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(Not) Hungry for Something Different?: Hunger Intensifies the Need to Belong and
Reduces Uniqueness-Seeking

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Management

by

Jane Park

June 2021

Dissertation Committee:

Dr. Thomas Kramer, Chairperson

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Dr. Mingyu (Max) Joo

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The Dissertation of Jane Park is approved:

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ABSTRACT OF THE DISSERTATION

(Not) Hungry for Something Different?: Hunger Intensifies the Need to Belong and Reduces Uniqueness-Seeking

by

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Doctor of Philosophy, Graduate Program in Management
University of California, Riverside, June 2021
Dr. Thomas Kramer, Chairperson

Despite the association between affiliation tendencies and hunger, surprisingly little is known if and how hunger – a bodily feeling produced by a lack of food – informs the relative weight consumers place on satisfying their need for similarity versus their need for distinctiveness. We argue and show that high versus low hunger heightens consumers' self-protective motives, intensifying their need to belong, and in turn strengthening their preferences for options signaling similarity to others. In support of our theory, further results show that the effect is attenuated when others to whom to signal similarity are absent; that is, in private (vs. public) consumption settings. Moreover, consistent with the hypothesized role of the need to belong, the effect of hunger on uniqueness-seeking is attenuated when the need to belong has been fulfilled; that is, in group (vs. individual) consumption settings.

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INTRODUCTION

Our bodies regularly rely on food for energy, so it is a common occurrence that we feel hungry every few hours when our energy needs to be replenished. Thus, temporary hunger tells us when it is time to eat, and once satiated, hunger pangs disappear. Moreover, 48% of consumers who are trying to lose weight at any one point in time experience hunger (Santos et al. 2017) – the uneasy sensation occasioned by the lack of food (Merriam-Webster 2020) – and so do many others who are not on calorie-restricted diets but who temporarily lack access to food. While such temporary experiences of hunger are widespread and everyday occurrences, so too unfortunately is chronic hunger. Nearly 800 million people globally do not have enough food, with the vast majority living in developing countries (World Food Programme 2018). However, because of food insecurity, it is estimated that many adults and one in six children in the US also face hunger (Feeding America 2017). However, despite the prevalence of temporary and permanent hunger and their marketplace relevance, research on the effects of hunger on consumer behavior in general, and on preferences more specifically, is remarkably scarce. This gap in the literature is even more surprising given that hunger, as a temporary or permanent type of harm, is likely to heighten consumers' self-protection motivation – the “biologically significant motivational state that stimulates us to be functionally attuned to particular events in our social environment” (Kenrick et al. 2010, p. 63). Further, hunger-induced self-protection motives are particularly relevant to belongingness needs, given that evolutionarily, individuals needed to rely on others for

food when their individual foraging proved unsuccessful. The current research strives to address this lacuna in the literature by examining the informational role that hunger may play in consumer decision-making, or more specifically, in responses to options that may indicate a desire for affiliation (i.e., options signaling similarity to others) versus a desire for dissociation (i.e., options signaling uniqueness from others), as well as the underlying mechanism thereof.

Specifically, although much work has provided support for consumers' reliance on affective feelings as information (Pham 1998; Schwarz and Clore 1983), research has only more recently started to examine the downstream consequences of bodily feelings as information – that is, reflections of physical processes such as hunger or pain (Clore 1992; Greifeneder, Bless, and Pham 2011). Extant research in this area has found, for instance, that consumers use as input into product evaluations the bodily sensations evoked by stores' soft versus hard flooring (Meyers-Levy, Zhu, and Jiang 2009), and that needs for psychological warmth guide liking of romance movies in response to feelings of physical coldness (Hong and Sun 2012).

Based on research in evolutionary psychology that suggests that hunger may lead individuals to seek food from others (Kaplan et al. 2005) and increases affiliative tendencies (Schachter 1959), we seek to add to the literature on bodily feelings as information by examining the impact of feelings of hunger on consumer choice, or – more specifically – the relative weight consumers place on satisfying their need for distinctiveness from others versus their need for similarity to others (Snyder and Fromkin 1977). In particular, given that hunger renders people insecure about their surroundings

and increases their need for safety (Pettijohn II, Sacco Jr., and Yerkes 2009), we argue that stronger as compared to weaker feelings of hunger trigger a heightened self-protective drive that intensifies consumers' need to belong, and in turn shifts their preferences away from options signaling distinctiveness from, to those signaling similarity to, others.

Support for our theory comes from seven studies showing that consumers' express stronger preferences for options signaling similarity to others as feelings of hunger get stronger, and that this effect is driven by an intensified need to belong via a heightened self-protective motivation. Furthermore, theoretically-relevant boundary conditions supply additional empirical evidence, demonstrating that the effect of hunger on uniqueness-seeking is attenuated when others to whom to signal similarity are absent; that is, in private (vs. public) consumption settings. Moreover, consistent with the hypothesized role of the need to belong, the effect of hunger on uniqueness-seeking is also attenuated when the need to belong has been fulfilled; that is, in group (vs. individual) consumption settings.

This research seeks to make several contributions. First, we add to the literature on bodily feelings as information by demonstrating the effect of hunger on consumer behavior. Our findings bolster extant work (for a recent review, see Krishna and Schwarz 2014) showing that not only do consumers' emotional states, but also their physiological states, shape decision-making. Moreover, we provide a more nuanced understanding of how current states of feeling, including physiological states, can influence consumers' preferences. Second, we deepen the understanding of hunger in consumer behavior

research. Psychologists and consumer behavior researchers have begun to examine how hunger impacts judgment and decision-making processes, such as consumers' likelihood to engage in prosocial behavior (Aarøe and Petersen 2013) and to acquire non-food items (Xu, Schwarz, and Wyer 2015). Going beyond this prior work, we empirically demonstrate when and why feelings of hunger impact consumers' subsequent uniqueness-seeking, and in doing so, underscore the underlying roles played by self-protective and belonging motives. Finally, this work furthers our understanding of uniqueness-seeking in consumers' lives. Whereas prior work has identified situational (e.g., angular-shaped seating arrangements; Zhu and Argo 2013) and psychological (e.g., feeling social exclusion; Wan, Xu, and Ding 2014) influences on uniqueness-seeking, we add a novel, physiological, determinant of the relative weight consumers place on signaling their uniqueness versus similarity.

THEORETICAL BACKGROUND

Hunger as a Bodily Feeling of Information

Consumers often rely on their feelings as a source of information (Schwarz and Clore 1983, 1988). Feelings-as-information theory provides a general framework for conceptualizing the role of subjective experiences, including affective, cognitive, and bodily sensations, in human judgment (Schwarz 2012). For instance, when making evaluative judgments, consumers may hold a target in mind, ask themselves “How do I

feel about it?” (Schwarz and Clore 1983) and then infer their liking of it from their mood. In addition, processing fluency, describing the ease of cognitive operations, is experienced as pleasant, and this cognitive feeling may serve as a basis of judgment (Winkielman et al. 2003). Lastly, and most relevant for the current research, bodily feelings refer to feelings driven by physical or sensory experiences such as hunger or pain (Greifeneder et al. 2011; Schwarz and Clore 2007) serving as informational inputs to consumers’ judgments. For example, consumer marketplace responses can be guided by haptic feelings from the touch of a hand (Peck and Childers 2003), feelings of physical confinement due to aisle width (Levav and Zhu 2009) or ceiling height (Meyers-Levy and Zhu 2007), and context effects from soft (vs. hard) flooring (Meyers-Levy et al. 2009). Moreover, similar to people’s usage of affective feeling as judgmental inputs (Raghunathan and Pham 1999), recent research has shown that bodily feelings can activate motives shaping consumers’ decisions. For instance, feelings of physical coldness can induce a need for psychological warmth, guiding responses to romantic movies (Hong and Sun 2012). In contrast, feelings of physical warmth (vs. coldness) have been found to engender a greater desire for social closeness, increasing preferences for conformity to others (Huang et al. 2014).

