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From groups to grits: Social identity shapes evaluations of food pleasantness

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ABSTRACT

Throughout human history, food consumption has been deeply tied to cultural groups. Past models of food preference have assumed that social concerns are dissociated from basic appetitive qualities—such as tastiness—in food choice. In contrast to this notion, we tested and found support for the novel idea that social identities can shape the evaluation of food pleasantness. Specifically, individual differences in social identification (Study 1) as well as experimentally manipulated identity salience (Study 2) were associated with the anticipated tastiness of identity-relevant foods. We also found that identity salience influenced perceived food pleasantness during consumption (Study 3). These results suggest social identity may shape evaluations of food pleasantness, both through long-term motivational components of identification as well as short-term identity salience. Thus, the influence of social identity on cognition appears to extend beyond social evaluation, to hedonic experience. We discuss implications for theories of identity, decision-making, and food consumption.

1. Introduction

When people eat Canadian Maple Syrup for breakfast, Pad Thai for lunch, or Southern Chicken Fried Steak for dinner, their food choices often reflect deeply held cultural identities. These associations transform food consumption into a socially meaningful behavior (Barthes, 1997). Past models of food preference have assumed that social concerns are dissociated from basic appetitive qualities of foods—such as tastiness—in food choice (Rangel, 2013). However, it is possible that social identities can shape the evaluation of food pleasantness itself. This possibility carries real-world implications, as the consumption of identity-relevant foods can yield negative health outcomes, as in the case of the American diet (see Guendelman, Cheryan, & Monin, 2011). In the present research, we examined whether social identities influence evaluations of food pleasantness.

Social identification is the product of perceiving oneself as part of a social group (Tajfel & Turner, 1979), which involves both defining oneself as part of a collective and attaching motivational significance to group membership (Brewer & Gardner, 1996; Correll & Park, 2005; Leach et al., 2008; Tajfel & Turner, 1979; Turner, Oakes, Haslam, & McGarty, 1994). Social identification therefore helps determine one's attitudes and behavior. Indeed, previous psychological and economic theories have implicated social identity in shaping consumption behavior and motivation (Akerlof & Kranton, 2000; Braun & Wicklund, 1989; Oyserman, 2009; Oyserman, Fryberg, & Yoder, 2007; Wicklund & Gollwitzer, 1982). People may choose to consume foods to signal their social identity to fellow group members (Barthes, 1997), follow norms of a social group or culture (Weber & Morris, 2010), or feel like one has attained a desired identity (Wicklund & Gollwitzer, 1982).

Past research has also found a direct link between social identity and food consumption. For example, people increase or decrease their food intake based on the behavior of in-group but not out-group members, indicating that group norms shape food consumption (Cruwys et al., 2012). Sports fans increase unhealthy eating after experiencing a vicarious defeat when their favored team loses, suggesting that events that impact the group can influence members' food consumption (Cornil & Chandon, 2013). Similarly, immigrants whose sense of American identity has been threatened are more likely to eat unhealthy American foods, demonstrating that people can use food consumption to fit into a group (Guendelman et al., 2011). It is unclear, however, whether social identity shapes food pleasantness *directly*—that is, whether group members find social identity-relevant foods more pleasant than similar foods that are not social identity-relevant. People may simply want to eat in-group foods to align themselves with the in-group, but it is also possible people internalize their social identities to the extent that they find in-group foods more appetizing and pleasant to consume. Indeed, according to the Perceptual Model of

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Intergroup Relations (Xiao, Coppin, & Van Bavel, 2016), highly salient social identities might alter perceptual judgments of taste and flavor.

Here, we examined whether social identity can alter the hedonic evaluation of food pleasantness. Numerous studies have found that top-down expectations about foods and beverages—such as believing a wine is expensive (versus cheap) or viewing an appetizing (versus unappetizing) food label—influence self-reported pleasantness during consumption and activation in brain regions associated with pleasantness (Grabenhorst, Rolls, & Bilderbeck, 2008; Plassmann, O'Doherty, Shiv, & Rangel, 2008; Wardle & Solomons, 1994). Moreover, culturally held schemas can influence food preferences (Zhu, Brescoll, Newman, & Uhlmann, 2015), and the contexts in which foods are evaluated shape implicit attitudes toward foods (Roefs et al., 2006). Therefore, people may anticipate that identity-relevant foods will be tastier prior to consumption (*expected* pleasantness) and even experience these foods as more pleasant during consumption (*experienced* pleasantness).

According to the Perceptual Model of Intergroup Relations, this impact of group membership is likely to occur when an individual's self-categorization with a group is highly accessible and they strongly identify with the group (Xiao et al., 2016). To test this possibility, we examined the relationship between two aspects of social identity (salience and collective identity strength) and evaluations of pleasantness for identity-relevant foods. In doing so, we build on past work that has demonstrated social identification influences evaluation—for instance, that people evaluate other people differently as a function of shared group membership (Tajfel, Billig, Bundy, & Flament, 1971; Turner et al., 1994; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). The present research aimed to extend the influence of social identity to one's own hedonic experience.

Social identities permeate perceptual and cognitive processes, including face processing (Van Bavel, Packer, & Cunningham, 2011), olfactory judgments (Coppin et al., 2016), appraisals of temperature (Pandey, Stevenson, Shankar, Hopkins, & Reicher, 2014), auditory processing (Shankar et al., 2013; Srinivasan et al., 2013), and representations of physical distance (Xiao & Van Bavel, 2012). Indeed, recent theorizing has proposed that social identity may act as a framework shaping people's perceptual judgments and experiences, which may include evaluations of food pleasantness (Xiao et al., 2016). However, the vast majority of research on this topic has examined visual perception. Little work has examined the impact of social identity on taste or flavor, presenting a surprising gap in our understanding of social identity and perceptual judgments (Xiao et al., 2016). As such, the present research has importance for human behavior given the link between culture and eating, on the one hand, and between eating and health, on the other hand.

1.1. The role of identification and identity salience

Social identities differ across people and situations in two critical ways. First, people differ in the extent to which they identify with different social groups, and a group member's degree of social identification moderates the influence of identity on behavior (Ashmore, Deaux, & McLaughlin-Volpe, 2004; Leach et al., 2008). Identities carry long-term motivational importance, and people who identify with a social group seek to maintain a positive evaluation of the in-group (Tajfel & Turner, 1979). In contrast, individuals who are weakly identified—or disidentified—with a particular group often do not want to be categorized as a group member (Becker & Tausch, 2014; Branscombe, Ellemers, Spears, & Doosje, 1999; Hamstra, Sassenberg, Van Yperen, Wisse, & Rietzschel, 2015). When group identity is made salient, individuals with low social identification may experience negative emotions, distance themselves from the group, and even "put down" other in-group members (Branscombe et al., 1999). Therefore, an individual's degree of identification with a group should predict whether they seek to evaluate the group positively or negatively. Moreover, identification has been further divided into components reflecting motivational investment in the group ("group-level self-investment") and perceived similarity to other group members ("group-level self-definition"; Leach et al., 2008). To the extent that evaluation depends on group-level motivations (e.g., maintaining a positive evaluation of the in-group), the impact of identification on food evaluation may depend on motivational components of identification.

Second, social identities vary in salience across contexts: in different situations, different identities can become active and guide behavior (Turner et al., 1994). Identification involves categorizing oneself and others as members of a social group (Turner et al., 1987), and this self-categorization depends on contextual factors (Turner et al., 1994). Thus, various identities can become active in different contexts.

