as the perception of similarity to the type of person who engages in a particular behaviour. Thus, if a participant felt very similar to those who eat fruit and vegetables, their level of prototype identification in the context of fruit and vegetable consumption would be perceived as high. Prototype identification was found to account for 6% of variance in behaviour, after controlling for intention and perceived behavioural control.

### **Moderators of TPB**

Another way in which social factors may be integrated into theory of planned behaviour is by moderating the relationship between the predictors and intentions or behaviour. For example, Terry and colleagues (2000) showed that attitudes are most likely to predict behaviour when they are supported by a congruent in-group norm, indicating that people are reluctant to act on their own attitudes when they feel that it would not be socially approved. In addition, in a study where TPB variables were explored alongside group norm and group identification, the results indicated that perceived behavioural control (an individual-oriented variable) was a better prediction of intentions among participants who did not strongly identify with the referent social group (Terry & Hogg, 1996). Participants whose group identification was stronger were more strongly influenced by the group norm.

### **Mediation by TPB Variables**

In the original formulation of the theory of planned behaviour, Ajzen (1991) argued that while other variables may influence behavioural intention and behaviour, their effect would be mediated by attitude, subjective norm and perceived behavioural control. The research reviewed earlier in this section suggests that the effect of social factors is commonly found, even after accounting for TPB variables. Nevertheless, when establishing the role of additional predictors of intention and behaviour, it is worth examining whether they are indeed independent. In a recent study, Stok, Verkooijen, de Ridder, de Wit and de Vet (2014) investigated the psychological mechanisms through which descriptive social norms influence vegetable intake intentions. The authors found that the effect of descriptive social

norms on intentions was partially mediated by self-identification, attitude and self-efficacy.

While TPB remains an influential theory in health psychology, researchers in the field have now started to recognise the powerful role of social influences in shaping health-related behaviour. Evidence shows that not all of these influences can be accounted for by the original TPB model. Thus, there is a need to not only further develop the understanding of social influences on health, but also to integrate the new insights within theoretical models of health-related behaviour.

### **Aim and Scope of the Thesis**

Based on the reviewed literature, there is compelling evidence to suggest that social factors exert a strong influence on individuals' eating behaviour. Prominent effects include social modelling of food intake (Herman et al., 2003) and the powerful role of perceived descriptive norm in eating behaviour (e.g. Burger et al., 2010). While the social influences on eating seem robust, they are only starting to be integrated into theoretical models of healthy eating (see for example Stok, Verkooijen, de Ridder, de Wit, & de Vet, 2014; Vartanian, Sokol, Herman, & Polivy, 2013). Therefore, the aim of this thesis is to further explore the role of social factors in healthy eating, and also integrate the social influences within the existing models of health behaviour, such as TPB.

The content of the thesis focuses on four research questions. The first question is: do social identities matter in predicting healthy eating? If so, are some identities more instrumental in shaping eating behaviour than others? People typically possess multiple social identities, and many of these are likely to provide no clear norm or standard regarding eating behaviour, but others might be helpful in motivating

people to maintain a healthy diet. Identifying the social identities that do influence the way people eat is an important first step addressed in Chapter 2. The studies included in this thesis focus in particular on female, family, Australian, and student social identity.

The second question is concerned with the effect of social identity salience and group identification on healthy eating intentions and behaviour. Measures of both intention and behaviour are frequently used in social and health psychology. In general, prediction of intention tends to be more accurate than prediction of behaviour, indicating that some good intentions are never fulfilled (Allan, Johnston, & Campbell, 2011; Sheeran, 2002). The studies presented in this thesis investigate whether the effect of variables related to social identity on healthy eating intentions is the same as their effect on healthy eating behaviour.

The third question is: does strength of group identification interact with the perceived social norms to predict healthy eating intentions and behaviour? Previous research on referent group norms has established that descriptive norms tend to influence those people who highly identify with the referent group, but not those who identify only weakly (Louis, Davies, Smith, & Terry, 2007). Thus, it is expected that a manipulation of group-level norms and prototypes would only influence the intentions and behaviour of those individuals who highly identify with the social group.

The fourth question is: is the effect of social identity on healthy eating intentions and behaviour mediated by TPB variables? The effect of descriptive norms on fruit intake has been shown to be partially mediated by attitudes, self-

identification and self-efficacy (Stok, Verkooijen, et al., 2014), and so it is likely that the effect of other social variables would be mediated by more proximal factors.

The four central research questions are addressed by five experimental studies, grouped into three empirical chapters. In Chapter 2, the results of two studies are presented that establish the role of salient social identity and group identification in shaping healthy eating intentions and snack choices. Chapter 3 focuses on the interaction between the healthiness of social images associated with a particular social identity and the strength of identification with that social group. The studies presented in Chapter 4 provide evidence that when individuals who highly identify with a particular social group are presented with images suggesting that other members of this social group engage in healthy behaviour, they are likely to choose less healthy foods from a menu (Study 4) and eat more in a taste test (Study 5). The implications of the findings for further research and policy, as well as the strengths and limitations of the studies are presented in the General Discussion chapter.

## CHAPTER 2

### SOCIAL IDENTITIES AS FACILITATORS OF HEALTHY EATING

#### **Abstract**

**Background.** Previous literature suggests that social factors exert a powerful influence over people's eating behaviour. The studies presented in this chapter tested the prediction that particular social identities are associated with healthier eating.

**Method.** Both studies included an experimental manipulation of social identity salience and a measurement of healthy eating intentions and behaviour (a choice between a healthy and unhealthy snack). In Study 1, female, family or personal identity was made salient. Study 2 included a 2 x 2 design, whereby social identity salience (female vs no-identity control) and measurement order (intention measured before behaviour vs intention measured after behaviour) were manipulated.

**Results.** In Study 1, increasing the salience of female or family identity led to stronger healthy eating intentions, but did not increase the likelihood of choosing a healthy snack. Study 2 demonstrated that female identification predicted healthy eating intentions, even after accounting for theory of planned behaviour variables. However, stronger female identification was associated with choosing the unhealthy snack.

**Conclusion.** The two studies provide preliminary evidence that social identity salience can significantly influence healthy eating intentions. However, they also suggest that the positive effect of female or family identity salience on intentions does not necessarily carry on to behaviour.

## Introduction

Some social groups have a reputation for engaging in very unhealthy behaviours. Think about students, for example: they are accused of binge drinking every weekend, eating pizza or noodles every day, and comforting themselves with chocolate or sweets during long nights of exam preparation. Other groups have a better reputation. Young professionals are stereotyped to eat lots of vegetables, drink only water, and spend their evenings jogging or working out at a gym. Although these are just stereotypes, there is a grain of truth in them, in that the social groups we identify with affect what we do, and that this influence extends to health-relevant behaviours such as eating, drinking, or exercising.

Recent research in both psychology and economics shows that social identities prescribe behaviours for people. More often than not, social groups create norms as to which behaviours are desirable and accepted, and which are not. Group members are then motivated to act in ways that are congruent with the group norms, a phenomenon known as the identity-based motivation (Oyserman et al., 2007). The motivational potential of social identities has been examined in the context of health-related behaviour (Oyserman et al., 2007), school success (Oyserman, 2008), consumer behaviour (Oyserman, 2009), and investment behaviour (Benjamin, Choi, & Strickland, 2010). For instance, ethnicity priming among Asian-American participants, who, according to a popular stereotype, are expected to be patient, makes them less likely to choose impatiently in an investment-related task (Benjamin et al., 2010). Similarly, research on racial identity shows that, for many African-Americans, healthy behaviours such as flossing teeth or eating greens are considered

identity-incongruent (Oyserman et al., 2007). In consequence, priming race-ethnicity among African-Americans has been shown to increase health fatalism and reduce access to health knowledge (Oyserman et al., 2007).

Out of the multiple identities that each individual has, those that are salient or accessible at a given time will have the greatest influence on behaviour. For instance, increasing the salience of a 'scholar' identity among student participants makes them more likely to choose consumer items that are related to current affairs or politics over those that are more entertainment-related (LeBoeuf, Shafir, & Bayuk, 2010). More generally, salience of a given social identity facilitates behaviours that are considered identity-congruent, and decreases the motivation for those that are considered incompatible with that particular identity (Oyserman et al., 2007).

Existing research suggests that social identity can be a powerful motivator, stimulating individuals to engage in behaviours that they consider congruent with their social group's norms and values. Although some of these concepts have already been applied to health behaviour (Oyserman et al., 2007), there is a need to examine in more depth the relationship between social identities and health behaviours. Oyserman et al. (2007) found an effect of identity salience on health-related cognitions, but did not assess the effect on health behaviour or intentions. Similarly, Tarrant and Butler (2011) reported that manipulating social identity salience influenced intentions to engage in healthy eating behaviour, but the behaviour itself was not measured. A study looking at American immigrant groups (Guendelman, Cheryan, & Monin, 2011) found that, when their American identity was threatened, immigrants were more likely to choose and consume stereotypically American foods, containing on average 182 additional calories and 12 extra grams of fat, compared to

ethnic foods. In the series of studies presented in this chapter we will extend existing research by (1) conducting a descriptive study to examine which social identities influence eating habits, (2) measuring the effect of social identity salience and the level of group identification on both healthy eating intentions and behaviour.

Much of the research concerned with the motivational potential of social identities is focused on racial or ethnic identity and was conducted in the United States. Our aim was to look at identities that are prevalent outside the United States, and that are relevant to the behaviour of Australians or Europeans. From a health promotion point of view, it would be very helpful to find identities that motivate healthy behaviours and are relevant to the majority of the Australian population, as they could later be used in health promotion campaigns. Thus, the first aim of our studies was exploratory: to establish which social identities are relevant to Australian university students and which of those identities may be associated with healthy eating behaviours. The second aim of our studies was to examine whether increasing the salience of particular identities affects eating intentions and behaviour. In particular, we hypothesised that increasing the salience of social identities that are associated with healthy eating would increase healthy eating intentions and the likelihood of choosing a healthy snack over a less healthy one. The third aim was to examine whether social identity salience would remain a significant predictor of healthy eating after controlling for traditional predictors of healthy eating intentions and behaviour, as outlined by theory of planned behaviour.

### **Pilot Studies**

In order to prepare the study materials, we conducted two pilot studies, in which participants were asked about their social identities and the relevance of these

social identities to their eating habits. In the first pilot study, nine female students were asked to list as many of their social identities as they could think of. After producing a list, participants were asked to think about whether or not each of their identities was associated with their food choices. Finally, they were asked to circle the names of those identities which, in their perception, influenced their food choices.

Seven social identities that were mentioned most frequently are listed in Table 1. These seven identities were used in the second pilot study, in which thirty female students were asked to rate how important the different identities were to them, and to what extent they perceived these to influence their eating habits. For each identity, participants responded to two statements: “This identity is important to who I am” and “This identity influences what I eat.” The responses were given on Likert-type scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). As presented in Table 1, female and family identity were perceived as the most important ones and also the ones most relevant to eating; these two social identities were selected to be used in Study 1.

Table 1. Importance and relevance to eating of social identities used in the pilot study.

	<i>M (SD)</i>
<i>Student identity</i>	
Importance	4.97 (1.56)
Relevance to eating	4.43 (1.79)
<i>Female identity</i>	
Importance	6.27 (1.36)
Relevance to eating	4.67 (1.70)
<i>Australian identity</i>	
Importance	4.93 (2.03)
Relevance to eating	4.07 (1.85)
<i>Family identity</i>	
Importance	6.23 (1.25)
Relevance to eating	5.24 (1.64)
<i>Religious identity</i>	
Importance	4.40 (2.45)
Relevance to eating	2.57 (2.01)
<i>Sport-team identity</i>	
Importance	3.97 (1.87)
Relevance to eating	3.80 (1.86)
<i>Student societies identity</i>	
Importance	2.72 (2.00)
Relevance to eating	1.90 (1.45)

## **Study 1: The Effect of Female and Family Identity Salience**

The first study was designed to test the hypothesis that increasing the salience of social identities associated with healthy eating will increase healthy eating intentions and behaviour. In line with findings from the pilot studies, the effect of female and family identity salience was compared to the effect of personal identity salience. It was predicted that increasing the salience of either of the social identities would increase healthy eating intentions, and would lead to a healthier snack choice.

### **Method**

**Design.** A 3×1 between-subjects experimental design was employed to test the study hypotheses. There were two experimental conditions in which social identities were primed: a family identity condition and a female identity condition. In the control condition, the salience of personal identity was increased. This was done in order to maximise the similarity between experimental procedures in all three groups, and to be able to explore the role of social identities specifically, as opposed to a personal identity.

**Participants.** Participants were 186 female students at an Australian university, who were recruited on campus and invited to participate in a study of students' social groups and lifestyle choices. Data from seven obese and 21 underweight participants were excluded from the final analyses. Normal weight was defined as Body Mass Index of between 18 and 30. We also excluded the data from six participants whose snack choice could not be recorded due to technical reasons, and from three participants who reported their age as under 18 or over 40. This resulted in a final sample of 149 participants. Participants were on average 21.6 years

old ( $SD = 3.20$ ), and had an average BMI of 21.6 ( $SD = 2.52$ ). Most participants identified themselves as Asian (45.6%), followed by European-Australian (40.9%), African (0.7%), and other (12.8%). The results did not differ between ethnic groups, and the analyses presented below are based on a pooled sample. All participants received a small snack in return for their time.

**Procedure.** After receiving information about the study and verbally consenting to participate, students were invited to respond to a series of questions on a touchscreen computer. The study started with a social identity manipulation. Participants were randomly assigned to one of three conditions: a family identity, female identity, or a personal identity control condition. In the family-identity condition, participants were asked to respond to four questions, each requiring them to list three things that they and other members of their family did (a) relatively often, (b) relatively rarely, (c) generally well, and (d) generally badly (manipulation adapted from Haslam, Oakes, Reynolds, & Turner, 1999). In the other two conditions, participants were asked the same questions, but in relation to themselves and other females (female-identity condition) or to things that they personally do (personal-identity control condition). In the analyses, the personal-identity condition was treated as a control condition.

After manipulating the salient social or personal identity, participants were asked to report their healthy eating intentions. Next, measures of family and/or female identity salience and demographic questions were included. At the end of the study, participants were asked to choose a snack, which they were then invited to keep.

### **Manipulation check and control variables.**

***Social identity salience.*** In the family identity condition, family identity salience was measured with one item: ‘Being a part of my family is important to who I am.’ In the female identity condition a similar item was used to measure female identity salience: ‘Being female is important to who I am’. In the personal identity condition, both items were included, which allowed a comparison between each of the social identity conditions and the personal identity condition. Participants responded on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). This measure was designed as a manipulation check.

***Demographics.*** This component of the study included demographic questions (age, ethnicity, height and weight) and two items about the perceived differences between apples and Oreo biscuits, the two snacks that participants were offered at the end of the study. The two items were: ‘What is healthier, an apple or a couple of Oreo biscuits?’ and ‘What is more expensive, an apple or a couple of Oreo biscuits?’, and participants responded on 7-point Likert-type scales ranging from -3 (*definitely an apple*) to 3 (*definitely Oreos*).

### **Dependent variables.**

***Healthy eating intentions.*** Healthy eating intentions were measured using two items: ‘I’m planning to eat more healthy food’ and ‘I intend to eat fewer unhealthy snacks’, to which participants responded on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The two items were presented as part of a larger questionnaire on future plans which included four questions in addition to those mentioned above. All questions were concerned with student lifestyle and activities such as studying, travel, and exercise. The additional questions were

included to conceal the fact that eating habits were the main focus of the study, and thus to reduce demand characteristics.

**Snack choice.** Participants were offered the choice of a snack-pack of two Oreo biscuits or an apple in return for their time. Their choice was recorded and used later as an outcome variable.

**Analyses plan.** Planned analyses included first a manipulation check to test whether, after having been subjected to the manipulation, participants in the three conditions would differ in their reported salience of family and female identity. Then, Analysis of Variance would be used to test whether there were any significant differences between the three groups in intentions to eat more healthy food and intentions to eat fewer unhealthy snacks. Next, a  $\chi^2$  test would be used to test the significance of between-group differences in snack choices. Finally, logistic regression would be used to test whether the experimental condition and the expressed intention to eat more healthy food or to eat fewer unhealthy snacks were associated with snack choice.

## Results

**Manipulation checks.** The manipulation was successful. Participants in the family identity condition reported that their family identity was more salient to them ( $M = 5.98$ ,  $SD = 1.35$ ) than participants in the control condition ( $M = 4.85$ ,  $SD = 2.10$ ),  $t(95) = 3.19$ ,  $p = .002$ . Similarly, participants in the female identity condition reported that their female identity was more salient to them ( $M = 5.86$ ,  $SD = 1.44$ ) than participants in the control condition ( $M = 4.83$ ,  $SD = 2.13$ ),  $t(95) = 2.83$ ,  $p = .006$ .

Participants were also asked to compare price and healthiness of an apple against that of a snack-pack of two Oreo biscuits. We expected apples to be perceived as healthier, but approximately equal in price to Oreos. All but five participants indicated that apples were healthier than Oreos, and this result was statistically significant ( $M = -2.72$ ,  $SD = 0.85$ ,  $t(148) = -39.18$ ,  $p < .001$ ). Participants were also asked to assess which snack was more expensive, and they indicated that apples were significantly cheaper ( $M = 0.77$ ,  $SD = 2.32$ ),  $t(141) = 3.98$ ,  $p < .001$ . As there was a significant difference in the perceived price of the two snacks, this variable will be controlled for in the analyses on snack choice.

**Healthy eating intentions.** In line with the predictions, we found that there was an effect of identity salience on the intention to eat more healthy food,  $F(2, 146) = 4.04$ ,  $p = .020$  (see Table 2 for means and standard deviations).

Furthermore, a planned contrast analysis revealed that participants in the family- and female-salient conditions had higher intentions to eat more healthy food than participants in the personal-identity condition,  $F(1, 146) = 7.27$ ,  $p = .008$ . The difference between the two social identity conditions was not significant,  $F(1, 146) = 0.81$ ,  $p = .37$ , *ns*. There was no effect of identity salience on the intention to eat fewer unhealthy snacks,  $F(2, 146) = 0.63$ ,  $p = .54$ , *ns*.

**Snack choice.** In addition to exploring the effect of social identity salience on eating intentions, we also looked at the effect on actual food choice. In the personal identity condition, 57.4% of participants choose an apple, compared to 41.2% in the family identity condition and 39.2% in the female identity condition, but these differences were not statistically significant:  $\chi^2(2) = 3.90$ ,  $p = .14$ , *ns*. To further explore the predictors of snack choice, a logistic regression analysis was performed,

controlling for the intention to eat more healthy food and perceived price of Oreos as compared to apples. As shown in Table 3, social identity had a significant effect on snack choice, with both family-identity and female-identity salience decreasing the odds of choosing an apple. The intention to eat healthier food and intention to eat fewer snacks did not influence snack choice, and their addition to the model did not change the overall results.

Table 2. Healthy eating intentions and food choices by experimental condition.

	Family identity (n = 51)	Female identity (n = 51)	Personal identity (n = 47)
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Intention to eat more healthy food	5.55 (1.17)	5.27 (1.61)	4.68 (1.78)
Intention to eat fewer snacks	4.84 (1.53)	4.65 (1.87)	4.45 (1.83)
% choosing an apple	41.2%	39.2%	57.4%

Table 3. Logistic regression analysis of choosing an apple instead of Oreo biscuits.

	B (SE)	OR	95% CI for OR	p
Constant	0.17 (0.64)	1.18		.80
<b>Family-identity-salient</b>	-0.84 (0.44)	0.43	0.18 - 1.02	.06
<b>Female-identity-salient</b>	-0.87 (0.44)	0.42	0.18 - 0.99	.05
Personal-identity-salient			reference category	
Perceived price of Oreos	-0.02 (0.08)	0.98	0.85 - 1.14	.93
Intention to eat healthier food	-0.02 (0.14)	0.98	0.74 - 1.30	.87
Intention to eat fewer snacks	0.10 (0.13)	1.10	0.86 - 1.41	.45

*Note.* n = 149.

## **Discussion**

The results of Study 1 provide support for the hypothesis that social identities influence healthy eating intentions. Namely, the results suggest that increasing the salience of a family or female identity increased the intention to eat more healthy food, but did not influence the intention to eat fewer unhealthy snacks. Although this result was not expected, it is possible that while increasing salience of particular social identities has led to a general intention to eat more healthily, the effect was not powerful enough to result in an intention to eat fewer unhealthy snacks, which is more specific and perhaps more difficult. People may be more inclined to express a vague intention to eat more healthy food, rather than a more specific intention to limit the consumption of a particular type of food (in this case, unhealthy snacks). The forming of intentions is likely to involve different psychological processes, depending on whether it is an intention to act or an intention to suppress behaviour. In a similar vein, it has been suggested that the implementation of intentions to act is governed by different self-regulatory processes than implementation of intentions to inhibit behaviour (Allan, Johnston, & Campbell, 2010). The effect of social identity salience on different types of intentions needs to be investigated further, with a view to finding whether social identities could be evoked to facilitate behaviour change.

The hypothesized effect of social identity salience on food choice was not found. In fact, the effect we found was opposite to the predictions: increased salience of family or female identity was associated with participants more frequently choosing a high-sugar snack over an apple. There is a number of reasons why this could have been the case. First of all, research shows that small temptations can remain undetected, and that products supplied in small packages are often perceived

as not requiring self-regulation (Coelho do Vale, Pieters, & Zeelenberg, 2008). Since the snack offered in this study was indeed a small package containing two biscuits, participants may have not perceived its consumption instead of an apple as contrary to their healthy eating intentions.

