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People's intended serving behaviour at social vs. non-social meals

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Abstract

The social facilitation of eating refers to people's tendency to eat more food when dining with others than when dining alone. Recent research suggests that social facilitation may be driven by people's tendency to make more food available even before social meals begin, a phenomenon referred to as social "precilitation." In order to uncover the mechanisms underlying social precilitation, it is helpful to first understand whether people consciously and deliberately make more food available for social meals. Three studies (total $N=792$) used an online serving paradigm to investigate this question. Participants were asked to imagine dining alone and dining socially, and indicated how much food they would serve themselves in each scenario. Unexpectedly, participants consistently reported intending to serve themselves *smaller* portions for social meals than for non-social meals (Study 1). This effect emerged even when they were asked about how someone else would behave (Study 2), and when they were informed that there was plenty of food available at the social meal (Study 3). This research highlights a disconnect between people's intended serving behaviour and the actual serving behaviour observed in laboratory studies, and suggests that people may not be aware of how their behaviour is influenced by the social context. Future research should examine *why* the disconnect between people's intended and actual serving behaviour occurs, whether it is related to the amount of food provided for social meals, and what implications the disconnect has for people's ability to manage their food intake.

Keywords: social facilitation; social precilitation; amount of food; food decision; portion size decision

1. Introduction

The social facilitation of food intake refers to people's tendency to eat more food when they are dining with other people than when they are dining alone. The effect is powerful, with a recent meta-analysis demonstrating that social facilitation has a large effect on food intake (Cohen's $d = 0.76$) when participants were eating with friends (Ruddock et al., 2019). The meta-analysis also found that participants consumed up to 23% more calories, and ate meals that were up to 48% larger, when dining with others compared to when dining alone. A number of possible explanations for the effect have been proposed in the past. For example, researchers have suggested that longer mealtimes (de Castro, 1990), elevated mood and increased enjoyment (Stroebele & de Castro, 2006), or distraction (Hetherington et al., 2006) at social meals might explain the larger food intake. However, none of these proposed mechanisms have been sufficient to explain the increased food intake observed during social meals. One reason that these explanations have not been sufficient may be that they focus on what happens *during* the meal (and thus do not explain where the extra food comes from), but decisions about how much food to eat might well happen *before* the meal. Research has demonstrated that people seem to plan their meal size in advance, infrequently deviate from these plans, and eat the vast majority (if not all) of what they serve themselves (Fay et al., 2011).

Both observational and experimental studies have found that people will make more food available for themselves before social meals than before non-social ones. Cavazza et al. (2011; Study 1) observed that people in a restaurant ordered more dishes for themselves when dining with others than when dining alone. They then replicated this finding in a lab-based study, in which participants came to a laboratory with other people and imagined that they were ordering food in a restaurant (no actual food was involved; Cavazza et al., 2011; Study 2). Ruddock et al. (2021) also demonstrated the same effect in the context of people's

serving behaviour. Using both within-subjects (Study 1) and between-subjects designs (Study 2), they found that people served themselves larger portions of food (in advance of the meal) when they knew they were going to be dining with another person compared to when dining alone, even when their dining companion for the social meal was not yet physically present. This effect in which people make more food available before social meals has been termed the social “precilitation” of eating (Herman, 2015).

People’s tendency to order themselves more dishes and serve themselves more food in advance of meals that they will be eating with others suggests that people have an expectation that they can or should eat more in social situations. However, there has been relatively little research conducted examining potential mechanisms driving social precilitation. Cavazza et al. (2011) suggested that social situations activate a “social meal script” which induces people to expect that, the more people they are eating with, the more socially acceptable and permissible it is for them to indulge by ordering and eating more food. Herman (2015) proposed a similar “feast” hypothesis (though he does note that “‘feast’ may overstate the festive atmosphere of the group meal”; p. 69), suggesting that perhaps people anticipate increased intake at social meals (compared to meals eaten alone) and thus provide extra food beforehand. However, no experimental studies have tested these hypotheses. Therefore, there is a need to examine why people provide and obtain more food before social meals than before solitary ones.

In order to understand what might be driving social precilitation, and to gain an insight into the types of mechanisms that could be tested in future research, it is important to consider people’s beliefs about their eating-related behaviours in different circumstances. Research has not yet examined people’s expectations of how they will behave when dining alone compared to when dining with others, and it is currently unclear whether people are aware of and are willing to report that they intend to engage in behaviour consistent with the

social precilitation effect. If there is indeed a social meal script that operates consciously and deliberately, then people should be able to report that they would serve themselves more before a social meal than before a non-social meal. Of course, it is also possible that people might be reluctant to acknowledge social influences on their intake (as is observed in modelling research; e.g., Spanos et al., 2014).

1.1. The Present Research

The purpose of the present research was to examine people's awareness of a social script consistent with the social precilitation effect. Three studies used an online serving task to investigate this aim. Study 1 asked participants to indicate how much food they would serve themselves when dining socially and when dining alone. Study 2 extended that by asking participants to indicate how much food they thought someone else would serve in those different dining scenarios, because research suggests that people may be more willing to acknowledge the effect of social context on food intake when being asked about someone else's behaviour rather than their own (Spanos et al., 2014). Study 3 then asked participants how much food they would serve in those different dining scenarios when they knew that there was plenty of food at the social meal and that they were the last person to serve, in order to rule out the possibility that participants were trying to be "polite" because they were imagining a limited amount of food available.

2. Study 1

The aim of Study 1 was to investigate people's beliefs and expectations about how much food they would serve themselves in a variety of dining scenarios. In this study, participants imagined dining alone, dining with one other person, and dining with a large group of people. For each scenario, participants indicated how much food they would serve themselves in that situation. It was hypothesised that, if people have a social-meal script that suggests that one can eat more in social settings, then participants would select larger

portions when they imagined dining with other people than when they imagined dining alone. In contrast, if people are reluctant to acknowledge or are unaware of social influences on their food intake, then this difference across dining scenarios might not emerge.

2.1. Method

2.1.1. Participants

Participants were recruited via Prolific, an online research platform, and received 1.90 GBP as recompense. To date, the majority of research on social facilitation has been conducted in Western countries. So that comparisons could be drawn to this prior work, the present study was restricted to individuals living in Australia, the United States of America, the United Kingdom, and Canada. The sample size for this study was selected to detect a small-to-medium effect with 80% power in a repeated-measures design. In total, 234 individuals completed the study. Three participants were excluded from the study because they failed a bot-check question (i.e., a question designed to verify that the study was being completed by a human and not a bot) that was included at the end of the study. The final sample consisted of 231 individuals (155 women; 76 men) with a mean age of 33.35 ($SD = 10.97$) and a mean body mass index (BMI; kg/m^2) of 26.83 ($SD = 7.60$). With regards to ethnicity, 90.0% identified as White/Caucasian, 5.6% as Asian, 1.7% as Black/African American, and 2.6% as “other”. All studies in this manuscript were approved by the university’s ethics committee.