The present work simultaneously addresses these two influential traditions in social identity research that have elaborated the role of identification and identity salience in parallel: social identity theory (SIT; Tajfel & Turner, 1979) and self-categorization theory (SCT; Turner et al., 1987). Whereas SIT is primarily concerned with the motivational and evaluative implications of group identification, SCT is primarily concerned with the flexible categorization of the self as an interchangeable member of social groups. Although these theories are strongly related—and indeed, SCT stems from SIT (see Hornsey, 2008)—in practice, researchers studying identity effects on motivation often tend to focus their studies on predictions that would stem from one or the other. For example, theories of identity economics (Akerlof & Kranton, 2000) and research on identity motivation (Oyserman et al., 2007) have focused on the role of identity salience in shaping motivation, whereas research on the pursuit of self-defining goals has focused on the motivational strength of identities (Wicklund & Gollwitzer, 1982). However, both social identity salience and the strength of social identification influence identity-relevant behavior (Hornsey, 2008; Reed, 2004). Therefore, if social identification impacts evaluations of food pleasantness, we propose it should do so for people who are particularly invested in a given social identity and for whom that social identity is salient. That is, we hypothesize that people who care about a particular identity will evaluate identity-relevant foods more positively, whereas those who are low on identification with a group will evaluate identity-foods more negatively—but these effects should emerge primarily when group identity is salient. This perspective simultaneously accounts for social identification and self-categorization in shaping hedonic evaluation: one's long-term identification with a group can shape the motivational relevance of identity-relevant goods, but this motivational impact depends on the extent to which a given social identity has been activated.

Altogether, this perspective also suggests that hedonic preferences for foods are not fixed and stable, but rather depend on contextual features of a decision process. These features may include the social meaning of a food to an individual, given that individual's degree of identification with a group and the extent to which an identity is activated by a given context. This insight goes beyond prior work finding that cultural contexts impact economic decisions (Weber & Morris, 2010), suggesting that social psychological factors can influence not only decisions but also hedonic evaluations. Finally, this view suggests a possible bridge between the effects of social identity on evaluation (e.g., Van Bavel & Cunningham, 2009) and on motivation (e.g., Oyserman et al., 2007). If social identity influences judgments of hedonic pleasantness, these altered evaluations may in turn influence the motivation to consume social identity-relevant goods. Thus, we propose that hedonic preferences depend on the social identity contexts in which they are embedded—taking into account a person's long-term

degree of social identification and the salience of a particular social identity in a given moment—and that social identity-driven preferences may guide motivation.

2. Overview

In three studies, we tested the idea that social identity can influence the expected (Studies 1 and 2) and experienced (Study 3) pleasantness of consuming social identity-relevant foods. Specifically, hedonic preferences should depend on the social identity contexts in which the preferences are embedded. In this light, we hypothesized that those strongly identified with a social group and those for whom group identification was made salient would report that identity-relevant foods are especially pleasant. To assess the generality of this process, we tested these hypotheses in the United States (Studies 1 and 2) and Canada (Study 3) and across different foods. In Studies 1 and 2, we operationally defined pleasantness as expected tastiness of food, whereas in Study 3, we assayed experienced pleasantness after consumption.

3. Study 1: social identification predicts expected food pleasantness

Study 1 tested whether social identity influences expected pleasantness of foods. In particular, the Southern U.S. has a strong regional identity associated with distinct cuisine. Southern cuisine often includes several unhealthy foods and research finds a higher prevalence of obesity in the region (Centers for Disease Control and Prevention, 2014; but see also Le et al., 2014). Therefore, Southern identity presents an important test case for understanding the role of identification in food preferences. To test this idea, participants from the Southern U.S. rated foods and drinks on how tasty, healthy, filling, and representative of Southern identity they were, and rated how much they wanted to consume each item. We used tastiness as an operational definition of food pleasantness. Participants also reported their identification with Southerners, allowing us to test whether strength of social identification would predict tastiness ratings and consumption preferences. In particular, this measure included two distinct components of social identification: group-level self-investment, which measures motivational investment in a group, and group-level self-definition, which measures the extent to which a person perceives similarity between themselves and other group members (Leach et al., 2008). In doing so, we tested whether any relationships between identification and evaluation are related to motivational components of identification or perceived similarity to the group.

3.1. Method

3.1.1. Participants

One hundred and three participants were recruited via Amazon's Mechanical Turk (MTurk) website for a survey advertised as recruiting people from the Southern United States. Participants were compensated $0.60, and the median task duration was 9.40 min (interquartile range = 7.93–11.89 min). Sample size was determined by heuristically choosing a target sample of 100; three additional MTurk participants were able to complete the survey before it closed because they did not request payment. We defined the Southern United States in accordance with the United States Census Bureau (Mackun, Wilson, Fischetti, & Goworowska, 2011). Because some of these states likely included people who are not strongly identified with traditional Southern culture—particularly within regions of South Atlantic states—we directly measured identification with Southerners. Twenty-four participants were excluded because they failed one of two attention checks (N = 10), reported dietary restrictions that affected their food preferences in the task (N = 4), or did not report living in, being born in, or growing up in a Southern state (N = 10), leaving 79 participants for analysis (mean age = 33.5, SD = 12 years; 48 males). These exclusion criteria were determined prior to analysis. Participants gave informed consent in accordance with approval from the NYU University Committee on Activities Involving Human Subjects. We report how we determined our sample size, all data exclusions, all manipulations, and all measures included in the study. Sample size was determined before any data analysis.

3.1.2. Stimuli

Stimuli consisted of images and labels of 24 food and drink items that varied in both perceived healthfulness and perceived representativeness of Southern identity. To generate items, a pilot study was conducted, in which an independent sample of 102 participants (mean age = 33.10, SD = 11.09 years; 47 males) from the Southern U.S. was recruited via Mechanical Turk and asked to freely generate foods perceived as high and low in Southernness. In particular, participants were asked to list five foods they associate with Southern identity, followed by five foods they do not associate with Southern identity. Participants also reported how much they liked each food and their social identification with Southerners (see Supplemental materials for further details and analyses).

Upon examining free responses, we further categorized the Southern and non-Southern foods based on whether we thought future participants would perceive them as healthy or unhealthy. We then selected five foods and one drink from each of the four cells to be used in the main task. We aimed to select Southern foods that were listed frequently, and thus would likely be perceived by subsequent participants as representative of Southern identity. Sample *Southern* foods included fried catfish (which we expected to be perceived as relatively unhealthy) and black-eyed peas (which we expected to be perceived as relatively healthy); sample *non-Southern* foods included pizza (which we expected to be perceived as relatively unhealthy) and a tuna sandwich (which we expected to be perceived as relatively healthy). Although we relied on own intuitions about how participants would perceive food healthfulness, we collected ratings of food healthfulness directly from subsequent participants in our main task, as described below. During stimulus generation, our primary aim was to construct an array of foods that would vary in perceived Southernness and healthfulness. For each food or drink, we selected an image depicting the item to accompany the labels (images were stock images found online; materials and de-identified data for all studies are available via the Open Science Framework website at https://osf.io/d2ytu/).

3.1.3. Procedure

Participants viewed an image and label of each food or drink item, and were asked to rate the extent to which they associated the food with Southern identity, how tasty the food is, the extent to which they believed the food is healthy, and how filling the food is. Ratings were made on a 7-point scale anchored at 1 (*not at all*) and 7 (*very much*). This process allowed for more fine-grained measurement of the degree of "Southernness" of a food, as opposed to the binary categorizations used in the stimulus generation process. As intended during stimulus generation, we observed variability across foods in average ratings of Southernness (M = 4.34, SD = 1.69, range = 1.70–6.67) and healthfulness (M = 4.09, SD = 1.53, range = 2.03–6.46). Average ratings of Southernness and healthfulness were not significantly correlated across foods, $r(22) = -0.03$, $p = 0.90$. Next, participants viewed each food item again and were asked to imagine they had the possibility of consuming it at the end of the survey. Participants rated how much they wanted the food item overall, on a 7-point scale anchored at 1 (*not at all*) and 7 (*very much*). Wanting was used as a measure of incentive motivation—that is, the motivation to consume rewards—which has been distinguished from liking (Berridge, Robinson, & Aldridge, 2009).

