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RESEARCH ARTICLE

Eating Heavily: Men Eat More in the Company of Women

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Abstract Sexual selection has been commonly considered by evolutionary psychologists interested in eating disorders among women; however, comparable attention has not been paid to problematic eating by men. We present the results of a field study through which we find that men eat more food when sharing a meal with women than with men. Notably, men appear to eat larger quantities of both unhealthy (pizza) and healthy (salad) food when in the company of women. More specifically, men eating with women ate 93% more pizza (1.44 more slices) and 86% more salad. Additionally, while women do not eat significantly differently as a function of the sex of their dining partners, women eating with men tended to estimate themselves to have eaten more and reported feeling like they were rushed and overate. In addition to expanding upon previous research concerning women's eating behaviors, our findings concerning male overconsumption in the presence of women appear to present an example of self-handicap behavior.

Keywords Eating · Sexual selection · Self-handicap behavior · Costly signaling · Obesity

Introduction

Intrasexual selection has been proposed by evolutionary social scientists as a reason for disordered eating (e.g., anorexia) among women (e.g., Abed 1998; Juda et al. 2004; Li et al. 2010; Mealey 2000; Salmon et al. 2008). This perspective presumes that when male mate preferences tend to prize a certain trait—such as relative thinness in most contemporary postindustrial societies (e.g., Tovee et al. 2006), then competition among women will ensue. In this view, the tendency and pressures for women to "eat lightly" in front of men (Mori et al. 1987) is expected to extend to disordered eating or under-eating all of the time (i.e., not simply in front of men) because of competition with other women.

Evolutionary mechanisms that might influence male eating patterns have received considerably less attention partly because eating disorders such as anorexia are significantly less common (e.g., Condit 1990; Bremser and Gallup 2012). When one reasonably recognizes overeating as a de facto kind of disordered or problematic eating, though, given that sustained overconsumption will tend to yield unhealthful outcomes and when one recognizes the overwhelming presence of men in competitive eating contests where the goal is to consume as much as possible in as short a period as possible (Nerz 2006), then it becomes clear that male eating patterns warrant closer attention through the lens of sexual selection theory. In fact, particularly in the context of important and practical public interests to understand the factors that contribute to obesity (cf. Roberts et al. 2012), it is valuable to consider that the degree to which conspicuous overconsumption of food by men might be influenced by the selective pressures of either female mate choice and/or intrasexual competition (Cronin 1993).

"Eating heavily" is the concept that we introduce in this article as a complement to (1) Mori et al.'s (1987) description of "eating lightly," which focuses on women tending to eat less in the presence of men, as well as (2) empirical demonstrations of women's sensitivity to maintaining femininity while eating in groups (e.g., Rolls et al. 1991). Our research builds upon experimental evidence concerning the social facilitation of eating in which people tend to eat more food when they are eating with other people (De Castro 1991; De Castro and Brewer 1991;

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Wansink et al. 2004). By applying an evolutionary framework that recognizes the potential importance of sexual selection, though, it is clear that sex differences should be considered with respect to the social facilitation of eating—in ways that are comparable to Hone et al.'s (2013) study of male overconsumption of alcohol in the context of "drinking games." Most specifically, when applied to this dynamic of eating in groups, the theory of self-handicap behavior (e.g., Greengross and Miller 2008; Hawkes and Bliege Bird 2002; Smith 2004) generates the prediction that males will "show off" in front of women by engaging in overconsumption. Given that it is not uncommon for men to eat with women, this prediction warrants testing since persistent overconsumption of food will increase the probability that a person encounters weight-related health problems (Chandon and Wansink 2007).

In this article, we develop and test hypotheses that consider the influence of sexual selection for male overconsumption. In contrast with more traditional lab experiments, the field study that we conducted presents an opportunity for naturalistic dynamics to be observed. Our findings have relevance for understanding overconsumption by men as well as demarcating lines for future research.

Theoretical Development

Sexual selection theory is most typically considered to operate through either (1) intersexual or (2) intrasexual pressures (e.g., Cronin 1993). In the former, the focus is on the mate preferences and choices that are, respectively, held and made by individuals. Examples include the abundant evolutionary psychology literature concerning which traits people find most attractive in members of the opposite sex (e.g., Kniffin and Wilson 2004; Karthikeyan and Locke 2014; Kniffin et al. 2014). In the latter, researchers highlight the importance of male-male and female-female competition as avenues for gaining reproductive success. Examples include Puts' (2010) review of the myriad ways in which men compete with each other to establish relative dominance as well as the aforementioned research on anorexia (e.g., Juda et al. 2004; Li et al. 2010; Mealey 2000; Salmon et al. 2008; Wasser and Barash 1983), which highlights the potential role of intrasexual competition among women.