2.1.2. Materials

2.1.2.1. Portion-Selection Task

Participants imagined three separate dining scenarios: dining alone (alone condition), dining with one other person (pair condition), and dining with a large group of people (large-group condition). The order in which participants imagined these three scenarios was randomised. In the pair and large-group conditions, participants were additionally instructed

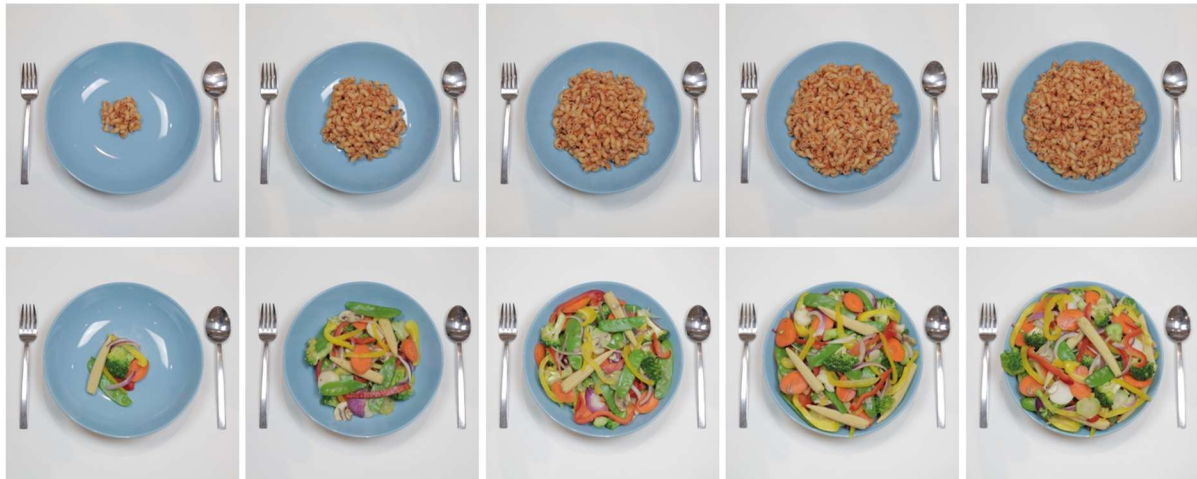
to imagine that their dining partners were people that they were close to (for example, friends, a partner, or family members) and who were a similar age to themselves (to minimise any potential influence of some participants imagining someone they were quite similar to and other participants imagining someone they were quite different to). To encourage participants to actually imagine their dining companions, before making their portion selections, they were asked for some additional details. In the pair scenario, participants indicated the gender of their imagined dining companion (*female*, *male*, or *other*). In the large-group scenario, participants indicated how many people they imagined eating with as well as the genders of their imagined dining companions (*female [all group members]*, *male [all group members]*, *other [all group members]*, or *mixed group of genders*).

For each dining scenario, participants moved a horizontal slider with their computer mouse to scroll through 25 images of either pasta or stir-fry (one half of the participants were randomly assigned to select from images of pasta in a tomato sauce, and the other half were assigned to select from images of a vegetable stir-fry; see Figure 1 for example images). For each of the three dining scenarios, participants selected the one image that best represented the amount of food they would serve themselves in that imagined scenario. All images showed the food photographed in the same blue bowl, with consistent lighting conditions and from the same bird's eye view. Participants could adjust the portion size displayed in the image by moving the slider, with the images showing increasingly larger portions as the slider was moved from left to right. In the pasta version, the images started at 25 grams and moved in 25-gram increments to 625 grams of food. Because stir-fry (~114 kcal per 100 grams) is approximately half as calorically dense as pasta (~240 kcal per 100 grams), the images in the stir-fry version started at 50 grams and moved in 50-gram increments to 1250 grams. Participants were not informed about the specific weight of the food shown in each

image, but the images did include a fork and a spoon next to the bowl to provide a size reference.

Figure 1

Example Images of Pasta and Stir-Fry



Note. Every sixth image from the full series is displayed above (i.e., images number 1, 7, 13, 19, and 25). The example portion sizes displayed for pasta are 25 g, 175 g, 325 g, 475 g, and 625 g, and for stir-fry are 50 g, 350 g, 650 g, 950 g, and 1250 g.

2.1.2.2. Potential Moderators

To assess whether the pattern of results differed according to a number of individual difference characteristics, the following variables were measured for exploratory analyses: participants' hunger (rated on a scale from 0 to 100), tendency to eat in response to social cues (using the Social Eating Scale; Spanos et al., 2014), liking of pasta (or stir-fry), frequency with which they normally ate pasta (or stir-fry), time since last food intake, frequency with which they normally (prior to the outbreak of COVID-19) ate with other people (e.g., family members, friends, colleagues), level of restraint (using Herman and Polivy's [1980] Restraint Scale), tendency to monitor and alter their behaviour in response to

environmental cues about what behaviours are socially appropriate (using Snyder's [1974] Self-monitoring Scale), and BMI. Although there were significant interactions on two of these measures (dietary restraint and social eating), the pattern of results was largely similar for individuals who scored low and high on these measures. Further details of these analyses can be found in the Supplementary Material.

2.1.2.3. Self-reported Intentions

As an additional way of measuring participants' expectations about how they might behave in social and non-social situations, participants were explicitly asked how much food they would serve themselves when dining with other people compared to when dining alone. Specifically, they were asked to indicate whether they would serve themselves *much less, a bit less, about the same, a bit more, or much more* food when dining with others compared to when dining alone.

2.1.2.4. Reasons Behind the Social Precipitation Effect

The following question was aimed at understanding participants' beliefs about why the social precipitation effect might occur. Participants were first given a brief introduction to the social precipitation effect. Specifically, they were informed that research has demonstrated that, not only do people eat more food at social meals than at non-social ones, but they also make more food available for social meals than for non-social ones. Participants were then asked, "Why do you think people might obtain more food for themselves (e.g., by serving themselves more food or ordering themselves more dishes off a menu) for social meals than for meals eaten alone?" Following this they were shown a variety of factors that might influence one's behaviour (e.g., "It is much better to have too much food than too little," "Obtaining more food gives them a good excuse to spend more time with their eating companions over the meal") and were asked to rate the extent to which each factor would influence behaviour in social vs. non-social situations. The rating scale ranged from 1 (*not at*

all an influence) to 7 (*very much an influence*). After completing the ratings, participants were then given the option to list, in an open-ended format, any other reasons they could think of for why people might obtain more food before social meals than before non-social ones.

2.1.2.5. Demographics

Participants reported their gender, age, height and weight (used to calculate their BMI), and ethnicity.

2.1.3. Procedure

All participants completed the study online. After providing their informed consent, participants completed the measures in the following order: hunger and mood measures, portion-selection task, self-reported intentions, Social Eating Scale, reasons behind the social precitation effect, liking of pasta (or stir-fry), frequency of eating pasta (or stir-fry), time since last food intake, frequency of social eating, Restraint Scale, Self-monitoring Scale, and demographics.

2.1.4. Statistical Analyses

Data on the main dependent variables were screened for outliers using Hoaglin and Iglewicz's (1987) outlier labelling rule. There were two outliers but removing these data points did not change the pattern of results and so analyses are reported with those participants included in the data set.

Descriptive statistics were calculated for the gender(s) of the participants' imagined dining companion(s) in the pair and large-group scenarios and for the number of imagined companions in the large-group scenario. The correlation between participants' portion-size selections and their self-reported hunger was also calculated.

A repeated-measures ANOVA with Bonferroni-corrected follow-up contrasts was conducted to examine whether participants selected significantly different portion sizes

across the three imagined dining scenarios. Food type was included as a between-subjects factor to determine whether the pattern of results differed for participants who saw images of pasta compared to images of stir-fry.

The self-reported intentions variable was first examined descriptively and was then included as a between-subjects factor in a repeated-measures ANOVA to assess whether participants' explicit self-reported intentions were consistent with their portion-size selections.

Participants' ratings of the level of influence that the various reasons have on why people might obtain more food before social meals than before non-social ones were ranked. Repeated-measures ANOVAs were conducted as follow-up analyses to confirm whether factors were deemed to be influential (vs. neutral or not influential) and factors were classified as having an influence if the confidence interval for the mean rating was above and did not cross the midpoint of the scale (i.e., a rating of 4). Factors were classified as not having an influence if the confidence interval was below and did not cross the midpoint of the scale.