We measured lay perceptions of food healthfulness because, based on prior research, we assumed that lay perceptions are a powerful influence on people's food choices (Hare, Camerer, & Rangel, 2009). That is, when people try to eat healthy foods, they rely on their own

perceptions of healthfulness. These ratings therefore allowed us to account for participants' perceptions of foods as relatively healthy or unhealthy.

Participants completed a measure of identification with the in-group (Leach et al., 2008) before or after completing the food ratings (order counterbalanced). Participants indicated how strongly they agreed with 14 statements on a 5-point Likert scale anchored at 1 (*strongly disagree*) to 5 (*strongly agree*) ($\alpha = 0.93$, $M = 3.68$, $SD = 0.81$). This scale includes two broad sub-components: group level self-investment ($\alpha = 0.93$, $M = 3.72$, $SD = 0.88$), which measures motivational components of identification (e.g., "The fact that I am a Southerner is an important part of my identity"), and group-level self-definition ($\alpha = 0.84$, $M = 3.57$, $SD = 0.89$), which measures perceived similarity to the group and of group members to one another (e.g., "I am similar to the average Southerner"). Participants also completed a measure that assessed their need to belong (Leary, Kelly, Cottrell, & Schreindorfer, 2013). We included this measure because a need to belong has been shown to moderate effects of social identification on cognition (Van Bavel, Swencionis, O'Connor, & Cunningham, 2012). However, there were no main effects or interactions with this measure, and thus it is not discussed further.

Finally, participants reported demographic information, including height and weight, which were used to compute Body Mass Index (BMI; $M = 26.30$, $SD = 5.73$, range = 18.75 to 44.42), state of birth, state of residence, and state in which they grew up, along with any dietary restrictions that would have affected their food choices in the survey. Geographic information and dietary restrictions were used as exclusion criteria.

3.2. Results

We first tested whether social identification was associated with the evaluations of food tastiness. Given that each participant completed 24 ratings, we used multi-level regression, which predicts responses on individual trials nested within participants and therefore models between-trial dependencies within participants. All within-participant predictors were mean-centered within persons, whereas between-participant predictors were centered across participants, so that fixed effects coefficients could be interpreted relative to the relevant means. Analyses were implemented in R, using the lme4 and lmerTest packages (Bates, Maechler, Bolker, & Walker, 2015; Kuznetsova, Brockhoff, & Christensen, 2016; R Core Team, 2016). The lmerTest package provides a Satterthwaite approximation to compute degrees of freedom.

To test whether social identification shaped expected food pleasantness, we analyzed participants' tastiness ratings as a function of consensus ratings of food Southernness, social identification, and their interaction. Although foods were initially generated to be perceived as Southern or non-Southern and healthy or unhealthy, the consensus ratings allowed us to treat Southernness as a continuous predictor. The model allowed a random intercept; random variance for food Southernness was equal to zero, and so was excluded to facilitate model convergence. We report fixed effect coefficients below. We also report an estimate of R^2 for multi-level regression that contains two parts: marginal R^2—signified as $R_{(m)}{}^2$—which indicates the variance explained by fixed effects alone, and conditional R^2—signified as $R_{(c)}{}^2$—which indicates the variance explained by fixed and random effects together (Johnson, 2014; Nakagawa & Schielzeth, 2013). These measures were computed using the MuMIn package in R (Bartoń, 2016).

We hypothesized that food Southernness would be associated with increased expected tastiness for those high on social identification with Southerners. Supporting this hypothesis, we found a Food Southernness × Identification interaction on tastiness ratings, $b = 0.08$, $SE = 0.03$, $t(1814) = 2.96$, $p = 0.003$, indicating that highly identified Southerners expected that Southern foods would be more tasty than non-Southern foods (Fig. 1). Fixed effect predictors accounted for 2.4% of the variance in the data, $R_{(m)}{}^2 = 0.024$, and fixed and random effects jointly explained 13% of the variance, $R_{(c)}{}^2 = 0.13$. Among high identifiers (centered one *SD* above the mean), food Southernness positively predicted tastiness ratings, $b = 0.09$, $SE = 0.03$, $t(1814) = 3.17$, $p = 0.002$. Among low identifiers (centered one *SD* below the mean), food Southernness did not have a significant impact on tastiness ratings, and the estimate was in the negative direction, $b = -0.03$, $SE = 0.03$, $t(1814) = -1.02$, $p = 0.31$.[1]

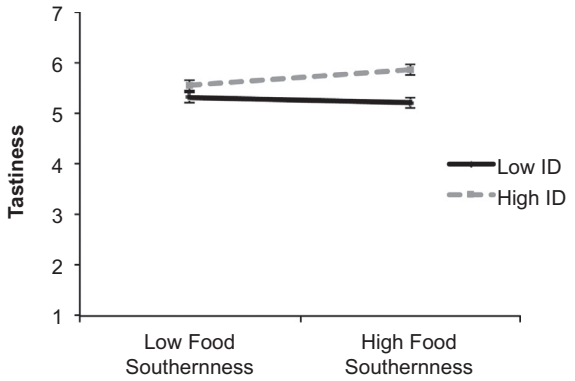

Fig. 1. Food Southernness × Identification interaction on anticipated food tastiness. Highly identified Southerners expected Southern foods to be tastier than non-Southern foods. The plot shows predicted values and standard errors around predicted values for high and low identifiers, as estimated from regression analysis. High and low identifiers are plotted one standard deviation above and below the mean (different lines), respectively, as is Southernness of foods (x-axis).

When order of the social identification scale (before = −1, after = 1) was entered as a predictor, it did not moderate the Food Southernness × Identification interaction, $b = 0.02$, $SE = 0.03$, $t(1812) = 0.80$, $p = 0.43$, $R_{(m)}{}^2 = 0.027$, $R_{(c)}{}^2 = 0.14$. Finally, as an exploratory analysis, we separated subcomponents of the social identification scale corresponding to group level self-investment and group-level self-definition, allowing us to test the impact of more motivational components of social identification as opposed to perceived similarity with group members. Although the components were highly correlated, $r(77) = 0.62$, $p < 0.001$, when both components were simultaneously entered into the model, *self-investment* interacted with food Southernness, $b = 0.10$, $SE = 0.03$, $t(1813) = 3.11$, $p = 0.002$, whereas *self-definition* did not, $b = -0.03$, $SE = 0.03$, $t(1813) = -0.87$, $p = 0.39$, $R_{(m)}{}^2 = 0.027$, $R_{(c)}{}^2 = 0.13$. This finding suggests the association with social identification was driven by motivational components of social identity as opposed to perceived similarity with the in-group.