Contributing to the aforementioned findings showing that bodily feelings impact decision-making, we explore the role of hunger in determining consumers’ subsequent desire to seek similarity to, rather than distinctiveness from others. Specifically, hunger is a state that consumers experience after missing a meal or not having enough food (Lozano, Crites, and Aikman 1999), increasing their desire to find nourishment while

temporarily inhibiting other unrelated concerns. In addition to engendering a longing for food, hunger may also result in a desire to acquire non-food items. For instance, experiencing hunger results in a greater desire for money, especially when it can be spent on food items (Briers et al. 2006). Hunger also drives people to seek out, and spend more money or time on, non-food-related items, such as binder clips (Xu et al. 2015).

The experience of hunger, of course, is not a recent phenomenon. Despite their individual foraging, our ancestors likely experienced states of hunger in which they were not able to feed themselves, motivating them to acquire food through other means (Kaplan and Gurven 2005). One strategy for individuals to satisfy their hunger might have been simply to take food from others, and research has shown that hunger may engender antisocial behavior to keep more resources and take more from others (DeWall et al. 2008). A second strategy for our hungry forefathers consisted of persuading others to give them food peacefully (Petersen et al. 2014), and indeed, peaceful food-sharing practices have existed for millennia, with large hunted animals being shared equally among group members (Gurven 2004). To induce others to share their food, hungry individuals will likely be motivated to display signals of cooperation and affiliation (Petersen et al. 2014), because such signals also indicate that the hungry individuals in the future may reciprocate and share their food with others. This argument is also consistent with Schachter (1959), who found that affiliative tendencies increased with increasing hunger.

One way in which consumers may seek or signal affiliation with others is by converging on in-group preferences (Berger and Heath 2007) and strategically selecting

options chosen or endorsed by a majority of others. However, it is currently unknown if hungry consumers will seek affiliation with others by signaling similarity in their choices. This lack in the literature is surprising, given the large body of work in both psychology and marketing investigating individuals' concurrent needs for uniqueness and for similarity (Lynn and Snyder 2002; Snyder and Fromkin 1977) as well as the documented marketing implications of consumers' reliance on products as sources of uniqueness (Tian, Bearden, and Hunter 2001).

Hunger and the Need for Uniqueness versus the Need for Similarity

Although consumers often seek similarity to others (Snyder and Fromkin 1977), they also desire to be distinctive and special. Whereas the former produces affiliation, empathy, and liking, the latter engenders self-esteem and social status (Lynn and Snyder 2002). As proposed by uniqueness theory (Snyder and Fromkin 1977), perceptions of excessive distinctiveness from others and of excessive similarity to others are both experienced as unpleasant, so that consumers desire a sense of moderate distinctiveness that balances the need for social acceptance with the need for uniqueness.

Research has provided evidence for individual differences and situational contexts driving the relative strength of uniqueness and similarity needs, as well as how they impact consumer preferences and how they are reflected in consumption decisions. For instance, consumers with a higher need for uniqueness are more likely to seek out more differentiated and less popular products (Tian et al. 2001), as well as scarce or

customized ones (Lynn and Harris 1997). Research has also shown that an individual's uniqueness-seeking tendencies can be influenced by physical and emotional experiences. For instance, people who feel confined in their personal space, such as being in a crowded room, are more likely to choose unique alternatives (Xu, Shen, and Wyer 2012). They are also more likely to choose minority-endorsed options in environments with angular (vs. circular) seating arrangements (Zhu and Argo 2013).

Yet despite their prevalence, feelings of hunger and their impact on the relative weight consumers place on seeking uniqueness versus similarity have not been systematically investigated (for an exception, see study 2 of Berger and Shiv 2011, which found students responding more favorably to distinct options when entering vs. leaving a dining hall). As we describe next, we propose that feelings of hunger inform consumers of uncertainty in their environment that heightens their self-protective motivation and intensifies their need to belong, which ultimately is reflected in a shift in preferences away from options signaling distinctiveness to those signaling similarity.

Hunger, Desire for Self-Protection, and Need to Belong

Feelings of hunger signal a lack of food, informing consumers of the potential for harm, which in extreme circumstances threatens survival. Feeling hungry makes people feel elevated uncertainty about their environment (Pettijohn II and Tesser 1999, 2003), and such instances of potential injury or uncertainty are likely to activate self-protective motives (Plutchik 1980) – goals to protect oneself from harm (Griskevicius et al. 2006) –

which drive behaviors to ensure survival. Although as a motivational orientation, self-protection may be chronically-salient among some people, it can also be situationally heightened by, for example, darkness (Schaller, Park, and Faulkner 2003). Indeed, research showing that hungry (vs. satiated) individuals prefer partners with more mature facial characteristics (Pettijohn II and Tesser 1999), who are slightly older and taller than they would ordinarily prefer (Pettijohn II et al. 2009) and with a bigger physical frame (Nelson and Morrison 2005) is consistent our proposition.

In addition to facilitating the sharing of food by others, many self-protective behaviors are aimed to create or maintain group cohesion (Taylor et al. 2000). For example, when threatened by a predator, people tend to stay close to each other to be less conspicuous (Hamilton 1971). Imitation or mimicry to avoid standing out may also serve a safety-enhancing function (Dijksterhuis, Bargh, and Miedema 2000), suggesting that a motive to protect oneself from danger may facilitate actions designed to fit in with others. Indeed, a related stream of work investigating the desire for affiliation when under threat has shown that those under threat have an increased desire to affiliate with others (Schachter 1959; Baumeister and Leary 1995). As well, Taylor and colleagues (2000) argued that responses to stress among females include nurturing activities and the creation and maintenance of social networks.

As discussed previously, self-protective behaviors when feeling hunger might also include affiliating with others who can share their food (Petersen et al. 2014). Thus, heightened self-protective motives are likely to engender an intensified need to belong, that is, the need to form and maintain relationships with others (Baumeister and Leary

1995). Although the need to belong is a fundamental need for affiliation with others (Baumeister and Leary 1995), research has shown that environmental cues can also temporarily activate the need to belong, in turn mediating subsequent responses (Zhu and Argo 2013). Given that social affiliation may be brought about by signaling interpersonal similarity (Lynn and Snyder 2002; Berger and Shiv 2011), the need to belong should lead consumers strategically and at least temporarily to express stronger preferences for less unique versus more unique options, since the former is more likely to signal similarity to others. In fact, research has shown that a more intense need to belong can prompt consumers not only to conform to others' opinions but also to seek out items that can minimize their uniqueness (Zhu and Argo 2013). However, although the shift in preferences expressed by consumers high versus low in hunger can be based on either a simple desire to indicate similarity with others or on an actual change in preferences, based on our theory we expect (and test in study 4) that the shift in preference reflects consumers wishing to signal similarity to others.

In sum, we hypothesize that consumers high (vs. low) in hunger are more likely to experience heightened self-protective motives, intensifying their need to belong, and strengthening their preferences for options signaling similarity to others. Seven studies tested our hypotheses. Studies 1a – 1c, conducted in the lab and field, and employing different manipulations of hunger, together revealed that stronger feelings of hunger indeed strengthened preferences for options signaling similarity while casting doubt on task involvement and mood as alternative explanations. Next, study 2 offered initial evidence that the observed effect was driven by a heightened self-protective motivation

resulting from stronger feelings of hunger. Study 3 extended the process evidence by demonstrating that uniqueness-seeking decreased among those high (vs. low) in hunger because of an intensified need to belong via a heightened self-protective motivation. The subsequent two studies relied on theoretically-relevant moderators to find additional evidence consistent with our hypothesis and underlying process. In particular, these studies found that stronger hunger engenders preferences for similarity-signaling options only in public (vs. private; study 4) and in individual (vs. group; study 5) consumption contexts.

STUDY 1A

Study 1a sought to provide initial evidence of the effect of hunger on uniqueness-seeking while controlling for differences in mood or task involvement as potential confounds. In particular, we tested if those high (vs. low) in hunger would be less likely to choose a more unique fitness class.

Method

We recruited 311 undergraduate students from two course sections (153 males; $M_{\text{age}} = 20.98$, $SD = 2.07$) one week before the date of the study to participate in an experiment to be conducted during class time in the following week. Those who had taken a similar study ($n = 54$) or failed to follow directions ($n = 10$) were excluded from

the study, leaving 247 participants (120 males; $M_{\text{age}} = 20.88$, $SD = 1.97$). The study consisted of a one-factor, two-level design (hunger: high vs. low). Students were informed that researchers were collecting information about the impact of hunger on food evaluations and on general behavior, and that they had been assigned at random to one of two conditions: low hunger or high hunger. Those in the low (high) hunger condition were then instructed to eat within at least two hours (not to eat within four hours) before the start of class.