2.2. Results

2.2.1. Preliminary Analyses

In the pair condition, participants imagined dining with someone of the same gender as themselves 26.4% of the time. In the large-group condition, participants imagined a group of people who were all of the same gender as themselves 15.7% of the time. Participants imagined dining with a mean of 6 companions in the large-group condition. Participants' self-reported hunger correlated significantly with all three portion-size selections (alone condition: $r = .17, p = .010$; pair condition: $r = .13, p = .043$; large-group condition: $r = .13, p = .046$).

2.2.2. Main Analysis: Effect of Dining Scenario on Portion-Size Selection

There was a significant effect of dining scenario on portion-size selection, $F(2, 458) = 42.65, p < .001, \eta^2_p = 0.16$, but the difference was in the opposite direction to what was hypothesised. Follow-up contrasts revealed that participants selected the largest portion in the alone condition, followed by the pair condition, and selected the smallest portion in the large-group condition (all $ps < .001$). There was no interaction with food type, $F(2, 458) = 0.74, p = .478, \eta^2_p = 0.003$, indicating that the pattern of results was the same for pasta and for stir-fry (see Table 1).

Table 1

Selected Portion Size of Food (Grams) as a Function of Imagined Dining Scenario Condition and Food Type

Food type	Imagined dining scenario		
	Alone	Pair	Large-group
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Pasta	381.90 (138.26)	348.06 (124.94)	309.27 (121.74)
Stir-fry	556.96 (248.85)	508.26 (214.39)	486.96 (220.16)

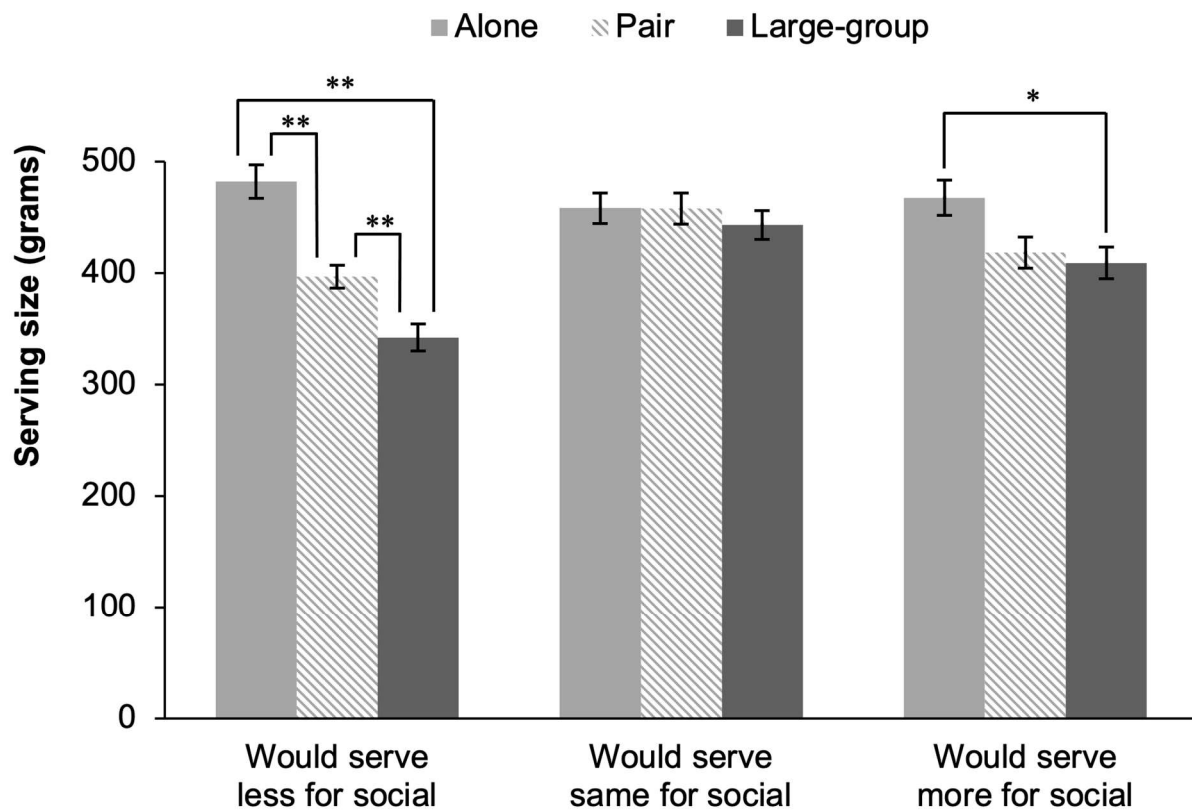
2.2.3. Self-reported Intentions

For the self-reported intentions question, 6% of participants indicated that they would serve themselves much less, 35% said a bit less, 46% said about the same, 9% said a bit more, and 4% said much more food when dining with others compared to when dining alone. Because only a small proportion of people selected the most extreme responses, the self-reported intentions variable was collapsed into three levels (“less,” “the same,” and “more”) for the following analyses. There was a significant interaction between dining scenario and the self-reported intentions variable, $F(4, 456) = 16.96, p < .001, \eta^2_p = 0.13$. With regards to

the simple effects, participants who said that they would serve themselves less when dining with others than when dining alone selected smaller portions in the large-group vs. alone scenarios (mean difference = -139.63 grams, $p < .001$, 95% CI [-166.13, -113.12]) and in the pair vs. alone scenarios (mean difference = -85.11 grams, $p < .001$, 95% CI [-113.74, -56.47]). There were no significant differences in selected portion sizes across scenarios for participants who said that they would serve themselves about the same amount when dining with others compared to alone ($ps > .444$). Participants who said that they would serve themselves more when dining with others than when dining alone actually selected *smaller* portions in the large-group compared to in the alone scenario (mean difference = -58.33 grams, $p = .009$, 95% CI [-105.25, -11.42]). There was no significant difference between selected portion sizes in the pair and alone scenarios for participants who said that they would serve themselves more when dining with others than when dining alone ($ps > .061$; see Figure 2).

Figure 2

Selected Portion Size of Food (Grams) as a Function of Imagined Dining Scenario Condition and Self-reported Intentions



Self-reported intentions for dining socially vs. alone

Note. Error bars represent standard errors. * $p < .01$ ** $p < .001$

2.2.4. Reasons Behind the Social Precilitation Effect

Regarding why people might obtain more food for social meals than for non-social ones, the top three reasons were “They want their host to feel appreciated,” “Social meals are often special occasions, and obtaining more food is a way to celebrate,” and “Because someone else has provided the food and it is free” (see Table 2 for the full set of reasons). All ratings were significantly higher than the neutral midpoint of 4 (i.e., participants rated every factor as having a significant influence on why people might obtain more food before social meals than before non-social ones).

Table 2

Participants' Ratings of How Much Influence Each Factor Has on Why People Might Obtain More Food Before Social Meals than Before Non-Social Ones

Reason	Mean rating
They want their host to feel appreciated	5.60
Social meals are often special occasions, and obtaining more food is a way to celebrate	5.19
Because someone else has provided the food and it is free	4.98
They want to make a good impression on their host	4.92
It is much better to have too much food than too little	4.74
Obtaining more food is a way to make the other diners feel more comfortable about the amounts they chose	4.26
Obtaining more food gives them a good excuse to spend more time with their eating companions over the meal	4.21

2.3. Discussion

Study 1 aimed to examine people's beliefs about how much food they would serve themselves when dining alone, dining with one other person, and dining with a large group of people. Contrary to prediction, participants selected the largest portions when they imagined dining alone and the smallest portions when they imaged dining in a large group, producing an effect in the opposite direction of what has been observed in studies of precilitation (e.g., Ruddock et al., 2021). The fact that participants did not simply select the same portion across the three conditions, and that portion-size selection was correlated (albeit weakly) with their level of hunger, suggests that participants were not just responding randomly or selecting the same amount in all conditions; rather, these responses seem to reflect a meaningful belief that they would select a smaller portion in social settings. This interpretation is further supported by participants' self-reported intentions, which indicated that the vast majority of participants believed that they would eat less or the same amount in a social setting compared to a solo one. In sum, the findings from Study 1 suggest that people are unaware of the social precilitation effect. However, it is also possible that people may be aware but reluctant to report that dining with a larger number of people can lead them to serve (and eat) larger

portions of food. Indeed, participants did seem to acknowledge that there are reasons one might obtain more food in social situations (such as wanting to appear appreciative to their host, or because social meals are special occasions), even though they seem to deny that they themselves would serve more food. Therefore, perhaps people would be more willing to acknowledge behaviour consistent with social precilitation when asked about how other people would behave. This possibility will be explored in Study 2.