Notwithstanding the arguments that Apostolou (2014) makes regarding the influence of parental choice of mates for their children in ancestral environments, we focus on the first two factors—intrasexual and intersexual selection—given our interest in situational eating in contemporary postindustrial environments. With respect to male eating behaviors as a potential focus for female mate choice, our interests build upon previous research seeking to identify specific traits that women in various circumstances might prefer among potential mates (e.g., Buss and Shackelford 2008). From this perspective, if one assumed that overconsumption among men was adaptive, then one would expect women to indicate preferences for men who are able to consume relatively greater amounts of food when compared with other men. While there is ample evidence that sustained overeating will result in body shapes that women do not typically consider to be attractive (e.g., Fan et al. 2005; Singh 1995), our focus on the behavior of eating—uncoupled from its relationship to body shape—is novel and uniquely specific. Indeed, given the existence of contemporary technologies and practices that permit people to shed weight (e.g., surgically), our isolated focus on the behavior of eating is particularly justified and valuable since radical interventions such as gastric bypass surgery offer the potential for people to engage in the behavior of overconsumption without the typical consequences for body shape.

Independent from the view that a given behavior (e.g., overeating among men) might be a product of female mate choice, the intrasexual selection hypothesis predicts that men will engage in behavior that permits them to "show off" that they possess extraordinary skills, advantages, and/or surplus energy in degrees that are superior to other men (e.g., Lange and Euler 2014; McAndrew and Perilloux 2012). Rooted in animal models such as the case of male elk antlers that evolved in response to competition among males rather than responding to anything that directly involves predators, prey, or female choice (cf. Frank 2011), the intrasexual selection hypothesis applied to men can explain conspicuous eating or overeating as yet another of the myriad activities (cf. Puts 2010) through which men attempt to establish dominance hierarchies that—if adaptive—would confer fitness advantages. It is notable and perhaps analogous to our analysis of overconsumption among men that this kind of intrasexual selection can produce maladaptive "runaway" effects for individual survival since—as with Frank's example of male elk—each of the elk would have greater maneuverability (e.g., in forests) if all of the individuals had shorter antlers.

Our general interest to learn more about male overconsumption is partly rooted in evolutionary analyses that recognize that men tend to take more hazardous risks than women do (e.g., Lendrem et al. 2014; Sapolsky and Bonetta 1997). Conspicuous consumption of food is a much less dramatic "risk" than, say, going off to the frontlines of war, but research on the effects of obesity nonetheless show overeating to constitute risky behavior. Indeed, the evidence shows that sustained overeating is not a risk but, instead, a simple hazard (e.g., Chandon and Wansink 2007). Applying an evolutionary approach to understanding male overconsumption offers an opportunity to recognize any behavioral or social upsides that might accompany—or be perceived to accompany—an activity that is otherwise a clear and simple hazard.

Hypotheses

Critics of evolutionary psychology often claim that researchers craft Panglossian "just so" stories that offer an evolutionary explanation for everything (e.g., Gould 2000). As

Kurzban (2002) argues, though, such criticisms are unjustified since (1) all other social sciences understandably and reasonably construct narratives to accompany their findings and (2) the main test that should matter is whether a study is testing falsifiable hypotheses. It is accurate that evolutionary psychologists often account for disparate behaviors with the same underlying theoretical framework but that reflects the pluralist nature of the theory. For example, Griskevicius et al. (2007) contend that conspicuous spending is an artifact of sexual selection pressures whereas Griskevicius et al. (2010) find evidence of conspicuous conservation that they explain with the benefit of sexual selection pressures. In his review of sexual selection among humans, Puts (2010) emphasizes that there exists a wide range of different ways in which people have constructed contests with which to create and measure relative standing within groups (e.g., to establish or maintain dominance with potential relevance for mating markets).