To strengthen the hunger manipulation, on the day of the study, students from the course section representing the low hunger condition first completed a supposed taste evaluation task, which asked them to eat, and then to evaluate, a granola bar (where 1 = bad, dislike, unfavorable, negative; 9 = good, like, favorable, positive; $\alpha = .93$). As manipulation check, they then indicated how hungry they were currently feeling (where 1 = not at all, 9 = as hungry as I have ever felt); how full their stomach felt (reverse-coded; where 1 = not at all, 9 = very full); how strong their desire to eat was (where 1 = very weak, 9 = very strong); how much food they thought they could eat (where 1 = nothing at all, 9 = a large amount); and when they had eaten their last full meal (where 1 = a short time ago, 9 = a long time ago; Lowe et al. 2000; $\alpha = .88$).

Next, participants were told that the university recreation center was promoting two group fitness classes – Yoga and Pilates – and was interested in their opinions about them (adapted from Wan et al. 2014). To ascertain that the two fitness classes were liked equally, we first conducted a pretest with 125 undergraduate students (61 males; $M_{\text{age}} = 22.28$, $SD = 5.21$), who evaluated a Yoga class and a Pilates class ostensibly offered by

the university recreation center (where 1 = dislike, negative, unfavorable, bad; 9 = like, positive, favorable, good; $\alpha_{\text{Yoga}} = .96$ and $\alpha_{\text{Pilates}} = .97$), followed by demographic details. As expected, participants rated the Yoga ($M = 6.23$, $SD = 2.01$) and Pilates ($M = 6.10$, $SD = 2.02$) classes equal in attractiveness ($t(124) = 1.66$, $p = .10$).

Participants in the main study were then informed that a recent survey among students from their university showed that 20% preferred the Yoga class (minority-endorsed, more unique option) and 80% preferred the Pilates class (majority-endorsed, less unique option). Participants subsequently indicated their relative preference for the group fitness class they would like to join (where 1 = Pilates, 9 = Yoga). In contrast, participants in the course section representing the high hunger condition first rated their level of hunger (Lowe et al. 2000; $\alpha = .88$), then marked their relative preference of fitness class, followed by the supposed granola bar taste evaluation task. Finally, to ensure that the hunger manipulation did not impact task involvement or mood, all participants reported how involved, engaged, and interested they had been during the study (where 1 = not at all, 9 = very; $\alpha = .89$) and their current mood (where 1 = good mood, 9 = bad mood), followed by demographic details.

Results

Manipulation Check. As expected, participants reported feeling hungrier in the high ($M = 5.47$, $SD = 1.57$) versus low hunger condition ($M = 3.80$, $SD = 1.63$; $F(1, 245) = 66.46$, $p < .01$, $\eta^2 = .21$). Those in the high hunger condition ($M = 5.57$, $SD = 2.00$)

also evaluated the granola bar more favorably than those in the low hunger condition ($M = 4.38$, $SD = 1.66$; $F(1, 245) = 25.21$, $p < .01$, $\eta^2 = .09$), which is consistent with findings that feelings of hunger can enhance evaluations of food items (Lozano et al. 1999).

Uniqueness-Seeking. An ANOVA with relative preference for group fitness class as dependent variable and hunger condition as independent variable yielded a significant main effect ($F(1, 245) = 6.34$, $p = .01$, $\eta^2 = .03$), such that preferences for the more unique Yoga class among participants high in hunger ($M = 5.11$, $SD = 2.54$) were weaker than among their counterparts low in hunger ($M = 5.92$, $SD = 2.48$). Moreover, no significant differences in task involvement ($M = 6.12$, $SD = 1.79$ vs. $M = 6.21$, $SD = 1.76$; $F(1, 245) = .14$, $p = .71$, $\eta^2 = .001$) and mood ($M = 3.93$, $SD = 1.57$ vs. $M = 3.99$, $SD = 1.70$; $F(1, 245) = .10$, $p = .76$, $\eta^2 = .00$) were observed between the high and low hunger conditions, respectively. Lastly, participants high versus low in hunger still revealed significant differences in uniqueness-seeking when controlling for task involvement ($F(1, 244) = 6.35$, $p = .01$) and when controlling for mood ($F(1, 244) = 6.34$, $p = .01$).

STUDY 1B

Although our first study found differences in uniqueness-seeking between those high versus low in hunger, study 1b sought to examine if high hunger decreases uniqueness-seeking or if low hunger increases uniqueness-seeking, compared to a control

condition. We also wanted to assess the robustness of our findings by manipulating participants' feelings of hunger with a priming task and by extending them to a different product category (i.e., fitness classes).

Method

In exchange for a small payment, we recruited 296 Amazon MTurk panelists (123 males; $M_{\text{age}} = 38.10$, $SD = 13.81$). Those who failed attention check ($n = 50$) or did not follow manipulation instructions ($n = 34$) were excluded from the study, leaving 212 participants (78 males; $M_{\text{age}} = 37.93$, $SD = 14.39$), who were assigned at random to conditions in a study consisting of a one-level, three-factor (hunger: high vs. low vs. control) between-subjects design. After providing consent, participants completed an online questionnaire comprised of two seemingly unrelated studies. First, as a baseline measure of hunger, they indicated how hungry they currently felt (where 1 = not at all, 9 = as hungry as I have ever felt). They then proceeded to a manipulation adopted from Herman, Fitzgerald, and Polivy (2003; see Appendix A), which uses comparisons with peers' feeling of hunger and a writing task recalling an experience of hunger to manipulate feelings of hunger. Specifically, participants in the low hunger condition were informed that in a supposed previous study, peers had felt relatively full and had scored 1.5 on the baseline hunger scale. Our participants were then asked to recall and describe a time in which they were more satiated than their peers. In contrast, participants in the high hunger condition were told that in a supposed previous study, their peers had felt

relatively hungry, scoring 7.9 on the baseline hunger scale. Participants were then asked to recall and describe a situation in which they were hungrier in comparison to their peers. Those in the control condition were asked to recall and describe a purchase of office products. As a manipulation check, all participants then again marked how hungry they currently felt (where 1 = not at all, 9 = as hungry as I have ever felt).

Next, all participants proceeded to the second, purportedly unrelated study. They were told that a local gym was promoting two group fitness classes – Zumba and Indoor cycling classes – and that the gym was interested in their opinions about them (adapted from Wan et al. 2014). To ascertain that the two fitness classes were liked equally, we conducted a pretest with 117 MTurk panelists (44 males; $M_{\text{age}} = 39.72$, $SD = 12.73$), who evaluated a Zumba class and an Indoor cycling class ostensibly offered by the local gym (where 1 = dislike, negative, unfavorable, bad; 9 = like, positive, favorable, good; $\alpha_{\text{Zumba}} = .97$ and $\alpha_{\text{Indoor Cycling}} = .97$), followed by demographic details. As expected, participants rated the Zumba ($M = 5.61$, $SD = 2.36$) and Indoor cycling ($M = 5.78$, $SD = 2.20$) classes as equally attractive ($t(116) = .89$, $p = .38$).

Participants in the main study were then informed that a recent survey among local gym users showed that 23% preferred the Indoor cycling class (minority-endorsed, more unique option) and 77% preferred the Zumba class (majority-endorsed, less unique option). Subsequently, they indicated their relative preference for the group fitness class they would like to join (where 1 = Zumba, 9 = Indoor cycling), followed up demographic information.

Results

Manipulation Check. Baseline feelings of hunger before the hunger manipulation did not differ among the high hunger ($M = 4.87$, $SD = 2.06$), low hunger ($M = 4.62$, $SD = 2.21$), and control ($M = 4.19$, $SD = 2.43$) conditions ($F(2, 209) = 1.65$, $p = .19$, $\eta^2 = .02$). However, as expected, following the hunger manipulation, participants reported feeling hungrier in the high hunger ($M = 5.33$, $SD = 2.06$) than those in the low hunger ($M = 4.19$, $SD = 2.40$) and those in the control ($M = 4.29$, $SD = 2.42$; $F(2, 209) = 5.12$, $p = .007$, $\eta^2 = .05$) condition. Participants in the low hunger and control conditions did not differ in their level of hunger ($p = .87$).