3. Study 2

One way to distinguish between being unaware of how social meals impact behaviour and simply being unwilling to report the intention to select larger portions in social settings is to look at the assumptions people make about the behaviour of others. Research has demonstrated a “self-other” difference when it comes to acknowledging the influence of external factors on people’s behaviour. This self-other difference has been labelled the *third-person effect*, in which people believe that external influences have a weaker impact on their own behaviour than on the behaviour of others (Douglas & Sutton, 2004). In the context of food intake, people seem to be more willing to acknowledge social influences on other people’s eating behaviour than on their own behaviour (Spanos et al., 2014), presumably because impression-management concerns are not activated when judging someone else’s behaviour. With respect to the current research, if people are indeed aware of the social precilitation effect, they might be more willing to acknowledge the influence of the social situation when it comes to making predictions about the behaviour of others compared to their own behaviour.

In Study 2, participants completed two portion-size selection tasks that were similar to the tasks used in Study 1. In the “self” version of the survey, participants were asked to indicate how much food they would serve themselves when dining alone and when dining with a group of people. In the “other” version of the survey, they were asked to indicate how

much food someone else might serve themselves when dining with a group of people compared to when dining alone. Based on the Study 1 findings, it was hypothesised that, when thinking about their own behaviour, participants would select smaller portions in the group condition compared to in the alone condition. Conversely, given the self-other difference in people's willingness to acknowledge social factors as an influence on food intake (Spanos et al., 2014), it was hypothesised that participants would assume that another person would select a larger portion when eating in a group than when eating alone condition.

3.1. Method

3.1.1. Participants

Participants were recruited via Prolific and were individuals living in either Australia, the United States of America, the United Kingdom, or Canada. Participants were unable to sign up for the current study if they had completed Study 1. Participants received 3.15 GBP as recompense for their participation. The sample size was calculated to provide 80% power to detect effect sizes of a similar magnitude to those found in Study 1. To allow for attrition between the completion of the self-version survey and the other-version survey, participants were oversampled by approximately 25%. The two versions of the survey were completed at separate timepoints, one week apart (counterbalanced); only participants who completed both surveys were included in the study. In total, 365 individuals completed both surveys. Three participants were excluded for failing all of the attention checks (i.e., questions directing participants to select a particular response) within either survey. The final sample consisted of 362 participants (238 women; 121 men; 3 "other") with a mean age of 35.36 ($SD = 13.07$) and a mean BMI of 25.92 ($SD = 6.59$). With regards to ethnicity, 83.7% identified as White/Caucasian, 8.3% as Asian, 3.0% as Black/African American, 0.3% as Hispanic/Latino(a), and 4.7% as "other".

3.1.2. Materials

3.1.2.1. Portion-Selection Tasks

The portion-selection task was similar to that used in Study 1. Given that there were no interactions by food type in Study 1, all participants in Study 2 were shown images of pasta.

In the self-version of the task, participants imagined dining alone and dining with a group of people, and indicated how much food they would serve themselves in each imagined dining scenario (as was done in Study 1). For the alone scenario, participants moved a slider to scroll through 25 images of pasta ranging from 25 grams to 625 grams and selected the image that best represented how much food they would serve themselves when dining alone. For the group scenario, participants were shown the image of their selected portion size from the alone scenario and were then asked to move the slider to adjust that portion size according to how much pasta they would serve themselves when dining with a group of people. Moving the slider to the right increased the portion of pasta and moving the slider to the left decreased the portion. The reason that participants adjusted the portion size for the group scenario based on their chosen portion size in the alone scenario, rather than making an independent selection (as in Study 1), was so that a parallel task could be used in the other-version of the survey.

In the other-version of the task, participants were asked about the serving behaviour of a fictitious person called Sam. The name Sam was chosen so that a specific gender was not implied, and participants were able to imagine a person of any gender (participants were asked to indicate whether they imagined Sam to be female, male, or “other”). Participants were first shown a “baseline” image of how much Sam “usually serves themselves” when dining alone. Three different anchors were used as a baseline (low anchor = 250 grams; middle anchor = 375 grams; high anchor = 525 grams), and were randomly distributed across participants. These anchor points were chosen based on the mean portion of pasta selected in

the alone condition in Study 1 (382 grams), the mean plus one standard deviation (520 grams), and the mean minus one standard deviation (244 grams). Participants were then asked to indicate how much food they thought that Sam would serve themselves when dining in a group of people. To choose how much pasta they thought that Sam would serve, participants moved a slider to select one of the 25 images of pasta. Moving the slider to the right increased the portion size and moving the slider to the left decreased the portion size.

For each scenario that they imagined, participants were also asked to describe the location they imagined themselves (or Sam) dining in and indicated whether the meal they imagined was a special occasion meal (e.g., for a birthday or end-of-year party) or a normal, everyday meal. In the group scenario, participants also described their (or Sam's) relationship to the people that they imagined themselves (or Sam) dining with (e.g., friends, family members, work colleagues, a mix of friends and family). Participants also indicated how many people they imagined themselves (or Sam) eating with and the genders of the imagined dining companions (*female [all group members]*, *male [all group members]*, *other [all group members]*, or *mixed group of genders*). All of these questions were included in both the self- and other-versions of the survey.

3.1.2.2. Additional Measures

3.1.2.2.1. Potential Moderators. A number of the measures in Study 2 were the same as (or very similar to) in Study 1, including a measurement of participants' hunger, the Social Eating Scale (Cronbach's $\alpha = .73$), liking and frequency of eating pasta, time since last food intake, frequency of social eating, Restraint Scale (Cronbach's $\alpha = .83$), Self-monitoring Scale (Cronbach's $\alpha = .72$), and demographics. As in Study 1, there were significant interactions on dietary restraint and social eating, however the pattern of results was largely similar for individuals who scored low and high on these measures. Further details of these analyses can be found in the Supplementary Material.

3.1.2.2.2. Comparative Judgment. In Study 1, participants were asked to self-report their serving intentions (i.e., how they generally behave in social vs. non-social situations). In contrast, in Study 2, participants were asked a comparative judgment question to examine whether they were aware of how they had behaved in the two specific situations they imagined in this study. After completing the portion-selection task, participants indicated whether they had selected a portion that was *much less*, *a bit less*, *the same*, *a bit more*, or *much more* when they imagined themselves (or Sam) dining with others compared to when they imagined themselves (or Sam) dining alone. This comparative judgment question was used to examine whether participants' explicit judgment about how they had behaved across the two scenarios was consistent with their portion-size selections.

