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Brief communication

Time to eat: the relationship between the number of people eating and meal duration in three lunch settings

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Abstract

We conducted an observational study of customers in three different types of lunch settings: a worksite cafeteria, a fast-food restaurant, and a moderately priced restaurant, and assessed the relationship between meal duration and the number of people eating at each table (group size). Results suggest a significant positive correlation between group size and meal duration, collapsing over eating settings. Analysis of variance yielded significant main effects of both eating setting and of group size, indicating that meal durations were longest in the moderately priced restaurant and shortest in the fast-food restaurant. An interaction between group size and eating setting indicates that the magnitude of the group size effect on meal duration differed in the different situations, with the effect of group size on duration being smallest, but still significant, in the fast-food setting compared with the other two settings.

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Introduction

Although it is generally assumed that the amount of food consumed at a meal is under the control of physiological variables that vary with nutritional deficit and surfeit, social factors also have clear effects on intake (see [Herman, Polivy, and Roth \(2003\)](#), for a review). Prominent among these is a phenomenon known as social facilitation, which refers to the fact that there is positive relationship between the number of people present while eating and the calories consumed by each. This effect has been extensively documented by de Castro and his colleagues ([de Castro, 1990](#); [de Castro & Brewer, 1992](#)), using data from food diaries kept by community volunteers. It is a robust effect, appearing regardless of whether the meals contain alcohol or not, take place on weekdays or weekends, consist of breakfast, lunch, dinner, or snacks, or are eaten at home or away from home ([de Castro, 1991](#); [de Castro, Brewer, Elmore, & Orozco, 1990](#)). Several studies conducted in field settings have also demonstrated that people eat more when they are in groups than when they are alone ([Hirsch &](#)

[Kramer, 1993](#); [Klesges, Bartsch, Norwood, Kautzman, & Haugrud, 1984](#); [Krantz, 1979](#)). For example, [Klesges et al. \(1984\)](#), observing people eating in restaurants, found that those eating alone consumed significantly less than those eating in groups. Laboratory experiments, too, have obtained a social facilitation effect. [Clendenen, Herman, and Polivy \(1994\)](#) and [Edelman, Engell, Bronstein, and Hirsch \(1986\)](#) provided participants, either in groups or alone, with a meal in the laboratory; both studies found greater intake among participants who ate socially than among those who ate alone.

One widely accepted explanation for the effect is ‘time extension’; that is, the more people present, the longer the meal takes; the longer the meal takes, the greater the intake. The idea that increasing the number of people present extends a meal is supported by the correlational data from de Castro’s studies ([de Castro, 1992](#)). Further, in two experimental studies in which number of eaters was manipulated and time to eat was observed ([Clendenen et al., 1994](#); [Mathey, 2000](#)), meal duration was a positive function of group size. Only one study has examined this relationship in naturalistic settings. [Sommer and Steele \(1997\)](#) found a positive correlation between group size and meal duration, but they studied this effect in only one snack

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setting (a coffee shop) and one meal setting (a traditional restaurant). It is possible that different types of eating contexts might differentially influence the relationship between group size and meal duration.

Research has identified several effects produced by the type of eating context, including food choices and perceptions (Bell & Meiselman, 1995; Bell, Meiselman, Pierson, & Reeve, 1994; Marshall & Bell, 2003; Meiselman, Hirsch, & Popper, 1988) and caloric intake (for a review, see Kramer (1995)). Marshall and Bell (1996) showed that different eating environments were perceived as differing in amount of time allotted to complete a meal and in the degree to which the patron feels rushed. Among the eating situations studied, fast-food restaurants were perceived as having the smallest amount of time available and as feeling the most rushed, while moderately priced restaurants were perceived as having the largest amount of time available and as feeling the least rushed; cafeterias fell between these two on both dimensions.