Uniqueness-Seeking. An ANOVA with relative preference for group fitness class as dependent variable and hunger condition as independent variable yielded a significant main effect ($F(2, 209) = 3.66$, $p = .03$, $\eta^2 = .03$), such that participants in the high hunger condition ($M = 4.09$, $SD = 3.11$) reported a weaker preference for the more unique option than their counterparts in both the low hunger ($M = 5.47$, $SD = 3.09$, $p = .01$) and control conditions ($M = 5.14$, $SD = 3.12$, $p = .04$). No significant difference in preferences was observed between the low hunger and control conditions ($p = .53$).

STUDY 1C

To enhance external validity of our previous findings, study 1c sought to replicate the results in a field study, using the presence versus absence of an olfactory cue (i.e., the scent of fresh pizza) to manipulate levels of hunger. In addition, because in studies 1a and 1b the hunger manipulation and manipulation check preceded the dependent variable, one could argue that hunger might have been far more salient when participants indicated their preferences than it otherwise would have been. Therefore, following Briers et al. (2006), in the current study we use a more subtle manipulation of hunger: exposing versus not exposing participants at the study location to an olfactory food cue. Olfactory food cues have been shown to increase the craving for, and the desire to eat, the cued food (Federoff, Policy, and Herman 2003); thus, we expected that exposing participants to the scent of pizza would render them hungry.

Method

Over a four-day period, we set up a table from 10:30 am – 1:30 pm near the main entrance of the Business School at a U.S. university for a supposed study on consumer marketplace decisions. Passersby were asked to evaluate two types of pretzels (Snyders Mini-Pretzels and Snack Factory Mini Pretzel Crisps) and select one of them to take with them, in a study that employed a one-factor, two-level (olfactory hunger cue: present vs. absent) between-subjects design. In particular, on two of the four days, when the

olfactory cue was present, we prominently displayed pizza – freshly delivered several times during the study time period – on a nearby table, the smell of which was noticeable throughout the area. Alternatively, we did not display pizza during the two days when the hunger cue was absent.

Because of precautions related to the COVID-19 pandemic, we limited interaction between participants and experimenters, as well as contact with study materials. The two brands of pretzels were presented in their original packaging in front of a sign that informed participants that 23% (minority-endorsed, more unique option) or 77% (majority-endorsed, less unique option) of students from their university preferred that option. We alternated which pretzel option was presented as the minority- versus majority-endorsed one every 90 minutes. The pretzel selection of each participant was recorded and served as the dependent variable.

Results

A total of sixty-one individuals chose a bag of pretzels over the course of the four days. Consistent with our prediction, a binary logistic regression with choice of the majority-endorsed option as dependent variable and hunger condition as independent variable yielded the predicted significant simple effect ($b = -3.19$, $SE = 1.40$, $Wald = 5.21$, $p = .04$). That is, while 67.76% of participants in the control (olfactory cue absent) condition chose the majority-endorsed option, only 38.24% of participants did so when the olfactory hunger cue was present.

Discussion of Studies 1A – 1C

Taken together, the first set of studies provided support for our basic prediction that stronger feelings of hunger strengthen preferences for options signaling similarity to others (i.e., majority-endorsed options) relative to options signaling uniqueness from others (i.e., minority-endorsed options). Further, this effect was found to be produced by high hunger decreasing uniqueness-seeking, rather than low hunger increasing uniqueness-seeking.

In our next study, we sought to extend these findings and start examining the underlying process by testing if differences in self-protective motivation guide the effect of hunger on uniqueness-seeking, as hypothesized. In addition, we investigated potential alternative mechanisms underlying the effect. Specifically, one may argue that feelings of hunger engender feelings of uncertainty, leading consumers to seek out options that are associated with higher certainty (i.e., majority-endorsed options). Furthermore, we sought to test hunger-induced depletion as an alternative mechanism. In particular, an alternative account for the effect we found is that those high in hunger are mentally depleted and thus seek to avoid risky (i.e., minority-endorsed) options. We thus also assess feelings of uncertainty and feelings of ego-depletion in study 2.

STUDY 2

Method

In exchange for compensation, we recruited 267 MTurk panelists (125 males, $M_{\text{age}} = 37.51$, $SD = 12.95$). Those who failed attention check ($n = 38$) or did not follow manipulation instructions ($n = 20$) were excluded from the study, leaving 209 participants (83 males, $M_{\text{age}} = 37.84$, $SD = 13.43$). Participants were randomly assigned to conditions in a study with a one-factor, two-level (hunger: high vs. low) between-subjects design. After providing consent, participants were asked to complete a series of three ostensibly unrelated studies. The first study consisted of the same hunger manipulation as that used in study 1b. Next, as in study 1b, they were told that a local gym was promoting two group fitness classes – a Zumba and an Indoor cycling class – and that the gym was interested in their opinions about them (adapted from Wan et al. 2014). They were then informed that a recent survey among participants from the local gym showed that 23% preferred the Indoor cycling class (minority-endorsed, more unique option) and 77% preferred the Zumba class (majority-endorsed, less unique option). Participants subsequently indicated their choice for the group fitness class they would like to join (where 0 = Zumba, 1 = indoor cycling).

Lastly, participants proceeded to the third study ostensibly investigating opinions on various topics, and reported their self-protective motivation (Griskevicius et al. 2006; $\alpha = .89$) by rating to what extent they felt a threat, and to what extent they felt a desire to

protect themselves during the hunger writing task (where 1 = not at all, 7 = very much; $\alpha = .89$). They then responded to the feeling of uncertainty scale (Faraji-Rad and Pham 2017; $\alpha = .89$; see Appendix B1) and an ego-depletion measure (Fischer, Greitemeyer, and Frey 2008; $\alpha = .79$; see Appendix B2). Finally, all participants reported demographic details.

Results

Manipulation Checks. Baseline feelings of hunger before the hunger manipulation did not differ between conditions ($F(1, 207) = .22, p = .64, \eta^2 = .001$), such that participants reported similar levels of hunger in the high ($M = 4.91, SD = 2.39$) versus low ($M = 4.77, SD = 2.11$) hunger condition. More importantly, and as expected, following the hunger manipulation, participants reported feeling significantly hungrier in the high ($M = 5.27, SD = 2.37$) than low ($M = 4.34, SD = 2.34$) hunger condition ($F(1, 207) = 8.05, p = .01, \eta^2 = .004$).

Uniqueness-Seeking. A binary logistic regression with choice of group fitness class as the dependent variable and hunger condition as the independent variable yielded the predicted simple effect ($\beta = -.57, SE = .28, \text{Wald } \chi^2 = 4.12, p = .04$). That is, whereas 58.5% of participants low in hunger chose the minority-endorsed, more unique group fitness class, only 44.3% of their counterparts high in hunger chose this option. This

result thus again replicated our previous findings and provided support for our prediction that feeling hungry would decrease uniqueness-seeking.

Self-Protective Motivation. An ANOVA with self-protective motivation as the dependent variable and hunger condition as the independent variable yielded a significant effect ($F(1, 207) = 10.42, p = .001, \eta^2 = .004$), such that participants in the high hunger condition ($M = 2.72, SD = 1.89$) reported a higher self-protective motivation than those in the low hunger condition ($M = 1.96, SD = 1.45$). Further, when hunger condition as the independent variable and self-protective motivation as the mediator were entered into a regression to predict choice of group fitness class, hunger was no longer a significant predictor of group fitness class choice ($\beta = -.42, SE = .29, t = -1.42, p = .15$), whereas self-protective motivation remained significant ($\beta = -.22, SE = .09, t = -2.51, p = .01$). Lastly, PROCESS model 4 (Hayes 2013) with 5,000 bootstrap samples revealed that the indirect effect of hunger through self-protective motivation was significant, with the 95% confidence interval excluding 0 ($a_1b_1 = -.16, SE = .08, 95\% CI [-.35, -.03]$).