4. Discussion

Study 1 provided preliminary support for our general hypothesis that social identification is associated with anticipated food pleasantness: participants high on identification with Southerners expected that foods more representative of Southern identity would be tastier. In

[1] We considered two alternate models to test whether results were robust to adjusting for relevant variables. First, we adjusted for consensus ratings of perceived healthfulness and fillingness, because these variables can also influence food preferences (Hare et al., 2009; Tang, Fellows, & Dagher, 2014). All inferences for the interaction and simple effects remained the same, $R_{(m)}{}^2 = 0.09$, $R_{(c)}{}^2 = 0.22$. Second, we further adjusted for consensus ratings of tastiness, in order to test an individual's idiosyncratic tastiness ratings while accounting for the fact that some foods (e.g., pizza) were perceived as tastier than others (e.g., salad) by all participants, $R_{(m)}{}^2 = 0.26$, $R_{(c)}{}^2 = 0.46$. Inferences for the interaction and the simple effect for high-identifiers remained the same; the simple effect of food Southernness for low-identifiers became significantly negative, $b = -0.07$, $SE = 0.02$, $t(1662) = -2.75$, $p = 0.006$, indicating that low-identifiers evaluated Southern foods more negatively than non-Southern foods.

particular, motivational components of long-term social identification, rather than perceived similarity with the group, predicted evaluation. This pattern of results indicates that the motivational significance of a particular social identity to an individual predicts that person's hedonic evaluation. Indeed, for those low on identification with Southerners, the point estimate for the effect of Food Southernness on anticipated tastiness was in the *negative* direction. When adjusting for consensus ratings of tastiness, which may more robustly reveal an individual's idiosyncratic effects, this negative slope was significant. Therefore, the positive or negative motivational significance of a group to an individual may contribute to positive or negative evaluations of foods. This finding offers initial evidence for a possible link between identity, evaluation, and motivation.

5. Study 2: identity salience influences expected food pleasantness

In Study 1, we measured individual differences in social identification. However, one limitation is that effects could be caused by third variables such as exposure to social identity-relevant foods (Pliner, 1982). To test a causal role of social identity, we primed Southern participants with either their personal or Southern identity, after which they completed the task described in Study 1.

It is worth noting that in Study 1, the order in which participants completed the social identification scale did not impact ratings. Although the presence of a social identification scale might have primed social identity, the absence of an identity scale would not have reduced the salience of Southern identity among participants with chronically high identity salience. For this reason, the absence of a social identity scale is not equivalent to the presence of a personal identity prime. By priming both social and personal identities in different conditions, Study 2 presented a stronger and more direct manipulation of identity salience that has been validated in previous research (Ambady, Paik, Steele, Owen-Smith, & Mitchell, 2004).

5.1. Method

5.1.1. Participants

One hundred fifty-one participants were recruited via MTurk for a survey advertised as recruiting people from the Southern United States. Participants were compensated $0.60, and the median task duration was 12.42 min (interquartile range = 9.78–15.84 min). Sample size was determined heuristically as 150 participants given the between-participants manipulation and within-participant repeated measures, and the possibility of necessary participant exclusions. An additional participant completed the survey without requesting payment. Using the same exclusion criteria as in Study 1, 44 participants were excluded, leaving 107 participants for analysis (mean age = 37.30, SD = 12.85 years; 56 males). Participants were again excluded on the basis of dietary restrictions (N = 17), geographic criteria established in Study 1 (N = 8), and not passing an attention check question (N = 10); an additional participant did not meet dietary restrictions and did not meet geographic criteria, and an additional seven participants did not meet geographic criteria and failed the attention check. Finally, in Study 2, an additional participant was excluded for not completing the priming manipulation questions. Participants gave informed consent in accordance with approval from the NYU University Committee on Activities Involving Human Subjects.

5.1.2. Stimuli

Stimuli were identical to those used in Study 1.

5.1.3. Procedure

Procedures were identical to those described in Study 1, with the following exceptions. First, participants performed an identity-priming task before completing any food ratings (adapted from Ambady et al., 2004; Coppin et al., 2016). Specifically, participants were randomly assigned to one of two conditions, in which we primed either their Southern identity (N = 47) or personal identity (N = 61). We primed participants by asking them to list and describe two things done relatively often and two things done relatively well by either *Southerners* (Southern identity condition) or *themselves* (personal identity condition); asking them to list two positive and two negative traits associated with Southerners (Southern identity condition) and with themselves (personal identity condition); and asking them to list a time they exhibited one of these traits. The priming manipulation was designed to make their Southern or personal identity accessible without threatening or affirming the identity; we asked participants to report both positive and negative traits to avoid selectively enhancing positive or negative valence of the primed identity. Finally, participants completed the measure of collective identification at the *end* in Study 2 (α = 0.95, M = 3.45, SD = 0.97), rather than counterbalanced as in Study 1, so that it could not activate Southern identity before completion of food ratings among participants in the "personal identity" condition. We did not observe a significant difference between identification in the "personal prime" condition (M = 3.58, SD = 0.90) and the "Southern prime" condition (M = 3.27, SD = 1.03), $t(105) = -1.66$, $p = 0.10$, $d = -0.32$.

5.2. Results

We tested whether identity salience (manipulated) and strength of identification (measured) jointly impacted evaluations of food tastiness. We again analyzed participants' tastiness ratings as a function of consensus ratings of food Southernness, identification, and their interaction. Again, we observed variability across foods in consensus ratings of Southernness (M = 4.56, SD = 1.67, range = 2.02–6.57) and healthfulness (M = 3.97, SD = 1.70, range = 1.76–6.65); consensus ratings of Southernness and healthfulness were not significantly correlated across foods, $r(22) = -0.11$, $p = 0.60$. Different from Study 1, we included prime condition (-1 = Southern identity, 1 = personal identity) and its interactions with social identification and food Southernness as predictors. The model allowed a random intercept; the random slope for food Southernness was close to zero and did not improve model fit, and so was excluded to facilitate model convergence. To test simple effects of prime condition, we created dummy codes for the condition variable so that the desired reference group corresponded to zero. To test simple slopes of food Southernness at different levels of identification, we re-centered identification one standard deviation above and below the mean (Aiken & West, 1991).

Replicating Study 1, we found a Food Southernness × Identification interaction with expected tastiness as the dependent measure, $b = 0.10$, $SE = 0.02$, $t(2455) = 5.20$, $p < 0.001$. However, we also hypothesized that prime condition would change the relationship between social identification and Food Southernness in predicting expected tastiness. Supporting this hypothesis, the aforementioned two-way interaction was qualified by a Prime Condition × Food Southernness × Identification interaction, $b = -0.07$, $SE = 0.02$, $t(2455) = -3.60$, $p < 0.001$ (Fig. 2). The fixed effects explained 4% of the variance in the data, $R_{(m)}^2 = 0.04$, and the fixed and random effects jointly explained 16% of the variance, $R_{(c)}^2 = 0.16$. Replicating the results of Study 1, simple effects analysis revealed that those in the Southern identity condition showed a Food Southernness × Identification interaction, $b = 0.17$, $SE = 0.03$, $t(2455) = 6.18$, $p < 0.001$. Specifically, those higher on identification expected Southern foods to be tastier, $b = 0.08$, $SE = 0.04$, $t(2455) = 2.01$, $p = 0.04$, whereas those lower on identification expected Southern foods to be less tasty, $b = -0.24$, $SE = 0.04$, $t(2455) = -6.87$, $p < 0.001$. In contrast, participants in the personal identity condition did not show a Food Southernness × Identification interaction, $b = 0.03$, $SE = 0.03$, $t(2455) = 1.14$, $p = 0.25$; both those high and low on identification showed negative simple effects of Food

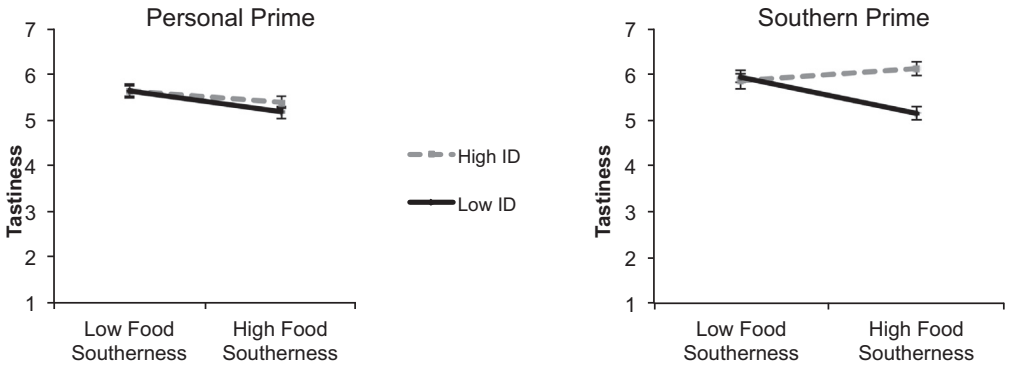

Fig. 2. Prime Condition × Food Southernness × Identification interaction on anticipated food tastiness. In the Southern prime condition, those who identified highly as Southerners were more likely to evaluate relatively more Southern foods as tastier, whereas participants in other cells evaluated Southern foods more negatively. The plot shows predicted values and standard errors around predicted values for high and low identifiers in each condition, as estimated from regression analysis. High and low identifiers are plotted one standard deviation above and below the mean (different lines), respectively, as is Southernness of foods (x-axis).