Another potential explanation comes from the dual processing model (Strack & Deutsch, 2004). Namely, it is possible that while filling in the questionnaire, participants engaged in reflective processing, where their values and goals were made conscious, and led to them expressing healthy eating intentions. When choosing the snack, on the other hand, participants may have been processing impulsively, and may have picked the item that corresponded to their immediate desires. If this is the case, it would suggest that the social identity manipulation had a significant effect on reflective processing, but little or no effect on impulsive processing.

It is also possible that increasing the salience of personal identity led to more introspection than the social identity manipulation and reminded participants about their values and norms. Even though this effect was not observed in the intentions participants expressed, it may have caused healthier behaviour.

The finding that increasing the salience of family and female identity increases healthy eating intentions and then ironically leads to unhealthier snack choices was not hypothesised. Nevertheless, it could be explained with what is known as *the licensing effect*. The licensing effect literature suggests that after people engage in or commit to an act that requires virtue or self-regulation, they become more likely to indulge (Fishbach & Dhar, 2005; Khan & Dhar, 2006). One of the proposed mechanisms of this effect is that committing to a virtuous act leads to an increase in

positive self-concept, which then decreases the negative self-attributions associated with an indulgent choice. In this case, expressing an intention to eat more healthy food may have been interpreted by the participants as bringing them closer to their healthy eating goal, and providing a licence to choose a self-indulgent snack later on.

The study did have a number of limitations. First of all, participants chose their snack after expressing healthy eating intentions. This may have given rise to a licensing effect, and has made the interpretation of the effect on food choice more difficult. A subsequent study should include food choice as the primary dependent variable, and examine whether that leads to a different effect. Second, the study was conducted in a sample of young and well-educated females, and the findings may not be generalisable to other populations. Further research should be conducted to explore which social identities are relevant to eating behaviour in other populations, and whether priming those identities has an effect on eating intentions and behaviour. Third, the use of a personal identity condition instead of a neutral control condition meant that it is difficult to establish whether the increase in healthy eating intentions happened indeed due to an increased salience of female or family identity. An alternative explanation could be suggested, whereby it was the change in personal identity salience rather than social identity salience that caused increased healthy eating intentions.

The strengths of this study include the use of two different items to measure healthy eating intentions, and an actual snack choice to measure behaviour. Even though some of the effects were not expected, the existing pattern of results provides a good starting point for further research exploring the relationship between social identities and health behaviour. Also, a very simple paradigm was used to manipulate

social identities, and this has proven enough to obtain an effect on intentions, suggesting that the effect of social identity salience on intention is rather strong.

In conclusion, Study 1 found that increasing the salience of female or family social identity facilitates healthy behaviour intentions. This effect seems to be moderated by the type of intention: intentions to act (to eat more healthy food) were facilitated, whereas intentions to inhibit undesirable behaviour (eat fewer unhealthy snacks) were unaffected. The next tasks for researchers and practitioners interested in using social identities as motivators for health behaviour change would be to identify other social identities associated with healthy behaviour, to encourage individuals to form positive behavioural intentions, and to help individuals act on those intentions.

### **Study 2: Female Identification, Healthy Eating Intentions and Snack Choice**

The results of Study 1 suggested that increasing the salience of female and family identity increases healthy eating intentions, but not healthy food choice. It is not clear whether this intention-behaviour gap was caused by a licensing effect. Study 2 was conducted to replicate the effect of increased female identity salience on healthy eating intentions, and to test the hypothesis that measuring food choice after the measurement of healthy eating intentions leads to a licensing effect, and thus less healthy food choices. In order to test this hypothesis, Study 2 manipulated the timing of healthy eating intentions measurement: they were measured either before or after the food choice. In addition, including measures of attitudes, perceived behavioural control and subjective norm regarding healthy eating allowed for examining whether female identity is an independent predictor of healthy eating intentions and behaviour, after controlling for variables suggested by the theory of planned behaviour.

## Method

**Pilot study.** A pilot study was carried out to gather data on perceived healthiness, price and liking of five popular snacks: Oreo biscuits, chocolate chip biscuits, wholegrain biscuits, a trail bar and a chocolate and peanut bar. The aim of the pilot was to choose two snacks for use in Study 2: the target snacks would be similar in how much participants liked them and in perceived price, but would have contrasting perceived healthiness scores. Thirty female participants at an Australian university were presented with snack-sized packages of each of the snack and given a 3-item questionnaire to fill in. Perceived healthiness was measured using the question: *How healthy do you think this snack is?* with responses given on a 7-point scale ranging from 1 (*very much*) to 7 (*not at all*) for each snack. Liking was measured using the question: *How much do you like this snack?* with responses given on a 7-point scale ranging from 1 (*very much*) to 7 (*not at all*) for each snack. The responses were then reverse coded, so that a higher score would indicate a snack that is healthier and more liked. In the third part of the pilot study, participants were asked to estimate how much each snack would cost on campus (in Australian dollars). The means and standard deviations for the three variables are presented in Table 4.

A series of repeated measure ANOVAs indicated that a trail bar and a chocolate and peanut bar were not significantly different in how much they were liked by students ( $F(1, 29) = 0, p = 1$ ) or how much they were estimated to cost ( $F(1, 29) = 0, p = 1$ ). However, these two snacks were significantly different in perceived healthiness,  $F(1, 29) = 52.16, p < .01$ , with the trail bar being perceived as

significantly healthier than the chocolate and peanut bar. Based on these results, a trail bar and a chocolate and peanut bar were chosen as target snacks for Study 2.

Table 4. Means and standard deviations of perceived healthiness, perceived price and liking of five snacks (pilot study, n = 30).

	Oreo biscuits	Chocolate chip cookies	Wholegrain biscuits	Trail bar	Chocolate and peanut bar
Perceived healthiness	0.60 (0.97)	0.93 (0.98)	4.07 (1.02)	4.87 (1.36)	1.83 (1.09)
Liking	5.13 (1.04)	5.03 (1.03)	3.33 (1.49)	3.33 (1.37)	3.33 (2.09)
Perceived price (in \$)	2.55 (0.81)	2.52 (1.07)	3.01 (1.28)	2.62 (0.89)	2.62 (0.83)

**Design.** A 2×2 between-subjects experimental design was employed to test the study hypotheses. The first experimental factor was the salient identity: participants were randomly assigned to an experimental group, where their female identity was made salient, or a control group, where no social identity was made salient. The second experimental factor was the order of measurements: healthy eating intentions were measured either before or after participants made a choice between a healthy and an unhealthy snack. The study included a behavioural measure of healthy eating: participants were given a choice between two snacks (a trail bar and a chocolate and peanut bar). Pilot data reported above suggested that the two snacks were very similar in their perceived liking and price ratings, but contrasting in perceived healthiness. Thus, the choice between the two snacks was deemed to be a good proxy for healthy food choice.

**Participants.** One-hundred and twenty female students at an Australian university participated in this study. Five participants did not provide answers to all questions, and their data was subsequently excluded from the analyses. The remaining 115 participants were on average 22.3 (5.75) years old and had an average BMI of 22.2 (3.24) kg/m<sup>2</sup>. Participants completed a questionnaire concerning their attitudes and intentions regarding healthy eating. The questionnaire included two experimental manipulations in a 2 (social identity salience: female vs. control) × 2 (order: intentions measured before snack choice vs. intentions measured after snack choice) between-subjects design.

**Materials and procedure.** The study included a female identity salience manipulation, similar to the one used in Study 1, and adapted from Haslam et al (1999). Participants' female identity was made salient by asking them four questions:

what do you and other women do ‘relatively often, relatively rarely, generally well and generally badly’. Participants were asked to list three items in response to each question. Participants in the control group were asked to list similar items about the Internet. After the manipulation, participants in the behaviour-first condition were asked to choose a snack, and they then proceeded with the remaining part of the questionnaire. Participants in the intention-first condition completed all the questionnaires first, and were asked to choose a snack at the very end of the study.

### **Measures.**

***Manipulation check.*** The effectiveness of the female identity salience manipulation was measured using two items: ‘Being a woman is important to who I am’ and ‘How similar are you to other women?’. Responses to these items were made on 7-point scales ranging from *strongly disagree/not at all similar* to *strongly agree/extremely similar*. However, these two items did not form an internally consistent scale ( $\alpha = .50$ ), and thus will be analysed separately.

***Theory of planned behaviour.*** Participants completed four scales commonly employed by research on the theory of planned behaviour (TPB; Ajzen 1991). Three items were used to measure participants’ intentions to eat healthier foods ( $\alpha = .72$ : e.g., ‘I would like to eat healthier’). Four items assessed participants’ attitudes towards eating healthier foods using seven-point semantic differential scales ( $\alpha = .82$ : e.g., ‘Eating healthy food during the next month would be unpleasant-pleasant’). Two items assessed participants’ perceived control over this behaviour ( $\alpha = .43$ : e.g., ‘I have complete control over whether I eat healthy foods during the next month’). Due to the low internal consistency reliability of this scale, in further analyses only the item quoted above will be used as a measure of perceived behavioural control. Two

items assessed participants' perception of the subjective norm ( $\alpha = .79$ : e.g., 'Those people who are important to me would want me to eat healthy foods during the next month'). Responses to the behavioural intentions, subjective norm and perceived behavioural control items were all made on 7-point scales ranging from *strongly disagree* to *strongly agree*.

**Self-control.** Next, participants completed a Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004). This scale is designed to measure trait self-control, and consists of 13 items measuring behaviours such as resisting temptation, self-discipline, and ability to delay gratification ( $\alpha = .81$ : e.g. 'I have a hard time breaking bad habits'). Responses to all items were made on five-point scales ranging from *not at all* to *very much*), and were coded so that a higher score indicates stronger self-control.

**Group norm.** Perceived in-group healthy eating norm was measured using two items: 'I think of women as the kind of group which would try to eat healthy foods' and 'Trying to eat healthy foods is important to women in general' ( $\alpha = .74$ ). These items were adapted from those used by Tarrant and Butler (2011). Responses were made on 7-point scales ranging from *strongly disagree* to *strongly agree*.

In the final section of the questionnaire, participants were asked to provide their year of birth, height and weight. After completion of the questionnaire, participants from the intention-first condition were given a chance to choose their snack. Following that, all participants were debriefed and thanked for their time.

## **Results**

**Manipulation check.** The female identity salience manipulation was not successful: there was no significant difference between the female identity and the

control group on the responses to the two manipulation check items. Participants in the female identity condition ( $M = 6.03$ ,  $SD = 1.20$ ) did not report significantly higher importance of being a woman than participants in the control condition ( $M = 6.02$ ,  $SD = 1.30$ );  $t(113) = -0.073$ ,  $p = .94$ . Also, participants in the female identity condition ( $M = 4.29$ ,  $SD = 1.46$ ) did not report feeling more similar to other women than participants in the control group ( $M = 4.46$ ,  $SD = 1.32$ );  $t(113) = 0.626$ ,  $p = .53$ . In subsequent analyses, the data from two groups will be pooled. Due to the failure of the manipulation, a continuous measure of female identity was used in the model, and it was calculated from responses to the item ‘Being a woman is important to who I am,’ assessed on a 7-point scale.

**Effects on healthy eating intentions.** Table 5 presents the descriptive statistics and Pearson’s correlation coefficients for the relationships between components of the TPB, self-control and female identity. Table 6 presents means and standard deviations of the TPB measures, separately for the female identity salience and the control condition. As expected, healthy eating intentions were highly correlated with attitudes, perceived behavioural control and subjective norms related to healthy eating. Female identity was significantly correlated with healthy eating intentions, attitudes and subjective norm, and there was a trend towards an inverse association with perceived behavioural control. Self-control trended towards being positively associated with perceived behavioural control, but was not correlated with any other variables. This variable will not be analysed further.

Table 5. Descriptive statistics and Pearson correlation coefficients for the relationship between study variables (subjective norms, SN; perceived behavioural control, PBC; attitudes towards eating healthier, ATT; intentions to eat healthier, INT; self-control, SC; and female identification, ID),  $n = 115$  (Study 2).

Variable	M	SD	SN	PBC	ATT	INT	SC
SN	5.73	1.29					
PBC	5.21	1.48	.39*				
ATT	6.18	1.08	.26*	-.05			
INT	5.58	1.13	.55*	.39*	.32*		
SC	2.96	0.60	.07	.18 <sup>+</sup>	.05	.06	
ID	6.03	1.25	.33*	.18 <sup>+</sup>	.30*	.35*	.17

Note: \*  $p < .01$ ; <sup>+</sup>  $p = .06$ .

Table 6. Means and standard deviations for the theory of planned behaviour measures, by experimental condition.

	Female identity salient condition (n = 58)	Control condition (n = 57)
Intention to eat more healthily	5.46 (1.24)	5.71 (1.01)
Attitude	6.16 (1.05)	6.21 (1.12)
Subjective norm	5.70 (1.40)	5.75 (1.17)
Perceived behavioural control	4.71 (1.13)	4.95 (1.30)

Note: None of the mean differences between conditions were statistically significant.

A hierarchical multiple regression analysis was performed, looking at associations between subjective norm, perceived behavioural control, attitudes, female identity, and the intention to eat healthier over the next month (see Table 7). All variables were standardised, to reduce the effect of multi-collinearity (Aiken & West, 1991), and the analyses controlled for BMI. The three TPB predictors were entered in the first block of the regression, and they accounted for a significant amount of variance in the intention to eat healthier ( $R^2 = .34$ ,  $F(4,102) = 13.00$ ,  $p < .001$ ). Subjective norm was the strongest predictor of intentions ( $\beta = .34$ ,  $p < .001$ ), followed by attitudes ( $\beta = .27$ ,  $p = .002$ ) and perceived behavioural control ( $\beta = .22$ ,  $p = .01$ ). The results of this analysis are mostly consistent with previous research on TPB, with the exception of the strong predictive power of the subjective norm. This will be elaborated upon in the discussion.

Female identification was added to the model in Block 2, significantly improving the predictive power of the model ( $R^2$  change = .06,  $F(1,101) = 9.21$ ,  $p = .003$ ). Female identity was a significant independent predictor of healthy eating intentions ( $\beta = .26$ ,  $p = .003$ ), but the TPB variables also remained significant.

Finally, a mediation analysis using the PROCESS macro (Hayes, 2013) was performed to test whether the effect of female identification on healthy eating intentions was mediated by the TPB variables. Table 8 depicts the  $a$ ,  $b$ ,  $c$  and  $c'$  paths. Results show that the effect of female identification was partially mediated by all three TPB predictors: for both the total indirect effect ( $B = .16$ ,  $CI [.07, .26]$ ) as well as each of the mediation paths ( $CI_{ATT} [.01, .11]$ ,  $CI_{SN} [.02, .17]$ ,  $CI_{PBC} [.01, .09]$ ) the confidence interval did not include zero, indicating significant mediation. It should be noted, however, that the lower ends of the confidence intervals were close

to zero, which warrants caution in interpreting the mediation. Pairwise comparisons indicated that the three mediators were equally strong, as each contrast's confidence interval included zero.

Table 7. Multiple regression analyses of intentions to eat healthier onto TPB variables (Block 1) and female identification (Block 2).

<i>Variable</i>	<i>Beta</i>	<i>R</i>	<i>R<sup>2</sup></i>	<i>R<sup>2</sup> change</i>
<i>Block 1</i>		.58	.34**	
Attitude (ATT)	.27*			
Perceived behavioural control (PBC)	.22*			
Subjective norm (SN)	.34**			
<i>Block 2</i>				
Female identification (ID)	.26*	.63	.39**	.06*

\*  $p < .01$ ; \*\*  $p < .001$ .

The beta values reported are those at entry, analyses controlled for BMI. N = 107.

**Table 8. Results from multiple mediation analysis including bootstrapping analysis for indirect effects.**

<i>Direct paths</i>		<i>Coefficients and significance levels (standard errors)</i>		
Mediation analysis	<i>a</i> paths (female identification → mediators)	(1) attitude	B = .20* (.08)	
		(2) subjective norm	B = .34*** (.08)	
		(3) perceived behavioural control	B = .27* (.11)	
	<i>b</i> paths (mediators → intention)	(1) attitude	B = .22** (.08)	
		(2) subjective norm	B = .23** (.08)	
		(3) perceived behavioural control	B = .13* (.06)	
	<i>c</i> path (female identification → intention)		B = .35*** (.07)	
	<i>c'</i> path (female identification → intention corrected for indirect effect)		B = .19** (.07)	
	<i>Indirect path</i>		<i>Bootstrapped coefficients and confidence intervals</i>	
	Bootstrap procedure	<i>a*b</i> paths (female identification → intention via mediators)	(1) attitude	B = .05, CI [.01, .11]
(2) subjective norm			B = .08, CI [.02, .17]	
(3) perceived behavioural control			B = .04, CI [.01, .09]	
total effect			B = .16, CI [.07, .26]	
pairwise contrasts between mediators		(1) vs (2)	B = -.04, CI [-.13, .04]	
		(1) vs (3)	B = .01, CI [-.05, .07]	
		(2) vs (3)	B = .04, CI [-.03, .13]	

Note: \*\*\* p < .001; \*\* p < .01; \* p < .05.

**Effects on snack choice.** Healthy eating intentions, attitudes, subjective norm and perceived behavioural control were entered into Block 1 of a logistic regression model of snack choice (see Table 9). None of the variables were significantly associated with snack choice. Importantly, there was no significant association between healthy eating intentions and snack choice.

In Block 2, female identification and order of measurement were added to the logistic regression model. If participants were given the choice before having the opportunity to express their intentions, they were significantly less likely to choose the healthy snack ( $OR = 0.41$ , 95%  $CI [0.18, 0.97]$ ,  $p = .04$ ). Female identification also predicted snack choice, in that participants who more strongly identified as female were also less likely to choose the healthier snack ( $OR = 0.62$ , 95%  $CI [0.39, 1.00]$ ,  $p = .05$ ). This runs against the association of female identification with healthy eating intentions, but is consistent with the findings of Study 1- this point will be elaborated upon in the discussion.

Table 9. Logistic regression analysis of choosing the healthier snack.

	B (SE)	OR	95% CI for OR	p
<i>Block 1</i>				
Intention	0.46 (0.29)	1.59	0.90 – 2.80	.11
Attitude	0.31 (0.26)	1.36	0.82 – 2.78	.24
Subjective norm	-0.11 (0.27)	0.90	0.53 – 1.52	.69
Perceived behavioural control	-0.40 (0.25)	0.67	0.41 – 1.10	.12
<i>Block 2</i>				
<b>Female identification</b>	-0.48 (0.24)	0.62	0.39 – 1.00	.05
<b>Behaviour measured first</b>	-0.88 (0.29)	0.41	0.18 – 0.97	.04

*Note.* n = 107. Values entered are from Block 2, where all variables were entered into the model.

## **Discussion**

The findings of Study 2 demonstrated a significant association between female identification and healthy eating intentions: those participants who strongly identified as female were also more likely to express healthy eating intentions. However, this association was not found for healthy food choice: participants who strongly identified as female were not more likely to choose a healthy trail bar over a less healthy chocolate bar. Importantly, this difference between the effect on intention and behaviour was not caused by a licensing effect: participants who expressed their healthy eating intentions before choosing a snack were in fact more likely to pick a healthy snack than participants who expressed their intentions only after choosing.

The results of this study provide an interesting new perspective on the associations between female identification, healthy eating intentions, and food choice. Healthy eating intentions were, in accordance with theory of planned behaviour, predicted by attitude, perceived behavioural control and subjective norm. This is largely in line with previous research applying TPB to healthy eating (Åstrom & Rise, 2001; Conner, Norman, & Bell, 2002; Povey et al., 2000b). The pattern of associations was slightly unusual, in that subjective norm was strongly associated with healthy eating intentions, and attitude and perceived behavioural control less so. This may have been caused by methodological factors: perceived behavioural control was assessed with one item, whereas subjective norm was assessed with a three-item, internally consistent measure (Armitage & Conner, 2001). Also, as half of the participants were exposed to a social identity salience manipulation, the social

influence on their cognitions may have become more pronounced, leading to an increased importance of the subjective norm.

Healthy eating intentions were positively associated with female identification. This finding was in line with the results of Study 1, and also with previous research showing that women tend to be more aware of the nutritional value of foods, and their eating intentions are more influenced by social pressures than men's eating intentions (Chaiken & Pliner, 1987; Grogan, Bell, & Conner, 1997; Wardle et al., 2004).

Interestingly, however, in this study, healthy eating intentions had no direct association with healthy food choice. Instead, the snack choice was associated with female identification and the order in which outcomes were measured. The lack of association between intention and behaviour may suggest that the food choice performed in the study was in fact not planned. Theory of planned behaviour provides a model of premeditated action, and its predictions were supported as long as intentions were concerned. Behaviour in this study, however, depended on contextual effects such as identity and goal reinforcement (in the form of stating healthy eating intentions).

In line with Study 1, female identification was found to be associated with healthier eating intentions, but also with unhealthy food choice. This might have to do with the ambiguous norms about healthy eating that are associated with female identity: on one hand, the injunctive norm (that is, what women should do) points towards eating light foods and salads, avoiding fat and striving for a slim body (see for example Garner, Garfinkel, Schwartz, & Thompson, 1980); on the other hand, the descriptive norm (i.e. what women actually do) suggests that many women are

overweight or even obese, they repeatedly fail at attempts to lose weight, and eat calorie-dense meals and snacks. If high female identification means also high salience of the relatively unhealthy descriptive norm, highly identifying females may actually be less motivated to eat healthy foods, even though they declare their healthy eating intentions (Louis et al., 2007).