In addition, including feelings of uncertainty in the analyses ($\beta = .01, SE = .09, t = .16, p = .88$) did not reduce the significance of the simple effect of hunger ($\beta = -.57, SE = .28, t = -2.04, p = .04$). Furthermore, including ego-depletion in the analyses ($\beta = -.10, SE = .06, t = -1.78, p = .07$) did also not reduce the significance of the simple effect of hunger ($\beta = -.58, SE = .28, t = -2.06, p = .04$). Moreover, when including feelings of uncertainty, ego-depletion, and self-protective motivation as parallel mediators, only self-protective motivation ($\beta = -.19, SE = .09, t = -2.04, p = .04$), but not feelings of

uncertainty ($\beta = .04$, $SE = .09$, $t = .44$, $p = .66$) or ego-depletion ($\beta = -.06$, $SE = .06$, $t = -.99$, $p = .32$), reduced the significance of the simple effect of hunger ($\beta = -.46$, $SE = .29$, $t = -1.56$, $p = .12$).

Discussion

Study 2 once again demonstrated that consumers high in hunger respond more favorably to options signaling similarity than those low in hunger. Further, the current study extended our previous findings by showing that differences in participants' self-protective motivation mediates the effect of hunger on subsequent uniqueness-seeking. Lastly, we cast doubt on feelings of uncertainty and ego-depletion as alternative drivers of the effect of hunger on uniqueness-seeking. Although these results were consistent with our expectations, it is not yet clear if self-protective motivation indeed raises consumers' need to belong which drives the effect of hunger on uniqueness-seeking, as we propose. Thus, in our next study, we seek to provide evidence for the complete sequential process.

STUDY 3

Method

In exchange for a small payment, we recruited 253 Amazon MTurk panelists (158 males, $M_{\text{age}} = 34.06$, $SD = 9.06$). Those who failed attention check ($n = 23$) or did not follow manipulation instructions ($n = 22$) were excluded from the study, leaving 208 participants (129 males, $M_{\text{age}} = 34.59$, $SD = 9.43$). After providing consent, they completed a series of three, ostensibly unrelated, studies. For the high versus low hunger manipulation, participants completed the tasks as in studies 1b and 2, followed by the same manipulation check. We then assessed their self-protective motivation as in study 2 (Griskevicius et al. 2006; $\alpha = .89$).

Next, in an ostensibly unrelated task, participants were asked to imagine that they were buying coffee from a grocery store to drink and saw a promotion for two different coffee brands that were on sale – Starbucks and Caribou Coffee – presented in counterbalanced order. To ascertain that attitudes toward the coffee brands we used as stimuli in this study were similar, we conducted a separate pretest with 108 participants (35 males; $M_{\text{age}} = 40.06$, $SD = 12.92$). They first rated how attractive they found Starbucks and Caribou Coffee on a 9-point scale (where 1 = dislike, negative, unfavorable, bad; and 9 = like, positive, favorable, good; $\alpha_{\text{Starbucks}} = .98$, $\alpha_{\text{Caribou}} = .98$), and then reported demographic details. As expected, there were no differences in

attitudes towards Starbucks ($M = 6.27$, $SD = 2.32$) and Caribou Coffee ($M = 6.06$, $SD = 2.06$; $t(107) = 1.19$, $p = .24$).

Participants in the main study were then informed that a recent survey showed that 35% of people said they enjoyed Caribou Coffee (minority-endorsed, high-uniqueness option) and 65% of people said they enjoyed Starbucks (majority-endorsed, low-uniqueness option). They then indicated which coffee brand they would choose, which constituted our main dependent variable. Lastly, participants proceeded to the third study ostensibly investigating opinions on various topics, and reported their need to belong (where 1 = not at all, 9 = very much; Zhu and Argo 2013; $\alpha = .90$) on two items: “I experience a strong need to belong to a group,” and “I am motivated to belong to a group (e.g., follow the majority or norm).” Then, they provided demographic information.

Results

Manipulation Check. The measured baseline feeling of hunger before the manipulation task did not differ between conditions ($M = 6.22$, $SD = 2.25$ vs. $M = 5.85$, $SD = 2.26$ for the high vs. low hunger condition, respectively; $F(1, 206) = 1.36$, $p = .25$, $\eta^2 = .01$). As expected, after the hunger manipulation, participants reported feeling significantly hungrier in the high versus low hunger condition ($M = 6.45$, $SD = 2.22$ vs. $M = 5.74$, $SD = 2.57$; respectively; $F(1, 206) = 4.54$, $p = .03$, $\eta^2 = .02$).

Uniqueness-Seeking. We conducted a binary logistic regression with product choice (0 = Starbucks, 1 = Caribou Coffee) as dependent variable and hunger (0 = low, 1 = high) as independent variable. Supporting our hypothesis, result showed that compared to participants low in hunger (64.1%), those high in hunger (77.1%) were more likely to choose the option signaling similarity ($\beta = -.68$, $SE = .31$, Wald $\chi^2 = 4.83$, $p = .03$).

Self-protective Motivation. An ANOVA with self-protective motivation as dependent variable and hunger condition as independent variable showed a significant main effect ($F(1, 206) = 6.95$, $p = .01$, $\eta^2 = .03$), such that participants high in hunger ($M = 4.59$, $SD = 1.92$) expressed a higher self-protective motivation than those low in hunger ($M = 3.84$, $SD = 2.19$).

Need to Belong. An ANOVA with need to belong as dependent variable and hunger condition as independent variable revealed a significant main effect ($F(1, 206) = 4.86$, $p = .03$, $\eta^2 = .02$); participants high in hunger ($M = 6.36$, $SD = 2.18$) indicated a more intense need to belong than the counterparts low in hunger ($M = 5.67$, $SD = 2.38$).

Sequential Mediation. To test if self-protective motivation and need to belong sequentially drove the effect of hunger on uniqueness-seeking, we conducted a bootstrapping analysis with 10,000 samples (PROCESS model 6; Hayes 2013) with a dummy variable for hunger (0 = low, 1 = high) as independent variable, coffee choice as dependent variable, and self-protective motivation as first mediator and need to belong as

second mediator. Results revealed that participants high versus low in hunger had a higher self-protective motivation ($\beta = .75$, $SE = .28$), which in turn intensified their need to belong ($\beta = .70$, $SE = .06$), as the 95% CI for this indirect effect excluded zero (-.26, -.0002). The impact of hunger became only marginally significant when the two mediators were added ($\beta = -.58$, $SE = .32$, $p = .07$). Furthermore, changing the order of the two mediators yielded nonsignificant indirect effects (95% CI = -.08, .13).

Discussion

Study 3 replicated and extended our results in important ways. In particular, we found that the impact of hunger on uniqueness-seeking was guided by a more intense need to belong via heightened self-protective motives. Consistent with our theory, those high (vs. low) in hunger expressed stronger preferences for the option signaling similarity to others. However, this finding also suggest that hunger should no longer impact preferences for options signaling similarity when others are not present to receive the signal – that is, in private consumption settings. Furthermore, it is still unclear if participants' responses indeed reflect a desire to signal similarity with others following an intensified need to belong or an actual shift in preferences. If preferences for options low in uniqueness are produced by a desire to signal similarity to others, then we should find an effect of hunger on expressed preferences when participants expect their decisions to become public but not when they expect them to remain private. On the other hand, the public versus private decision context should not moderate the effect of hunger on

uniqueness-seeking if hunger actually shifts preferences toward options low in uniqueness.

STUDY 4

The objectives of study 4 were two-fold. Firstly, we sought to provide additional evidence consistent with the need to belong producing a desire to signal similarity to others by manipulating the decision context. Secondly, we sought to cast doubt on an alternative explanation based on differences in arousal. That is, one might argue that hunger produces high levels of arousal, which in turn may lead participants to seek out low-arousal, “safe” options rather than unique ones that could cause further arousal.

Method

In exchange for a small payment, we recruited 222 MTurk panelists (54 males, $M_{\text{age}} = 39.65$, $SD = 13.85$). Those who failed attention check ($n = 7$) or did not follow manipulation instructions ($n = 10$) were excluded from the study. Thus, 205 participants (48 males, $M_{\text{age}} = 39.73$, $SD = 13.94$) completed an online study consisting of several parts, ostensibly to evaluate products. Participants, who were assigned at random to conditions in a 2 (hunger: high vs. low) X 2 (decision-making setting: public vs. private) between-subjects design, first underwent the same hunger manipulation as in studies 1b, 2, and 3, followed by the hunger manipulation check.