Southernness (high-identifiers: $b = -0.08$, $SE = 0.03$, $t(2455) = -2.34$, $p = 0.02$; low-identifiers: $b = -0.14$, $SE = 0.04$, $t(2455) = -3.58$, $p < 0.001$).[2] In other words, identity primes altered the relationship between social identification and evaluation of Southern foods: only high-identifying individuals primed with Southern identity, as opposed to personal identity, expected Southern foods to be more tasty.

As in Study 1, we separated the social identification scale into components of group-level self-investment ($\alpha = 0.95$, $M = 3.48$, $SD = 1.09$) and group-level self-definition (SD: $\alpha = 0.79$, $M = 3.35$, $SD = 0.92$) in a secondary analysis. Although the two components were highly correlated, $r(105) = 0.64$, $p < 0.001$, we entered both into the model simultaneously. We again found that self-investment showed the two-way interaction with food Southernness, $b = 0.10$, $SE = 0.02$, $t(2453) = 4.41$, $p < 0.001$, replicating Study 1. This interaction was qualified by a three-way interaction with prime condition, $b = -0.05$, $SE = 0.02$, $t(2453) = -2.03$, $p = 0.04$. In contrast, self-definition did not show the two-way interaction, $b = -0.02$, $SE = 0.03$, $t(2453) = -0.61$, $p = 0.54$, or the three-way interaction, $b = -0.01$, $SE = 0.03$, $t(2453) = -0.32$, $p = 0.75$. (In this model, fixed effects accounted for 4.9% of the variance in the data, while fixed and random effects jointly accounted for 15.9% of the variance.) These data again suggest that the effects of identification may have been driven by the motivational components of social identity, as opposed to perceived similarity to fellow group members.

6. Discussion

Replicating and extending the results of Study 1, both identity salience and social identification influenced expected food pleasantness, which subsequently shaped food preferences. When primed with Southern (versus personal) identity, strongly identified Southerners expected Southern foods to be tastier than non-Southern foods, whereas those with low identification expected Southern foods to be less tasty. These findings again reveal that the motivational significance of a particular social identity to an individual shapes the positive or negative impact of social identity on evaluation. Indeed, we found that those with low social identification had more negative evaluations of identity-relevant foods.

Importantly, because identity salience was manipulated, these data provide initial evidence that social identity can causally influence the relationship between individual differences in social identification and anticipated food pleasantness. Given that social identification was measured, we cannot rule out the possibility that social identity salience caused food preferences to influence levels of social identification, rather than the reverse. Nonetheless, these data are consistent with the idea that short-term social identity salience and long-term social identification influence evaluations of food pleasantness.

7. Study 3: identity salience influences experienced food pleasantness

Study 3 examined the influence of social identity on *experienced*, as opposed to *expected*, food pleasantness, testing whether social identity effects extend to evaluation during actual food consumption. We also expanded our assessment to more directly assess pleasantness as well as other dimensions of taste. Finally, we studied a different social identity to help assess the generality of social identity effects. Specifically, we manipulated identity salience by priming Canadian participants with either personal or Canadian identity. Thereafter, participants tasted samples of maple syrup and honey and rated the pleasantness of each food. Although both foods are similarly sweet, they differ in their social identity associations: whereas Canada is world famous for its maple syrup—and even boasts a national strategic maple syrup reserve in case of syrup-related emergencies (see Van Praet, 2015)—honey has no particular association with Canada.

7.1. Participants

Eighty-five participants took part in this experiment in Ottawa—the national capital of Canada. Participants were recruited in a popular public square and compensated with a beverage (either water or soda).[3] Sample size was determined using a power analysis to detect a medium effect size. Seven participants were excluded because they were under 18, four because they were not Canadian citizens, one because he/she tasted the samples before filling the priming questionnaire, one because he/she was given twice the same sample rather than one of each, and one because the condition the participant was in was not recorded. As a result, data from 71 Canadian participants were included in the analyses (mean age = 37.30 years, $SD = 12.85$ years; 56 males). An additional four participants were excluded from analyses of pleasantness, because they did not provide ratings for honey ($N = 2$), syrup ($N = 1$), or both (N = 1). Participants gave informed consent in accordance with approval from the Carleton University Research Ethics Board.

[2] We tested the same alternate models as described in Study 1. When we adjusted for perceived healthfulness and fillingness, $R_{(m)}^2 = 0.07$, $R_{(c)}^2 = 0.20$, we found the same pattern of three-way and two-way interactions, although the simple slope of Food Southernness among high-identifiers primed with group identity was not significant, $b = 0.06$, $SE = 0.04$, $t(2379) = 1.48$, $p = 0.14$. However, when we further adjusted for consensus ratings of tastiness, $R_{(m)}^2 = 0.21$, $R_{(c)}^2 = 0.41$, we observed a significant simple effect of Food Southernness among high-identifiers primed with social identity, $b = 0.19$, $SE = 0.04$, $t(2389) = 5.06$, $p < 0.0001$, and we did not observe significant negative effects of Food Southernness among those primed with personal identity, whether high-identifiers, $b = 0.03$, $SE = 0.03$, $t(2372) = 0.96$, $p = 0.34$,or low-identifiers, $b = -0.03$, $SE = 0.03$, $t(2384) = -0.92$, $p = 0.36$.

[3] We did not record whether participants chose water or soda. Although expectations of sweetness and caloric intake can modulate metabolic responses (Crum, Corbin, Brownell, & Salovey, 2011), the samples of honey and sugar were intentionally selected to have similar levels of sweetness and identical caloric content. It is therefore unlikely that expectations of water versus soda would alter relative responses to syrup versus honey.

7.2. Stimuli

Two food samples were used: maple syrup and honey. These foods were differentially associated with Canada, but closely matched in terms of calories and sweetness. To ensure similar caloric and sweetness values, we delivered 20 mL of honey (containing 16 g of sugar and 60 cal), and 18 mL of maple syrup (containing 14 g of sugar and 60 cal). As such, calories were kept constant, and honey was slightly sweeter than maple syrup, providing a more conservative test of our hypothesis.

7.3. Procedure

First, participants completed demographic questions related to their gender, age, citizenship and place of residency. They were then asked to rate their hunger, fullness and thirst on a continuous scale from "not at all hungry/full/thirsty" to "never been more hungry/full/thirsty." Participants also indicated the time of their last meal and its composition.