In our case, we follow the tradition of concurrently considering rival hypotheses rather than relying exclusively on testing a single null hypothesis (cf. Cohen 1990). With the benefit of a field study that we conducted inside an "all you can eat" restaurant, our unobtrusive observations of participants allows us to examine any influences that the sex of eating partners had upon individuals' eating behaviors. The hypotheses that we present respectively reflect the (1) intersexual and (2) intrasexual selection pressures described above.

Analogous to the view that women "eat lightly" in order to respond to men's mating preferences (cf., Mealey 2000), the intersexual or mate-choice hypothesis that we test presumes that men "eat heavily" in response to women's mating preferences. As we note above, sustained overeating most likely leads to body shapes that women do not typically consider to be attractive (e.g., Fan et al. 2005; Singh 1995); however, in the context of short-term events (e.g., a single meal), it is plausible that overeating would be recognized as an attractive demonstration of strength and energy. Given these conditions and the recognition that eating (e.g., in the context of a single meal) is distinct from any longer-term morphological consequences, our hypothesis mirrors evolutionary studies of women's eating behaviors.

The expectation that intersexual selection pressures are associated with male overconsumption in the company of women also relies partly on the basic finding that female mate preferences can vary significantly across contexts. For example, Whissell—based on an analysis of male protagonists in romance literature written for women—concludes that "Heroes who might have been warriors, princes, or knights in earlier tales are described today as CEOs, oil magnates, and corporate raiders" (1996, 443). The common thread of these roles is that they each occupy a relatively high position in their respective social contexts. In our case, just as no one would expect an evolutionary basis per se for why women should prefer men who are adept at balancing a firm's quarterly earnings to exceed Wall Street expectations, the hypothesis that women will tend to prefer men who can eat conspicuously or competitively does not need a direct evolutionary basis beyond the fact that eating represents an avenue through which men can distinguish themselves as relatively superior. To the extent that masculinity tends to be viewed isomorphically with a man's relative position in their social contexts, it is also plausible that the masculinity that men can demonstrate through conspicuous eating might function as a mechanism for men to enhance how attractive they are perceived by women.

More specifically, though, it is important to note that the intersexual selection hypothesis also complements Al-Shawaf et al.'s (2015) recent suggestion that men disproportionately tend to consume new foods (i.e., food neophilia) as a means of signaling strong immune systems in the context of present or potential mates. As Al-Shawaf et al. specify, "advertising one's immunological robustness—for instance, displaying food neophilic tendencies—should … result in particularly pronounced mating benefits for men" (2015, p. 33) given evidence that women prize signals of good health. While it is an independent question to consider whether gross overconsumption of food either offers—or is often perceived to offer—a comparable signal of strength as consuming new foods, there is an alignment between Al-Shawaf et al.'s (2015) suggestion and our hypothesis whereby eating behaviors constitute a way through which men can enhance their attractiveness in the eyes of potential mates.

> *Hypothesis 1*: Men will eat more in the company of women than men dining with men.

Analogous to the view that anorexia exists among women as a response to higher-status women suppressing the ability of lower-status women to reproduce (e.g., Wasser and Barash 1983), the intrasexual selection hypothesis that we present applies previous evolutionary reviews (e.g., Puts 2010) to the specific question of eating behaviors. In this view, men overeat in the company of other men as a means of asserting dominance or claiming status in relation to the other men. As with H1, our perspective treats the behavior of overeating in the context of a single meal event as independent from any longer-term morphological consequences that are correlated with overeating. In this perspective, independent of the potential longer-term consequences upon male-male competition for increased body weight, it is hypothesized that men tend to overeat in the company of other men as part of a de facto dominance contest.

> *Hypothesis 2*: Men will eat more in the company of men than in the company of women.

Our overall approach to test two rival hypotheses (1) mirrors evolutionary studies of disordered eating among women whereby intersexual and intrasexual selection pressures have been considered and (2) recognizes that there can be more

than one evolutionary perspective on a given phenomenon (e.g., Kniffin 2009; Wilson 1994). Data in support of hypothesis 1 would need further testing to account for whether the pattern is a product of either female mate choice or male-male competition; however, if hypothesis 2 were supported, the findings would be more clearly consistent with the view that men "eat heavily" to impress other males.