The finding that stating healthy eating intentions first was associated with healthier food choices suggests that participants were not subject to a licensing effect (Khan & Dhar, 2006). If a licensing effect was driving the results of this study, participants who expressed their healthy eating intentions before choosing a snack would have been more likely to choose an unhealthy snack. Instead, participants were more likely to choose a healthy snack if they stated their intentions beforehand. Indeed, expressing healthy eating intentions may have served as a goal reinforcement, reminding participants of their aims, and making it more likely for them to act accordingly.

**Study limitations.** This study has a number of limitations. First of all, the manipulation of female identity salience was not successful, and an individual difference, one-item measure of female identification was used instead. This type of analysis did not allow for examining the causal effect of female identity salience on healthy eating intentions and behaviour. The failure of the manipulation may have been caused by chronic salience of female identity, whereby women are constantly aware of their gender. Also, the non-identity control group may have experienced increased levels of female identification due to the circumstances of study participation: responding to a poster recruiting female students, being surrounded by female students, interacting with a female experimenter.

Second, due to logistic considerations, a binary choice between a healthy and an unhealthy snack was used, rather than a continuous measure. This may have made the study less reliable by providing a rather crude measure of the main outcome of interest. Additionally, participation in the study may have been seen as a justification for indulgence, and thus undermined the translation of the healthy eating intentions into action (Taylor, Webb, & Sheeran, 2013). However, it should be noted that modern life provides countless justifications for indulgence, and that one of the challenges for healthy eating campaigns is to remind people to make healthy food choices at all times.

Third, the study only looked at explicit attitudes towards healthy eating and did not include a measure of implicit attitudes towards healthy food or unhealthy snacks. It has been suggested that consumption of unhealthy snacks can be predicted by implicit attitudes towards snacks, especially when self-regulatory resources are low (Hofmann et al., 2007). Including a measure of implicit attitudes would be a valuable addition to the model.

**Conclusion.** Overall, the results of this study highlight that female identification is an independent predictor of healthy eating intentions, even after accounting for variables specified by TPB. In contrast, stronger female identification was not associated with healthier snack choices, but indeed with an increased probability of choosing a less healthy snack. These findings illustrate an interesting case of an intention-behaviour gap, where the same construct (in this case, social identity) increases good intentions, but has an ironic effect on behaviour. Further research may explore the mechanisms of this gap, potentially exploring the effect of

psychological licensing, injunctive and descriptive norms, and the role of implicit attitudes.

## CHAPTER 3

### DOES IDENTITY CONTENT INFLUENCE HEALTHY EATING INTENTIONS?

#### **Abstract**

**Background:** Female identity is stereotypically associated with healthy eating behaviour, whereas students are often perceived as unhealthy eaters. Female students may therefore be exposed to conflicting norms regarding the appropriate amount and types of foods that they should be eating.

**Methods:** In a sample of 156 female students, we examined the effect on healthy eating intentions and behaviour of (1) increasing the salience of either female or student identity; and (2) presenting participants with social images of their in-group members engaging in either healthy or unhealthy behaviour. After the manipulation, participants also indicated to what extent they identified with the in-group (females or students).

**Results:** Findings suggested that both experimental factors influenced healthy eating intentions, but only in interaction with group identification. Group identification was positively associated with healthier eating intentions in the female identity salience condition, but not in the student identity salience condition. Also, when participants were presented with images of their in-group members engaging in unhealthy behaviour, those who strongly identified with their in-group reported healthier eating intentions than those who did not. There was no effect of group identification when participants were presented with images of other in-group members engaging in healthy behaviour.

**Conclusion:** These findings are in line with our previous results showing an association between female identification and healthy eating intentions. The results are discussed in light of the broader issues surrounding women's eating habits.

## **Introduction**

The studies reported in the previous chapter of this thesis provided evidence that variables related to social identity predict healthy eating intentions, even after the variables suggested by theory of planned behaviour have been controlled for. The results presented so far suggest that healthy eating intentions and behaviour may be influenced by the psychological salience of particular social identities, including gender and family identity. This chapter will extend this investigation into the effects of increasing the salience of student identity, typically associated with unhealthy eating, and will investigate the role of social images (depicting in-group members engaging in healthy or unhealthy behaviour) in increasing healthy eating intentions and behaviour.

### **Identity Signalling**

Stemming directly from social identity and self-categorisation theory, and central to the concept of identity-based motivation (Oyserman et al., 2007), is the notion that people are motivated to engage in behaviours that are considered appropriate by members of the in-group. In a similar vein, people avoid behaviours associated with groups and individuals they dislike (Berger & Rand, 2008). In other words, some behaviours and choices, including those that have consequences for one's health, can be used for the purposes of identity signalling – indicating that one belongs to a certain social group, or that one does not belong to an undesirable group.

Multiple psychological mechanisms could be involved in the process of identity signalling. Berger and Rand (2008) made a link between identity signalling and the prototype/willingness (P/W) model of risk behaviour (Gibbons & Gerrard,

1995), which holds that people are more willing to engage in health risk behaviour if they would like to attain the characteristics typically attributed to those who engage in similar behaviours (the prototype). One of the original applications of the P/W model concerned adolescent smoking (Gibbons & Gerrard, 1995). If, for instance, someone perceives smokers as independent and cool, and would like to be independent and cool, they are more likely to start smoking than someone who does not perceive smokers as independent and cool or who does not want to be independent and cool. On the other hand, if someone perceives smokers as stupid and reckless, they should be less likely to take up smoking once this association is made salient, assuming they do not want to be seen as stupid and reckless. Thus, people's perceptions and the desirability of the characteristics of a typical smoker are likely to influence the likelihood of them becoming smokers themselves.

The P/W model recognises two pathways to behaviour: the reasoned pathway, which reflects the fact that some behaviour is intentional and planned ahead of time; and the social reaction pathway, which stems from the recognition that behaviour is often a reaction to the social environment (Gibbons, Gerrard, & Lane, 2003). The model focuses on the social reaction pathway, positing that people compare themselves to the prototype of a person who engages in a particular behaviour and, to the extent that the prototype is favourable, their willingness to engage in that particular behaviour increases. Thus, prototypes influence behaviour by increasing willingness, and not by increasing intentions. In fact, in the original formulation of the model, Gibbons et al. (2003) argued that it is unlikely that adolescents would express the intention to engage in risky healthy behaviour, even if they have positive prototypes related to that behaviour. Studies involving a manipulation of the

prototype as a means to changing health behaviour have provided mixed results: a prototype manipulation had no effect on binge drinking among female undergraduate students (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), but was successful in reducing willingness to engage in unsafe sex (Blanton et al., 2001) and in reducing tanning booth use among students (Murnen & Smolak, 1997).

The P/W model is also of relevance to eating behaviour. Research looking at people's perceptions of healthy and unhealthy eaters indicates, for example, that unhealthy eaters are perceived as more immoral, overindulgent and undisciplined than healthy eaters (Oakes & Slotterback, 2004; Steim & Nemeroff, 1995). Applying the prototype/willingness model directly to adolescent eating behaviour, Gerrits and colleagues (2009) found that adolescents held distinct prototypes of healthy and unhealthy eaters, and that those who held a more favourable image of unhealthy eaters were also more likely to eat more unhealthy foods. Holding a favourable image of healthy eaters was not related to eating behaviour (Gerrits, de Ridder, de Wit, & Kuijer, 2009).

More generally, eating can be seen as a behaviour that signals identity, and the decision as to what and how much to eat is guided not only by hunger and the nutritional value of food, but also by the symbolic message sent by choosing a particular food type, and eating it in a particular quantity. For instance, in their analysis of the role of identities in food choice Bisogni et al. (2002) noted that some of their participants reported "consistently selecting or modifying food situations to enact what was important to them" (Bisogni et al., 2002, p. 134).

A line of research that is particularly relevant to the research questions explored in this chapter links eating to the expression of gender identity. Mori,

Chaiken and Pliner (1987) found that heterosexual women ate less in the presence of a desirable man than in the presence of either an undesirable man or another woman. Mori et al.'s (1987) Study 2 demonstrated that this effect was due to the women's desire to signal their femininity, as femininity is associated with eating small and light meals (Chaiken & Pliner, 1987; Mori et al., 1987). Consequently, women who want to conform to the social ideals of femininity will tend to choose light meals and small portions. This is especially likely to occur in situations where they are motivated to emphasise their femininity, that is, in interactions with potential mating partners, or when they are seeking acceptance or approval from other members of the in-group (i.e. other women).

### **Social Norms**

Just as prototypes refer to the perception of people who typically engage in a given behaviour, social norms specify to what extent the behaviour is typical or prevalent within a certain social group (descriptive norm), and to what extent it is desirable and encouraged (injunctive norm) (Cialdini et al., 1991; Cialdini, Reno, & Kallgren, 1990). People are likely to shape their own eating behaviour according to what they see others eating, and what they think others will approve of them eating (Herman & Polivy, 2005).

The importance of normative influences on eating behaviour is evident in a number of independent research strands. One way of conceptualising normative influences is through the notion of subjective norm, which is one of the three predictors of behavioural intention specified by TPB. Subjective norm refers to the perception of whether or not significant others would approve of a particular behaviour, and it has been found to be significantly correlated with healthy eating

intentions and behaviour in several studies (see for example: Åstrom & Rise, 2001; Povey, Conner, Sparks, James, & Shepherd, 2000a; Sparks & Guthrie, 1998; White, Terry, Troup, Rempel, & Norman, 2010). According to a recent meta-analysis, the average correlation between subjective norm and dietary intentions is  $r = .35$ , and the correlation between subjective norm and dietary behaviour is  $r = .15$  (McEachan et al., 2011).

Secondly, a large body of experimental evidence suggests that eaters are influenced by their eating companions with respect to the type and quantity of food they consume (Herman et al., 2003; Vartanian, Herman, & Wansink, 2008). Even though this effect is robust and has been demonstrated under a variety of circumstances, the mechanism through which social influences affect people's food intake has only recently been investigated. Vartanian, Sokol, Herman and Polivy (2013) provided experimental evidence to support the hypothesis that social models, including eating companions, influence people's eating behaviour by "providing a norm of appropriate food intake" (Vartanian et al., 2013, p. e79268). In each of the three experiments reported by Vartanian et al. (2013), perceived norms fully mediated the effect of model's food intake condition on participants' snack consumption.

Thirdly, a recent systematic review and meta-analysis (Robinson, Thomas, Aveyard, & Higgs, 2014) looked at the effect of informational norms on eating. The research on informational norms differs from the research on social modelling in that informational norms refer to knowledge about how other people behaved, acquired without having had the opportunity to observe their behaviour. The review concluded that both high intake and low intake norms exerted moderate influence on the amount

of food consumed by study participants. In other words, participants ate less if they were told that their predecessors ate little, and they ate more if told that their predecessors ate a lot.

Studies included in the review by Robinson and colleagues (2014) all used an analogous paradigm, in which participants had the opportunity to consume some foods, after receiving information about the eating behaviour of previous study participants. They did not, however, meet the other participants or see them eating. This methodological paradigm rules out impression management as an explanation of any change of behaviour, since participants ate alone. It does, however, provide a strong manipulation of social norm- participants were given information about what other people had done in that particular situation, and, based on that information, they were able to infer what behaviour would be appropriate.

Following on from the finding that eating is influenced by social norms, new interventions are being developed, aiming to promote healthy eating by exposing people to normative information about the healthy eating behaviour of relevant others (Robinson, Fleming, & Higgs, 2013; Robinson, Harris, Thomas, Aveyard, & Higgs, 2013). The outcomes of laboratory studies piloting such intervention approaches are promising: Robinson, Fleming and Higgs (2013) found that descriptive norm based messages (e.g. “The typical student eats over 3 servings of vegetables each day”) are more effective than health based messages (e.g. “Eating a lot of vegetables is good for your health”) in increasing fruit and vegetable intake in a student sample. Also, descriptive norm based messages have been found to be as effective as health based messages in reducing the intake of high calorie snack foods (Robinson, Harris, et al., 2013).

As illustrated above, considerable heterogeneity exists in how social influences on eating are conceptualised and measured. Also, the strength of the association between social factors and eating behaviour can vary considerably, depending on the operationalization of the social factor and the methodology used. Social norms are often included in survey-type studies as one of the predictors of dietary behaviour, but the findings as to the strength of their influence are inconclusive. In a recent literature review, the evidence for an association between social norms and fruit and vegetable intake has been deemed insufficient, with only 2 out of the 6 reviewed studies reporting a significant association (Shaikh, Yaroch, Nebeling, Yeh, & Resnicow, 2008).

### **Group Identification**

Differences in the strength of association between social norms and dietary behaviour might reflect the importance of context – under certain circumstances, people might be more prone to social influence than in others. The referent informational influence perspective, informed by social identity and self-categorisation theory, suggests that the strength of social influence depends on characteristics related to group membership. On one hand, people who strongly identify with their social group are more likely to be influenced by the group norm. On the other hand, people are more likely to be influenced by a message if it comes from someone who belongs to the same social group.

For instance, the effect of a pro-diet versus and anti-diet message on adolescent girls' perceptions of dietary habits in the community depended on the source of the message: the content of the message had the largest effect if the message was delivered by a journalist, but had virtually no effect when the message was delivered

by a radical feminist (Balaam & Haslam, 1998). The authors argued that the participants identified much more with a journalist than with a radical feminist, and so were more likely to be influenced by a message that came from an in-group member. In a similar vein, Oyserman et al. (2007) demonstrated that ethnic minority members are unlikely to change their attitudes in response to health promotion campaigns, as long as they perceive them to be directed at the white and middle class population (the out-group). Finally, recent experimental research varied the social membership of the confederate to examine the extent of social modelling of food intake, depending on whether the confederate was an in-group or an out-group member (Cruwys et al., 2012). The results suggested that social modelling occurred in the condition where participants shared a membership in a salient social group with the confederate, but did not occur in the condition where the confederate was an out-group member.

### **Student Eating**

The focus on female participants in research on healthy eating is often justified by noting that women pay more attention to their diets, as they are motivated by a desire to eat healthily as well as to control their weight (Wardle et al., 2004). Women are also more prone to obsession about their diets and, in consequence, more likely to be affected by eating disorders (see for example, Lewinsohn, Seeley, Moerk, & Striegel-Moore, 2002). However, since the majority of social psychological research is conducted with student samples and students' diets are typically rather unhealthy (Dinger, 1999; Glore, Walker, & Chandler, 1993), it is important to examine the effect of student identity salience and social norms attached to the student status on healthy eating intentions and behaviour. It is likely that female students in particular

are exposed to two different sets of norms regarding healthy eating, and thus it is important to disentangle the potential effects of student and female identities.

### **Present Study**

The study presented in this chapter focuses on the effects of female and student identity salience on healthy eating intentions and behaviour. The literature suggests that women tend to eat healthier foods and are more concerned with maintaining a healthy diet than men (see for example Wardle et al., 2004), and that femininity is associated with eating small and light meals (Chaiken & Pliner, 1987). Students, on the other hand, have been shown to have generally poor diets, consuming fewer fruit and vegetables than the recommended intake, and consuming large amounts of high-fat, high-calorie foods (Brevard & Ricketts, 1996; Driskell, Kim, & Goebel, 2005; Racette, Deusinger, Strube, Highstein, & Deusinger, 2005). The two dependent variables of interest are healthy eating intentions and food choices made from an online restaurant menu. Based on the literature reviewed above, it is expected that female identity salience will be associated with stronger healthy eating intentions and healthier food choices than student identity salience.

Within each social identity condition, we look at the effects of presenting participants with social images of other people belonging to the same social group (i.e. other females or other students) engaging in either healthy or unhealthy behaviour. It is expected that healthy eating intentions reported by participants, and their eating behaviour, will be aligned with the presented social images. Thus, participants who were shown images of in-group members engaging in healthy behaviour would report stronger healthy eating intentions and choose healthier foods

from the menu than participants who were shown images of in-group members engaging in unhealthy behaviour.

We also test whether the effect of social identity salience and social image healthiness on healthy eating intentions and food choices is moderated by group identification. In the current study, we define group identification as the importance of a particular group membership to an individual's self-concept (Doosje, Ellemers, & Spears, 1995; Leach et al., 2008). To the extent that a particular behaviour is seen as appropriate for one's social group, and that social group is important to one's self-concept, we would expect an increase in the behavioural intention and actual behaviour. On the other hand, even if certain behaviour is crucial to a social group, one will not be motivated to engage in it if their identification with the group is low.

As discussed above, healthy eating is part of the social expectations associated with femininity, and thus female identity salience is expected to be associated with healthy eating intentions and behaviour, but only among those who report high levels of female identification. Student identity, on the other hand, is not associated with a healthy eating norm, and thus identification as a student should not be linked to healthier eating intentions of behaviour.

## **Method**

### **Design**

The study employed a  $2 \times 2$  between-subjects design, resulting in four experimental cells. Salient social identity and the healthiness of social images were the independent variables, and were manipulated by showing participants one of four sets of pictures: pictures of women engaging in either healthy or unhealthy behaviour (in the female identity condition), or pictures of students engaging in either healthy

or unhealthy behaviour (in the student identity condition). See Figure 1 for examples of images used in the manipulation.

### **Participants**

Participants were 156 female students at a large Australian university. They were recruited from two subject pools at the Psychology department, and were given either course credit or \$10 for their participation, depending on which participant pool they signed up from. The study was hosted online and participants completed it outside of the lab, without supervision from the experimenter. Participants were on average 21.1 years old ( $SD = 3.0$ ), with a mean self-reported BMI of 20.8 ( $SD = 2.7$ ).

### **Procedure**

Participants accessed the study through a link to the study website. The purpose of the study was partially concealed and participants were told that the study was concerned with the factors influencing their food preferences. Once on the study website, participants were given information about the study and were asked to either provide consent or exit the study. Participants were then randomly assigned to one of the 4 conditions in a 2 (salient social identity: female or student)  $\times$  2 (social images: healthy or unhealthy) experimental design.

The two experimental manipulations were delivered within a picture selection task. All participants were given a set of six images, depicting either women (in the female identity salience condition) or students (in the student identity salience condition); this constituted a manipulation of social identity salience. Three of the six images in each set portrayed in-group members (i.e. students or women) engaging in either healthy or unhealthy behaviour, while the other three images depicted in-group members in non-health related scenes; this constituted a manipulation of the healthy

or unhealthy social images. Thus, for example, a participant in a female identity salience, unhealthy condition would receive three images of females engaging in unhealthy behaviour, and three images of females in neutral scenes. All participants were asked to choose the three images that they thought best represented what it meant to be a woman (in the female identity salience conditions) or a student (in the student identity salience conditions). After participants completed the manipulation, they were asked to choose items for breakfast, lunch and dinner from an online restaurant menu, adapted from a popular Australian restaurant chain. Participants were instructed not to take price into account (information about prices was not provided), and were asked to imagine being on a day trip and having to eat all their meals in a restaurant. Following the menu choices, participants were asked to complete a battery of questionnaires measuring a number of constructs, including with respect to social identity and eating behaviours. After completing the questionnaires all participants were debriefed via an online form, and were given the contact details of the experimenters should they have any questions or comments.

Figure 1. Examples of images used in the experimental manipulation.

	Female identity	Student identity
Healthy images	 A close-up photograph of a young woman with long brown hair, smiling warmly. She is holding a fork with a piece of tomato and green leafy vegetables, positioned over a clear glass bowl filled with a fresh salad. The background is softly blurred, suggesting an indoor setting with natural light.	 A photograph of a busy university canteen or food court. Several people are seen in motion, some standing at a counter. The environment is brightly lit with colorful signage, including a prominent green sign with the word 'Love' and a logo. The scene conveys a sense of active student life.
Unhealthy images	 A close-up photograph of a woman with a grey headband and dark hair, looking directly at the camera with a surprised or intense expression. She is holding a large, partially unwrapped chocolate bar, with a piece of the bar held in her mouth. The background is plain white.	 A photograph of a library lounge or study area. Two young men are sitting on the floor, facing each other. They are surrounded by bookshelves filled with books. In the foreground, there are several plates of food and drinks on a low table, suggesting a social gathering. A television set is visible in the background, displaying a bright image.

## Measures

### **Moderator variable.**

**Group identification.** Identification as a woman (in the female identity condition) and identification as a student (in the student identity condition) were measured using 4-item scales adapted from Doosje et al. (1995). In the female identity condition, the items were: *I see myself as a woman, I am pleased to be a woman, I feel strong ties with other women, I identify with other women.* In the student condition, analogical items were used, with the words woman/women substituted with [university] student/students. Responses were given on a 7-point scale, ranging from *strongly disagree* to *strongly agree*. Internal consistency of both versions of the scale was satisfactory:  $\alpha = .85$  for the female identification scale;  $\alpha = .79$  for the student identification scale.

### **Outcome variables.**

**Healthy eating intentions.** Healthy eating intentions were measured using four items: *I intend to eat more healthy foods, I plan to eat more fruit and vegetables, I am highly motivated to eat more healthily and I intend to take better care of my body.* Participants responded to these items using a 7-point scale, ranging from *strongly disagree* to *strongly agree*. Internal consistency of this scale was satisfactory ( $\alpha = .87$ ).