3.1.2.2.3. Reasons Behind Portion Selection Choices. In the self-version of the survey, participants were asked, "Why did you select a smaller/larger/same-sized portion of food when you imagined dining with others compared to when you imagined dining alone?" In the other-version of the survey, participants were asked, "Why do you think Sam would select a smaller/larger/same-sized portion of food when dining with others compared to when dining alone?" Responses to the comparative judgment question were used to determine which version of the "reasons" question they were shown: if participants indicated that they had served much less/a bit less when dining with others, then they were asked why they had chosen to serve a smaller portion when dining with others; if they indicated that they had served much more/a bit more, then they were asked why they had chosen to serve a larger portion when dining with others; if they indicated that they had served the same, then they were asked why they had chosen to serve the same-sized portion when dining with others. Participants responded by rating how strongly they agreed or disagreed with 19 statements (e.g., "I [Sam] would want to make a good impression on the other diners"). The rating scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). After rating their level of agreement

with the statements, participants were then given the option of responding to an open-ended question: “Were there any other reasons why you selected a smaller [larger/the same-sized] portion of food when you imagined dining with others compared to when you imagined dining alone?” or “Were there any other reasons why you thought Sam would select a smaller [larger/the same-sized] portion of food when dining with others compared to when dining alone?” These questions were included to examine why participants made the portion selection choices that they did in the portion-selection task, and to assess what factors participants believed were shaping their serving behaviour in social compared to non-social situations.

3.1.3. Procedure

The study was completed as a two-part study online. At the first timepoint, participants completed the following measures in order: mood and hunger measures, portion-selection task (self-version or other-version), comparative judgment, Social Eating Scale, reasons behind their portion selection choices, liking and frequency of eating pasta, time since last food intake, frequency of social eating, Restraint Scale, Self-monitoring Scale, and demographics. One week later, participants completed the following measures in order: mood and hunger measures, portion-selection task (the version that they did not complete at Time 1), comparative judgment, reasons behind their portion selection choices, and time since last food intake.

3.1.4. Statistical Analyses

3.1.4.1. Preliminary Analyses

As in Study 1, data were screened for outliers, however, there were no outlying values on any of the main dependent variables.

The extra information that participants provided about the scenarios they imagined (location of the meal, occasion [special meal vs. normal meal], relationship to dining companions, gender of companions, number of companions) was analysed descriptively.

3.1.4.2. Main Analyses: Effect of Dining Scenario on Portion-Size Selection

3.1.4.2.1. Self-Version Data. A repeated-measures ANOVA was conducted to examine whether the selected portion sizes differed between the alone and group conditions. A between-subjects factor that coded for whether the self-version was completed at Time 1 or Time 2 was also included to investigate whether the pattern of results differed according to whether participants completed the self-version first or the other-version first.

3.1.4.2.2. Other-Version Data. Because participants did not select a portion in the alone scenario and only selected a portion in the group scenario, a difference score (group scenario portion size minus alone scenario portion size [i.e., the anchor]) was calculated for each participant. These difference scores were used in the following analyses. First, a one-sample *t*-test comparing participants' difference scores to a value of 0 was conducted to examine whether participants were significantly adjusting the portion sizes from the alone scenario anchor when imagining Sam dining in a group. Second, to assess whether the difference scores varied depending on whether participants completed the other-version of the study first or second, a univariate ANOVA was conducted with difference scores as the dependent variable and a variable that coded for whether the other-version was completed at Time 1 or Time 2 as the fixed factor. Finally, to examine whether participants who were shown different anchors for the alone scenario (low anchor = 250 grams; middle anchor = 375 grams; high anchor = 525 grams) responded in the same or a different pattern (when adjusting the portion size for the group scenario), another univariate ANOVA was conducted with a variable that coded for which anchor was shown as the fixed factor.

3.1.4.2.3. Comparing the Self- and Other-Versions. To enable comparison between the self- and other-versions of the survey, a difference score (group-scenario portion size minus alone-scenario portion size) was calculated for each participant's self-version data. The difference scores from the self- and other-versions were included in a repeated-measures ANOVA to investigate whether the magnitude of the difference scores varied between the self- and other-versions. The variable that coded for version completion order was included as a between-subjects factor to assess whether the order in which participants completed the two versions of the survey affected the pattern of results.

3.1.4.3. Secondary Analyses

3.1.4.3.1. Comparative Judgment. To assess whether participants' comparative judgment response was consistent with their portion-size selections, participants' responses on both the comparative judgment question and on the portion selection difference score (i.e., group portion size minus alone portion size) were coded as -1 if the responses reflected serving less when dining with others than when dining alone, 0 for serving the same when dining with others and dining alone, and 1 for serving more when dining with others than when dining alone. The intraclass correlation was then calculated between these two sets of coded responses. This analysis was completed on both the self-version data and the other-version data.¹

3.1.4.3.2. Reasons Behind Portion Selection Choices. The various reasons for why participants selected a smaller/larger/the same-sized portion when imagining themselves (or Sam) dining with others compared to alone were ranked according to participants' ratings.

Repeated-measures ANOVAs with the comparative judgment variable included as a

¹ In the later open-ended questions about whether there were any other reasons why they selected the portion sizes that they did, three participants in total (one in the self-version and two in the other-version) specified that they had made a mistake when responding to the comparative judgment question (their comparative judgment responses were *a bit more* but they said they had selected smaller portions in the group scenario in the portion-selection task). Consequently, these participants' data were excluded from the comparative judgment analyses.

between-subjects factor were conducted as follow-up analyses to confirm that reasons were significantly endorsed (or not endorsed, vs. receiving a neutral rating). Reasons were classified as “agreed with” if the confidence interval for the mean rating was above and did not cross the midpoint of the scale (i.e., a rating of 4). Reasons were classified as “disagreed with” if the confidence interval was below and did not cross the midpoint of the scale.²

3.2. Results

3.2.1. Preliminary Analyses

In the self-version alone condition, the majority of participants imagined dining at home (98.3%) and all participants imagined a normal meal. In the self-version group condition, the majority imagined dining at their own or someone else’s home (72.8%) and the next largest proportion imagined dining at a restaurant (24.4%). The majority of participants imagined a normal meal (83.7%) and imagined dining with people they had a close relationship with (friends, family, partner, or a mix of friends/family/partner; 96.7%). Participants imagined dining with a mixed group of genders most frequently (71.5% of the time) and a group of people who were all of the same gender as themselves 20.7% of the time. Participants imagined a mean of 4 dining companions in the group scenario.

In the other-version alone condition, the majority of participants imagined Sam dining at home (88.4%) or at a restaurant (10.0%) and the majority of participants imagined a normal meal (99.7%). In the other-version group condition, the majority of participants imagined Sam dining at Sam’s or someone else’s home (63.9%) or at a restaurant (34.2%). The majority of participants imagined a normal meal (72.9%) and imagined Sam dining with people Sam had a close relationship with (friends, family, partner, or a mix of

² The data of the participants who incorrectly answered the comparative judgment questions were excluded from these analyses because it was not possible to know whether they were responding to the question asked of them (“Why did you select a larger portion of food when you imagined dining with others compared to when you imagined dining alone?”) or the question that would make sense if they had answered the comparative judgment question in the way in which they had intended (“Why did you select a smaller portion of food when you imagined dining with others compared to when you imagined dining alone?”).

friends/family/partner; 95.0%). Participants imagined Sam dining with a mixed group of genders most frequently (83.1% of the time) and imagined Sam dining with a group of people who were all of the same gender as Sam 13.0% of the time. The participant's gender matched Sam's gender 47.0% of the time and matched the genders of all the imagined dining companions 6.4% of the time. Participants imagined a mean of 4 companions in the group scenario.

3.2.2. Main Analyses: Effect of Dining Scenario on Portion-Size Selection

3.2.2.1. Self-Version Data

The repeated-measures ANOVA revealed a significant effect of dining scenario on portion-size selection, $F(1, 361) = 42.55, p < .001, \eta^2_p = 0.11$. As in Study 1, participants chose larger portions when they imagined dining alone ($M = 345.10$ grams, $SD = 116.99$) than when they imagined dining in a group ($M = 321.89$ grams, $SD = 106.73$). There was no significant interaction with the timepoint at which participants completed the self-version survey, $F(1, 360) = 0.95, p = .331, \eta^2_p = 0.003$.