Materials and Methods

One hundred and thirty three adults (74 males and 59 females) were recruited to participate in a study of eating at an Italian restaurant in Northeastern USA where customers paid a fixed price for "all you can eat" pizza, salad, and side dishes. Our analyses are based on a sample of 105 respondents because we discarded responses from eight recruits who were eating alone, and 20 recruits provided incomplete survey responses. Males ranged in age from 18 to 81 (M=43.93, SD=16.60) and females from 18 to 80 (M=45.23, SD=16.90).

The study was conducted during lunch hours over a 2-week time period with Institutional Review Board approval. Customers who entered the restaurant that day for lunch were recruited to participate in the study before being seated along with the people who joined them and were asked two questions related to restaurant choices—"Why did you choose this restaurant?" and "What other places did you consider for lunch?"—to avoid priming their attention to eating preferences (Bradburn et al. 2004). Consistent with other behavioral studies of eating in naturalistic environments (e.g., Wansink et al. 2012), the number of slices of pizza that diners consumed was unobtrusively observed by research assistants and appropriate subtractions for uneaten pizza were calculated after waitstaff cleaned the tables outside of the view of the customers. In the case of salad, customers used a uniformly small bowl to self-serve themselves and, again, research assistants were able to observe how many bowls were filled and, upon cleaning by the waitstaff, make appropriate subtractions for any uneaten or half-eaten bowls at a location outside of the view of the customers. While there were side dishes available as part of the buffet, consumption of those items was not measured given the finite abilities to measure customers' eating patterns and the fact that the side dishes were marginal (by definition) to the buffet's main attractions.

When participants had finished with their meals, a research assistant met them at the cash register to ask them to complete a survey that asked each of them to estimate the number of calories of pizza they consumed as well as their level of (dis)agreement on a nine-point scale with the statements "I overate," "I felt rushed," and "I am physically uncomfortable." These measures were collected based on previous research showing important influences of social environments on the consumption and perceived consumption of food (e.g., Wansink 2006, 2014).

Our analyses focus on comparing the sex of each eater in relation to the sex of the person's eating partners. Among the 60 males who participated in the study, 40 of them were sitting within groups of two or more people that included at least one woman (hereafter "mixed-sex groups") and 20 of them were sitting with other men. Among the 45 women who participated in the study, 35 were sitting within mixed-sex groups and 10 were sitting with other women. As indicated in Table 1, there were no significant differences between the relevant comparison-pairs with respect to self-reported measures of age or height. Interestingly, men eating with women weighed significantly less than men eating with men while women eating with men weighed less than women eating with other women. For more details regarding the mixed-sex groups, we can note that 32 people were part of groups that included one man and one woman, 10 people were sitting in groups that included two men and two women, and 33 people were sitting in any other combination of a mixed-sex group (e.g., two men, one woman).

Results

As illustrated through Fig. 1 and Table 2, males dining with females consumed significantly more pizza (F=3.26, p=0.02) and more salad (F=2.16, p=0.04) than males dining with males. These findings reject hypothesis 2 and fit with hypothesis 1 since males "eat heavily" when their company—or audience—includes females, and, to the extent that salad tends to be more healthy than pizza, it is visible in the first column of Table 2 that males eat more unhealthy and healthy food in the presence of females. In contrast with these patterns, the sex of a female's eating partner did not significantly influence how much pizza and salad was consumed.

Table 2 provides closer analysis of the various main effects and interactions that our study examines. With respect to the number of pizza slices that were consumed, there was a significant main effect based on sex whereby men tended to eat more than women (F[1,109]=14.58, p<0.01). There was also a significant main effect of being in the mixed-sex versus same-sex groups (F[1,109]=9.26, p<0.01) whereby people in mixed-sex groups tended to eat significantly more pizza. With respect to the interaction that is predicted by the "eating heavily" hypothesis, Table 2 shows a significant interaction effect between gender of the respondents and the gender of the people in the group (mixed-sex vs. same-sex) such that men do eat significantly more pizza in the company of women (F[1,109]=4.22, p<0.05).