**Intended food intake.** A short food frequency questionnaire measuring the intended intake of fruit and vegetables and snack food was included (Holub, Haney, & Roelse, 2012). The items were worded so that participants were asked to estimate their likely consumption of fruit, vegetables, hot potato chips, pizza, sweets, savoury snacks and soft drinks in the two weeks following the study. Participants responded

on a 7-point Likert-type scale, ranging from *never* to *more than once every day*. The questionnaire consisted of two subscales: a fruit and vegetable subscale ( $\alpha = .75$ ) and a snack food subscale ( $\alpha = .66$ ). The internal consistency of the subscales in this study was similar to that obtained by Holub et al. (2012).

**Food choices.** As a quasi-behavioural measure of eating behaviour, participants were presented with an online restaurant menu and asked to choose what they would like to have for breakfast, lunch and dinner for the next day. The menu comprised multiple options, and the interface allowed participants to specify their first and second choices for each meal. Based on information provided by the restaurant on whose menu the food choices were based, we were able to estimate the energy content in kilojoules of each meal. The total energy content (in kJ) of each of the three meals composed by each participant was then added and this summary value constituted the dependent measure. If a participant specified a first and second choice for a meal, the energy content of the two choices was averaged to form a single value.

**Additional measures.**

A number of other measures were included in the study, including a scale measuring participants' perceptions of the factors potentially influencing their food choices, measures of dieting and exercise intentions, descriptive norm regarding healthy eating, healthy eating knowledge, group leadership, inclusion of group in self, healthy eater self-identity, and perceived behavioural control over healthy eating and dieting intentions; and an Implicit Attitudes Task measuring implicit attitudes towards fruit and snacks. These measures were included in the online questionnaire

for exploratory purposes, but analysis of these variables is beyond the scope of this study.

### **Analyses Plan**

Planned analyses included a series of multiple regression analyses, with healthy eating intentions, intended food intake and energy content of online menu choices (in kJ) as the key outcomes. In each regression model, factors corresponding to experimental conditions (female vs. student salient identity, healthy vs. unhealthy social images) and group identification were entered at Step 1, and 2-way interactions (salient identity x social images, salient identity x identification, social images x identification) and the 3-way interaction were entered at Step 2. SPSS 19 (IBM Corp., 2010) was used to analyse the data.

## **Results**

### **Preliminary Analyses**

Tables 1 and 2 present descriptive statistics of the study variables. Analyses of Variance (ANOVAs) were performed to test whether participants in the four conditions differed on age or BMI. As expected with a random assignment procedure, no significant differences were found ( $ps > .10$ ). Group identification in both the student ( $M = 5.92, SD = 0.71$ ) and female ( $M = 6.02, SD = 0.87$ ) identity salience conditions was high, well above the midpoint of the scale. There were no differences in group identification between the conditions ( $ps > .10$ ).

### **Healthy Eating Intentions**

A hierarchical multiple regression analysis was performed to investigate the effect of salient social identity, healthiness of social images (both contrast coded),

and group identification (centred) on healthy eating intentions (see Table 3). None of the predictors had a significant main effect on healthy eating intentions ( $ps > .10$ ).

A statistically significant interaction ( $\beta = .26, p < .05$ ) emerged between salient social identity (student vs female) and group identification (see Figure 2); simple slopes analysis was conducted to explore this interaction. In the student identity condition, there was no association between group identification and healthy eating intentions; participants in the student identity condition reported similar healthy eating intentions regardless of their student identification levels. In the female identity condition, however, there was a positive association between female identification and healthy eating intentions; participants who strongly identified with other women reported stronger healthy eating intentions than participants who did not identify as strongly with other women.

A statistically significant interaction ( $\beta = -.23, p < .05$ ) also emerged between healthiness of the social images (healthy vs unhealthy) and group identification. Simple slopes analysis (see Figure 3) suggested that when healthy social images were shown, participants' extent of group identification was not significantly associated with their healthy eating intentions. However, when unhealthy social images were shown, participants who identified more with the salient social group reported higher healthy eating intentions than participants who did not identify as much.

The interaction between the two experimental factors (social image healthiness x social identity) and the 3-way interaction did not account for a significant amount of variance in the model (see Table 3).

Table 1. Descriptive statistics of the key study variables for the entire sample (n = 156).

Variable	Range	Mean	SD
Age	16 – 31	21.1	2.96
BMI	14.5 – 29.1	20.8	2.72
Group identification			
Student	4.25 – 7.00	5.92	0.71
Female	3.25 – 7.00	6.02	0.87
Healthy eating intentions	1 – 7	5.70	1.01
Intended food intake			
Fruit and vegetable intake	1.50 – 7.00	5.40	1.22
Snack food intake	1.00 – 6.80	2.70	0.82
Food choices (kJ)	5306 – 19680	10962	2447

Table 2. Means and standard deviations by study condition.

	Female identity salient		Student identity salient	
	Healthy images (n = 36)	Unhealthy images (n = 41)	Healthy images (n = 38)	Unhealthy images (n = 41)
Group identification	6.06 (0.91)	6.00 (0.89)	5.96 (0.67)	5.83 (0.74)
Healthy eating intentions	5.73 (0.77)	5.59 (1.30)	5.66 (1.08)	5.83 (0.81)
Intended fruit and vegetable intake	5.29 (1.01)	5.42 (1.41)	5.51 (1.27)	5.38 (1.18)
Intended snack food intake	2.78 (1.15)	2.87 (0.71)	2.61 (0.70)	2.55 (0.62)
Food choices	10740 (2047)	10876 (1784)	10882 (2741)	11013 (2581)

Table 3.

Results of Hierarchical Regression Analysis: Predictors of Healthy Eating Intentions.

Variable	b	SE (b)	$\beta$
Step 1			
Social image healthiness	-.01	.08	-.01
Salient social identity	-.07	.08	-.07
Group identification	.20	.11	.16
Step 2			
Social image healthiness	-.01	.08	-.01
Salient social identity	-.07	.08	-.07
Group identification	.11	.08	.11
Social image healthiness x Salient social identity	.09	.08	.09
Social image healthiness x Group identification	-.23	.11	-.18*
Salient social identity x Group identification	.26	.11	.21*
Social image healthiness x Salient social identity	.03	.10	.03
x Group ID			

\* $p < .05$ . N = 147.

Figure 2. Social identity salience and group identification interact to predict healthy eating intentions.

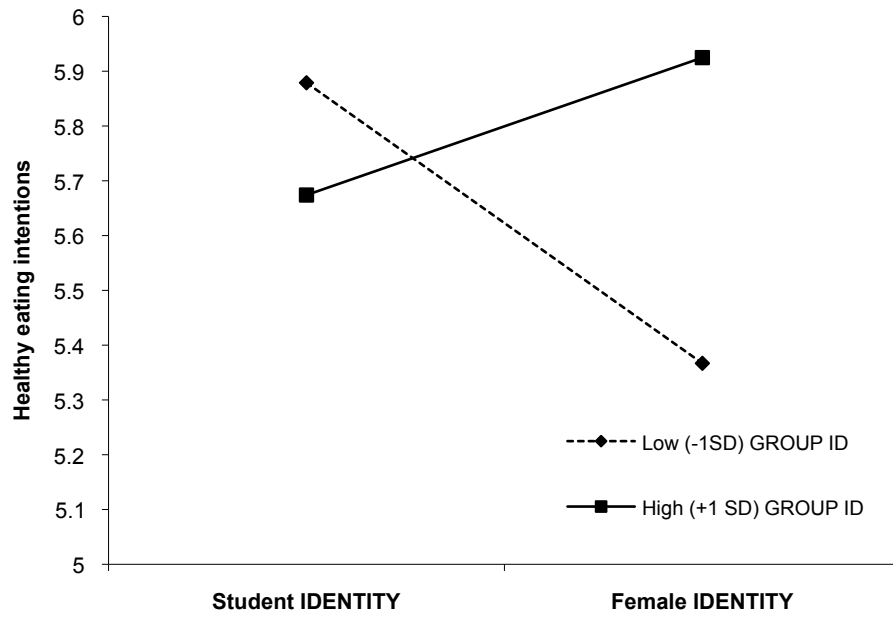
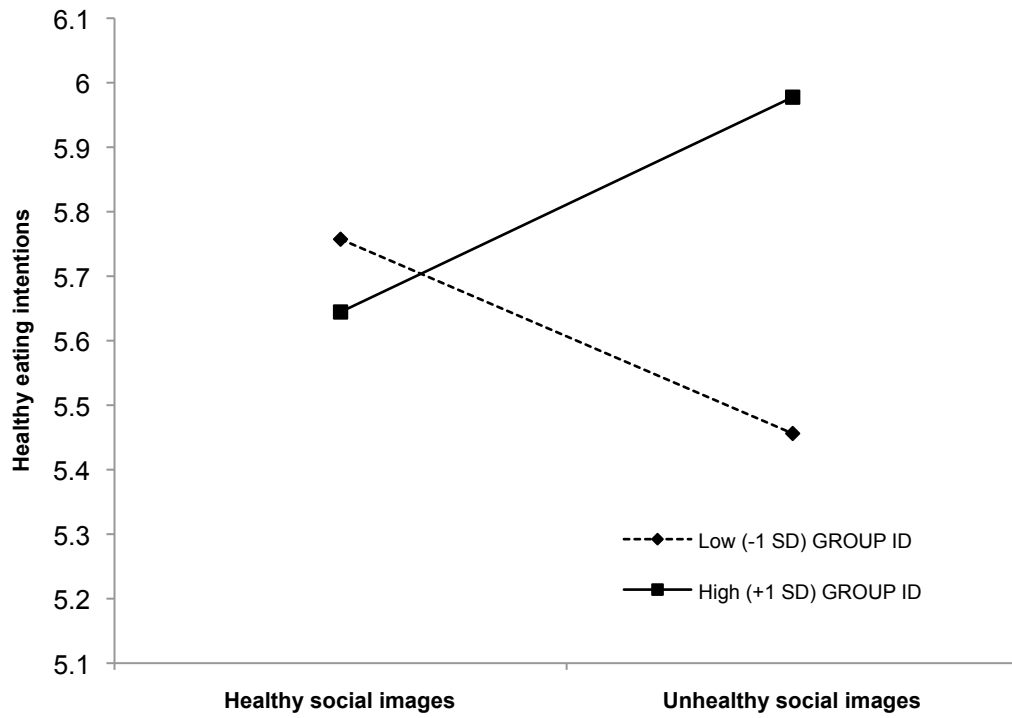


Figure 3. Healthiness of social images and group identification interact to predict healthy eating intentions.



### **Intended Food Intake**

A hierarchical multiple regression analysis was performed, including salient social identity, healthiness of social images and group identification as predictors of intended fruit and vegetable intake, and intended snack food intake. The model predicting fruit and vegetable intake accounted for a significant amount of variance,  $F(3, 142) = 3.25, p = .02, R^2 = .06$ , but only group identification was significantly associated with the intended intake of fruit and vegetables ( $\beta = .25, p = .002$ ). None of the other variables or interactions contributed significantly to the model. The model did not account for a significant amount of variance in snack food intake,  $F(3, 142) = 1.43, p = .24$ .

### **Food Choices**

A hierarchical multiple regression analysis was performed, including salient social identity, healthiness of social images and group identification as predictors of food choices. The model did not account for a significant amount of variance,  $F(5, 149) = 0.61, p = .69, R^2 = .02$ , suggesting that, in this study, social identity salience, social image healthiness and group identification did not significantly predict food choices. Healthy eating intentions were also not significantly correlated with food choices ( $r = -.08, p = .33$ ), suggesting that the measure of healthy food choices may have not had sufficient validity. This will be discussed further in the Discussion section.

## **Discussion**

Female students are potentially exposed to two contradicting sets of norms regarding healthy eating: eating healthy and light meals is generally considered

feminine and thus desirable for a woman (e.g. Mori et al., 1987), but a healthy diet is not commonly associated with being a student. This study explored whether healthy eating intentions and behaviour depend on whether student or female social identity is temporarily made salient. We expected that, when their female identity is made salient, female students would be more likely to behave according to the social standards associated with femininity, and thus would report healthier eating intentions and choose lighter and healthier meals from an online restaurant menu than when their student identity is made salient. We also presented participants with social images that portrayed their in-group members engaging in either healthy or unhealthy behaviour, and we expected that their healthy eating intentions and behaviour would be aligned with those images: healthier in the healthy social images condition, and less healthy in the unhealthy social images condition.

### **Summary of Findings**

There were no differences in the expressed healthy eating intentions and behaviour between participants in the student identity salience and female identity salience conditions. However, an interaction between social identity salience and group identification was found, such that within the female identity salience condition, there was an association between group identification and healthy eating intentions. Namely, when their female identity was made salient, participants who reported higher levels of female identification also expressed healthier eating intentions. This positive association is consistent with findings presented in the previous chapter, where we reported a positive correlation between female identification and healthy eating intentions. This finding also corroborates earlier

research suggesting that women are more likely than men to find healthy eating important (Wardle et al., 2004) and to have healthy diets (Courtenay, 2000a).

There was no evidence of an association between group identification and healthy eating intentions in the student identity salience condition. This suggests that, even though students are stereotypically perceived as unhealthy eaters, student identity might not be associated with unhealthy eating per se. This finding is consistent with the results presented by Louis et al. (2007), who also found a non-significant correlation between student identification and healthy eating intentions<sup>1</sup>.

The association between group identification and healthy eating intentions also depended on whether participants were presented with healthy or unhealthy social images. In the healthy social images condition, participants expressed similar levels of healthy eating intentions, regardless of the strength of their group identification. When they were presented with unhealthy social images, however, their group identification was positively associated with healthy eating intentions. In other words, after being exposed to unhealthy social images, those participants who identified more strongly with the salient social group also expressed healthier eating intentions. This pattern resembles a compensatory effect, whereby high identifiers might be motivated to 'make up' for the unhealthy behaviour of their in-group members, and express particularly healthy intentions.

There may be a number of possible explanations for this pattern of results. First of all, the pictures showing women or students engaging in unhealthy behaviour may have been interpreted as images of undesirable behaviours that should be avoided rather than imitated. Thus, participants who identified highly with their

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<sup>1</sup> Louis et al. (2007) did find that the interaction between student identification and perceived descriptive norm was predictive of healthy eating intentions. We did not replicate this result with our data, possibly due to very high levels of student identification.

social group may have expressed healthy eating intentions in order not to be associated with the undesirable individuals or social subgroups (e.g. women who binge on chocolate, students who eat junk food) presented in the pictures. Previous research on identity signalling suggests that indeed, individuals often make choices with a view to not being associated with undesirable social groups (Berger & Heath, 2007, 2008).

Alternatively, the unhealthy images may have acted as reminders of healthy eating intentions for the highly identified participants. Seeing other in-group members engage in unhealthy behaviour may have made it easier for our participants to remember that they in fact wanted to maintain a healthy diet. In consequence, the reported healthy eating intention would then be stronger.

In a similar vein, counteractive control theory (Trope & Fishbach, 2000) posits that, in some circumstances, the presence of a temptation might increase self-regulatory efforts, leading to more effective goal-directed behaviour. The effects predicted by counteractive control theory have been found in the context of eating (Kroese, Evers, & De Ridder, 2009, 2011), suggesting, for example, that female participants report stronger goal intentions to eat healthily after looking at a picture of chocolate rather than a picture of a flower (Kroese et al., 2009). In the current study, images of in-group members engaging in unhealthy behaviour may have been interpreted as a temptation, leading to counteractive control and an increase in the reporting of healthy eating intentions. Our results suggest that counteractive control might not be an exclusively intra-individual phenomenon, but may operate at a group level, where individuals react to the observed unhealthy behaviour of others by increasing their own healthy intentions. This is also in line with previous theorising

which suggests that observing the intake of eating companions, even when the companions eat relatively large quantities, may inhibit people rather than stimulate them to eat more (Hermans et al., 2013).

### **Strengths and Limitations**

The study presented in this chapter constitutes one of the very few existing attempts to consider social identity as a predictor of healthy eating behaviour. As eating is an inherently social activity, this study was designed to look beyond individual-level predictors of healthy diet and include social factors that may be influencing people's eating behaviour. We succeeded in showing that the effect of images that reflect a group norm depends on people's level of identification with that group, and we have speculated that, among those who highly identify with their group, this effect may be a reflection of counteractive control. Also, many of the norms and prototypes associated with belonging to a particular social group are internalised. Including a manipulation that subtly manipulated identity salience in the context of an individual behaviour meant that we were able to examine the effect of social identity salience in situations where no actual in-group members are present. This is important for the generalizability and applicability of our findings- in most situations where people eat, they are not directly interacting with in-group members, but the influence of the social group is exerted through internalised norms.

Previous studies have suggested that the diets of recent immigrants might be influenced by their desire to be included and treated as legitimate inhabitants of their new home country (Guendelman et al., 2011), and that members of ethnic minorities are unlikely to change their health-related attitudes and behaviours in response to campaigns that they see as targeted at members of the white middle class (Oyserman

et al., 2007). These findings have implications for public health and can be used to guide health promotion campaigns. Our study highlights the importance of female identity in shaping healthy eating intentions. It provides evidence for the existence of a complex relationship between female identification, female identity salience and healthy eating intentions, and suggests that women who identify strongly with their gender group are also more likely to express healthy eating intentions. It also suggests that the healthy eating norm has largely been internalised by women and has become a part of female identity, as female identification alone was significantly associated with healthy eating intentions. Thus, health promotion campaigns might be more successful if they appeal to women's sense of gender identification and the existing link between being a woman and eating light, healthy foods. This approach is already being used by the marketing teams responsible for diet foods, but there is scope to utilise it more in health-oriented public campaigns.

A few limitations of the study need to be taken into account. Firstly, the questionnaire used included only self-report measures of variables related to healthy eating intentions and behaviour. Participants' responses to the questionnaire items may have been affected by social desirability, as it is customary in our society to form judgements of people depending on what they eat (Steim & Nemeroff, 1995). Thus, participants may have felt compelled to report positive attitudes towards healthy eating and to choose healthier items from the menu, in order not to appear immoral or indulgent. Indeed, the average healthy eating intention reported by participants was 5.70 on a 7-point scale, which is significantly higher than the scale midpoint ( $t(147) = 20.49, p < .001$ ). Some of these problems could potentially be

dealt with by using a measure of implicit attitudes, where it is more difficult for participants to respond according to what they see as socially desirable.

Secondly, due to the lack of a manipulation check, we cannot say with confidence that our manipulations were successful. Participants in the female identity salience conditions reported a higher descriptive norm for healthy eating than participants in the student identity conditions, but this may have been a result of the wording of the questions rather than the social identity salience manipulation itself. It is possible that the novel manipulation used in this study, based on pictures rather than text, was not strong enough to influence participants' perceptions of whether women and students typically engage in healthy or unhealthy behaviour. In future studies, it might be helpful to use a more powerful manipulation of the prototype of a healthy and unhealthy woman/student and to include an explicit manipulation check to measure the effect of the manipulation.

Contrary to our predictions, none of the variables included in the model was significantly associated with the food choices that participants made from the online restaurant menu, which were included as a proxy measure of eating behaviour. There were also no consistent effects on the intended food intake. This may have been caused by methodological issues. First of all, the correlation between the kJ content of selected foods and participants' healthy eating intention was uniformly low in all conditions ( $r = -.08, p = .33$ ). However, the correlations between the healthy eating intentions and the intended fruit and vegetable intake and junk food intake were larger and statistically significant ( $r = .40, p < .001$ , and  $r = -.34, p < .001$ , respectively), but there were still no reliable effects of the experimental manipulation or group identification on these outcomes. This indicates that the lack of effects

likely had to do with the difficulties in predicting behaviour rather than being caused solely by methodological problems with the measure.

Other possible explanations for the lack of behavioural effects may have to do with the circumstances of the study. For instance, choices from an online menu are quite a crude measure of eating behaviour, as eating breakfast, lunch and dinner in a restaurant might seem unrealistic to the participants. Thus, participants may have treated this as an opportunity to choose the items that they liked the most, rather than the items that they would actually order. This would make it less likely for them to choose items that are in line with their healthy eating intentions. Also, recent research indicates that in situations in which people feel that they deserve a treat (and completing a research study might be such a situation), they are more likely to ignore their good intentions and indulge in the behaviours that they were planning to avoid or limit (Taylor et al., 2013).

From a more general perspective, the multitude of factors influencing human behaviour means that it is typically easier for psychological models to predict attitudes or intentions than it is to predict behaviour. Models based on theory of planned behaviour, for instance, explain on average 44.3% of variance in intention, compared to only 19.3% of variance in behaviour (McEachan et al., 2011). The food choices made by participants in this study may have been influenced by any number of variables that were not assessed in the questionnaire, such as their hunger at the time of completing the questionnaire, or chronic preference for some types of food over others.

The disparity of findings regarding healthy eating intentions versus behaviour highlights some of the difficulties inherent in behavioural research. Research on the

intention-behaviour gap has identified a number of factors that moderate how well intention can predict behaviour. These factors include temporal stability and accessibility of intention and the presence of relevant self-schemas (Sheeran, 2002). In the broader context of group norms, it could be, for example, that group norms are a strong predictor of intentions, but only influence behaviour if it is performed within the group, or observed by other group members.

It is also possible that other variables, not included in our study, influence health-related behaviour directly, without the mediation by intention. Recent theorising suggests that associative processes, such as implicit cognitions or motivation, may play an important role in shaping health behaviours, independently of behavioural intentions or other conscious cognitions (Sheeran, Gollwitzer, & Bargh, 2013). This would be a promising avenue for further research.