Next, consistent with Simpson, White, and Laran's (2018) procedure to manipulate the decision-making setting, participants were told that researchers were interested in their donation preference for a local nonprofit organization. To ascertain that attitudes toward the two organizations we used as stimuli in this study were similar, we recruited a separate sample of 225 Amazon MTurk panelists (76 males; $M_{\text{age}} = 43.05$, $SD = 14.76$), who rated the level of attractiveness of two nonprofit organizations on the same three items as before ($\alpha_{\text{Food for the Hungry}} = .98$, $\alpha_{\text{Freedom from Hunger}} = .98$) and reported demographic details. As expected, participants rated the Food for the Hungry ($M = 6.93$, $SD = 1.65$) and Freedom from Hunger ($M = 6.99$, $SD = 1.68$) organization as equally attractive ($t(224) = -.87$, $p = .38$).

All participants in the main study were then instructed to imagine that they were thinking of donating to a nonprofit organization and were presented with two different nonprofit organizations to which they could donate – Food for the Hungry and Freedom from Hunger. They were also told that a recent survey had shown that 25% of people said they would like to donate to Freedom from Hunger (minority-endorsed, high-uniqueness option) and 75% of people said they would like to donate to Food for the Hungry (majority-endorsed, low-uniqueness option).

In the public context condition, participants were then informed “Please note, your contribution will be made public and your name will be listed as a donor on the fundraising campaign of a charity website.” Conversely, in the private setting condition, participants were told “Please note, your contribution will completely be anonymous and confidential.” Subsequently, they indicated their relative preference for the nonprofit

organization to which they would like to donate (where 1 = Food for the Hungry, 9 = Freedom from Hunger). Next, as manipulation check for the decision-making context, participants completed a four-item public-private measure along a seven-point scale (1 = not at all, 7 = completely; adopted from White, Simpson, and Argo 2014; Woolley and Risen 2020). Responses to the two items that measured the public context (“viewed by others,” and “discussed by others”; $\alpha = .81$) and responses to the two items that measured the private context (“private” and “confidential”; $\alpha = .91$) were averaged. Participants then completed a three-item arousal measure on a four-point scale (1 = definitely do not feel, 4 = definitely feel; $\alpha = .74$; adopted from Mayer and Gaschke 1988), which asked them to indicate the extent to which they felt fed up, jittery, or nervous. Finally, they reported demographic details as before.

Results

Manipulation Checks. We first computed a decision-making context index by subtracting mean ratings of the public context items from their mean ratings of the private context items, such that a relatively higher (lower) score indicated a greater perceived public (private) decision-making context. As expected, a 2 (hunger) X 2 (decision-making context) ANOVA only revealed a significant main effect of context ($F(1, 201) = 28.14, p = .00, \eta^2 = .12$), such that those in the public ($M = 1.83, SD = 2.90$) versus private ($M = -.50, SD = 3.15$) context were more likely to expect their responses to become public.

In addition, a 2 (hunger) X 2 (decision-making context) ANOVA revealed that baseline feelings of hunger before the hunger manipulation did not vary between the low and high hunger conditions ($M = 3.88$, $SD = 2.25$ vs. $M = 4.08$, $SD = 2.25$, respectively; $F(1, 201) = .63$, $p = .43$, $\eta^2 = .003$). Next, a 2 (hunger) X 2 (decision-making setting) ANOVA on hunger ratings after the hunger manipulation only revealed a significant main effect of hunger, such that participants in high ($M = 4.26$, $SD = 2.16$) versus low ($M = 3.63$, $SD = 2.32$) hunger condition expressed feeling hungrier ($F(1, 201) = 4.56$, $p = .03$, $\eta^2 = .02$).

Uniqueness-Seeking. We predicted an interaction between hunger and decision-making context, such that those high versus low in hunger who expected their responses to become public would be less likely to seek uniqueness, replicating our previous results. On the other hand, the effect of hunger should be attenuated or eliminated when respondents expect their responses to remain private. A 2 (hunger) X 2 (decision-making context) ANOVA revealed a significant main effect of hunger, such that participants high versus low in hunger expressed stronger preferences for the option signaling similarity ($F(1, 201) = 4.63$, $p = .03$, $\eta^2 = .02$). The main effect of decision-making setting was not significant ($F(1, 201) = 1.82$, $p = .18$, $\eta^2 = .009$). More importantly, the interaction between hunger and decision-making setting was significant ($F(1, 201) = 5.24$, $p = .02$, $\eta^2 = .03$; see figure 1). That is, participants high versus low in hunger in the public decision-making context indicated a weaker preference for the unique option ($M = 3.57$, $SD = .37$ vs. $M = 5.16$, $SD = .34$, respectively; $F(1, 201) = 9.94$, $p = .002$, $\eta^2 = .05$).

However, there were no differences in preferences as a function of hunger among those in the private context ($M = 4.88$, $SD = .32$ vs. $M = 4.83$, $SD = .40$ for the high vs. low hunger condition, respectively; $F(1, 201) = .01$, $p = .92$, $\eta^2 = .00$). Further, among those high in hunger, preferences for the unique option were significantly weaker in the public ($M = 3.57$, $SD = .37$) versus private decision-making context ($M = 4.88$, $SD = .32$; $F(1, 201) = 7.13$, $p = .008$, $\eta^2 = .03$). On the other hand, decision-making context did not impact preferences for the unique options among those low in hunger ($M = 5.16$, $SD = .34$ vs. $M = 4.83$, $SD = .40$ in the public vs. private decision context, respectively; $F(1, 201) = .41$, $p = .52$, $\eta^2 = .002$).

Moreover, no significant differences in arousal ($M = 1.74$, $SD = .73$ vs. $M = 1.69$, $SD = .74$; $F(1, 201) = .12$, $p = .74$, $\eta^2 = .001$) were observed between the high and low hunger conditions, respectively. Furthermore, no significant differences in arousal ($M = 1.76$, $SD = .72$ vs. $M = 1.66$, $SD = .74$; $F(1, 201) = .66$, $p = .42$, $\eta^2 = .003$) were observed between public and private decision-making setting conditions, respectively. Lastly, when controlling for arousal, a 2 (hunger) X 2 (decision-making context) ANOVA still revealed a significant main effect of hunger ($F(1, 201) = 4.49$, $p = .04$, $\eta^2 = .02$) and a significant interaction effect ($F(1, 201) = 5.75$, $p = .02$, $\eta^2 = .03$).