3.2.2.2. Other-Version Data

The one-sample *t*-test revealed a significant degree of adjustment in portion-size selection for Sam, such that participants selected smaller portions when they imagined Sam dining in a group compared to the amount that Sam “usually ate” when dining alone (mean difference = $-17.54, p = .001, 95\% \text{ CI } [-27.71, -7.37]$). The first univariate ANOVA found that participants' difference scores were the same irrespective of whether they completed the other-version of the survey at Time 1 or Time 2, $F(1, 360) = 1.88, p = .171, \eta^2_p = 0.01$. The second univariate ANOVA revealed that participants' difference scores differed according to which anchor they were shown, $F(2, 359) = 65.16, p < .001, \eta^2_p = 0.27$. Participants in the low-anchor group adjusted upwards by a significant amount (mean difference = $+41.88$ grams, $95\% \text{ CI } [26.70, 57.05]$). Participants in the middle-anchor group did not adjust the

portion significantly (mean difference = -11.35 grams, 95% CI [-26.59, 3.90]). Participants in the high-anchor group adjusted downwards by a significant amount (mean difference = -81.50 grams, 95% CI [-96.50, -66.51]). Given this anchor effect, an additional analysis was conducted on the self-version data to determine whether a similar pattern was also present in the self-version of the survey. Participants were separated into three groups based on the portion sizes that they chose in the alone scenario (small-portion group, middle-portion group, large-portion group) and the file was split according to these groupings. For each grouping, a repeated-measures ANOVA was conducted and the analysis revealed the same general pattern as for the other-version analysis: Participants in the small-portion group adjusted significantly upwards (mean difference = +11.95 grams, 95% CI [2.92, 20.97]), $F(1, 112) = 6.88, p = .010, \eta^2_p = 0.06$; participants in the middle-portion group adjusted significantly downwards (mean difference = -21.51 grams, 95% CI [-31.28, -11.75]), $F(1, 128) = 19.00, p < .001, \eta^2_p = 0.13$; and participants in the large-portion group adjusted significantly downwards (mean difference = -58.13 grams, 95% CI [-72.02, -44.24]), $F(1, 119) = 68.66, p < .001, \eta^2_p = 0.37$.

3.2.2.3. Comparing the Self- and Other-Versions

The repeated-measures ANOVA revealed that there was no significant difference in the magnitude of the difference scores between the self-version ($M = -23.20$ grams, $SD = 67.68$) and other-version ($M = -17.54$ grams, $SD = 98.43$) of the data, $F(1, 361) = 1.06, p = .303, \eta^2_p = 0.003$. There was also no significant interaction with version completion order, $F(1, 360) = 0.44, p = .510, \eta^2_p = 0.001$.

3.2.3. Secondary Analyses

3.2.3.1. Comparative Judgment

For the self-version data, 43.2% of participants reported that they selected smaller portions when imagining dining with others than when dining alone, 43.5% reported they

selected the same-sized portions, and 13.3% reported they selected larger portions when imagining dining with others than when dining alone. Based on the portion selection difference score, 44.3% selected a smaller portion for the group scenario than for the alone scenario, 39.1% selected the same-sized portions, and 16.6% selected a larger portion for the group scenario than for the alone scenario. There was excellent consistency across measures, as indicated by the intraclass correlation, $ICC(2, k) = .91$ (95% CI [.89, .93]).

For the other-version data, 47.8% of participants reported that they selected smaller portions when imagining Sam dining with others than when dining alone, 28.1% reported selecting the same-sized portions, and 24.2% reported selecting larger portions. According to the portion selection difference score, 49.7% selected a smaller portion for the group scenario than for the alone scenario, 18.3% selected the same-sized portions, and 31.9% selected a larger portion. These frequencies suggest good consistency across measures, as supported by the intraclass correlation, $ICC(2, k) = .89$ (95% CI [.87, .91]).

3.2.3.2. Reasons Behind Portion Selection Choices

3.2.3.2.1. Self-Version Data. For participants who said that they served themselves less when they imagined dining with others compared to alone, the three most strongly agreed with reasons were “I would want to eat a similar amount to the other diners,” “I was thinking about the impression that my portion size would make on the other diners,” and “I would not want to be judged negatively for eating a different amount to other diners.” For participants who said that they served themselves the same amount across scenarios, the only reason that participants significantly agreed with was “I was imagining how hungry I would be” (all other reasons were rated as not significantly different to or lower than the midpoint of the scale). For participants who said that they served themselves more when they imagined dining with others compared to alone, the three reasons that participants significantly agreed with were “I would want to eat a similar amount to the other diners,” “I would not want the

other diners to feel uncomfortable or self-conscious about the amounts they chose,” and “Eating that amount makes social gatherings more enjoyable.” (See the Supplementary Material for participants’ level of endorsement of all 19 statements.)

3.2.3.2.2. Other-Version Data. For participants who said that Sam would serve themselves less when dining with others than when dining alone, the three most strongly agreed with reasons were “Sam would want to eat a similar amount to the other diners,” “Sam would want to make a good impression on the other diners,” and “Sam would not want other diners to think negatively of her/him/them.” For participants who said that Sam would serve the same amount when dining with others as they normally would when dining alone, the most highly endorsed reason was “Sam would want to eat a similar amount to the other diners,” but this rating was not significantly different to the midpoint of the scale. For participants who said that Sam would serve more when dining with others compared to alone, the three most strongly agreed with reasons were “I was thinking about the amount of food that is usually available at social meals,” “Sam would want to eat a similar amount to the other diners,” and “Sam would want the other diners to feel more comfortable about the amounts they chose.” (See the Supplementary Material for participants’ level of agreement regarding each of the 19 statements.)

3.3. Discussion

Study 2 aimed to examine whether people would be more willing to acknowledge the impact of social context on eating behaviour when asked about how another person, rather than themselves, would behave in social and non-social dining scenarios. As in Study 1, the self-version data from Study 2 showed that participants selected smaller portions when they imagined dining in a group than when they imagined dining alone. Contrary to prediction, the same pattern was observed for the other-version of the task: Participants also selected smaller portions when they imagined Sam dining in a group compared to the amount that Sam

“usually ate” when dining alone. Given that there was good-to-excellent consistency between participants’ portion selections and their comparative judgment responses, it appears that participants were aware that they were selecting smaller portions for the group scenarios in both the self- and other-versions of the study. When asked why they selected the portion sizes that they did, participants who adjusted the portion sizes (either up or down) between the alone and group scenarios tended to rate impression-management concerns and “want to eat a similar amount to other diners” as the main reasons for their choices. In order to further understand participants’ tendency to choose smaller portions for social meals, we also examined their responses to the optional open-ended question about why they selected the portion sizes that they did. One of the most commonly cited reasons was food availability, which included concerns about a limited amount of food being available and wanting to take a “fair” portion size. It seems, then, that participants may have been imagining social meals in which there was a limited amount of food available, and they were concerned about being judged negatively for taking more than their fair share (or taking more than others). The next study was designed to rule out the possibility that the present results were driven by these concerns.

4. Study 3

The purpose of Study 3 was to rule out the possibility that the pattern of results observed in Studies 1 and 2 was due to participants imagining social situations in which there was a limited amount of food available. As in the previous two studies, participants imagined dining alone and dining with a group of people and indicated how much food they would serve themselves in each situation. However, half of the participants were explicitly told that there was plenty of food available at the social meal and that they were the last person to serve themselves (the other half of the participants did not receive this additional information). Based on the findings from Studies 1 and 2, it was hypothesised that

participants in the standard-information group would select smaller portions in the group scenario compared to the alone scenario. If people imagining social meals with limited amounts of food was indeed driving the effect observed in those studies, then it was hypothesised that participants in the extra-information group would select larger portions in the group scenario compared to the alone scenario (consistent with the precilitation effect). In contrast, if imagining limited amounts of food was not driving the effect, then it was hypothesised that participants in the extra-information group would also select smaller portions in the group scenario compared to the alone scenario.