A few factors limit the generalizability of our findings. First of all, we used an all-female, all-student sample. Participants from this demographic group tend to be highly educated, knowledgeable about healthy eating, and tend to have relatively high socioeconomic status. The choice of study population was partly motivated by the fact that female students' eating behaviour is particularly likely to be affected by social influences (Grogan et al., 1997). However, it does mean that the findings might not extend to women who are not students, or men. Secondly, the experimental manipulations and the measurement of outcomes were all performed within a short time, making it difficult to explore how lasting the effects of the manipulation are. Also, the findings may have been influenced by the time of day when participants completed the study, as this was not controlled for in the study design.

### **Future Directions**

An area of the study that could benefit from methodological changes is the measurement of eating behaviour. The restaurant menu measure could be improved by allowing participants to choose a meal from a take-away or cafeteria-style menu, and informing them that they would receive their chosen meal later on in the study, or in a follow-up session. This method would increase participants' commitment to their choices, as they would be expected to consume the selected meal. Another, more ecologically valid way of following up on the current study would be to introduce social identity cues in a cafeteria or a canteen, and measure the effect of the presence of those cues on people's behaviour in a naturalistic environment.

More generally, it would be interesting to explore in more depth the way in which women define their gender identity, and to what extent their own understanding of what it means to be a woman is related to their attitudes towards eating, and healthy eating in particular. A large body of literature suggests that women who suffer from eating disorders tend to have higher scores on measures of femininity (see Murnen & Smolak, 1997, for a meta-analysis). However, the relationship between gender identity and attitudes towards healthy eating has been explored to a lesser extent, and would warrant a further investigation. A traditional construction of gender identity in terms of traditional female gender roles such as a carer or the person who prepares food for the family may be related with a desire to set a good example and to consume healthy foods herself. Even though the aspect of preparing food for the family may not have been particularly salient to the participants in our student sample, more traditional understanding of gender identity and gender roles might be related to healthier food choices. This issue could be explored in a future, perhaps qualitative, study.

One of the challenging issues in the study of women's healthy eating intentions and practices is the fact that, to some women, choosing healthier foods might not necessarily be a means to maintaining better health, but rather a means to attaining a slimmer silhouette and thus more attractive physical appearance. As Madden and Chamberlain (2004) have concluded after analysing nutritional health messages in women's magazines, "The feminine beauty discourse constructs healthy dietary practices as a means through which to manage one's weight and, more importantly, one's physical appearance. This discourse privileges weight management over health as the primary benefit of eating a healthy diet" (Madden & Chamberlain, 2004, p. 593). While some practices recommended to dieters are indeed healthy (e.g. eating adequate amounts of vegetables and wholegrain products), many weight-loss diets are overly restrictive and lack the variety needed for balanced nutrition. Also, some dieters tend to eat foods labelled as 'diet' or 'low-fat', which may indeed be low in calories, but are not necessarily healthy. Future research could explore whether there are specific aspects of female identity that make it more likely for women to pursue a healthy diet as opposed to a weight-loss or weight-maintenance diet. A helpful instrument for such an investigation would be a measure of intentions that specifically separates healthy eating from dieting.

## **Conclusion**

The study presented here paints a complex picture of the relationships between social identity salience, group identification, and healthy eating intentions and behaviour. Our findings corroborate the results of previous studies presented in this thesis, which suggest that female identification is associated with healthy eating intentions, but not necessarily with healthier eating behaviour. Also, ironically, the

results suggest that presenting social images of in-group members engaging in unhealthy behaviour might be effective for increasing healthy eating intentions among people who are highly identified with the group.

## CHAPTER 4

### VICARIOUS LICENSING EFFECTS ON HEALTHY EATING

#### **Abstract**

**Background:** Studies presented in Chapter 2 of this thesis suggest that individuals who identify strongly with a social group that values healthy eating also tend to report healthier eating intentions. Exposure to social images showing in-group members engaging in either healthy or unhealthy behaviour may influence individuals' healthy eating intentions and behaviour. Self-categorisation theory and vicarious licencing perspective offer contrasting predictions regarding the effect of viewing healthy and unhealthy social images on the healthy eating intentions and behaviour of those individuals who strongly identify with their social group. Two studies tested these predictions in the context of Australian (Study 4) and female (Study 5) social identity.

**Method:** Both studies employed experimental methodology, where participants were randomly assigned to a condition. In Study 4, Australian participants were shown social images of other Australians engaging in either healthy or unhealthy behaviour. Study 5 had a 2×2 design and included a manipulation of healthiness of social images, but also a manipulation of thinness focus. Participants' group identification was measured in both studies. The outcomes included healthy eating intentions and behaviour.

**Results:** Both studies showed that healthiness of the presented social images interacted with participants' group identification to predict eating behaviour. Contrary to the predictions of self-categorisation theory, the behaviour of high

identifiers was opposite to the content presented in the social images. In particular, high identifiers tended to choose higher calorie food from an online menu and eat more food in a taste test when presented with social images of their in-group members behaving healthily.

**Conclusion:** The findings of both studies were in line with a vicarious licensing approach, which claims that high identifiers base their own self-concept on presented information about in-group members. Thus, when participants were presented with social images of in-group members who engaged in healthy behaviour, they gave themselves a licence to behave in less healthy ways.

## **Introduction**

Studies presented in the previous chapters showed that some social identities carry a healthy eating norm, and that increasing the salience of female and family identity also increases healthy eating intentions. However, many social identities do not carry a strong normative message about healthy or unhealthy behaviour, and they could be seen to be either generally healthy, or generally unhealthy, depending on the context. For example, Australian identity could be considered healthy, as many Australians have diets rich in seafood, fruit and vegetables, participate in outdoor activities, and enthusiastically engage in sports. On the other hand, about 60% of Australians are either overweight or obese (Australian Bureau of Statistics, 2012), many foods traditionally seen as Australian are energy-dense and unhealthy (e.g. meat pies, red meat), and so one could say that Australian identity is linked to an unhealthy norm. Depending on the perception that one has about the group norms, the effect of identifying with that group on healthy eating intentions and behaviour is likely to be different. The first aim of this chapter is to explore the subtleties of identity content, and the effect that presenting a healthy or unhealthy social image of one's group will have on healthy eating intentions and behaviour.

The second question explored in this chapter is whether receiving information about one's group members engaging in healthy behaviour makes one more or less likely to behave healthily. The literature on social influences on eating shows that social identification and social norms have an interactive effect on intentions and behaviour, with high identifiers being generally more influenced by their group's social norms than low identifiers. For example, in a recent study (Louis et al., 2007),

students' healthy eating intentions were influenced by the perceived referent group norm, but only among students who identified strongly. The intentions and behaviour of those who identified weakly were unaffected by the norm. Similarly, in a study of young adults (Åstrom & Rise, 2001), only the healthy eating intentions of those who strongly identified with their friends and peers were influenced by the perceived group norm, such that participants who perceived the group norm to be healthier also reported stronger healthy eating intentions. Recent research shows that a similar interaction also arises when individuals are exposed to a minority norm: being informed that only a minority of in-group members engage in the target behaviour (Stok et al., 2011). In this study, Dutch university students were told that only a minority of their peers ate a sufficient amount of fruit. Following this information, the intention to eat more fruit and actual fruit intake decreased among high identifiers, but remained unaffected among low identifiers.

These findings are in line with social identity and self-categorisation theory, which claim that social influence in groups happens through the process of referent informational influence (Abrams & Hogg, 1990; Turner, 1991). In the context of a salient social identity, people use the information about the behaviour of their in-group members to construct a group norm. The norm is perceived as a group prototype and high identifiers start to think and behave in terms of the group norm. This process does not rely on direct social influence or seeking social approval. Rather, high identifiers internalise the group norm and see the prescribed behaviours as appropriate for group members like themselves. Both intentions and behaviour are then aligned with the group norm. This mechanism is not present among low identifiers, because they do not internalise the group norm.

However, another line of research (Kouchaki, 2011) shows that receiving information about in-group members engaging in behaviour that is in line with a shared goal (e.g. obeying moral principles) may sometimes be seen not as a positive descriptive norm that should be followed, but rather as a licence for the individual to act in a way that is not in line with the goal (e.g. behave in an ethically dubious way). This phenomenon has been labelled ‘vicarious licensing’. Kouchaki (2011) described vicarious licensing in the context of moral behaviour and racial discrimination, and a similar effect could potentially be observed for healthy behaviour and healthy eating specifically, if the healthy eating goal is shared with other in-group members. According to the logic of vicarious licensing, receiving information about many in-group members eating healthily might lead to the development of a vicarious ‘healthy self-concept’, and result in less healthy behaviour.

The existing research on various forms of licensing focuses on behavioural outcomes and does not usually consider the effect on intentions. Some studies on the licensing effect show that expressing good intentions might be enough to licence a subsequent indulgent preference or behaviour (Khan & Dhar, 2006). Moreover, licensing effect theorists state explicitly that “this effect occurs without explicit intention or awareness” (Khan & Dhar, 2006, p. 259). In a similar vein, within the vicarious licensing literature, predictions concerning intentions are typically not formulated.

Self-categorisation theory and the vicarious licensing model both predict that levels of social identification would influence healthy eating behaviour, as long as the identity in question is associated with a healthy eating norm or goal. The difference lies in the direction of the predicted interaction between identification and

exposure to healthy or unhealthy social images. Predictions as to whether presenting individuals with information about healthy behaviour of their in-group members would result in an increase or a decrease in their own healthy behaviour depend on the theoretical approach, and thus the presumed underlying psychological processes. According to self-categorisation theorising, information about in-group members' behaviour would be interpreted as a descriptive norm, leading high identifiers to behave in accordance with the norm, and low identifiers to remain unaffected (Abrams & Hogg, 1990). The vicarious licensing perspective, on the other hand, predicts that high identifiers presented with information about their in-group members engaging in healthy behaviour would use this information to boost their own healthy self-concept, and give themselves a licence to engage in less healthy behaviour. Thus, by establishing the nature and direction of the interaction between social image and identification, the studies presented below will provide evidence either in support of self-categorisation theory, or the vicarious licensing perspective.

The following two studies explore the effects of exposing individuals to social images representing health-related behaviour of their in-group members on their own healthy eating intentions and behaviour. The context is provided by two different social identities: Australian identity and female identity. Australian identity carries both a healthy and an unhealthy eating norm, and thus specific identity content can be manipulated in a credible way. Female identity is stereotypically seen as healthy (as evidenced by its association with healthy eating intentions, observed in Studies 1-3), and people who eat healthy or low-fat foods are perceived as more feminine, irrespective of their actual gender (Barker, Tandy, & Stookey, 1999; Oakes & Slotterback, 2004). At the same time, 47% of women in developed countries are

either overweight or obese (OECD, 2013), suggesting that still many of them do not employ healthy eating practices.

The outcomes of interest include both healthy eating intentions and behaviour, in order to explore the parallels and potential differences in how these two outcomes are affected by group identification and social images. Our studies also examine the interaction between participants' group identification and healthiness of social images, to find out whether the interaction pattern follows either of the following two predictions:

- (1) Self-categorisation theory prediction: Social images will be interpreted as descriptive norm. Behaviour (and possibly intentions) of high identifiers will be influenced by the descriptive norm, in that high identifiers will behave according to the norm, and low identifiers will be unaffected;
- (2) Vicarious licensing prediction: Social images will be interpreted as information about in-group members' past and current behaviour. Behaviour of high identifiers will be influenced by these images, in that they will behave opposite to what is presented. In particular, they will engage in more unhealthy behaviour if exposed to healthy social images. Low identifiers will be unaffected.

#### **Study 4: Vicarious Licensing among Australians**

In this study, Australian participants were presented with pictures showing their in-group members (i.e. other Australians) engage in either healthy or unhealthy behaviour, with a focus on eating and participating in sports. The pictures were selected to constitute a social image of the referent group, and it was predicted that participants' healthy eating-related intentions and behaviour would change depending on the set of pictures they were exposed to. We also expected an interaction between being exposed to a set of healthy or unhealthy social images, and participants' identification as Australians. Outcome variables were healthy eating intentions and choices made from an online restaurant menu.

#### **Method**

**Design.** The study was introduced as an enquiry into the food preferences of Australians. We used a 2 × 1 between-subjects design, where the social image of Australians was manipulated by exposing participants to a specific set of pictures.

**Participants.** Participants were 87 (69 women and 18 men) Australian first year psychology students at a large Australian university. Participants were recruited as partial fulfilment of course requirements. The study was hosted online and participants completed it from their own computers, without supervision from the experimenter. Participants were on average 19.7 years old ( $SD = 5.6$ ), with a mean self-reported BMI of 22.3 ( $SD = 4.1$ ).

**Procedure.** Participants were randomly assigned to one of two conditions: healthy social images or unhealthy social images condition. As part of the experimental manipulation, all participants were presented with six images and asked

to choose the three that they thought best represented what it meant to be Australian. Two of these images were neutral in content and were present in both conditions (e.g. Australian flag, koala). The remaining four images were different in the two conditions and represented either healthy behaviour (e.g. people playing sports, fruit, grilled prawns) or unhealthy behaviour (e.g. people watching sports, beer, meat pies). The images were used to construct a social image of health-related behaviours of Australians: the unhealthy images were supposed to convey an unhealthy descriptive norm, and the healthy images- a healthy descriptive norm.

After participants completed the manipulation, they were asked to choose items for breakfast, lunch and dinner from an online restaurant menu (a menu from a popular Australian restaurant chain was adapted for this). Participants were instructed not to take price into account (in fact, information about prices was not provided), and were asked to imagine being on a day trip and having to eat all their meals in a restaurant.

Following the menu choices, participants were asked to complete a battery of questionnaires measuring constructs related to identity and eating. Participants also reported their height and weight, and this information was later used to compute their BMI. After completing the questionnaires all participants were debriefed via an online form, and were given the contact details of the experimenters for any questions or comments.

### **Measures.**

***Group identification.*** National identification was measured using a 4-item scale (e.g. 'I identify with other Australians'; Doosje et al., 1995). Responses were

given on a 7-point scale, ranging from *strongly disagree* to *strongly agree*. The scale was internally consistent, with Cronbach's  $\alpha = 0.78$ .

***Group-specific norms.*** Norms were measured using two items: 'I think of Australians as the kind of group which would eat a healthy diet' (descriptive norm) and 'Trying to eat a healthy diet is important to Australians' (injunctive norm) (items adapted from Tarrant & Butler, 2011). Responses were given on a 7-point scale, ranging from *strongly disagree* to *strongly agree*.

***Healthy eating intentions.*** Healthy eating intentions were measured using two items: 'I intend to eat a healthy diet in the next 3 months' and 'I want to eat a healthy diet in the next 3 months'. Participants responded to these items using a 7-point scale, ranging from *strongly disagree* to *strongly agree*. The internal consistency of this scale was satisfactory, with Cronbach's  $\alpha = 0.68$ .

***Food choices.*** As a quasi-behavioural measure of food choices, participants were presented with an online restaurant menu and asked to choose breakfast, lunch and dinner for the next day. The menu comprised multiple options, and the interface allowed participants to specify their first and second choices for each meal. Based on information provided by the restaurant, we were able to retrieve the energy content in kilojoules of each meal. The energy content of the three meals chosen by each participant was then added up and constituted our dependent measure. If a participant specified a first and second choice for a meal, the energy content of the two choices was averaged to form a single value.

***Additional measures.*** Measures of exercise intentions, body satisfaction, perceived behavioural control over healthy eating and dieting intentions were also

included in the questionnaires for exploratory purposes, but analysis of these variables is beyond the scope of this study.

**Analyses plan.** All analyses were conducted using IBM SPSS for Windows, version 19 (IBM Corp., 2010). The primary analyses involved two multiple regression models: one predicting healthy eating intentions, and one predicting the energy content of the meals chosen from the online restaurant menu. Each of the models included the following predictors: healthiness of the presented social images (healthy vs unhealthy), national identification, and an interaction term: social image healthiness x national identification. Additional analyses involved computing a correlation between healthy eating intentions and energy content of food choices and testing a mediation model whereby the effect of the experimental manipulation on the outcome variables was mediated by perceived descriptive and injunctive norm.

## **Results**

**Preliminary analyses.** The mean, range, and standard deviation for key study variables are presented in Table 1. Table 2 presents descriptive statistics for the two experimental conditions. We first compared the average age and BMI of participants in the healthy and unhealthy social image condition. Participants in the two conditions had very similar BMI:  $M = 22.79$ ,  $SD = 4.09$  in the healthy social images condition, compared to  $M = 21.78$ ,  $SD = 4.08$  in the unhealthy social images condition, and the difference was not statistically significant ( $t(83) = -1.14$ ,  $p = .26$ ). Participants in the healthy social images condition were slightly older ( $M = 21.07$ ,  $SD = 7.40$ ) than participants in the unhealthy social images condition ( $M = 18.21$ ,  $SD = 1.55$ ). This difference was statistically significant ( $t(84) = 2.45$ ,  $p = .02$ ). Further analyses indicated that age was not associated with the energy content of the choices

from an online restaurant menu, but was marginally significantly correlated with healthy eating intentions ( $r = .19, p = .08$ ). However, inclusion of age as a covariate in the analyses did not affect the observed results for either of the dependent variables. Gender was distributed equally across the two conditions.

Table 1. Descriptive statistics for key variables.

Variable	Range	Mean	SD
Age	17-48	19.67	5.56
BMI	15.9 – 41.4	22.29	4.10
National identification	4-7	6.16	0.69
Descriptive norm	1-6	3.93	1.24
Injunctive norm	2-7	4.45	1.21
Healthy eating intentions	3.5-7	6.03	0.76
Food choices (kJ)	7843 - 16959	11551	1925

Table 2. Means and standard deviations by experimental condition.

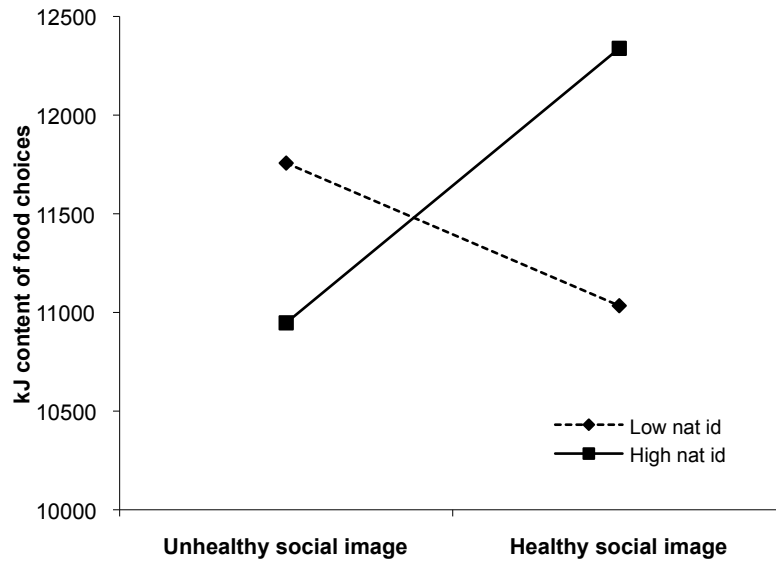
	Healthy Condition (n = 45)	Unhealthy condition (n = 42)
Age	21.07 (7.40)	18.21 (1.55)
BMI	22.79 (4.09)	21.78 (4.08)
National identification	6.19 (0.71)	6.12 (0.67)
Descriptive norm	4.00 (1.33)	3.86 (1.14)
Injunctive norm	4.42 (1.20)	4.48 (1.23)
Healthy eating intentions	6.08 (0.71)	5.99 (0.82)
Food choices (kJ)	11746 (2102)	11337 (1711)

**Healthy eating intentions.** A model including the social image healthiness condition, national identification and the interaction between the two variables accounted for a significant amount of variance in healthy eating intentions,  $F(3, 83) = 3.65, p = .02, R^2 = .12$ . Multiple regression analysis indicated no significant main effect of condition ( $\beta = .04, p = .69$ ) on healthy eating intentions. There was, however, a significant association between national identification (entered into the model as a continuous variable) and healthy eating intentions, whereby participants who identified more strongly as Australian also expressed more healthy eating intentions ( $\beta = .33, p = .002$ ). The condition x national identification interaction was not significant ( $\beta = -.09, p = .40$ ), indicating that national identification was similarly associated with healthy eating intentions in both experimental conditions.

**Online menu selections.** A model including the social image healthiness condition, national identification and an interaction between the two variables accounted for a marginally significant amount of variance in the energy content of online menu selections,  $F(3,78) = 2.46, p = .07, R^2 = .09$ . A multiple regression analysis indicated no main effect of condition ( $\beta = .09, p = .42$ ) or national identification ( $\beta = .05, p = .63$ ) on the energy content of participants' food choices. There was, however, a significant interaction between these two variables ( $\beta = .26, p = .02$ ). A closer inspection of this interaction through a simple slopes analysis (see Figure 1) revealed that participants who did not strongly identify as Australian were not significantly affected by the social images, but the pattern of their means was in line with the presented content: those who were presented with healthy social images tended to choose lower-energy foods than those who were presented with unhealthy social images ( $\beta = -.19, p = .26$ ). Among participants who did strongly identify as

Australian, a significant and opposite effect was observed: those who were presented with healthy social images chose higher-energy foods than participants presented with unhealthy social images ( $\beta = .36, p = .02$ ).