With respect to salad consumption, Table 2 shows that there were no main effects for sex or group type. There was, though, a significant interaction effect between the sex of the respondents and their group type (mixed-sex vs. same-sex)

Table 1 Descriptive statistics of the sample

	Males eating with females (n=40)	Males eating with males (n=20)	t	Females eating with males (n=35)	Females eating with females (n=10)	t
Demographics						
Age (years)	44 (18.86)	43 (11.19)	0.42	44.52 (17.09)	48.18 (16.49)	0.64
Height (cm)	178.02 (7.72)	181.11 (7.32)	1.59	165.83 (7.71)	164.82 (5.88)	0.37
Weight (kg)	86.35 (17.92)	100.80 (21.33)	2.87**	64.63 (10.95)	75.54 (12.42)	2.38*
BMI	27.20 (5.13)	30.96 (6.62)	2.52**	23.46 (3.53)	27.77 (3.68)	2.96**

Standard deviations are in parentheses. Height (in.) and weight (lbs) respectively: males eating with females: 70.09, 191.89; males eating with males: 71.28, 224.00; females eating with males: 65.29, 143.62; females eating with females: 64.83, 167.28

*p<.05; **p<.01

whereby men eat significantly more salad in the company of women (F[1,98]=4.83, p<.05).

In addition to rejecting hypothesis 2, Table 2 also fails to replicate the finding of women "eating lightly" while, interestingly, demonstrating that women tend to perceive themselves to eat lightly in the company of men. With respect to feeling as if one "overate," there was no significant main effect of sex or group type; however, there was a significant interaction effect between sex of the respondents and the group type whereby women were significantly more likely to feel as if they overate if they ate in the company of men (F[1,115]=4.15, p<.05). Similarly, with respect to "feeling rushed," women who ate with men were significantly more likely to indicate that they felt rushed (F[1,112]=4.53, p<.05). Taken together, while the current study does not find evidence that women eat lightly in the company of men, we do find evidence that women tend to perceive themselves to eat more in the company of men while also feeling rushed and feeling as if they overate.

In order to check against the possibility that men eating with women might be less comfortable than others, Table 2 shows that there are no significant differences based on an eater's company with respect to how comfortable they feel. The absence of significant differences for this question helps to anticipate the possibility that discomfort or anxiety (e.g., from eating with a member of the opposite sex) might encourage overconsumption or under-consumption.

For an independent analytical approach, Table 3 presents comparisons among (1) men eating with men, (2) men eating in groups that included only one man, and (3) men eating in groups that included more than one man. The clear pattern that emerges is that men eat more pizza and salad in the company of women when compared with men eating exclusively with other men. The pattern fits cleanly with prediction of H1 that men will tend to eat more in the company of women.

Discussion

Drawing on data from a naturalistic setting, our observation of men "eating heavily" is sensibly viewed in an evolutionary perspective as men "showing off" (Hawkes and Bliege Bird 2002; Lange and Euler 2014; Smith 2004). Our findings do not account for whether the showing-off is a product of female mate choice or intrasexual competition among men; however, our study's falsification of hypothesis 2 is valuable since it fits with the general pattern of men engaging in riskier behavior in

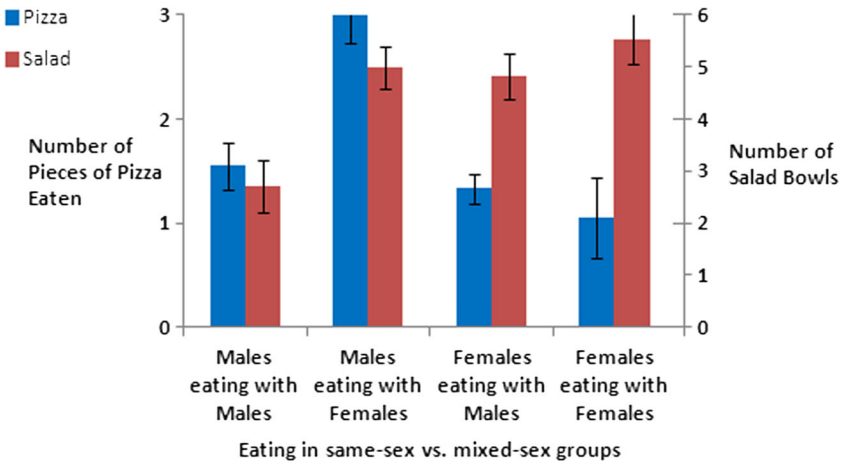

Fig. 1 Pizza and salad consumption of males and females eating in same-sex versus mixed-sex groups

Table 2 Analysis results showing the effects of eating in groups of same-sex versus mixed-sex