4.1. Method

4.1.1. Participants

Participants were recruited via Prolific and were individuals living in Australia, the United States of America, the United Kingdom, or Canada. Participants were unable to sign up for the current study if they had completed Studies 1 or 2. Participants received 1.25 GBP as recompense for their participation. The sample size was calculated to provide 80% power to detect effect sizes of a similar magnitude to those found in Study 1. In total, 201 participants completed the study. Two participants failed both attention check questions and were therefore excluded. The final sample consisted of 199 participants (127 women; 71 men; one “other”) with a mean age of 35.80 ($SD = 12.87$) and a mean BMI of 24.71 ($SD = 5.87$). With regards to ethnicity, 86.4% identified as White/Caucasian, 9.0% as Asian, 1.0% as Black/African American, 0.5% as Hispanic/Latino(a), and 3.0% as “other”.

4.1.2. Materials

4.1.2.1. Portion-Selection Task

Participants completed the portion-selection task used in Study 1 but were only asked to imagine dining alone and dining in a group (i.e., there was no pair scenario), and all participants were shown images of pasta. Half of the participants were allocated to the

standard-information group in which they completed the task as above. The other half of the participants were allocated to the extra-information group in which, before making their group scenario portion-size selection, participants read the following: “Imagine that everyone else in the group has already served themselves. You are the last person to serve yourself some food and there is still plenty of pasta left in the serving bowl.” The rest of the task was exactly the same across groups. After indicating how much they would serve, participants also provided additional information about the scenarios that they were imagining (location of the meal, occasion [special meal vs. normal meal], relationship to dining companions, gender of companions, number of companions).

4.1.3. Procedure

In the present online study, participants first completed the portion-selection task. They then completed some additional measures (that were the same as in Study 2) in the following order: comparative judgment, reasons behind their portion selection choices, and demographics.

4.1.4. Statistical Analyses

Data were screened for outliers as in Studies 1 and 2 but there were no outlying values on any of the main dependent variables.

The extra information that participants provided about the scenarios they imagined (location of the meal, occasion [special meal vs. normal meal], relationship to dining companions, gender of companions, number of companions) was analysed descriptively.

A repeated-measures ANOVA was conducted to examine whether the portion-sizes selected differed between the alone and group scenarios. A between-subjects factor that coded for information group was included to examine if the pattern of results differed according to whether participants completed the standard-information or the extra-information version of the task.

To assess whether participants' comparative judgment response was consistent with their portion-size selections, a difference score was calculated for participants' portion size selections (group portion minus alone portion), participants' responses on the comparative judgment question and on the difference score were coded as -1, 0, or 1 according to whether the responses aligned with participants serving less, the same, or more when dining with others than when dining alone, and the intraclass correlation was calculated between the two sets of coded responses.³

Participants' ratings of the various reasons for why they selected the portion sizes they did when imagining a social compared to non-social meal were ranked. To determine whether the reasons were agreed or disagreed with (vs. being viewed as neutral), a repeated-measures ANOVA with participants' comparative judgment included as a between-subjects factor was conducted. Reasons were classified as agreed with if the confidence interval for the mean rating was above and did not cross the midpoint of the scale (i.e., a rating of 4) and as disagreed with if the confidence interval was below and did not cross the midpoint of the scale.⁴

4.2. Results

4.2.1. Preliminary Analyses

In the alone condition, the majority of participants imagined dining at home (98.0%) and all participants imagined having a normal meal. In the group condition, the majority of participants imagined dining at their home or someone else's home (65.8%) and the next largest proportion imagined dining at a restaurant (32.2%). The majority of participants imagined having a normal meal (83.4%) and imagined dining with people they had a close relationship with (friends, family, partner, or a mix of friends/family/partner; 96.5%).

³ As in Study 2, participants ($n = 2$) who specified that they had made a mistake when responding to the comparative judgment question were excluded from this analysis.

⁴ The data of the two participants who incorrectly answered the comparative judgment question were excluded from this analysis.

Participants imagined dining with a mixed group of genders most frequently (70.9% of the time) and a group of people who were all of the same gender as themselves 19.6% of the time. Participants imagined a mean of 4 dining companions in the group scenario.

4.2.2. Main Analysis: Effect of Dining Scenario on Portion-Size Selection

The repeated-measures ANOVA demonstrated a significant effect of dining scenario on portion-size selection, $F(1, 198) = 38.59, p < .001, \eta^2_p = 0.16$. As in Studies 1 and 2, participants selected larger portions when they imagined dining alone than when they imagined dining in a group. There was no significant interaction with information group, $F(1, 197) = 3.48, p = .064, \eta^2_p = 0.02$ (see Table 3).

Table 3

Selected Portion Size of Food (Grams) as a Function of Imagined Dining Scenario Condition and Information Group

	Imagined dining scenario	
	Alone	Group
Information group	<i>M (SD)</i>	<i>M (SD)</i>
Standard-information	328.50 (133.76)	305.00 (118.60)
Extra-information	351.77 (122.75)	308.33 (119.52)

4.2.3. Secondary Analyses

4.2.3.1 Comparative Judgment

On the comparative judgment question, 39.6% of participants reported selecting smaller portions when imagining dining with others than when dining alone, 47.7% reported selecting the same-sized portions, and 12.7% reported selecting larger portions. Based on the portion selection difference score, 55.3% selected a smaller portion for the group scenario

than for the alone scenario, 23.9% selected the same-sized portions, and 20.8% selected a larger portion. These results suggest a moderate consistency across measures, as supported by the intraclass correlation, $ICC(2, k) = .56$ (95% CI [.42, .67]).

4.2.3.2 Reasons Behind Portion Selection Choices

For participants who said that they served themselves less when they imagined dining with others compared to alone, the three most strongly agreed with reasons were “I would want to eat a similar amount to the other diners,” “I would not want to be judged negatively for eating a different amount to other diners,” and “I was thinking about the impression that my portion size would make on the other diners.” For participants who said that they served themselves the same amount across scenarios, the only significantly agreed with reason was “I was imagining how hungry I would be.” For participants who said that they served themselves more when they imagined dining with others compared to alone, the three most strongly agreed with reasons were “I would want the other diners to feel more comfortable about the amounts they chose,” “I would want to eat a similar amount to the other diners,” and “I would not want the other diners to feel uncomfortable or self-conscious about the amounts they chose.” (See the Supplementary Material for participants’ level of endorsement of all reasons.)

4.3. Discussion

Study 3 aimed to rule out the possibility that the results of Studies 1 and 2 were driven by participants imagining social meals in which there was a limited amount of food available. Consistent with the first two studies, participants in Study 3 given standard instructions selected smaller portions when they imagined dining in a group than when they imagined dining alone. Furthermore, even when participants were explicitly told that they were the last person in the group to serve themselves and that there was plenty of pasta left in the serving bowl, they still selected smaller portions in the group compared to the alone scenario. These

findings suggest that participants selecting smaller portions when they imagined dining with others compared to when they imagined dining alone was not an artefact of them imagining social meals in which there is not enough food available.

5. General Discussion

The aim of the present research was to examine people's intended serving behaviour at social and non-social meals to provide insight into whether people have a conscious social meal script that leads to the social precilitation effect. Across three studies, participants consistently responded in the opposite direction to what is observed in social precilitation studies involving actual food intake (e.g., Ruddock et al., 2021); that is, participants consistently selected smaller portions when they imagined dining in a group compared to when they imagined dining alone. This pattern of results was still observed when participants were asked about how someone else would behave (Study 2), and when informed that they were the last person to serve themselves and that there was plenty of food available (Study 3). Furthermore, participants' comparative judgment responses were generally consistent with their portion-size selections, suggesting that they were not unintentionally selecting smaller portions in the group scenarios. Rather, they seem to be quite aware that they are selecting smaller portions for social meals than for non-social meals. These findings, then, are inconsistent with the idea that there is a conscious social script dictating that people should serve (or order) themselves more food for a social meal (Cavazza et al., 2011; Herman, 2015). Instead, it appears that people intend (at least when asked in the abstract) to serve themselves less food when dining with company than when dining by themselves.