Figure 1. Simple slopes analysis: The effect of presenting healthy and unhealthy social images at low (-1SD) and high (+1SD) levels of national identification.



**Intention-behaviour gap.** The intention to eat healthy foods was not significantly correlated with the energy content of items chosen from the online menu ( $r = -.11, p = .31$ ). This may indicate that participants' choices were not aligned with their intentions, but it may also indicate a problem with the measure of behaviour. This issue will be further explored in the discussion.

**Perception of the group norm.** For exploratory purposes, we investigated whether participants in the two experimental conditions differed in their perceptions of descriptive and injunctive healthy eating norm. Participants in the healthy and unhealthy norm condition were very similar in their perception of the descriptive healthy eating group norm ( $M = 4.00, SD = 1.33$  and  $M = 3.86, SD = 1.14$ , respectively,  $t(85) = 0.54, p = .59$ ). The difference in perceived injunctive group norm was also small and not statistically significant ( $M = 4.42, SD = 1.20$  and  $M = 4.48, SD = 1.23$ , respectively,  $t(85) = -0.21, p = .84$ ). This suggests that the manipulation did not influence eating behaviour via its effect on perceived group norms.

## **Discussion**

The findings of this study support the prediction that national identification interacts with the healthiness of identity-related social images to predict healthy eating. Low identifiers were not affected by the manipulation of social images, which is in line with the predictions of both self-categorisation theory and vicarious licensing. Contrary to predictions based on self-categorisation theory, however, we found that high identifiers made choices that were contradictory to the presented social images. In particular, they chose higher-energy food when they were presented with healthy social images, and lower-energy food when they were presented with

unhealthy social images. Thus, the results support a vicarious licensing interpretation.

Healthy eating is a goal shared by Australians; indeed, this study shows a moderate positive correlation between Australian identification and healthy eating intentions, and a relatively high injunctive norm (a mean of 4.45 on a 7-point scale) for healthy eating. The experimental manipulation, social images of Australians engaging in healthy or unhealthy behaviour, did not change the perceived injunctive or descriptive norm, as evidenced by no differences between the two groups on the normative variables. It is, however, possible that, in line with the vicarious licensing effect, high identifiers inferred from the presented information that they were already being healthy (as their in-group members engaged in healthy behaviour), and they gave themselves a licence to pick less healthy options from the online restaurant menu. Low identifiers may have seen the pictures as examples of behaviour to follow, and since their identification levels were lower, they may have taken an individual-level action to be healthier by choosing lower-energy foods from the menu.

Additional insight into the potential vicarious licensing mechanism comes from inspecting the median and range of national identification in the study sample. Identification scores were between 4 and 7 on a 7-point scale, with a median of 6.25. This indicates that national identification was generally very high, and that the individuals who in the context of this sample were labelled as ‘low identifiers,’ were, in fact, still relatively highly identifying with other Australians. This suggests that vicarious licensing in this sample occurred at extremely high levels of identification, which is in line with the ‘spyglass self’ theorising (Goldstein & Cialdini, 2007): at

high enough levels of identification, individuals infer information about themselves by observing how psychologically similar others (e.g. other in-group members) behave.

The lack of an interactive effect on healthy eating intentions can also be explained from the vicarious licensing perspective. Endorsing questionnaire items such as “I plan to eat healthy food next month” has a low cost and requires no actual commitment. While participants gave themselves a licence to choose less healthy food items, their healthy self-concept remained intact, and they still saw themselves as committed to healthy eating. Thus, their intentions did not change, only their actions moved away from the intention. Also, the correlation between healthy eating intentions and food choices from the online menu was weak and not statistically significant, and it was similar across both social image conditions, and all levels of national identification. This suggests that participants did not experience a dissonance between their expressed healthy intentions, and the, relatively less healthy, choices they were making.

The finding that there was no effect of social images on the perceived descriptive and injunctive healthy eating norm was unexpected, but can be explained by the fact that the images presented to participants were not introduced as representative and were not accompanied by statistics or any other information. It may be that participants in either one or both conditions dismissed the picture sets as not representative of Australians, and their perceptions of the group norm remained unchanged by the manipulation. It is also possible that the picture sets were accepted as representative, but were not interpreted as normative content.

The existing pattern of results indicates that social images influence behaviour through psychological processes independent of descriptive or injunctive norms. It might be that some of the social images created associations with healthy eating, or primed a healthy eating goal, and that these effects depended on the level of identification with fellow Australians, who were supposedly depicted in the pictures.

The main strength of this study lies in its innovative manipulation of identity content. By showing participants a set of pictures rather than a paragraph of text, we intended to create a manipulation that is both convincing and interesting. Also, pictures are widely used in food marketing and constitute a common temptation for those who strive to eat healthily (Seiders & Petty, 2004). Thus, using pictures is an ecologically valid way of manipulating the healthiness of social images.

The findings obtained using our image-based manipulation are novel: we found that the effect of social images on healthy eating depends on the level of group identification, whereby the low identifiers coordinate their behaviour with the social images, and high identifiers behave contrary to those images. These results, although at first counterintuitive, can be explained in terms of vicarious licensing.

Our findings illustrate that group processes need to be considered when we think about social influences on eating behaviour. Existing research on social processes in eating focuses either on direct social influence, such as in confederate studies (see for example Wansink, 2004), or on the role of social norms (Robinson et al., 2014). It is crucial and currently under-emphasised that people make decisions about their food based on the behaviour of others, but also based on the internalised perception of what is appropriate for an in-group member, and how well the group is doing in achieving the healthy eating goal. The group perspective is especially

important in light of the growing interest in interventions based on social norms (Robinson, Fleming, et al., 2013; Robinson, Harris, et al., 2013). Our results suggest that those interventions should take into account baseline levels of group identification, and perhaps offer different programmes for low and high identifiers.

The study's main limitation is that the measure of healthy eating was only quasi behavioural, and thus the findings may not generalise to eating behaviour in the real world. However, the pattern of results was different than the one obtained for intentions, which suggests that this measure taps into more than just healthy eating intentions. A different and more ecologically valid measure of healthy eating will be used in a follow-up study.

In conclusion, this study provides preliminary evidence for a vicarious licensing effect in eating behaviour. It seems that, when healthy eating is a shared group goal, high identifiers give themselves a licence to indulge in less healthy food. In the following study we will further explore this phenomenon by looking at vicarious licensing in the context of female identity. We will also include a more realistic measure of eating behaviour, to address one of the main limitations of this study.

### **Study 5: Vicarious Licensing among Women**

In Study 5 we sought to replicate the results from the previous study and establish the existence of a vicarious licensing effect in the context of female identity. Also, a behavioural measure of eating behaviour (a taste test) was included in place of the online menu choices. Including a measure of actual food consumption rather than hypothetical choices increased the internal validity of the study.

The relationship between aspects of female identity and food choices is a complex one. Existing literature documents significant gender differences in the consumption of fruit and vegetables, high-fibre and low-fat foods, with women having generally healthier diets than men (Beer-Borst et al., 2000; Li et al., 2000; Liebman, Cameron, Carson, Brown, & Meyer, 2001; Neumark-Sztainer, Story, Resnick, & Blum, 1998; Patterson, Haines, & Popkin, 1994; Wardle et al., 2004) and attaching greater importance to healthy eating (Courtenay, McCreary, & Merighi, 2002; Wardle et al., 2004). At the same time, women are significantly more likely than men to experience symptoms of disordered eating, such as body checking, binge eating, fasting and vomiting (Lewinsohn et al., 2002; Striegel et al., 2009).

The fact that women have relatively healthy diets, and their increased vulnerability to pathological eating patterns, might both be consequences of the thin ideal internalisation, whereby women accept the socially defined idea that only thin women are feminine and attractive (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Thompson & Stice, 2001). Striving for thinness might lead to a healthy light diet, but might also result in excessive dieting, lack of a balanced diet and bingeing, followed by compensatory practices such as fasting or vomiting.

In order to account for both healthiness and thinness focus as predictors of women's eating behaviour, we manipulated the content of the social images of women on two dimensions: healthiness (healthy vs. unhealthy eating) and thinness (thinness focus vs. no thinness focus). This added a new factor to the design employed in Study 4. We also included female identification as a covariate, hypothesising that the focus on healthiness and thinness present in the social images will interact with female identification and lead to different eating behaviours depending on the level of identification. In particular, in line with the findings of Study 4, we expected low identifiers to eat less after exposure to social images focussing on healthiness or thinness, and we expected high identifiers to eat less after exposure to social images not focussing on healthiness or thinness.

## **Method**

**Design.** The study employed a 2×2 between-subjects design, with female identification included in the model as a continuous covariate. The two experimental factors were the healthiness focus (healthy or unhealthy) and thinness focus (present or absent) of the social images. Participants were randomly assigned to one of four conditions.

**Participants.** Participants were 123 female first year psychology students at a large Australian university, who were recruited as partial fulfilment of course requirements. Six participants were eliminated from the study (two due to a data entry mistake, one had a nut allergy and could not eat all the presented foods, one did not believe the food labelling, one studied nutrition, and one experienced rapid weight loss due to illness), resulting in a remaining sample of 117 participants.

Participants were on average 18.9 years old ( $SD = 3.53$ ) and had a mean BMI of 21.7 ( $SD = 3.43$ ). The average female identification was very high ( $M = 5.98$ ,  $SD = 0.76$ ).

**Procedure.** The experiment was introduced to participants as a study of “Gender differences in taste perception”. This was done to increase the salience of participants’ female identity, and also to conceal the focus on the amount of food consumed during the study. Participants who signed up through the online booking system were then invited to the laboratory and completed the study individually. All participants interacted with the same female experimenter who was responsible for administering the questionnaires and delivering food and drink for the taste test.

The task including the two experimental manipulations was similar to that in Study 4; participants were presented with a set of six pictures, and were asked to select the three pictures that best represented what it meant to be a woman. Three pictures in this set were not related to eating or health more generally (e.g. women shopping, a mother holding a baby). The other three pictures constituted the manipulations and hence differed between conditions: they were related to a healthy or unhealthy social image, and either focussed on thinness or not. Sample photos for each condition can be found in Figure 2. The pictures were selected to represent the appropriate combination of healthiness (healthy or unhealthy) and thinness focus (present or absent) of social images. Thus, for example, in the healthy and no thinness focus condition, pictures showed healthy weight or slightly overweight women preparing healthy food or engaging in sport.

Next, participants were invited to take part in a taste test. This involved tasting four different foods (grapes, trail mix, chocolate chip cookies, and low-fat chocolate chip cookies) and choosing and then tasting one of four drinks (water, orange juice,

coke, or diet coke). Each food type was presented on a well-stocked individual plate, in quantities that were kept similar between participants (9 pieces of each type of cookies, about 120g of trail mix, about 140g of grapes). All foods were labelled, primarily to alert participants to the difference between chocolate chip cookies and low-fat cookies. The drinks were presented in individual cans or bottles, in quantities that were easily available in the supermarket (200ml for coke and diet coke, 250ml for orange juice, 350ml for water).

Participants were asked to sample as much of the different food types as they needed in order to have a good perception of their taste, and then to rate each food type on four different scales. Similarly, participants chose and tasted one of the four drinks and rated it on four scales. The rating of foods and drinks was done to corroborate the cover story, and the responses were not analysed. Participants were given 10 minutes to complete the tasting test and filler questionnaires, and were given additional time if needed.

After the tasting was completed, the experimenter collected the remaining food and drinks, and instructed the participant to complete a number of questionnaires on a tablet computer. The left-over foods were then taken to another room and weighed. For each food type, the weight of the left-overs was subtracted from the initial weight, to calculate the amount consumed. The consumed amounts of the four food types were then added up to calculate the total food intake (in grams), which constituted the main outcome. Drink choice was not analysed.

After participants completed all questionnaires, they were thanked and fully debriefed about the purposes of the study.

Figure 2. Sample photos presented in the four experimental conditions.

	Healthy social images	Unhealthy social images
Thinness focus		
No thinness focus		

## **Measures.**

**Group identification.** Female identification was measured using an adaptation of the 4-item scale used in Study 4 (Doosje et al., 1995). The items used were the following: *I see myself as a woman, I am pleased to be a woman, I feel strong ties with other women, I identify with other women.* The scale was internally consistent, with Cronbach's  $\alpha = .77$ .

**Descriptive norm.** In order to measure descriptive norms, we asked participants *To what extent do you think the following groups eat a healthy diet?* The target social group (women) was embedded among other social groups (men, your family, students). Descriptive norm was assessed on a 5-point scale, ranging from 1 (*not at all*) to 5 (*to a great extent*).

**Healthy eating intentions.** Healthy eating intentions were measured using four items: *I am highly motivated to eat more healthily, I plan to eat more fruit and vegetables, I am highly motivated to eat more healthily, I intend to take better care of my body.* Participants responded to the items using a 7-point Likert-type scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency of the scale was satisfactory, with Cronbach's  $\alpha = .81$ .

**Food intake.** Participants' food intake was calculated by measuring the weight (in grams) of food that was consumed during the taste test.

**Demographics.** At the end of the questionnaire, participants were asked about their age, height and weight. The height and weight data were later used to calculate BMI.

**Additional measures.** We also used the following measures: The Positive And Negative Affect Scale (PANAS; Crawford & Henry, 2004), Body Image States Scale

(Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002), Restrained Eating Scale (Herman & Polivy, 1980), Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ, Version II; Thompson et al., 1999) and Dieting Intentions Scale (Cruwys, Platow, Rieger, & Byrne, 2013). In addition to that, we asked participants to rate the healthiness of all the food and drink items that were presented to them in the taste test, and we included a 16-item measure of healthy eating knowledge. These data were not analysed.

**Analyses plan.** SPSS 19 (IBM Corp., 2010) was used to analyse the data. First, multiple linear regression was used to test the main effects of social image healthiness, thinness focus and female identification on healthy eating intentions. Second, a model of food intake was built, with the main effects of social image healthiness, thinness focus and female identification entered at Step 1, two-way interactions between the variables entered at Step 2, and a three-way interaction entered at Step 3. Third, an additional exploratory analysis of descriptive norms regarding healthy eating included a model where social image healthiness, thinness focus and female identification were entered at Step 1, and two-way interactions between these variables were entered at Step 2. Where appropriate, simple slopes analyses were conducted to explore the interactive effects.

## **Results**

**Preliminary analyses.** Descriptive statistics of key study variables are presented in Tables 3 and 4.

Table 3. Descriptive statistics for key variables for the entire sample (n = 117).

Variable	Range	Mean	SD
Age	16-42	18.94	3.53
BMI	13.2 – 37.2	21.68	3.43
Female identification	3.5-7	5.98	0.76
Descriptive norm	2-5	3.58	0.71
Healthy eating intentions	3-7	5.85	0.80
Total food intake (g)	9 - 214	87.49	47.77
Grapes intake (g)	2-145	43.38	35.88
Chocolate chip cookies intake (g)	0-51	16.97	10.86
Low fat cookies intake (g)	0-51	16.54	10.94
Trail mix intake (g)	0-74	10.61	12.49

Table 4. Descriptive statistics by study condition

	Healthy social images		Unhealthy social images	
	Thinness	No thinness	Thinness	No thinness
	focus	focus	focus	focus
	(n = 30)	(n = 29)	(n = 28)	(n = 30)
Age	19.55 (4.01)	18.93 (4.61)	18.96 (3.27)	18.29 (1.30)
BMI	20.74 (2.93)	22.21 (3.38)	22.54 (4.11)	21.82 (3.31)
Female identification	5.85 (0.89)	6.20 (0.77)	5.81 (0.61)	6.10 (0.62)
Descriptive norm	3.62 (0.73)	3.69 (0.60)	3.80 (0.58)	3.32 (0.82)
Healthy eating intentions	5.99 (0.81)	6.06 (0.61)	5.95 (0.63)	5.81 (0.97)
Total food intake	88.34 (52.31)	78.66 (43.69)	88.40 (43.78)	95.39 (54.31)
Grapes consumed	43.72 (35.11)	36.03 (36.03)	43.32 (34.34)	48.43 (40.60)
Chocolate chip cookies consumed	16.93 (10.21)	17.31 (9.88)	15.48 (11.81)	18.18 (12.22)
Low-fat cookies consumed	17.66 (11.91)	15.79 (9.79)	16.48 (10.99)	17.86 (11.86)
Trail mix consumed	10.03 (9.18)	9.52 (11.10)	13.12 (16.34)	10.93 (14.17)

**Healthy eating intentions.** Multiple regression analysis revealed that neither female identification ( $\beta = -.002, p = .98$ ) nor the social image healthiness ( $\beta = .08, p = .39$ ) or thinness focus ( $\beta = -.05, p = .64$ ) of the presented social images were significantly associated with healthy eating intentions. The overall model did not account of a significant amount of variance,  $F(3, 113) = 0.32, p = .81, R^2 = .008$ .

**Food intake.** Analogous to the results of Study 4, we did not find a significant main effect of social image healthiness, thinness focus or female identification on participants' food intake (see Table 5). There were, however, two significant two-way interactions: the interaction between social image healthiness and female identification ( $\beta = 0.26, p = .009$ ), and a marginally significant interaction between thinness focus and female identification ( $\beta = 0.16, p = .08$ ). The three-way interaction was not significant, indicating that the healthiness focus and thinness focus produced a similar pattern of effects on food intake. The model including the main effects of healthiness focus, thinness focus and female identification, and the three two-way interactions, accounted for a marginally significant amount of variance in food intake,  $F(6, 109) = 1.95, p = .08, R^2 = .10$ .

An inspection of the two-way interactions revealed that, for both the social image healthiness and thinness focus, low identifiers behaved in accordance with the behaviour presented in the social images, eating less food when they were presented with healthy social images, and more food when they were presented with unhealthy social images ( $\beta = -0.73, p = .03$ ). High identifiers, on the other hand, behaved opposite to the presented social images, and ate more food when they were presented with healthy social images, and less food when they were presented with unhealthy social images. This difference, however, was not significant ( $\beta = 0.46, p = .18$ ) (see

Figure 3). A very similar pattern emerged for the interaction between thinness focus of the social images and female identification, with low identifiers eating less when they were presented with images focussing on thinness ( $\beta = -0.45, p = .20$ ), and high identifiers eating less when they were presented with images not focussing on thinness ( $\beta = 0.47, p = .17$ ) (see Figure 4). These simple effects were not significant.

Table 5. Results of a Hierarchical Regression Analysis for Food Intake.

Variable	b	SE	$\beta$
		(b)	
<b>Step 1</b>			
Social image healthiness	-.12	.23	-.05
Thinness focus	.01	.24	.004
Female identification	-.24	.32	-.07
<b>Step 2</b>			
Social image healthiness x Female identification	.85	.32	.26**
Thinness focus x Female identification	.55	.31	.16*
Social image healthiness x Thinness Focus	.29	.24	.12

\*  $p = .08$ ; \*\*  $p < .01$ .  $N = 115$ .

Entries are statistics for Step 2 in which all effects and interactions are entered.

Figure 3. Interaction effect of female identification and social image healthiness on standardised food consumption

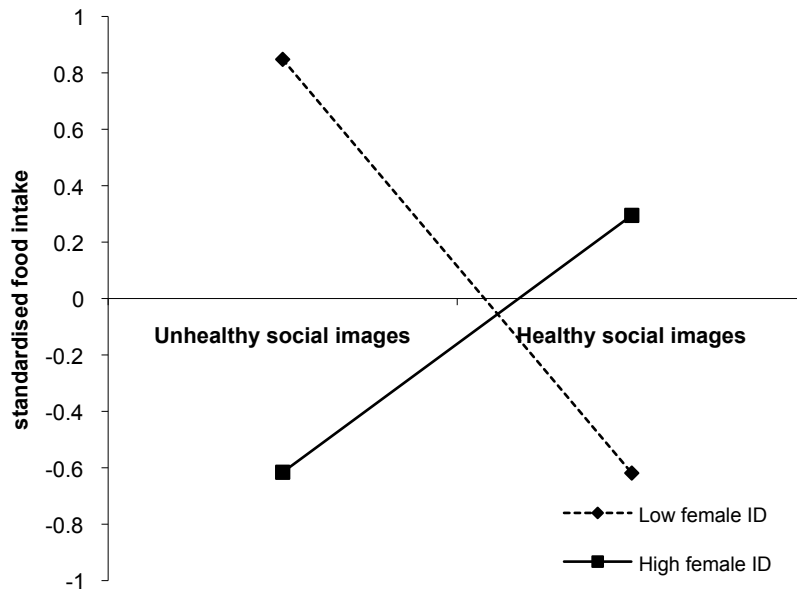
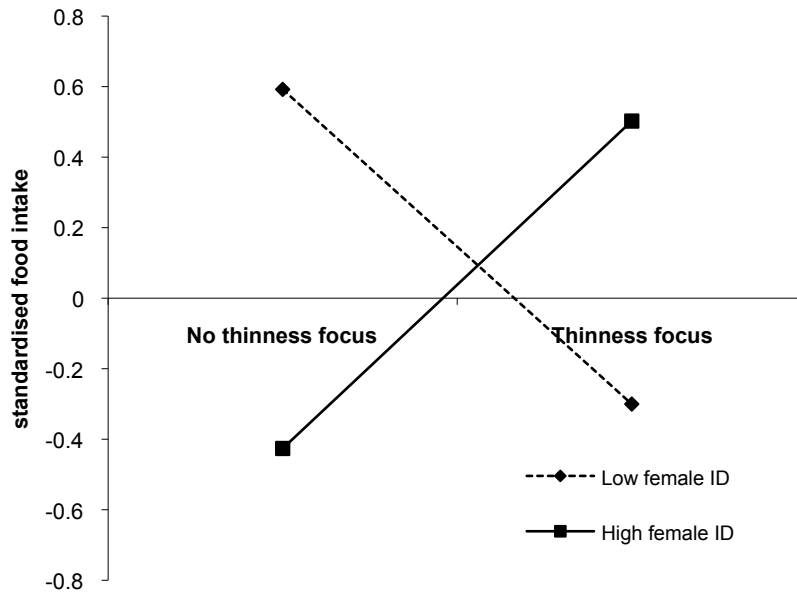


Figure 4. Interaction effect of female identification and thinness focus on standardised food consumption.