	Males eating with females (n=40)	Males eating with males (n=20)	Females eating with males (n=35)	Females eating with females (n=10)	F test Effect of gender	F test Effect of group type	F test Effect of gender×group
Salad consumed[a]	5.00 (2.99)	2.69 (2.57)	4.83 (2.71)	5.54 (1.84)	3.84	1.36	4.83*
Pizza slices consumed	2.99 (1.75)	1.55 (1.07)	1.33 (0.83)	1.05 (1.38)	14.58**	9.26**	4.22*
I overate[b]	2.67 (2.04)	2.76 (2.18)	2.73 (2.16)	1.00 (0.00)	3.57	3.33	4.15*
I felt rushed[b]	1.46 (1.07)	1.90 (1.48)	2.29 (2.28)	1.18 (0.40)	0.02	0.83	4.53*
How many calories of pizza you think you ate?	478.75 (290.67)	397.50 (191.37)	463.61 (264.25)	111.71 (109.57)	5.01*	10.39**	4.05*
I am physically uncomfortable[b]	2.11 (1.54)	2.27 (1.75)	2.20 (1.71)	1.91 (2.12)	.15	.03	.39

Standard deviations are in parentheses.

[a] Measured based on the bowls consumed

[b] Measured on a Likert scale with 1=strongly disagree and 9=strongly agree

*p<.05; **p<.01

the company of women. In a domain unrelated to food, for example, Bogan et al. (2013) find that mixed-gender groups—as compared with all-male and all-female groups—tend to make the riskiest decisions in a financial decision-making experiment. In this context, while a simple consideration of male-dominated eating contests might suggest that—contrary to our findings—men tend to eat more in the exclusive company of other men, it is notable that commercially popular eating contests tend to feature scantily clad women as part of the event (e.g., as escorts for the competitors) (Nerz 2006). A very narrow application of our findings, in that case, is that consumption in male-dominated eating contests is likely modified by the presence of women.

Much more generally, given that the situations that we compared in this field study with respect to the gender of eating partners reflect common naturalistic eating groups (e.g., Sobal and Nelson 2003; Davy et al. 2006), our findings suggest the hypothesis that, beyond a given situation, men will be more likely to persistently overeat as a function of the frequency with which they eat meals in the company of women. While future research will be needed to examine that proposition, it is interesting that while men eating with women tend to consume relatively high amounts of unhealthy food—an example of costly signaling—the comparably high consumption of healthy food also warrants closer investigation.

To focus on the findings with respect to women's consumption, while women do not "eat lightly" in our sample—perhaps due to the structure of the present study's sample—it is interesting that we find that women perceive themselves to do so in the presence of men. Given that previous research regarding "light eating" (Mori et al. 1987) tends to focus on dyads eating with each other in the context of a (potential) romantic relationship, it seems possible that the broader diversity of relationships—and ages—that are part of our sample is responsible for the non-replication with respect to women's

Table 3 Analysis results comparing males' consumption in different groups

	Only-male groups (n=20)	Only one male in mixed-sex groups (n=21)	More than one male in mixed-sex groups (n=19)	F test
Salad consumed[a]	2.69 (2.57)	5.55 (2.66)	4.33 (3.31)	5.16**
Pizza slices consumed	1.55 (1.07)	2.79 (1.54)	3.13 (2.18)	4.89*
I overate[b]	2.76 (2.19)	2.92 (2.30)	2.53 (1.81)	.18
I felt rushed[b]	1.90 (1.48)	1.65 (1.34)	1.47 (1.23)	.49
How many calories of pizza you think you ate?[b]	397.50 (191.38)	409.52 (246.87)	555.26 (321.84)	.15
I am physically uncomfortable[b]	2.27 (1.75)	2.32 (1.77)	1.95 (1.24)	.72

Standard deviations are in parentheses

[a] Measured based on the bowls consumed

[b] Measured on a Likert scale with 1=strongly disagree and 9=strongly agree

*p<.05, **p<.01

consumption in the presence of men. On the other hand, our research design helps to generate the broader finding that women show a robust tendency to feel as if they ate lightly—while feeling rushed—in contexts involving men.