An interesting finding in Study 2 was that, although there was an overall effect in which participants selected smaller portions in the group scenario, there appeared to be an "anchor effect" in the other-version data. That is, participants who saw the low anchor (250 grams) for the alone scenario adjusted the portion upwards for the group scenario,

participants who saw the middle anchor (375 grams) did not adjust the portion, and participants who saw the high anchor (525 grams) adjusted the portion downwards for the group scenario. Further analysis of the self-version data revealed the same pattern, with participants who chose the smallest portions in the alone scenario increasing the portion size for the group scenario and participants who chose the largest portions in the alone scenario decreasing the portion size for the group scenario. (Note however that the effect in both the self- and other-versions of the survey was largest for the “adjust downwards” group, as compared to the “adjust upwards” and “no adjustment” groups.) Furthermore, a reanalysis of the data from a within-subjects laboratory study of social precilitation (Study 1 of Ruddock et al., 2021) revealed that, although there was an overall social precilitation effect, there was a tendency for participants who selected large portions in the alone condition to adjust downwards and select a smaller portion in the social condition. Therefore, it appears that this pattern of variability is observed in both online and real-world settings. It may be that this variability is the result of normative influence, with people wanting to behave in line with what others are doing. Specifically, people may be aiming to eat as much as they can without being seen to have eaten excessively (Herman et al., 2019). For example, people who feel as though they generally eat a large amount of food when dining alone (or at least more than other people would) might be motivated to adjust downwards, and people who feel as though they eat small portions when alone (or less than others would) might be motivated to adjust upwards, so that they are eating more similarly to their perception of the amount that other people eat and to avoid judgement for being different.

The present findings have theoretical implications, particularly when considered in combination with how people *actually* behave in real-world settings. Although participants in the present research consistently reported intending to serve themselves less food at social meals than at non-social ones, real-world studies (e.g., Ruddock et al., 2021) demonstrate that

people in fact serve themselves more food at social meals. This disconnect between people's intended and actual behaviour suggests that they are *not* aware of how their behaviours are influenced by the social context. It is possible that, when asked in the abstract, people report that they would eat less food at social meals because they are concerned about how they would be judged. Indeed, the most strongly endorsed reasons for why participants selected smaller portions for the social meals in both the self- and other-versions of Study 2, and in Study 3, were related to impression-management concerns and wanting to convey a favourable image. Perhaps, however, when it comes time to serve food in real-world settings, people may be able to lessen the impact of those impression-management concerns with rationalisations such as "I do not have to eat it all and can leave some food leftover on my plate", which may then "allow" them to serve larger portions for those social meals. Because there was no option in the online serving tasks to indicate that they would not eat the entirety of their served portion, and therefore any judgment they might expect about their eating-related behaviours would be based solely on the amount of food they served, this could potentially explain why participants reported intending to have smaller portions when dining socially. Another possibility stems from the fact that it is unclear whether participants in the present research imagined serving themselves alone, in the company of others who were also serving food, or in the company of others who were simply watching. In laboratory studies of precilitation, participants served themselves either alone (in a separate room to their dining companion) or in the presence of a dining companion who was also serving themselves food (Ruddock et al., 2021), but perhaps in the online studies participants were imagining serving a portion of food *in front* of other people who were just watching them. This may have heightened impression-management concerns leading participants to report that they would serve smaller portions when dining with others, whereas in laboratory studies participants

may be focusing more on the amount of food that they would want to eat when dining *with* others.

5.1. Limitations and Future Directions

In order to be able to gauge people's social script, the current study used an online task that was removed from an actual eating situation to ask people about their intended serving behaviour. This design provided consistent evidence that participants intended to serve themselves less food for meals eaten with other people than meals eaten alone, suggesting that they do not appear to have a conscious social script that they should serve themselves a bigger portion for social meals. However, it is possible that people's intentions might shift when it comes time to actually serve themselves food (e.g., because they can see the amount of food that has been provided for the social meal, or perhaps because the sensory properties of the food—the sight and smell—triggers a desire to eat that overrides the abstract, cognitive intentions). Future research should examine whether people's intentions about how much to serve themselves at social meals change as the meal approaches. Research should also investigate whether people have an accurate awareness of how much they have served (and eaten) at a social meal, once that meal has concluded. Given the disconnect between people's intended and actual serving behaviour, is it possible that people *think* they are serving themselves less food, but in fact end up serving more and not being aware of it. Another possibility is that when it comes time for the actual meal, people do realise that they are serving themselves more food but think that they will just not eat it all (e.g., because it is better to have too much food than too little, as endorsed by participants in Study 1). However, given the influence that pre-meal decisions have, and that people do not tend to stray from these (Fay et al., 2011), people might then consume all or almost all of that food, despite not intending to do so when they were serving.

To evaluate whether people's intended serving behaviour differed according to food type, Study 1 used two types of main meals with different caloric values (pasta and stir-fry). There was no significant difference by food type indicating that, irrespective of the food type and its caloric value, participants reported that they would select smaller portions for social meals. However, in all three studies, participants only had the option to choose a portion of one food to constitute their whole meal. Lab-based studies of social precilitation do demonstrate the effect even when only one food option is available (Ruddock et al., 2021), but in real-world dining scenarios meals are not always comprised of just a single dish, particularly when people are eating with others. It is possible that the social precilitation effect might be even more pronounced when people are presented with variety (e.g., because they serve themselves slightly larger portions of each dish, or because they have an extra course of food that they would not have when dining alone). Future research should examine people's intended behaviour at social and non-social meals when they are serving themselves a portion of multiple courses (e.g., an entree, main, and dessert).

In the present studies, the focus of the research was on how much food people served themselves, because this allowed comparisons to be drawn to previous lab-based precilitation studies examining actual serving behaviour (Ruddock et al., 2021). However, there are other ways that food can come to the table before a meal. Even before people serve themselves, that food has to have been provided in some way. It would be beneficial for research to examine people's intended and actual behaviour when it comes to *providing* food for the group for the social meals (e.g., like a host would at a dinner party), because research has so far only focussed on what happens when each person is responsible for serving (or ordering) themselves their own individual portion. It is possible that people do have a social script but that it is about providing more food for a social meal, rather than serving oneself more food. If this were the case, then people should be willing to acknowledge that they would provide

more food (per person) if they were a host of a social meal compared to the amount of food they would provide (per person, i.e., for themselves) when alone. Understanding whether people intend and actually do provide more food, per person, for social meals compared to non-social ones may also provide insights into the disconnect between people's intended and actual serving behaviour observed in the current studies. For example, it may be the case that seeing that a large amount of food has been provided for a meal implies that there is some expectation that it will be eaten (or at least a significant proportion of it will be eaten) and that there is a social norm that it is appropriate, in that social context, to eat a large amount.

5.2. Conclusion

To conclude, the present research demonstrated that people consistently report intentions to serve themselves smaller portions of food for meals they would eat with other people compared to meals they would eat alone, and this effect remains when asking about how another person might behave as well as when informing participants that there is plenty of food available at the social meal. These findings are contrary to results of social precilitation studies showing that people serve themselves more food before social meals than before meals eaten alone (Ruddock et al., 2021), and thus suggest a disconnect between people's intentions and their actual behaviour. One of the challenges for future research will be to understand *why* this disconnect emerges, and what implications it has for people's ability to manage their food intake.

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Declaration of interest

Declarations of interest: none