**Descriptive norm.** For exploratory purposes, we also investigated the effect of the social image healthiness and thinness focus manipulations, as well as female identification, on descriptive norm regarding healthy eating. The overall model explained a marginally significant amount of variance,  $F(6, 110) = 2.12, p = .06, R^2 = .10$ . Social image healthiness ( $\beta = 0.06, p = .54$ ), thinness focus ( $\beta = 0.13, p = .19$ ) and female identification ( $\beta = .12, p = .23$ ) did not have a significant main effect on descriptive norm (see Table 6). However, two of the two-way interactions were significant.

Analysis of the statistically significant social image healthiness by thinness focus interaction ( $\beta = -.23, p = .02$ ) indicated that the effect of thinness focus on the perceived descriptive norm depended on the healthiness of social images presented. An inspection of the means revealed that thinness focus had no effect on perceived descriptive norm among participants who were shown healthy social images. However, in the unhealthy social images condition, presenting participants with images focussed on thinness increased perceived descriptive norm from 3.33 to 3.77 on a 7-point scale (see Figure 5).

Another statistically significant two-way interaction emerged between social image healthiness and female identification ( $\beta = -.21, p = .03$ ). Simple slopes analysis (see Figure 6) indicated that when participants were presented with healthy social images, they reported similar levels of perceived descriptive norm, regardless of their level of female identification. However, when they were presented with unhealthy social images, participants who strongly identified with other females reported higher levels of perceived descriptive norm.

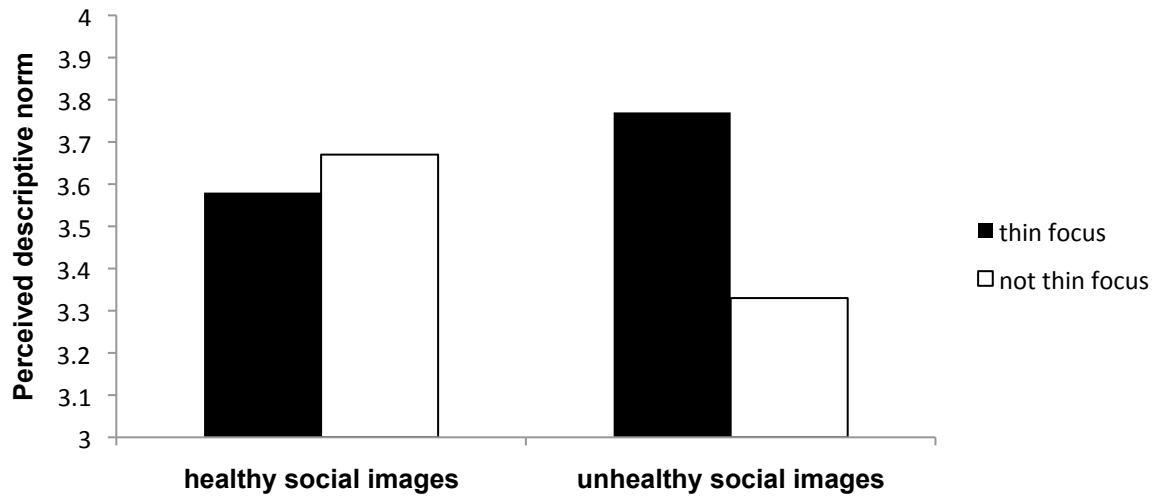
Table 6. Results of a hierarchical regression analysis for descriptive norm.

Variable	b	SE (b)	$\beta$
Step 1			
Social image healthiness	.04	.06	.05
Thinness focus	.09	.07	.13
Female identification	.15	.09	.16
Step 2			
Social image healthiness x Female identification	-.20	.09	-.21*
Thinness focus x Female identification	-.001	.09	-.001
Social image healthiness x Thinness Focus	-.16	.07	-.23*

\*  $p < .05$ ;  $N = 116$ .

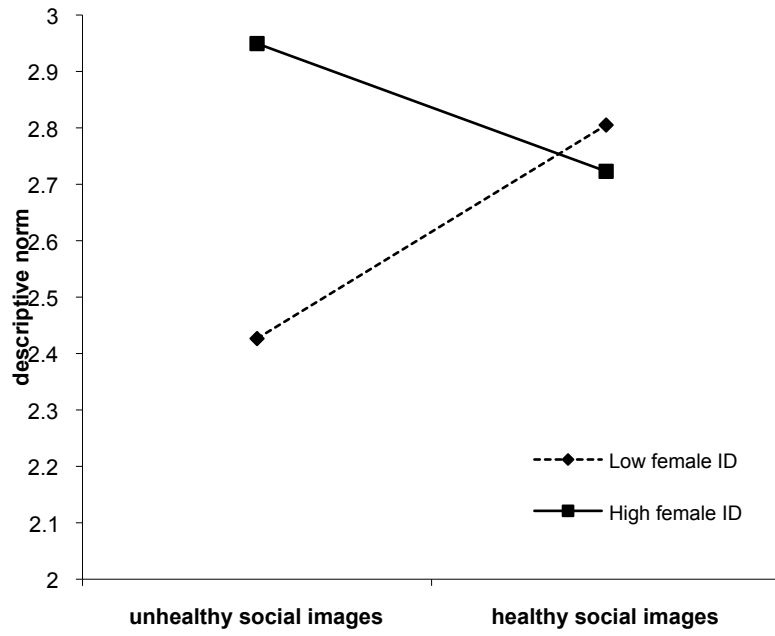
Entries are statistics for Step 2 in which all effects and interactions are entered.

Figure 5. Interaction effect of social image healthiness and thinness focus of social images on perceived descriptive norm regarding healthy eating.



Note. Means estimated at female identification value of 5.98.

Figure 6. Interaction effect of social image healthiness and female identification on perceived descriptive norm regarding healthy eating.



## **Discussion**

The prediction that social identification moderates the effect of the healthiness and thinness focus of social images on food intake was supported. The direction of this interaction was consistent with the vicarious licensing effect observed previously among Australians: high identifiers consumed more food in the healthy social image condition than in the unhealthy social image condition, and low identifiers showed an opposite pattern of results. A similar interaction emerged for thinness focus, with high identifiers eating more when the thinness focus was present, and low identifiers eating more when the images did not emphasise thinness. Overall, low identifiers tended to behave in line with the social images presented to them, while high identifiers' behaviour was contrary to the images.

The strength of this study lies in its attempt to disentangle the effect of the healthiness and thinness focus present in the social images of women. In everyday life, women are bombarded with images presenting them with the thin ideal, but also images representing temptation and encouragement to indulge. The effects of the combination of these two factors on eating behaviour were largely unknown, and previous research was often not able to state with confidence whether the effect of some manipulations was achieved by increasing the healthy eating goal, or rather increasing the thinness goal. In the interest of women's mental health, it is important to promote interventions that increase healthy eating without increasing unhealthy dieting.

Our study also emphasises the importance of including female identification in modelling the predictors of eating behaviour among women. While it has been shown that women have on average healthier diets and healthier eating intentions

than men (Wardle et al., 2004), our results strongly suggest that manipulations appealing to aspects of female identity will have different effects, depending on the level of female identification.

An important limitation of this study is the lack of a control condition in the experimental design. Further research including a control condition would allow assessing whether specific manipulations lead to an increase or decrease of food intake, as compared to the control level. Also, adding a questionnaire measuring the perceived representativeness of the presented social images would have given more insight into the psychological mechanisms responsible for the statistical effects. Another limitation is the fact that the drinks offered to participants during the taste test may have been a confounding factor. In other words, the amount of food that participants consumed may have been different, depending on which drink they chose. Due to a relatively small sample size, it was not possible to control for drink choice in the statistical analyses.

The vicarious licensing effect found across the two studies further illustrates the role of social identity processes involved in healthy eating. Studies 1-3 pointed to an association between identification with 'healthy' social groups and healthy eating intentions, and also the lack of an analogous association with healthy eating behaviour. Studies 4 and 5 suggest a more complex picture, with the association between identification and intentions still in place, but a more interesting interactive effect on healthy eating behaviour. Namely, the effect of identification on behaviour depends on the content of the group identity. Without information about what is considered appropriate behaviour in a given group, it is difficult to predict whether a high identifier will eat healthy food or not.

From a health promotion perspective, the vicarious licensing effect is surprising and potentially dangerous. It is often assumed that presenting people with information about good behaviour of their peers or in-group members will improve their own behaviour (Lewis & Neighbors, 2006). While this approach might often be right, our studies show that, at least in certain cases, exposing high identifiers to a healthy social image may backfire and result in less healthy behaviour.

In conclusion, across two studies using different social identity frameworks and different measures of healthy eating, we found that high identifiers, when presented with information about healthy behaviour of their in-groups, may use that information as a licence to eat less healthily. This finding emphasises the role of social processes in healthy eating, and points to vicarious licensing as one of the important contributors to the intention-behaviour gap.

## CHAPTER 5

### GENERAL DISCUSSION

#### **Summary and Interpretation of Results**

The aim of this thesis has been to contribute to a better understanding of the role of social factors in promoting healthy eating. This was done by (1) identifying a number of social identities that are perceived as important in general and also relevant for healthy eating; (2) investigating the effect of social identity salience and group identification on healthy eating intentions, and also on food choices and eating behaviour; (3) exploring the interactive effect of group identification and normative information on healthy eating intentions and behaviour; (4) testing whether the effect of social identity related variables on healthy eating is mediated by attitudes, subjective norm, perceived behavioural control, or perceived descriptive norm.

This thesis presents the results of five experimental studies conducted in a student population, examining the associations between social identity salience, group identification, healthy eating intentions, and eating behaviour. Study 1 showed that experimentally increasing the salience of female or family identity, as compared to personal identity, led to increased self-reported healthy eating intentions. However, increasing the salience of these two identities did not increase the likelihood of participants choosing a healthy snack over an unhealthy one. Instead, there was a marginally significant trend for participants in the female and family identity salient conditions to choose the unhealthy snack more often.

Study 2 did not include a successful manipulation of female identity salience, but nevertheless provided a replication of the results from Study 1 in a correlational

analysis. Female identification, measured as an individual difference variable, was positively associated with healthy eating intentions, even after controlling for attitudes, subjective norms and perceived behavioural control (variables postulated by theory of planned behaviour). Ironically, but similar to what was found in Study 1, stronger female identification was associated with a lower likelihood of choosing a healthy snack over an unhealthy one. Study 2 also included a manipulation of the order of measurement, whereby half of the participants reported their healthy eating intentions before choosing a snack; the other half chose a snack first, and only later reported their healthy eating intentions. This manipulation was included in order to rule out licensing effect as an explanation for the difference between participants' reported intentions and actual behaviour. In line with the licensing effect prediction (Khan & Dhar, 2006), participants would be expected to choose a healthy snack less often if they had just expressed healthy intentions. However, the results of Study 2 indicated an opposite pattern: participants who expressed their intention first were more likely to choose a healthy snack, possibly because expressing the intention served as a reminder of a healthy eating goal. All in all, Studies 1 and 2 provided evidence for two effects: (1) the positive association between female identity salience or female identification and self-reported healthy eating intentions; and (2) the lack of positive association (or possibly a negative association) between female identity salience or female identification and healthy food choices.

While the first two studies explored the association between female identity and healthy eating, their design did not allow for examining the content of female identity: the social images, norms and prototypes that were made salient when participants were encouraged to think of themselves in the context of their female

identity. This issue was the focus of Studies 3-5, which used a manipulation of the social images associated with particular social identities.

Study 3 involved a manipulation of salient social identity (student or female) and a manipulation of the healthiness of social images associated with each social identity (healthy or unhealthy). Thus, participants were not only led to consider themselves in light of a particular social identity, but they were also provided with social images suggesting whether members of that particular social group were typically behaving in healthy or unhealthy ways. The results corroborated the evidence from Studies 1 and 2, indicating that in the female identity salience condition, female identification was positively associated with healthy eating intentions. There was no association between student identification (measured in the student identity salience condition) and healthy eating intentions.

In both identity salience conditions, the results indicated an interaction between the strength of group identification (student or female) and the healthiness of social images. In other words, after being shown unhealthy social images, participants who highly identified with their salient social group expressed stronger healthy eating intentions than participants who did not identify highly. When participants were shown healthy social images, the level of their group identification was not associated with healthy eating intentions. Neither group identification nor healthiness of social images was significantly associated with eating behaviour; that is, even if participants expressed healthier eating intentions, those were not reflected in the healthiness of their menu choices.

Studies 4 and 5 used the same manipulation of social images as Study 3. Study 4 examined the effect of being presented with healthy and unhealthy social images

associated with Australian identity on healthy eating intentions and behaviour. The main finding was a vicarious licensing effect for healthy eating. Vicarious licensing has originally been established in the context of moral behaviour (Kouchaki, 2011): people were more willing to express prejudiced attitudes after they were led to believe that their social group was more moral than other similar groups. In other words, the moral credentials established by the group members' past behaviour created a licence for individuals in the study to behave in morally dubious ways. This effect was particularly pronounced among participants who highly identified with their social group. The results of Study 4 suggest a similar effect in the context of eating behaviour: participants who identified highly as Australian chose less healthy food from an online restaurant menu when they were shown images of in-group members (other Australians) engaging in healthy behaviour than when they were shown images of unhealthy behaviour. This finding was then replicated in Study 5, in the context of and female identity. A pattern of results suggesting vicarious licensing was observed, whereby participants who highly identified as female ate more food during a taste test when they were shown images of other women engaging in healthy behaviour, compared to when they were shown images of other women engaging in unhealthy behaviour.

### **Female Identity and Eating**

The finding that female identity is associated with healthy eating intentions fits well in the context of several strands of literature. First of all, a large body of survey research indicates that in many Western countries women have healthier diets than men (Beer-Borst et al., 2000; Fagerli & Wandel, 1999; Li et al., 2000; Liebman et al., 2001; Neumark-Sztainer et al., 1998; Patterson et al., 1994; Wardle et al., 2004).

Although the exact causes of gender differences in healthy eating are not known, it has been found that the perception of different foods is gendered: healthy foods (such as fruit and vegetables or yoghurt) and low-calorie foods are perceived as feminine, whereas having a diet with a high content of meat, potatoes and alcohol is considered masculine (O'Doherty Jensen & Holm, 1999). Women who strive to maintain a diet that is in line with the prevailing gender norms need to consume larger amounts of fruit and vegetables and limit their meat and potato consumption. Thus, women's healthy diets might be a consequence of their adherence to the gendered norm regarding the foods that are appropriate for men and women to eat. This phenomenon is a potential explanation for the association between female identification and healthy eating intentions, which was found in Studies 2, 3 and 5: women who more strongly identify as female may internalise the healthy eating norm and then express this norm in their intentions.

A related phenomenon is the self-presentational value of specific food choices. Since women who eat healthy foods and small portions are perceived as more feminine (Chaiken & Pliner, 1987), some women may engage in those exact behaviours in order to emphasise their femininity to their eating companions or observers. Indeed, in the presence of an attractive male, women tend to eat less than in the presence of an unattractive male or a fellow female (Mori et al., 1987). The desire to appear feminine might be another reason why, in the studies presented above, more highly female identified women expressed stronger healthy eating intentions.

Some literature suggests that women are better informed about what a healthy diet entails, and that their healthier eating is a consequence of being more

knowledgeable (Wardle et al., 2004). However, it has been argued that while women's diets are influenced by their concerns about health, they are shaped to an equal or even larger extent by women's concerns about weight management (Madden & Chamberlain, 2004; Rolls, Fedoroff, & Guthrie, 1991; Wardle et al., 2004). This confounding effect was reflected in the results presented in this thesis, particularly in Study 5, where social images focussing on thinness produced similar effects to social images focussing on healthiness. Although a variety of items were used to measure healthy eating intentions across the studies (e.g. "I intend to eat more healthy foods" and "I intend to take better care of my body"), the wording of the items does not allow distinguishing between healthy eating motivated by health versus thinness concerns.

Women's preoccupation with thinness in the Western world has both positive and negative effects. On one hand, women are physically healthier and less obese and overweight than men (Courtenay, 2000a). On the other hand, women suffer from higher rates of distress (Denton, Prus, & Walters, 2004), and at least some of this distress is related to body image dissatisfaction and eating disorders (as illustrated by higher rates of both among women than among men; Lewinsohn et al., 2002). The association between female identification and healthy eating intentions, which emerged in the studies presented here, seems promising, because appeals to female identity could potentially be used in healthy eating campaigns. However, this association needs to be treated with caution, because any messages that link femininity and eating may be interpreted in the context of weight management, and might contribute to the eating-related distress that is already being experienced by many women.

## **Intention-Behaviour Gap**

Although the observed association between female identification and healthy eating intentions seems quite robust, a similarly robust association with healthy eating behaviour was not found. The results of Studies 1 and 2 suggested a marginally or significantly negative effect of female identity on healthy food choice, while Study 3 found no association between the strength of female or student identification and healthy eating behaviour. There appears to be a gap between what participants reported as their intention, and their behaviour when they were asked to choose between different food items. This intention-behaviour gap is not uncommon in health psychological research (Sheeran, 2002) and a number of theoretical explanations have been put forward to clarify why people often do not act on their intentions. An important perspective has been offered by proponents of the dual-process models of behaviour (Hofmann et al., 2008; Kremers et al., 2006), who argue that intention explains only a modest amount of variance in behaviour, because a significant proportion of the variance is explained by associative processes, which tend to be ignored by socio-cognitive models.

Methodological issues may also have contributed to the observed discrepancy between intentions and behaviour. In Studies 1 and 2, participants were offered a snack as a token of gratitude for participating in the study. They may have interpreted that as a special occasion, where their usual healthy eating goals did not apply (Taylor et al., 2013). In Studies 3 and 4, participants were making choices from an online restaurant menu, and may have been drawn towards the most attractive options (e.g. most expensive or the best sounding ones) rather than the most healthy ones. Although food choices made online have been used as a measure

of healthy eating in previous research (see for example Pascoe & Richman, 2011), the results obtained in this way should ideally be replicated in an environment where participants make real food choices. Indeed, Study 5, which measured participants' food intake in a taste test, provided a replication of the vicarious licensing effect found in Study 4.

A different pattern of results regarding the intention-behaviour gap emerged in Studies 4 and 5, where social images and group identification explained a significant amount of variance in eating behaviour, but had no effect on intention. These results fit the predicted vicarious licensing effect, whereby participants who strongly identified with their social group exhibited less healthy eating behaviour after they had been shown social images of other group members engaging in healthy behaviour. The presence of an individual-level licensing effect has previously been demonstrated in the context of dieting: participants who believed that they had made sufficient progress towards their weight loss goal were also less likely to choose an apple rather than a candy bar as compensation gift (Fishbach & Dhar, 2005). In other words, the perceived progress towards the goal was used as a licence to excuse choosing an unhealthy snack in the immediate future. The vicarious licensing effect implies a similar mechanism, but at a group level: progress made by other group members towards the common goal is used as a licence to excuse one's own goal-incongruent behaviour. However, in line with the original vicarious moral licensing research (Kouchaki, 2011), this effect was only found among high identifiers, presumably because a high level of identification is needed to translate others' behaviour into a change in one's own self-perception. In other words, for high identifiers, knowing about others' healthy behaviour is enough to create a perception

that they are engaging in healthy behaviour as well (regardless of their actual behaviour), and to licence unhealthy behaviour. The lack of effect on intention matches the logic of licensing, whereby the perception that one has already made sufficient progress towards a goal (or in line with an intention) causes a decrease in goal-congruent behaviour. The implication here is that the goal or intention does not change, and that the change in behaviour is caused by perceived progress in achieving the goal.

### **Strengths of the Studies**

All five studies employed experimental methodology to investigate the association between social identity and healthy eating intentions and behaviour. The random assignment of participants to conditions allowed for minimising the role of confounding factors, such as hunger level, overall food preferences, or participants' knowledge about healthy eating. Also, the use of experimental methodology makes it possible to make claims about the causal influence of identity salience and social images on healthy eating intentions and behaviour.

In addition, an important strength of the presented studies is that all of them included a measure of both intentions and behaviour. While it is customary for psychological research to focus on intentions and other self-reported variables, psychology is the study of human behaviour, and leaders in the field have emphasised the need to conduct more research focussed specifically on behaviour (Baumeister, Vohs, & Funder, 2007). This is especially important in the context of eating, where correlations between intentions and behaviour can be rather modest, but it is the eating behaviour, and not intention, that has important consequences for

people's health and well-being. Also, including measures of both intention and behaviour allowed for examining the intention-behaviour gap for healthy eating.