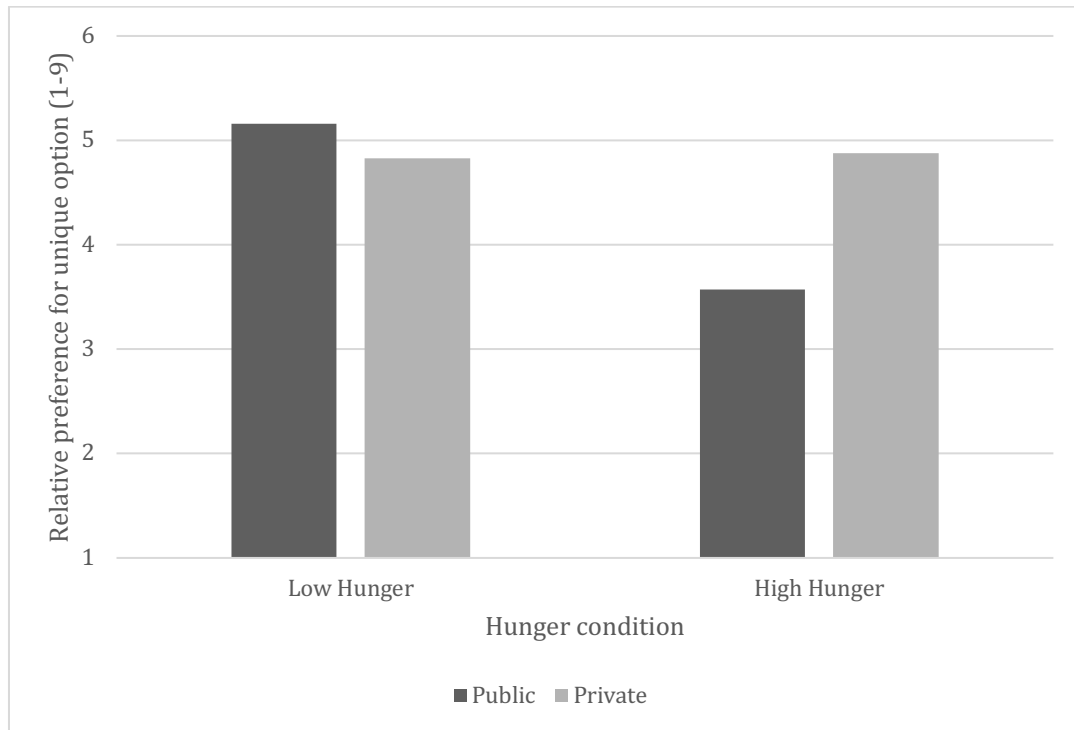


Figure 1 Study 4: Relative Preference for Unique Option

Discussion

The results of study 4 are consistent with our theory regarding the relationship between hunger and uniqueness-seeking. Specifically, in a public decision-making context, uniqueness-seeking decreased among participants high versus low in hunger, replicating our previous results. However, in the private decision-making setting, the association between hunger and uniqueness-seeking was attenuated, ostensibly because private consumption settings render similarity-signaling to others futile. Further, finding the effect in public but not in private settings is consistent with our proposition that the preferences hungry consumers express reflect a signal of their similarity to others, rather than an actual shift in their preferences.

Although these results are consistent with our theory that an intensified need to belong leads consumers to seek similarity to others, our next study sought to provide additional evidence for the underlying process based on the need to belong via moderation (Spencer, Zanna, and Fong 2005). In particular, if hunger indeed intensifies the need to belong, then the effect should be attenuated or eliminated when the need to belong has been satisfied – that is, in group (vs. individual) consumption contexts.

STUDY 5

Method

Two hundred and fifty-one students (140 males; $M_{\text{age}} = 21.45$, $SD = 3.39$) were recruited from a large university in the western U.S. Those who failed to attention check ($n = 10$) or did not follow manipulation instructions ($n = 15$) were excluded from the study, leaving 226 participants (127 males; $M_{\text{age}} = 21.48$, $SD = 3.35$), who were randomly assigned to conditions in a study with one-factor, two-level (decision-making context: individual vs. group) between-subjects design. After providing consent, they first indicated their level of hunger as in previous studies (Lowe et al. 2000; $\alpha = .87$).

Next, participants were instructed to imagine that they had decided to join an online book club and had seen a promotion for two different book clubs they could join. Following Ariely and Levav's (2000), participants were given different information about the decision setting. In the group setting condition, they were told that they would be joining the book club with a group of friends. However, in the individual condition, participants were told they would be joining the book club alone. Additionally, they were informed that a recent survey showed that 37% of people enjoyed Book Club W (minority-endorsed, high-uniqueness option) and 63% of people enjoyed Book Club O (majority-endorsed, low-uniqueness option). Participants then indicated their relative book club preference on a 9-point scale (1 = Book Club O, 9 = Book Club W).

Following a manipulation check on the decision-making condition (1 = consumed alone, 9 = consumed with others), they reported demographic details as before.

Results

Manipulation Check. As expected, the manipulation of decision context was successful ($M = 4.93$, $SD = 2.96$ vs. $M = 6.08$, $SD = 2.57$ for the individual vs. group condition, respectively; $F(1, 224) = 9.74$, $p = .002$, $\eta^2 = .04$).

Uniqueness-Seeking. We expected that we would replicate the effect of hunger on uniqueness-seeking among those in the individual decision context condition; however, relative preferences for the option signaling similarity should no longer differ according to hunger level among those in the group decision context condition. To test our main prediction, we conducted a regression analysis with level of hunger (measured; mean-centered), decision context condition (where 0 = individual, 1 = group), and their interaction as independent variables, while online book club preference (where 1 = low-uniqueness, 9 = high-uniqueness) served as dependent variable. A significant simple effect of hunger emerged, such that participants became less likely to choose the high-uniqueness option with increasing hunger ($\beta = -.23$, $SE = .10$, $t = -2.32$, $p = .02$), once again replicating the previous results. The simple effect of decision-making condition was not significant ($\beta = -1.09$, $SE = .60$, $t = -1.81$, $p = .07$). More importantly, the two-

way interaction between hunger and decision-making condition was significant ($\beta = .28$, $SE = .13$, $t = 2.10$, $p = .04$; see figure 2).

To explore the interaction, we used spotlight analysis (Spiller et al. 2013) at plus and minus one standard deviation from the mean value of current feelings of hunger. Participants in the high (vs. low) hunger condition who were joining the book club alone reported a weaker preference for the high-uniqueness option ($\beta = -.23$, $SE = .10$, $t = -2.32$, $p = .02$). However, as expected, for participants joining the book club with a group of friends, differences in the strength of their feelings of hunger did not influence their preferences ($\beta = .05$, $SE = .09$, $t = .55$, $p = .58$). Further, participants high in hunger expressed marginally stronger preferences for the high-uniqueness option ($\beta = .57$, $SE = .34$, $t = 1.69$, $p = .09$) when they were participating with a group as compared to those participating alone. Lastly, the decision-making condition did not affect the relative preferences of participants low in hunger ($\beta = -.45$, $SE = .34$, $t = -1.30$, $p = .20$).

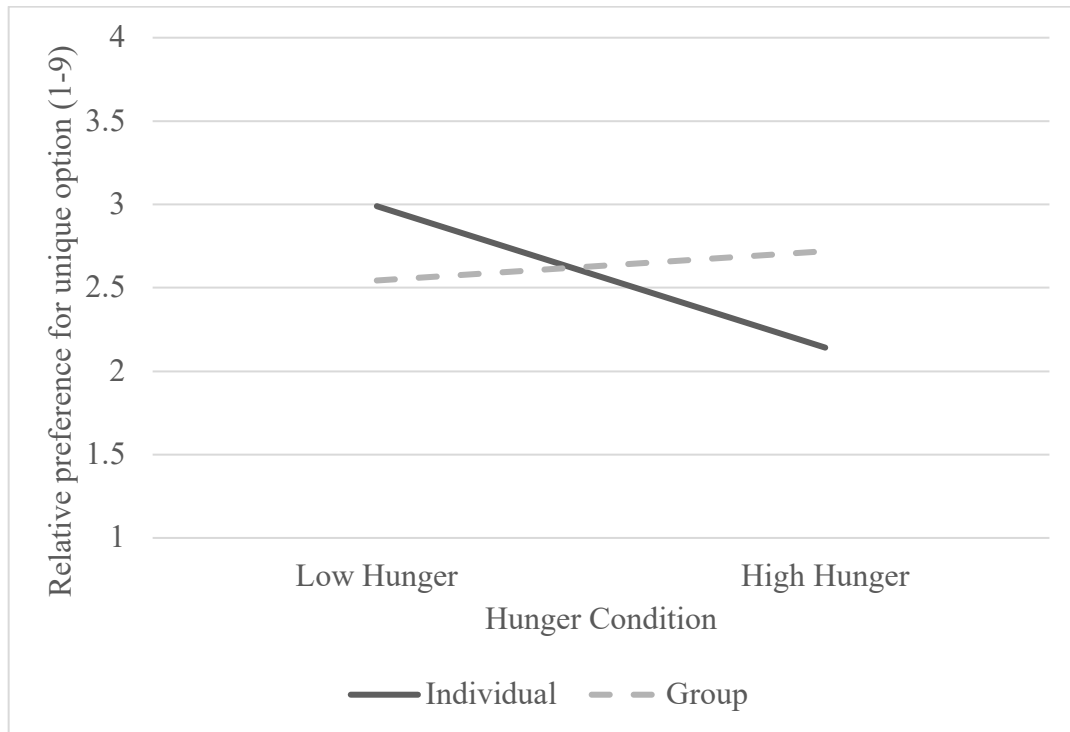


Figure 2. Study 5: Relative Preference for Unique Option

Discussion

The results of this study are once again consistent with our hypothesized effect, as well as with the underlying process based on a heightened need to belong engendered by feelings of hunger. That is, when expressing their preferences for two book clubs differing in uniqueness, those high versus low in hunger who anticipated joining on their own more strongly preferred the option signaling similarity. On the other hand, and consistent with the hypothesized role of the need to belong, hunger-driven differences in

book club preferences were attenuated among those who anticipated joining with a group – for whom the need to belong likely would be fulfilled by the group.