Second, participants performed the identity-priming task described in Study 2 (Ambady et al., 2004). Participants were randomly assigned to one of two priming conditions: Canadian identity (N = 37) and personal identity (N = 34). As in Study 2, the questionnaires asked participants to list and describe two things they do relatively often and two things they do relatively well (personal identity) or two things Canadians do relatively often and two things Canadians do relatively well (Canadian identity). Participants were also asked to list one positive and one negative trait of the relevant identity and describe a time when a Canadian person (Canadian identity) or they (personal identity) exhibited this trait. Finally, participants were asked to draw the Canadian flag (Canadian identity) or themselves (personal identity).

Third, participants were given a sample of honey and a sample of maple syrup (in a pseudo-randomized order); samples were placed in plastic cups before the study began, and participants were blind to the substance contained in each. There were no notable visual differences in color between the two substances. Participants were then asked to respond to a series of items by placing a tick on a 168-mm line. Specifically, for each product participants were asked to report its familiarity (anchored at *not familiar at all* and *very familiar*), intensity (anchored at *not intense at all* and *very intense*), pleasantness (anchored at *not pleasant at all* and *very pleasant*), sweetness (anchored at *not sweet at all* and *very sweet*), bitterness (anchored at *not bitter at all* and *very bitter*), saltiness (anchored at *not salty at all* and *very salty*) and sourness (anchored at *not sour at all* and *very sour*). Judgments were scored in millimeters, based on the location on the line the participant indicated. Pleasantness served as our primary measure of food evaluation, as pleasantness is considered the most important dimension of chemosensory perception (see Yeshurun & Sobel, 2010).

Next, participants were asked the extent to which they agree with the following four statements on a 7-point Likert scale (anchored at 1 = *strongly disagree* and 7 = *strongly agree*): "*I like the product*", "*I think the product tastes good*", "*I didn't like eating the product*", "*I would like to consume this product at the end of the experience*" (honey: α = 0.89, M = 3.98, SD = 1.66; syrup: α = 0.86, $\underline{M}$ = 4.68, SD = 1.62). Participants were asked to guess what the sample was and how much they would be willing to pay for a small (100 mL) bottle of this product. The procedure was repeated with the second product. The participants were then asked which product they preferred, if they had any pre-existing preference for one of the products, and if so, which one.

Fourth, participants were asked the extent to which they associated maple syrup and honey with Canada, and completed a Canadian identity questionnaire (Cameron, 2004) using a 7-point Likert scale anchored at "strongly disagree" and "strongly agree" (α = 0.73, M = 5.53, SD = 0.82). Self-reported identification did not differ significantly across the "personal identity" condition (M = 5.51, SD = 0.82) and the "Canadian identity" conditions (M = 5.54, SD = 0.84), $t(69) = 0.12$, $p = 0.91$, $d = 0.03$.

7.4. Results

To confirm that maple syrup more than honey is associated with Canada, we conducted a 2 (*Prime condition*: Canadian identity, personal identity) × 2 (*Product*: maple syrup, honey) repeated measures Analysis of Variance (ANOVA) on ratings of association with Canadian identity. We treated product as a categorical factor in this and all subsequent analyses, rather than as a continuous predictor as in Studies 1 and 2, because there were only two products tested in Study 3. This analysis only revealed a main effect of product, $F(1, 69) = 98.95$, $p < 0.001$, $\eta_P^2 = 0.59$, confirming that maple syrup (M = 6.21, SD = 1.04) was indeed perceived as more strongly associated with Canada than honey (M = 3.83, SD = 1.80), regardless of condition; the interaction with condition was not significant, $F(1,69) = 2.22$, $p = 0.14$, $\eta_P^2 = 0.03$.

7.4.1. Hunger, fullness and thirst levels before the start of the experiment

To test whether there were any differences between conditions in hunger, fullness and thirst levels prior to priming, we performed a 2 (*Prime condition*: Canadian identity, personal identity) × 3 (*Internal state dimension*: hunger, fullness, thirst) repeated measures ANOVA on initial state. The interaction of Condition × Internal state dimension was not statistically significant, $F(2, 136) = 1.97$, $p = 0.14$, $\eta_P^2 = 0.03$, and there was no main effect of condition, $F(1,68) = 1.53$, $p = 0.22$, $\eta_P^2 = 0.02$. Therefore, we found no evidence for any internal state differences between experimental conditions prior to identity priming.

7.4.2. Social identity priming alters experienced pleasantness of identity-relevant foods

Our central hypothesis was that social identity priming would influence experienced pleasantness while consuming social identity-relevant foods. We therefore conducted a 2 (*Prime condition*: Canadian identity, personal identity) × 2 (*Product*: maple syrup, honey) repeated measures ANOVA on pleasantness ratings made after tasting each product. We found a main effect of product, $F(1, 65) = 14.72$, $p < 0.001$, $\eta_P^2 = 0.19$, such that our Canadian participants preferred maple syrup to honey overall. More importantly for our hypotheses, this effect was qualified by a marginally significant interaction with identity priming, $F(1,65) = 3.09$, $p = 0.08$, $\eta_P^2 = 0.05$—a moderate effect size, indicating that the relative pleasantness of honey and syrup depended on prime condition (Fig. 3). Observed power to detect this interaction was 0.41, indicating modest power to detect the effect.

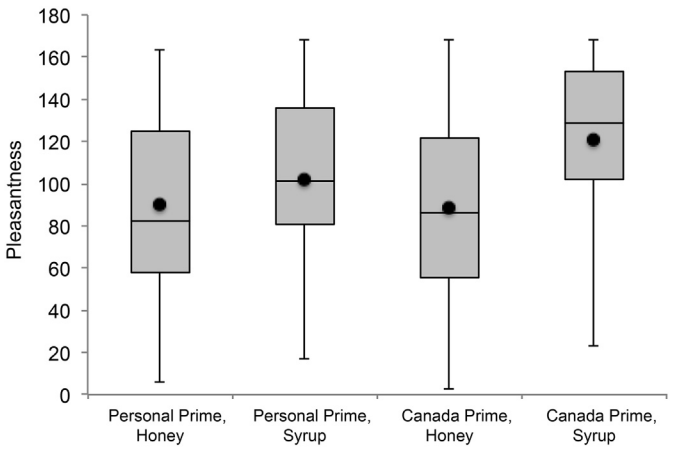

Fig. 3. Prime Condition × Food Product interaction on experienced food pleasantness. Canadians primed with their Canadian identity had relatively higher pleasantness ratings after consuming maple syrup compared to honey. Pleasantness was indicated by marking a 168 mm line anchored at "*Not pleasant at all*" and "*Very pleasant.*" Whiskers indicate the full range of scores in each condition. Boxes indicate the second and third quartiles, with medians indicated by the divide between those quartiles and means indicated by circles within the boxes.

Pairwise tests revealed that participants in the Canadian identity prime condition significantly preferred maple syrup (M = 121.11, SE = 6.64) over honey (M = 88.26, SE = 7.28), $F(1, 65) = 16.91$, $p < 0.001$, $\eta_P^2 = 0.21$, whereas participants in the personal identity prime condition did not significantly prefer maple syrup (M = 102.34, SE = 7.15) over honey (M = 90.13, SE = 7.84), $F(1, 65) = 2.01$, $p = 0.16$, $\eta_P^2 = 0.03$. Additionally, pleasantness ratings of maple syrup showed a marginally significant increase in the Canadian identity condition relative to the personal identity condition, $F(1, 65)$ 3.70, $p = 0.06$, $\eta_P^2 = 0.05$. Therefore, these results indicate that identity salience altered the relative pleasantness of maple syrup and honey, such that those primed with Canadian identity evaluated the taste of maple syrup as more pleasant relative to honey.