In a similar vein, it is worth pointing out that, across the five studies, three different ways of measuring eating behaviour were used. As part of Studies 1 and 2, participants made a choice between a healthy and unhealthy snack. This was a quick and easy measure of food choices, but it could be argued that some of the variance in behaviour was lost due to the binary character of the measure. In order to rectify this problem, Studies 3 and 4 used an online restaurant menu, where participants were free to choose from a variety of options. This measure also mirrored the process of choosing food in a restaurant, which most participants were likely familiar with. While adding variety and simulating the process of choosing a meal in a restaurant, this measure could be criticised for not being realistic enough: the choices participants made had no real consequences, as they were not offered the opportunity to eat the selected meals. Finally, Study 5 employed a taste test, where participants were given four different foods and were instructed to eat as little or as much of each food as they liked. This measure of eating behaviour is frequently employed by food researchers, as it gives participants the opportunity to make choices about both the type and quantity of food consumed. It is also the measure that most closely resembles the usual eating environment.

From a more theoretical point of view, an important strength of the series of studies presented in this thesis is that they build upon a number of established psychological theories of human behaviour. The research questions tackled by the studies stem directly from social identity theory, self-categorisation theory and the identity-based motivation approach. The overall hypothesis being tested was that

people's intentions and behaviour with regard to eating depended on their salient social identity and the norms, prototypes and social images associated with that particular social group. The results of the five studies provided support for this hypothesis, even though the pattern of results was not always consistent. In addition, one of the aims of this thesis was to link the social identity hypothesis to existing models of health behaviour, showing that social identification is associated with healthy eating intentions even after controlling for the predictors specified by the theory of planned behaviour (Study 2), and that identity content, in the form of social images, influences healthy eating intentions and behaviour in different ways, depending on the level of identification (Studies 3-5).

Finally, the emergence of a vicarious licensing effect in the context of healthy eating was an important result, which certainly warrants further investigation. Eating is viewed as a predominantly individual activity, and current psychological research often overlooks the fact that food choices can be a reflection of a social identity (Bisogni et al., 2002). The presence of a vicarious licensing effect in this context suggests that when making decisions about eating, people pay attention not only to what other individuals eat, but also to what their group in its entirety is eating. In the original formulation of the vicarious moral licensing effect, Kouchaki (2011) emphasised the novelty of her finding that moral credentials could be acquired through group membership alone. In a similar vein, the results of Study 4 and 5 provided preliminary evidence that belonging to a group which engages in healthy behaviour may sometimes provide a licence for individuals to act in less healthy ways. As this effect is unexpected and largely incongruent with the predictions based on social identity and self-categorisation theory, it deserves attention. If high

identifiers do not benefit from information about the healthy behaviour of their group, perhaps other strategies should be used to promote their commitment to a healthy lifestyle.

### **Limitations**

Although the studies presented in this thesis provide a compelling account for a complex relationship between social identity and healthy eating, they do suffer from a few limitations. First of all, Studies 1-3 all attempted a manipulation of salient social identity, but the manipulation was not always successful. More specifically, in Study 1, the social identity salience manipulation influenced identity centrality (a measure used as a manipulation check), but this effect was not present in Study 2. A relevant issue previously identified by social identity researchers is that manipulation checks aiming to measure identity salience are likely to be unsuccessful, as the act of measuring a particular identity is likely to increase its salience (c.f. Cruwys, 2012; Stryker & Serpe, 1994). This phenomenon could explain the lack of differences in female identity centrality between the two conditions in Study 2. Due to this problem, some authors do not include a manipulation check at all (e.g. Shih, Pittinsky, & Ambady, 1999), and following this practice, a manipulation check was not included in Study 3.

Also, the lack of effect in Study 2 may have been caused by an increased salience of female identity which occurred independently of the experimental manipulation: (a) due to the logistics of the study, participants had to be informed in advance that only females would be recruited; and (b) the study was concerned with eating, a domain that is associated with thinness and attractiveness, and is of particular interest to females. Unlike Study 1, participants in the control condition in

Study 2 did not undergo a social identity manipulation. Thus, if the salience of their female identity was increased at the beginning of the study, there was no procedure to then bring it back to the baseline level. Thus, the chronically salient female identity may have influenced participants' responses, even if they were assigned to the control condition.

Studies 3-5 employed a new manipulation, using social images to influence participants' perceptions of the behaviour of their in-group members. This manipulation was created specifically for the purposes of these studies, and was meant to be engaging and meaningful to the participants. However, an important limitation of this new manipulation was the lack of a pilot study to test its properties. This meant that the manipulation procedure, originally designed to manipulate perceived descriptive norm, may have influenced psychological variables other than the descriptive norm. For example, the images used to make female identity salient in Study 3 may have in fact increased the salience of personal identity. The use of pictorial stimuli rather than a text paragraph of a vignette increased the possibility of participants interpreting the manipulation in different and unexpected ways.

While participants did engage with the images, due to the lack of pilot testing it is not entirely clear which psychological variable was being influenced by the manipulation. Also, analysis of the collected data (data not presented) indicated that perceived descriptive norm was not consistently affected. Participants who were presented with unhealthy images may, for example, have rejected them as non-representative of their in-group, and thus their perception of the descriptive norm would have remained unchanged. A measure of the perceived representativeness or truthfulness of the images should perhaps be included in any further studies

employing this manipulation, so that its exact effect on participants' perceptions may be assessed. In addition, a pilot study would help shed light at the exact psychological variables affected by the manipulation.

While the inclusion of both healthy eating intentions and behaviour as outcome variables in all five studies was an important methodological strength, the effects on behaviour did not follow a consistent pattern, indicating a potential methodological problem. In particular, the results of Study 3 differed from those obtained in Studies 4 and 5. In Study 3, healthiness of social images interacted with group identification, so that high identifiers reported stronger healthy eating intentions when they were presented with unhealthy social images, compared to healthy social images. Moreover, group identification and healthiness of social images had no main effect on healthy eating behaviour. In contrast, Studies 4 and 5 found a similar pattern of results, but the interactive effect occurred for healthy eating behaviour, and not for intentions.

The most surprising discrepancy is perhaps the lack of effects on behaviour in Study 3, even though the type of experimental manipulation used and the measure of healthy eating behaviour were the same as in the subsequent study. It should be noted, however, that the images used in the manipulation were different in each of the studies, and this may have caused differences in the effects. Also, the lack of statistical power may explain the lack of effect on behaviour in Study 3: Study 3 had fewer participants per experimental cell than Studies 4 or 5, and thus the probability of detecting an existing effect was lower.

In all studies, it was assumed that participants were aiming to have a healthy diet, and that they cared about what they ate. However, the strength of that goal was

never measured explicitly, and it may have been a moderator of some of the effects. Future research should perhaps measure the strength of the healthy eating goal and include it in the analyses.

The choice of study population limits the generalizability of the findings. In particular, all studies comprised a student sample, where the average age was just above 20 years. Also, in four of the studies only female participants were recruited. As a consequence, it is unclear whether the results would be applicable in non-students groups, among older participants, and among men.

In addition, all measures of eating behaviour were relatively artificial, and may not be representative of how participants would have behaved in the real world. Future studies of identity and eating may employ a more ecologically valid strategy, perhaps observing people's behaviour in a canteen, or asking participants to keep a food diary. Both types of measurement have previously been used in research on eating. For example, Berger and Rand (2008) observed participants in a campus eatery to establish whether their food choices and intake were influenced by a manipulation of identity signalling embedded in a newspaper article.

Finally, due to the logistics of the study, all outcomes were measured shortly after introducing the experimental manipulation, with the usual study duration of about 10 minutes. It is therefore difficult to estimate how lasting the effects of increased identity salience may be. As this aspect is particularly important for developing interventions, measuring ongoing effects of identity salience would be an interesting direction for further study.

## Future Research

The results presented in this thesis should be interpreted as preliminary evidence supporting the notion that the salient social identity influences people's eating intentions and behaviour. The five studies described here have resulted in a few important findings, but a lot remains to be done to establish how social identities influence eating, and whether these effects may be used in public health interventions. The following section will outline a few avenues for further research, starting from replications that would strengthen the presented results, and then discussing potential conceptual follow-ups.

All five studies presented in this chapter were conducted in tightly controlled, but also relatively artificial environments. A potential criticism might be that the results obtained would not be replicated in a more ecologically valid study. Thus, it would be important to replicate the studies in a real-life environment where individuals are eating, and where their social identities are made salient by subtle cues. Measures such as ecological momentary assessment (EMA; Stone & Shiffman, 1994) allow for recording events in the natural environment, at the time when they occur. For example, participants could be asked to record all their meals and snacks, and how salient their different social identities were at the time of choosing those particular foods. A within-person experimental design could also be used, whereby certain social identities would be made salient on particular days, and participants would be asked to record their food intake over a period of time.

Ecological momentary assessment has been used to study various aspects of eating, for example the relationship between mood and binge eating (Wegner et al., 2002), or the factors causing lapse in dieting (Carels et al., 2002). Considering that

many people in the Western world now possess camera-enabled mobile phones, participants could be asked to take photographs of their food, reducing the error associated with retrospective recall (Martin et al., 2009; Martin et al., 2014). Another strategy to increase ecological validity would be to introduce social identity cues in the environment where food is being chosen and consumed, similar to existing interventions where individuals were subtly reminded about healthy eating in a grocery store (e.g. Papies, Potjes, Keesman, Schwinghammer, & van Koningsbruggen, 2014) or at a restaurant (e.g. Papies & Veling, 2013).

Another avenue for future research would be to disentangle the inconsistent pattern of results regarding the effect of social identity salience and group identification on healthy eating intentions and behaviour. In light of the theory of planned behaviour, it is surprising that the association between salient social identity and healthy eating intentions was not translated into behaviour, and that the correlations between intention and behaviour were low across the five studies. Even though a methodological explanation could be made and has been discussed above, it is likely that in many cases eating is incongruent with intentions, but rather reflects the influence of temptation, self-control failures, and licensing. Future research might usefully focus on ‘unintentional eating’, moving away from predicting healthy eating intentions, and turning to the study of what causes people who have good intentions to not turn them into actions. Social identity is a promising concept to study in this context, as people may feel accountable to their in-group members for what they do.

In order to strengthen the evidence for a vicarious licensing effect in healthy eating, it would be important to establish the psychological mechanism driving the effect. Kouchaki (2011) demonstrated that vicarious moral licensing is mediated by

moral self-concept: high identifiers build their self-concept based on what they know about the behaviour of other members of their social group. Hearing about the moral behaviour of in-group members leads to the development of a moral self-concept and provides high-identifiers with a licence to engage in immoral behaviour. A similar mechanism might be present in the context of eating: learning about healthy behaviour of others might lead to the development of a healthy self-concept, and consequently to less healthy individual behaviour. This mediation mechanism was tested in Study 3 (data not presented), but the mediation model did not account for a significant amount of variance, potentially due to low power. It would therefore be necessary to replicate the vicarious licensing effect and include the healthy self-concept as a potential mediating variable.

Also, it would be interesting to establish the conditions under which information about the healthy behaviour of in-group members is treated as a licence to behave unhealthy, as opposed to being perceived as a healthy descriptive norm. This is likely to have to do with the strength of social identification: Kouchaki (2011) demonstrated that vicarious moral licensing only occurred among high identifiers. She further argued that high identifiers would be particularly likely to construct their self-concepts based on information about the behaviour of their in-group members. Thus, further research might be able to establish what level of social identification is needed to facilitate vicarious licensing, and how it could be prevented.

### **Women and Eating**

Women's food choices are driven not only by the desire to be healthy, but also by the desire to be thin. Some researchers have claimed that, generally speaking, the thinness discourse is more powerful in influencing women's eating than concerns

about health (Madden & Chamberlain, 2004). As discussed before, most of the studies presented in this chapter were not designed to allow for distinguishing between healthy eating driven by healthiness versus thinness concerns. Study 5, where the healthiness and thinness focus were experimentally manipulated, provided a starting point for distinguishing between the effects of these motivating factors. In order not to increase the prevalence of eating disorders, it is important to find ways in which healthy eating can be promoted without encouraging people, and particularly women, to resort to unhealthy dieting (Fagerli & Wandel, 1999). Caution is especially needed when communicating to women, who are the most responsive to health promotion messages, but also the most vulnerable to the damaging effects of the thin beauty ideal.

Most studies presented in this thesis focussed on female identity, but they also provided preliminary evidence that other social identities, such as family and Australian identity, may be associated with healthy eating intentions and behaviour. Qualitative research suggests that eating is often a way of communicating one's identity (Bisogni et al., 2002), and so it is likely that a range of social identities can have influence over people's eating-related decisions. As a follow-up from the studies presented above, it would be especially interesting to explore the food-related content of Scottish and male identity, due to the fact that both of these social identities are stereotypically associated with unhealthy behaviour.

### **Scottish Identity and Eating**

According to the prevailing stereotype, the Scottish diet is full of fried foods and generally unhealthy (Fuller, Backett-Milburn, & Hopton, 2003; Scottish Government, 1996), and this is mirrored in the statistics indicating relatively poor

health outcomes among the Scottish population (Scottish Government, 2010). Fuller et al. (2003) suggested that the media may be exacerbating the situation by frequently referring to the unhealthy Scottish diet stereotype, thus perpetuating the belief that an unhealthy diet is a vital part of the Scottish identity. Even though Fuller et al. (2003) did not explicitly suggest the psychological mechanisms responsible for this situation, it seems likely that, if Scottish identity and unhealthy eating are commonly linked, unhealthy eating might be perceived as a necessary part of the Scottish identity, and thus Scots would be unwilling to change their diets, for fear of losing their identity. A similar phenomenon was described by Oyserman et al. (2007), who noted that eating fried food and being heavy seemed to be an essential part of the social identity of the American South, making the Southerners resistant to healthy eating campaigns. The perceptions of the link between Scottish identity and unhealthy eating, and its consequences for dietary change, could usefully be explored in future research, potentially employing a mixed method approach.

Fuller et al. (2003) also pointed out that Scots may be reluctant to change their diets in response to healthy eating campaigns because they believe that their diets are already healthy. The suggestion that perceiving one's eating habits as healthy might prevent people from improving their diets is in line with the research demonstrating a licensing effect in the context of eating (Khan & Dhar, 2006), and also with the vicarious licensing effect found in Studies 4 and 5. An interesting future study might look at the perceived descriptive healthy eating norm in the Scottish population and the correlation between how healthy people perceive their diets to be and how healthy they actually are. As suggested by Fuller et al. (2003), people do not always

have the means to accurately monitor their food intake for variety and healthiness, and thus their perception of how healthy their diet is might be incorrect.

### **Masculinity and Eating**

Another interesting avenue for research would be to explore the links between masculinity and eating. As discussed in the earlier parts of this thesis, women's femininity is judged on the basis on what they eat, and consequently women tend to adjust their eating to convey a favourable image of themselves. Although some researchers claim that men are not judged as harshly on the basis of their eating (Chaiken & Pliner, 1987), strong links exist between masculinity and the consumption of certain types of food, for example red meat (Sobal, 2005). In other words, people who eat meat are perceived as more masculine (and less feminine) than those who do not eat meat. In a similar vein, eating fruit and vegetables and paying attention to the nutritional value of foods is considered feminine (Newcombe et al., 2012), and thus men who care about projecting their masculinity might be reluctant to engage in those behaviours. Qualitative research has started exploring the reasons why men might be reluctant to engage in healthy eating, emphasising that the social ideals of masculinity prevent men from openly expressing concerns about their health, while encouraging risk-taking behaviour (Courtenay, 2000b, 2000c). There is room to explore these phenomena using experimental methodology, for example by establishing how men's food choices change in response to a masculinity threat.

Finally, some social identities are built specifically around eating; for example, vegetarianism, the Weight Watchers, or the Slow Food movement. Especially in the context of weight loss, social support is an important resource to help people persevere in their efforts (Hwang et al., 2010), and a social identity built around a

group weight loss may be an important motivating factor. Food items marketed under the logo of Weight Watchers potentially not only make it easier for people to choose low-calorie items, but also remind them of the Weight Watcher social identity and the associated goal of losing weight. The exact benefits and potential dangers of possessing this identity would be an exciting avenue for further research.

### **Implications for Policy and Practice**

A vast body of literature suggests that having multiple social relationships is beneficial to people's health and wellbeing (Jetten, Haslam, & Haslam, 2012; Jetten, Haslam, Haslam, & Branscombe, 2009). According to Cohen and Janicki-Deverts (2009), a logical next step would be for psychologists to design interventions that improve social networks, and in consequence improve health. In light of the research results presented in this thesis and the broader research on social identity and health, this section will propose a number of recommendations for using social identity to increase the maintenance of a healthy diet and to reduce obesity.

The studies presented in this thesis, as well as previous research (e.g. Tarrant & Butler, 2011), suggest that engaging in healthy eating behaviour is congruent with some social identities (e.g. female and British), but not others (e.g. the student identity). This may suggest that, when the 'healthy' social identities are salient, people are more likely to feel motivated to maintain a healthy diet, and are also more susceptible to advice about healthy eating. In line with this logic, it might be helpful to deliver healthy eating advice and interventions in situations where the identities associated with healthy eating are already salient. For example, posters promoting healthy eating displayed in a hairdresser's salon (where women's gender identity is

salient) may be more effective than posters displayed in a university library (where student identity is salient).

Another recommendation based on the social identity literature is that health interventions are more likely to be successful if they are delivered by individuals or organisations that share an important social group membership with members of the target group. Adolescent girls were more likely to change their attitudes towards eating after hearing a message from a woman they identified with, rather than from a woman they did not identify with (a radical feminist) (Balaam & Haslam, 1998). Also, female students modelled their food intake on their fellow eaters when the fellow eaters studied at the same university, but not if they studied at another university (Cruwys et al., 2012). Finally, Oyserman, Fryberg, and Yoder's (2007) analysis of the role of identity in health eating suggests that people are unlikely to change their attitudes following health-promotion campaigns if they feel that those campaigns are not congruent with their social identity. Thus, it might be beneficial to take the social identity concerns into account when planning the delivery of interventions promoting healthy eating. For example, in line with Oyserman et al.'s (2007) findings, interventions aimed at members of ethnic minorities should be developed in consultation with those minority groups, and ideally delivered by the members of those groups, so that people do not see the intervention as coming from the out-group.

More generally, public health interventions need to be built in accordance with social identities and, where possible, capitalise on those identities. A notable example of an intervention that is very sensitive to social identities and the norms associated with them is the Football Fans in Training (FFIT) intervention developed

in Scotland (Gray et al., 2013). This intervention was gender-sensitised, which means that it capitalised on what is known about gender differences in the approaches to health and weight management: men are overall more reluctant to follow health advice, and they see exercise as a better method of losing weight than dieting (Hunt, Gray, et al., 2014). In addition, this intervention used men's identification with their favourite football clubs and their aspiration to become more like their favourite footballers. Men who took part in FFIT lost on average 4.36% more weight than men in the control group, and this difference has been described as clinically important (Hunt, Wyke, et al., 2014). This example suggests that interventions which capitalise on people's existing social identities and promote strategies congruent with those identities tend to be well-received and result in significant improvement in important health outcomes. Following the success of FFIT, it is likely that more identity-sensitised interventions will be developed.

Finally, the studies presented in this thesis suggest that care needs to be taken when using a norm-based approach to promoting health eating. On the one hand, messages based on social norms have been shown to increase healthy eating among students (Robinson, Fleming, et al., 2013; Robinson, Harris, et al., 2013). Studies presented in Chapter 4, however, suggest that people who identify strongly with their social group might interpret information about their in-group members engaging in healthy eating as meaning that they do not need to eat healthy foods themselves. While it is definitely beneficial to further research the efficacy of health promotion campaigns that appeal to social norms, the possibility of a vicarious licensing effect described in this thesis needs to be taken into account when developing interventions.

## **Concluding Remarks**

Across five studies and a number of experimental paradigms, data in this thesis suggest that group identification and salient social identity influence people's healthy eating intentions and behaviours. Although the pattern of results was complex and not always consistent, the evidence presented here certainly warrants further investigation into when and why increasing the salience of particular social identities (for example, female identity) causes people to self-report that they are intending to eat healthier foods. These findings may then usefully be applied in healthy eating promotion, where appeals to social identity could increase the effectiveness of health eating campaigns.

The findings presented in this thesis also highlight a few potential dangers that should be taken into account when researching and applying the social identity perspective on healthy eating. Most importantly, in the context of female identity, healthy eating is often associated with dieting, and any appeals to female identity within healthy eating promotion may lead to an increase in unhealthy dieting practices. Also, the presence of vicarious licensing should be taken into account when creating interventions that appeal to social norms or social images: according to the research presented in this thesis, high identifiers may react to the information about healthy behaviour of their in-group members by giving themselves a licence to behave in less healthy ways.

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## APPENDIX 1

### TPB ITEMS USED IN STUDY 2

Participants responded to the items below on 7-point Likert-type scales ranging from 1 (*strongly disagree*) to 7 (*strongly agree*)

Healthy eating intention:

1. It is likely that I will eat healthy foods during the next month.
2. I would like to eat healthier.
3. I intend to eat healthier.

Subjective norm:

1. Most people who are important to me would approve of my eating healthy foods during the next month.
2. Those people who are important to me would want me to eat healthy foods during the next month.

Perceived behavioural control:

1. I have complete control over whether I eat healthy foods during the next month.
2. If I wanted to I could easily eat healthy foods over the next month.
3. Eating healthy foods during the next month would be: extremely difficult – extremely easy.

Attitudes towards healthy eating were assessed using 7-point semantic differential scales anchored at 1 and 7.

Attitude

Eating healthy foods during the next month would be:

1. unpleasant – pleasant
2. bad – good
3. negative – positive
4. unfavourable – favourable