GENERAL DISCUSSION

Across seven studies, we found evidence consistent with our proposition that stronger, compared to weaker, feelings of hunger heighten self-protective motives, which, consequently, intensify consumers' need to belong and increase preferences for options signaling similarity. This effect appears to be robust across a variety of product options that signal similarity versus uniqueness, and extends to studies conducted in the field, laboratory, and online. Further, in addition to finding process evidence via two mediation studies, we presented theoretically-relevant boundary conditions that provided additional support for our proposition, showing that the effect is attenuated when others to whom to signal similarity are absent (i.e., in private vs. public settings) and when the need to belong has been fulfilled (i.e., in group vs. individual consumption contexts). Lastly, we cast doubt on alternative explanations based on mood, involvement, uncertainty, arousal, and depletion.

Theoretical Contributions

Much extant research on hunger has shown that its experience impacts behavior via changes in impulsivity and self-control (Gailliot et al. 2007; Muraven, Tice, and Baumeister 1998; Shah, Mullainathan, and Shafir 2013), intensifying aggressive (Gal and Liu 2011; Nelson and Morrison 2005) and competitive (Aarøe and Petersen 2013; Roux, Goldsmith, and Bonezzi 2015) behaviors. In the marketplace, feelings of hunger are reflected in increased purchases of food and nonfood items (Xu et al. 2015). We add to this literature by showing that hunger may also engender heretofore unexamined psychological consequences by triggering self-protective motives that in turn influence consumers' desire to belong.

Our findings also contribute to the feeling-as-information literature by documenting the informational role that hunger plays in shaping preferences. In particular, research has started to provide evidence for the influence of consumers' current bodily feelings as a source information. For instance, consumers use as input into product evaluations the bodily sensations evoked by stores' soft versus hard flooring (Meyers-Levy et al. 2009) and into their variety-seeking the feelings of physical confinement (Levav and Zhu 2009). Adding to these prior findings, our research suggests that one particular bodily feeling – the feeling of hunger – can also systematically influence consumption patterns – by shifting the balance consumers seek between satisfying their need for uniqueness and their need for similarity.

Furthermore, our findings also add important insights to the uniqueness-seeking literature. Prior research indicates that a desire to engage in uniqueness-seeking can be influenced by individual differences such as their need for uniqueness (Tian et al. 2001) and situational variables such as seating arrangements (Zhu and Argo 2013) and room temperature (Huang et al. 2014). To the best of our knowledge, however, our research is the first to examine whether and how a specific internal state, such as feeling hungry, can influence consumers' likelihood to engage in uniqueness-seeking.

Practical Implications

The findings reported here have potential substantive implications for marketers and for consumers. In particular, marketers should try to offer a degree of uniqueness that matches consumers' likely feelings of hunger. For example, restaurant patrons may be more tempted by unique or extraordinary desserts than appetizers, since the latter are likely to be ordered in a state of hunger. More generally, consumers may seek less uniqueness before than after any of the main meals of the day. Further, research that has demonstrated a circadian influence on hunger (Scheer, Morris, and Shea 2013), such that feelings of hunger are strongest in the evenings – which suggests that consumers' need for uniqueness and their preferences for distinctive options may similarly be circadian in nature, with preferences shifting more towards options signaling similarity to others in the evenings.

In addition, our hunger manipulations showed that subtle interventions can impact how hungry consumers feel. Thus, specialty retailers or marketers who concentrate on unusual products, such as odditymall.com or touchofmodern.com, may appear more attractive to consumers who are first reminded they are satiated. As well, unique stores in shopping malls should be located away from the food court – despite the higher foot traffic there – since the smell of food can arouse appetite and feelings of hunger.

Furthermore, consumers should be aware that products they have chosen while feeling hungry may not be what they desire when satiated – as Snickers’ advertising tagline “You’re not yourself when you’re hungry” pointed out. Thus, consumers may come to regret purchasing that plain sweater or basic pair of sneakers, or getting that everyday haircut to signal a desire for affiliation while being hungry, once they feel satiated.

Limitations and Future Directions

Some limitations of the present research reveal opportunities for future research. Specifically, we limited our investigation to one type of bodily feeling (i.e., hunger) and one type of consumer behavior (i.e., uniqueness-seeking) because of the theoretical associations between the former and need to belong, and between need to belong and the latter. Given that the experience of thirst might also signal environmental uncertainty and heighten self-protective motives, one might seek to generalize our effect to feelings of thirst. Future research might also extend work on bodily feelings as information examine

the physical feeling of pain and its consequences in the marketplace. As is the case with hunger, the experience of pain is also likely to be ubiquitous. As well, in most of our studies the feelings of hunger are likely to have been salient to participants, and one might investigate if chronic (vs. fleeting) feelings of hunger are similarly reflected in uniqueness-seeking, and the degree to which consumers are conscious of the influence of hunger on their behavior.

Furthermore, we focused our research on consumers' seeking to affiliate with others as a result of feeling hunger. However, hunger has also been shown to increase greed and aggressive behaviors (Petersen et al. 2014), which might lead to consumers' seeking to signal their distinctiveness from others. Indeed, findings by Berger and Shiv (2011; study 2) showing that students were more likely to choose distinct options before versus after visiting the dining hall suggest that at least in some circumstances, hunger may strengthen, rather than weaken, preferences for options signaling distinctiveness. Thus, future research might examine under which conditions hunger increases the need for similarity versus the need for uniqueness.

In addition, clearly, there are additional individual difference and situational variables that attenuate or even reverse the effect we demonstrated. For example, materialism as a value system relates to consumers' desire for power and control (Kasser and Ahuvia 2002), social relationships (Rindfleisch, Burroughs, and Wong 2009), possessiveness (Belk 1985), and uniqueness-seeking (Lynn and Harris 1997), it is likely to impact the relationships between hunger and uniqueness-seeking, with its effect attenuated among those high in materialism.

APPENDIX A

Hunger Manipulation used in studies 1b, 2, 3, 4 (Herman, Fitzgerald, and Polivy 2003)

<p>Low Hunger Prime</p>	<p>A recent survey revealed that participants from the previous survey felt relatively full – i.e., scoring 1.5 from the previous scale (1= Not hungry at all, 9 = As hungry as I have ever felt). Please recall a situation in which you were more satiated in comparison to peers around you. It can be any time when you felt full compared to your peers. Please describe the context of this situation in which you felt more satiated in comparison to your peers – what happened, how you felt about being full etc. in more detail. Please try to focus specifically on aspects related to being more satiated than your peers. Write the description so that someone reading it might even feel less hungry just from reading what you wrote.</p>
<p>High Hunger Prime</p>	<p>A recent survey revealed that participants from the previous survey felt relatively hungry – i.e., scoring 7.9 from the previous scale (1= Not hungry at all, 9 = As hungry as I have ever felt). Please recall a situation in which you were hungrier in comparison to peers around you. It can be any time when you felt lacking food or nutrition or craving food more than did your peers. Please describe the context of this situation in which you felt hungrier in comparison to your peers – what happened, how you felt about being hungrier, etc. in more detail. Please try to focus specifically on aspects related to being hungrier than your peers. Write the description so that someone reading it might even let them feel hungry just from reading what you wrote.</p>

APPENDIX B1

Feeling of Uncertainty Scale (Faraji-Rad and Pham 2017)

1. During the choice task, how did you feel about making the decision? (Unsure (1) – Sure (9))
2. During the choice task, how did you feel about making the decision? (Feel confident (1) – Don't feel confident (9); reverse-coded)
3. During the choice task, how did you feel about making the decision? (Hesitant (1) – Determined (9))

APPENDIX B2

Ego-Depletion Measure (Fischer, Greitemeyer, and Frey 2008)

1. How much effort did you exert during the previous decision task? (Very little (1) – Very much (10))
2. How much energy did you exert during the previous decision task? (Very little (1) – Very much (10))

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