To test whether these effects were specific to pleasantness, we next examined taste dimensions. Similar analyses on taste variables did not show a Condition × Product interaction for ratings of sweetness, saltiness, bitterness, or sourness (all $ps \geq 0.16$; see Table S2 in Supplementary materials). This suggests that the effect of social identity priming did not extend to basic taste perception, but was instead specific to evaluations of pleasantness. Similarly, there was no interaction on ratings of intensity ($p = 0.30$; see Table S2). Finally, we did find an unexpected Condition × Product interaction on familiarity ratings, $F(1, 67) = 4.13$, $p = 0.046$, $\eta_P^2 = 0.06$; however, participants reported *more* familiarity with honey (M = 139.90, SD = 23.12) than maple syrup (M = 127.69, SD = 40.93) in the Canadian prime condition relative to ratings for honey (M = 122.27, SD = 47.15) and syrup (M = 133.33, SD = 29.06) in the personal condition. Therefore, intensity and familiarity also did not appear to account for the effects of identity salience on evaluations of pleasantness.[4]

Given that familiarity is known to influence food evaluations (Pliner, 1982), we conducted a secondary, exploratory analysis of pleasantness as a function of Condition and Product while adjusting for familiarity ratings. We used Generalized Estimating Equations, which fits a marginal model that accounts for repeated measures (Liang & Zeger, 1986). (We do not report a measure of standardized effect size for this analysis because, to our knowledge, such measures have not been well-developed for GEE.) When adjusting for familiarity, we observed a stronger Condition × Product interaction on ratings of food pleasantness, $b = 7.42$, $SE = 2.53$, $Wald\ \chi^2 = 8.59$, $p = 0.003$, 95% CI = [2.46, 12.39]. This finding may indicate that familiarity and identity-relevance had opposing effects on food evaluation.

Finally, we tested for a 3-way interaction of Condition and Product with social identification, as in Study 2, using GEE. We did not observe interactions with social identification, $b = -3.70$, $SE = 4.23$, $Wald\ \chi^2 = 0.76$, $p = 0.38$, 95% CI = [−12.00, 4.60]. To better understand this null effect, we compared social identification scores in Study 3 with those observed in Studies 1 and 2. Social identification scores in Study 3 were higher than scores in Studies 1 & 2 (see Supplemental materials and Fig. S2), indicating a restriction of range. Indeed, in Study 3, only three participants (4%) had social identification scores below the scale midpoint, which may indicate dis-identification, compared with 15 participants (15%) and 36 participants (33%) in Studies 1 and 2, respectively. In other words, the average participant in Study 3 was highly identified, explaining why we may not have observed a 3-way interaction. However, the data remain consistent with the hypothesis that high-identifiers would show a Condition × Product interaction. As in Study 2, individuals who are highly identified with a group should evaluate in-group foods more positively when primed with the relevant identity. Nonetheless, we cannot rule out the possibility that other differences in task design contributed to this difference (e.g., two ratings instead of 24; differences in measuring collective identification; or differences between experienced and expected pleasantness).

8. Discussion

Study 3 extended the findings of Studies 1 and 2 to *experienced* (compared with *expected*) pleasantness. Specifically, salience of Canadian identity influenced the relative pleasantness of maple syrup versus honey: those primed with Canadian identity found maple syrup more pleasant than honey. This effect of the social identity prime—which was manipulated—provides suggestive causal evidence for an effect of social identity on evaluation. Given that social identity salience was manipulated, these results support our general hypothesis that social identity may play a causal role in influencing food evaluation.

9. General discussion

Across three studies, we found evidence that social identity is connected to evaluations of hedonic food pleasantness. In Study 1, strongly identified Southerners expected that foods more representative of Southern identity would be tastier than non-Southern foods. In Study 2, only Southerners primed with Southern (versus personal) identity showed this effect. In Study 3, only Canadians primed with Canadian (versus personal) identity reported higher experienced pleasantness upon tasting maple syrup relative to honey. Overall, this research introduces a novel process by which social identity can influence food preferences, expanding the ways in which identity can influence consumer preferences (Akerlof & Kranton, 2000; Reed, 2004), motivation (Giguère, Lalonde, & Taylor, 2014; Oyserman et al., 2007; Wicklund & Gollwitzer, 1982), and cognition (Van Bavel, Hackel, & Xiao, 2014).

The current findings support the presence of a link between social identity and economic choice (Akerlof & Kranton, 2000), but add to it by demonstrating a psychological pathway that mediates this link. In Study 3, we found that experienced food pleasantness mediated a relationship between identity and willingness-to-pay for food products (see Supplemental analyses). The present work thus highlights the idea that consumer choice depends on the identity contexts in which it unfolds, because identity may alter evaluations of pleasantness. As a result, consumers may find foods more pleasant—and therefore may be more willing to pay for them—when advertisers present foods as congruent with a consumer's most valued identities. Thus, the current findings have important implications for models of decision-making, some of which have assumed that basic food properties like tastiness remain distinct from more abstract social concerns (Rangel, 2013). People are regularly embedded within social contexts that activate social identities (Turner et al., 1994), which can influence preferences. Food evaluation may therefore be viewed as a dynamic process dependent on social contexts, along with other forms of evaluation (Cunningham, Zelazo, Packer, & Van Bavel, 2007; Packer & Van Bavel, 2015). These contexts can include long-term factors that shape the meaning of a stimulus to an individual—for example, the long-term motivational relevance of an identity to a person—as well as short-term factors such as the extent to which a social identity is activated.

This research also extends recent work that has demonstrated the impact of social identity on basic perceptual and cognitive processes

[4] Although pleasantness is considered the primary dimension of chemosensory perception (Yeshurun & Sobel, 2010), we also collected Likert ratings of liking, disliking (reverse coded), taste, and whether participants would like to consume this product again. Upon averaging these items for honey (α = 0.89) and syrup (α = 0.86), these ratings showed a similar pattern of simple effects: syrup (M = 4.81, SD = 1.59) was preferred to honey (M = 3.93, SD = 1.71) in the Canadian prime condition, $F(1,69) = 7.35$, $p = 0.008$, $\eta_P^2 = 0.10$, but syrup (M = 4.55, SD = 1.67) was not significantly preferred to honey (M = 4.03, SD = 1.63) in the personal prime condition, $F(1, 69) = 2.51$, $p = 0.12$, $\eta_P^2 = 0.04$,. These ratings did not show a significant Condition × Product interaction, $F(1,69) = 0.60$, $p = 0.44$, $\eta_P^2 = 0.01$. While caution is warranted in interpreting a null effect, it is possible that the effects on experience related primarily to affective processes. Indeed, when wines are labeled as expensive as opposed to cheap, neural regions related to affective value (e.g., vmPFC and ventral striatum) mediate an effect of price on perceived pleasantness (Schmidt, Skvortsova, Kullen, Weber, & Plassmann, 2017). It is possible that the "pleasantness" measure in our study most directly addressed this affective component. But we treat this possibility as highly tentative.

beyond social evaluation (Coppin et al., 2016; Pandey et al., 2014; Shankar et al., 2013; Srinivasan et al., 2013; Van Bavel et al., 2011; Xiao & Van Bavel, 2012). Past work has left taste and flavor as a relatively unexplored domain for social identity. The observed effects in the present research suggest that social identification also has influence in the realm of evaluations of hedonic experience. That is, social identification influences evaluations of hedonic pleasantness, even in the absence of other people.

Results from the current research also highlight the importance of considering both long-term differences in social identification and short-term differences in social identity salience. Past research on identity and motivation has often examined either one or the other (Akerlof & Kranton, 200; Oyserman et al., 2007; Wicklund & Gollwitzer, 1982). We found that both factors influenced identity-driven evaluations of food pleasantness, and in Study 2, they interacted to predict evaluation. We did not observe this interaction in Study 3, in which our sample consisted of high-identifiers; however, the results of Study 3 are consistent with our theoretical viewpoint that high-identifiers would show a positive effect of identity salience. Nevertheless, the convenience sample in Study 3 had modest statistical power given the effect size observed (observed power = 0.41), and future research would be benefit from a high-powered replication. (Studies 1 and 2 had higher statistical power of 0.86 and 0.90, respectively, giving us greater confidence in the findings from those studies.[5]).