In the present study, we sought to extend the generality of Sommer and Steele's (1997) findings by observing eating in additional venues (a fast-food restaurant, a worksite cafeteria, and a moderately priced restaurant) and by examining the combined influence of these different venues and group size on meal duration. Since these situations differ in the perceived amount of time available for eating, we hypothesized that effects of group size on time would operate differently in the various settings. Specifically, we predicted that group size effects would be moderated by perceived time available in these eating situations, with the smallest effect predicted for the fast-food restaurant, the largest effect predicted for the moderately priced restaurant, and an intermediate effect predicted for the worksite cafeteria.

Method

Participants

The participants were 1124 individuals who had chosen to eat lunch at one of three types of eating establishments on seven different days during which researchers unobtrusively observed customers' eating behavior. Age and sex of the individuals were not recorded.

Procedure

We observed people eating lunch (11:30 a.m. to 1:30 p.m.) in three naturalistic settings: a worksite cafeteria (two Tuesdays, one Wednesday), a moderately priced restaurant (one Tuesday, one Wednesday) and a fast-food restaurant (one Tuesday, one Wednesday), located in suburban Boston, MA. One or two researchers, seated at a corner table, observed all tables. Once at the eating establishment, individuals either obtained their food and

then seated themselves at tables (fast-food restaurant and worksite cafeteria) or were directed to a table by the maitre d' and then ordered their food (moderately priced restaurant). Groups were self-selected; no control over the number of individuals at each table was exercised.

Each researcher (for his/her assigned tables) recorded the time at which individuals began eating (beginning with the serving of bread at the moderately priced restaurant and with being seated with food in the fast-food restaurant and worksite cafeteria), the time at which the table members left, and the number of people per table. If members arrived after others had begun eating, they were added to the group size. If members ate and left before others had finished, they were subtracted from the group size. We excluded those individuals who began eating alone at the table, and who were then joined by others as the meal progressed. We did this because eating for these individuals began as an isolated event and then changed to a social one. Otherwise, group size at each table was defined by the number of people present at the completion of the meal.

Group size at tables ranged from one to eight in the worksite cafeteria and the moderately priced restaurant, and from one to seven in the fast-food restaurant. To eliminate cells with small ns, we combined data for tables of five or more into a single category. The number of groups of each size in each establishment appears in the last column of Table 1.

For all analyses, the unit of analysis was the group; that is, each group (or solo eater) provided one meal duration. Correlation coefficients were calculated from product-moment values (Pearson's r).

Table 1
Meal duration by lunch setting and group size at table

Lunch setting	Group size	Minutes at table		Number of tables
		Mean	SD	
Worksite cafeteria	1	12.6	3.8	24
	2	23.0	7.9	34
	3	33.0	11.3	28
	4	41.1	10.6	41
	5 +	44.0	14.2	21
Moderately priced restaurant	1	27.6	6.7	8
	2	44.9	10.8	29
	3	47.2	10.1	13
	4	52.3	8.5	24
	5 +	58.5	13.1	21
Fast-food restaurant	1	10.7	3.3	22
	2	18.2	6.0	33
	3	18.4	6.8	23
	4	19.7	7.2	28
	5 +	21.9	5.8	18

Results

Collapsing over eating settings (Table 1), there was a significant correlation between group size and meal duration, both with solo eaters included in the analysis, $r(365) = 0.50$, $p < 0.001$, and with solo eaters excluded, $r(311) = 0.35$, $p < 0.001$. This relationship was similar to the correlations found in the studies both by de Castro and Brewer (1992) and Sommer and Steele (1997).

A 3×5 (eating setting by group size) univariate ANOVA yielded significant main effects of eating setting, $F(2, 352) = 232.6$, $p < 0.001$, and of group size, $F(4, 352) = 58.0$, $p < 0.001$. The main effect of setting indicates that meal durations were longest in the moderately priced restaurant and shortest in the fast-food restaurant. In accordance with previous results, eating times increased with number of persons present.

A significant interaction between group size and eating setting indicates that the magnitude of the group size differed in the different situations. $F(8, 352) = 7.7$, $p < 0.001$. To determine the relative effects of group size in the different eating settings, we compared linear slopes relating group size and meal duration in each setting. The slope of the relationship between group size and meal duration for the fast-food restaurant was significantly flatter than that for either the moderately priced restaurant ($t = 4.66$, $p < 0.01$) or the worksite cafeteria ($t = 5.17$, $p < 0.01$). That is, the effect of group size on duration was smallest in the fast-food setting. Nevertheless, simple effects analyses showed that the effect of group size was significant for all three settings.