Limitations of the current study include the fact that the context for each group's meals is unknown, and the variable number of diners per group makes it clear that the eating parties were not exclusively comprised by pair-bonded couples. While it is possible that the patterns that we reported in our study vary as a function of whether a meal is being shared by romantic partners (Alley et al. 2013; Kniffin and Wansink 2013) or by co-workers (Kniffin et al. 2015), our findings are arguably more powerful since the groups are more diverse. An additional limitation is the fact that women eating with men weighed significantly less than women eating with men. While this difference does not necessarily impact our finding of men "eating heavily, " it does represent the kind of trade-off that characterizes naturalistic studies, which typically cannot incorporate random assignment to different experimental conditions, when compared with artificial laboratory studies. In fact, beyond inviting further lab-based research into the social influences of eating within mixed-sex groups that would have more limited age ranges as well as larger samples, it would also be valuable—in other naturalistic environments—to consider whether the same patterns would be displayed in other types of restaurants (i.e., that are not "all you can eat" buffets) that offer different types of food (cf. Wansink, Cheney, & Chan 2003). Lab-based research would also facilitate timing of the eaters' behaviors—a variable that could help us understand whether women might tend to feel rushed when eating with men because, plausibly, men might tend to eat faster—particularly, perhaps, when eating with women.

An additional set of limitations with our current study involve potential moderators that could be examined with a larger sample. For example, following Hone et al. (2013) and their study of drinking games, it is plausible that mating effort interacts with the patterns examined in the present article. Similarly, following Greengross and Miller's (2008) study of self-deprecating humor (i.e., a kind of self-handicap behavior), it is imaginable that status interacts with overeating as well whereby it would tend to be viewed more favorably by women of high status but not low-status men. In the case of our field study, we do not have information concerning these potential moderators; however, with respect to status, at least, it is reasonable to expect that the common draw of the all-you-can-eat restaurant attracted a relatively homogenous sample of customers.

Finer-grained analyses of the dynamics examined in our study would also focus on the perspectives that participants drew upon to motivate their eating. In a naturalistic field setting, it is not possible to ask a battery of psychological questions; however, future tests of the concept that men tend to "eat heavily" should investigate the relevant motivations or mechanisms. Similarly, it would be interesting to consider the pattern of "eating heavily" alongside the findings from previous research that men tend to engage in "heroic" activity and, more generally, feats of strength more frequently than women do (e.g., Farrelly et al. 2007; Iredale et al. 2008; McAndrew and Perilloux 2012). For example, while our findings of male overconsumption are arguably analogous to Iredale et al.'s (2008) finding that men tend to give more to charity in the company of women, and future research could examine if men tend to eat relatively more in the company of relatively attractive women (cf. Raihani and Smith 2015), the effects of "showing off" in each context are obviously very different. Future research could also consider whether the focus on lunches that we examined in this study present different patterns than dinners given a traditional expectation that dinners are more likely to be romantically involved.

Building on Bègue et al.'s (2015) recent findings that men with higher levels of testosterone—a stress hormone associated with dominance—tend to have greater preferences for spicy or hot food, it would also be ideal if future research were to consider the potential relevance of hormones in relation to overeating. Among other questions, future research that includes hormonal assays could test whether people who win eating contests tend to experience the kind of testosterone increases—and decreases—that researchers have found when people win—and lose—other contests (e.g., wrestling matches: Elias 1981). Given the more common prevalence of "eating challenges" in restaurants where customers—usually men—agree to purchase a large amount of food for which they pay nothing if they can eat it all within a narrow period of time (Koebler 2009), the same outcomes would be interesting to examine since it is imaginable that changes in testosterone could influence behavior for a period of time after the challenge.

Conclusion

Most generally, our field study follows on previous applications of sexual selection theory to consumer behavior (e.g., Miller 2009; Saad 2007, 2011a, b) as well as research on the social significance that food preferences can indicate (Kniffin and Wansink 2013; Wansink et al. 2012). Our study extends those findings into the arena of eating, an activity that carries public as well as private health consequences. With the benefit of sexual selection theory, our field study generates novel perspectives for understanding practical and important dynamics involving food consumption. Future research into "eating heavily" among males should examine the relative importance of female mate choice and intrasexual competition and consider whether this pattern holds in societies where relative thinness is not prized (e.g., Tovee et al. 2006); however, our behavioral findings drawn from a naturalistic field

study introduce an important pattern through its rejection of the hypothesis that men tend to eat more in the company of other men. In fact, to the extent that overconsumption based on social context can contribute harmfully to weight gain, the findings presented in this article also offer a basis for future research to apply evolutionary social science to matters of public policy involving public health (cf. Roberts et al. 2010).

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