The effects of long-term social identification in Studies 1 and 2 were primarily driven by motivational components of social identification, rather than perceptions of similarity to the in-group. Although exploratory, this finding is consistent with recent work in which motivational investment in a group—but not perceived similarity to a group—predicted prosocial giving and neural markers of vicarious reward toward in-group versus out-group members (Hackel, Zaki, & Van Bavel, 2017). In that work, individuals high in group-level self-investment showed larger neural responses in ventral striatum—a region strongly linked to reward processing (Garrison, Erdeniz, & Done, 2013)—when they witnessed in-group (as opposed to out-group) members win money. Together, these findings suggest a nuanced person-by-situation interaction framework in which the long-term motivational relevance of a social identity to an individual may influence evaluation—especially when that social identity is activated.[6]

Consistent with this approach, we found that individuals low on social identification who were primed with Southern identity evaluated Southern foods more *negatively*. These participants disagreed with scale statements affirming identification with the group, suggesting that these participants had low identification or were *dis*-identified. This finding is consistent with past work suggesting that those low on group identification—particularly members of a stigmatized minority group—may react negatively to group categorization (Branscombe et al., 1999). This finding further highlights the importance of considering individual differences in the motivational meaning of a social group to an individual, rather than assuming group contexts will influence all individuals in the same manner.

Although we have focused on evaluations of in-group foods, social identity may also lead people to evaluate out-group foods more negatively—for instance, feeling disgust toward the appearance, smell, or (as assessed in the current research) taste of out-group foods. These visceral experiences may promote or maintain negative attitudes toward an out-group. If these evaluations also depend on social identification and identity salience, our results suggest ways to mitigate these negative evaluations. For instance, priming a superordinate identity might mitigate negative out-group judgments (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993) or implicit evaluations (Van Bavel & Cunningham, 2009). This possibility presents an interesting direction for future work.

Our findings reveal a possible bridge between social identity effects on evaluation and social identity effects on motivation. It is possible that enhanced evaluation of food pleasantness leads to increased incentive motivation to consume foods. Although we did not measure consumption behavior directly, we did collect measures of incentive motivation across studies (explicit ratings of "wanting" in Studies 1 and 2 and willingness-to-pay in Study 3;). These measures showed evidence of mediation: altered food evaluations mediated a relationship between social identity-relevance of foods and motivation to consume foods, consistent with a role for evaluation in guiding motivation (see Supplemental materials). These supplementary analyses should be viewed as preliminary, because mediation analysis cannot determine the direction of causality when variables are measured rather than manipulated (Spencer, Zanna, & Fong, 2005). It is possible that ratings of tastiness and desire for foods shared variance unrelated to the causal pathway we have proposed. In addition, we did not directly test consumption behavior. It is possible that other countervailing processes may guide consumption behavior—for instance, a perceived group norm to remain healthy. Therefore, an important direction for future research will be to test effects of long-term social identification and social identity salience on patterns of food consumption.

However, if social identity effects on evaluation of food can shape consumption, our findings have potential practical implications for healthy eating. Although many processes influence healthy eating, social identity may represent one influence that has a meaningful impact on a large scale. In particular, social identity may trigger positive evaluations of foods, which may lead people to consume more social identity-relevant foods regardless of the perceived health content. Indeed, we found that the impact of social identity remained when accounting for the perceived healthfulness of foods. Lay perceptions of healthfulness may differ from expert opinions (Bucher, Hartmann, Rollo, & Collins, 2017), limiting the extent to which our data may speak to actual healthy eating, but these data suggest that identity influences evaluation above and beyond people's own perceptions of healthfulness.

Most cultures are associated with a mix of healthy and unhealthy foods, but some are perhaps most strongly associated with unhealthy cooking, such as Southern identity or American identity. Although the present research was not designed to test health outcomes, we did observe a relationship between social identity effects and Body Mass Index (BMI) in Study 1, during which preferences were measured under natural conditions of social identity salience. Specifically, we computed the correlation between Food Southernness and expected tastiness within each participant's ratings (Fisher r-to-z transformed). These scores provide an index of individual differences in the relationship between food Southerness and tastiness.[7] We found a positive association between these scores and BMI, $b = 8.51$, $SE = 2.92$, $t(75) = 2.92$, $p = 0.005$, 95% CI = [2.71, 14.31], $R^2 = 0.10$ (Fig. S3). That is, people who expected Southern foods to be tastier were also more likely to have

[5] To estimate post-hoc statistical power for multi-level regressions in Studies 1 and 2, we used a bootstrap approach in the R programming language. We randomly resampled participants with replacement and refit the models over the course of 1000 simulations, creating a distribution of p values that could be expected with the sample size we used. We then calculated the proportion of p values below 0.05 for the key interaction in each study, providing an estimate of power to detect the effect in the population.

[6] It is worth noting that the self-investment subscale contains items that have an affective element—particularly items that assess "group-level satisfaction" (e.g., "It is pleasant to be a Southerner"). The affective nature of these items may explain why the self-investment subscale was positively associated with ratings of anticipated hedonic experience. However, the association held when excluding the group-level satisfaction items from the self-investment subscale (see Supplemental analyses). This result suggests that the importance of a group to individual members shapes the relationship between identity and evaluation.

[7] Two participants were excluded from this analysis because they did not have variance in tastiness ratings, meaning we could not calculate correlations between the two variables. For the Study 2 analysis, four participants were excluded. One did not have variance in tastiness ratings, one did not report height or weight, and two reported impossible heights or weights (169 in. or 8 lbs., respectively).

higher BMI scores. However, in Study 2, in which social identity salience was experimentally manipulated, this relationship was not observed, $b = 0.33$, $SE = 3.05$, $t(101) = 0.51$, $p = 0.61$, 95% CI = [−5.73, 6.38], $R^2 = 0.0001$. The present work did not test healthy eating directly, but this relationship offers an interesting avenue for future research.

Indeed, social identity cues may trigger *unhealthy* eating, much as gender cues in food packaging influence food preferences (Zhu et al., 2015). At the same time, social identity may be leveraged to promote *healthy* eating (Berkman, Livingston, & Kahn, 2017). For example, forging a connection between a meaningful and chronically salient social identity and a healthy food may enhance positive evaluations of that food. Alternatively, satiating or affirming social identity motives may reduce their influence on behavior (Wicklund & Gollwitzer, 1982). Although it is beyond the scope of the current research, it is possible that these manipulations may help people avoid unhealthy foods or avoid overeating.

10. Conclusion

The current research offers initial evidence that social identity can influence the *expected* and *experienced* pleasantness of food consumption. Past models of food preference have assumed that social concerns are dissociated from basic appetitive qualities of foods (Rangel, 2013). However, our research suggests that food evaluation may be influenced by the salience of a particular social identity, suggesting that the influence of social identity permeates to hedonic experience. In sum, this work suggests that evaluation can best be understood by considering the social contexts in which it takes place.

Author contributions

All authors contributed to research concept and design. Data collection was performed by L. M. Hackel (Studies 1 and 2) and M. J. A. Wohl (Study 3). L. M. Hackel performed the data analyses and drafted the manuscript, and G. Coppin, M. J. A. Wohl, and J. J. Van Bavel provided critical revisions. All authors approved the final version of the manuscript for submission.

Open Practices

Materials and data are available at https://osf.io/d2ytu/.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jesp.2017.09.007.

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