Discussion

These data lend support to the notion that the social facilitation effect is mediated by ‘time extension’. That idea really consists of two related causal propositions: (1) an increase in the number of people present for an eating occasion causes an increase in its duration, and (2) an increase in the duration of an eating occasion causes people to eat more. We have provided evidence for the first of these propositions. What is missing are both a rationale and empirical support for the second. Why should a longer meal be a larger meal, and, more important, is this the case?

One obvious rationale is suggested by the early work of Schachter and his colleagues (Nisbett, 1968; Schachter & Rodin, 1974) on the control of eating by external cues. Basically the idea is that people eat because they are in the presence of palatable food; therefore longer duration of exposure to such cues increases the amount eaten. Indeed, anecdotally, people lingering at a table at dinner parties are sometimes heard to beseech their hosts to ‘take this away before I eat any more’. Similarly, Edelman et al. (1986, p. 81) noted that “[i]n the social condition, subjects talked with each other and lingered at the table. Many continued

eating by nibbling at their leftover food as they sat talking”. Of course, if it is extended exposure to external cues that is important, then the social facilitation phenomenon is not particularly ‘social’, in that, other than keeping an individual at the table longer, what other people are doing (eating) has no particular influence on his or her behavior.

Rationale aside, a recent study by Pliner, Bell, Kinchla, and Hirsch (2003) provides some empirical support for the notion that spending a longer time at a meal increases amount consumed. These investigators provided participants with a laboratory lunch of pizza, a beverage, and dessert, manipulating both group size and meal duration. Participants ate alone, with a partner, or with three others at a meal lasting for 12 or 36 min. Total intake was significantly greater in the long lunch condition than in the short lunch condition. Interestingly, there was no effect of group size. Thus, it does seem to be the case that a longer meal is a larger meal.

In the present study, the proportion of single eaters in the moderately priced restaurant (8%) was significantly smaller than it was in either the fast food (18%) or cafeteria (16%) settings, $\chi^2(2) = 8.4$, $p < 0.02$. Interpreting this finding in the context of Marshall and Bell (1996), it might be that solo eaters choose establishments where they can eat quickly—perhaps to minimize social anxiety associated with eating alone. The fact that solo eating times in the cafeteria and fast-food restaurant were similar to each other and much shorter than times for solo eaters in the moderately priced restaurant, could be explained by the fact that meal pacing differs in these settings. The shorter time for solo eaters in these two venues could also be explained by an employee’s need to return to work. In this case, the worksite cafeteria may be perceived as being similar to a fast food option. As group size increases in the worksite cafeteria, the social aspect of the eating experience might contribute to the perception that this venue is less like a fast food option and more like that of a moderately priced restaurant. Research is warranted in understanding why people choose to eat alone versus in groups in particular venues.

We acknowledge that we excluded individuals who bought food ‘to go’, a common phenomenon in the worksite cafeteria and fast-food restaurant. We also excluded seven individuals (in the worksite cafeteria) who had begun eating their meal alone, but who were then joined by others as the meal progressed—turning an isolated eating event into a social one. It is possible that by eliminating these individuals, we may have reduced the number of solo eaters for the analysis, possibly affecting the estimates of the effect of eating alone on meal duration, but we did not want this confounding to influence the data in one direction or another.

Despite these limitations, the present study extends prior research by assessing the effect of group size on meal duration in three types of eating venues. This increases the generalizability of the effect.

Further, this study shows variation in the behavior of solo eaters, suggesting the importance of research with this population.

Finally, this study is the first to provide comparative means of eating times in different eating venues for the same meal. The results indicate that the size of the eating group differs in importance between types of venue. Given the hypothesized role of meal duration as the mediator of the social facilitation effect, it would be interesting to determine whether the social facilitation effect follows a similar pattern.

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