Eating Less to Impress? The Influence of Cross-Gender Presence and Impression Management on Portion Sizes among Undergraduate Students

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ABSTRACT

***Background**: Data from the RISKESDAS year 2018 indicates an increasing prevalence of overweight among adults. This increase is in line with the increase in portion sizes, where the presence of people of different gender and impression management are suspected to influence portion sizes. Hence, further study on portion sizes is needed to aid in developing effective policies to promote healthy eating behaviors. **Objectives**: To investigate the influence of cross-gender presence and impression management on portion sizes during lunch. **Method**: This study employed a quasi-experimental design consisting of control and experimental groups. The experiment involved a confederate as a dining companion for participants in the experimental group whose gender differs from the participants. We analyzed data from 227 participants, with an expected effect size of d = 0.25, significance level (a) of 0.05, and power of 0.95. Participant criteria included being students of Universitas Negeri Semarang (UNNES), not currently on a diet, having no allergies, and not being vegan or vegetarian. Impression management was measured using items from Turnley & Bolino (1999), while portion sizes were measured using the Fake Food Buffet (FFB) developed by Bucher et al. (2011). **Results**: Participants with high impression management tended to have larger portion sizes when dining with individuals of the opposite gender than when dining alone. Impression management positively influenced portion sizes. Without the influence of impression management, when dining with individuals of the opposite gender, participants tended to choose smaller portion sizes compared to when dining alone. **Conclusion**: The community must be aware of the significant influence of high impression management and the presence of individuals of the opposite gender on meal portions. Individuals with high impression management may consider avoiding social eating situations if they want to reduce their portion sizes.*

***Keywords**: Eating behavior, Impression management, Portion size, Social context.*

INTRODUCTION

The prevalence of overweight and obesity worldwide continues to rise annually. The World Health Organization reported that by 2016, the global prevalence of obesity reached 13.1%, ranging from 4.7% in Southeast Asia region to 28.6% in America (WHO, 2022). In Indonesia, based on data from RISKESDAS year 2018, the prevalence of overweight (Body Mass Index/BMI ≥ 25) among adults aged 18 and above increased by 5% from 2007 to 2018, while obesity (BMI ≥ 27) increased by 11.3% (Kementerian Kesehatan Republik Indonesia, 2018).

Obesity and overweight lead to non-communicable diseases that pose life-threatening risks. It is known that increasing BMI raises the risk of diseases such as coronary heart disease, ischemic stroke, and type 2 diabetes (Dale et al., 2017). Moreover, obesity has adverse metabolic effects on insulin resistance, blood pressure, cholesterol, and triglyceride (Czech, 2017; Do Carmo et al., 2016; Mc Auley, 2020; Nur & Warganegara, 2016). WHO reported, out of 56.9 million deaths worldwide, 40.5 million or 71% of deaths were attributed to non-communicable diseases such as heart disease and stroke (World Health Organization, 2018).

Large portion sizes contribute to the risk of obesity and overweight (Livingstone & Pourshahidi, 2014). Portion size refers to the quantity of food consumed at one time, such as how much food is on an individual's plate during lunch (Benton, 2015). Portion size preferences can vary based on factors such as gender, age, hunger, and BMI (Duszka, Hechenberger,

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Dolak, Kobiljak, & König, 2022). Over the past few decades, portion sizes of various types of food have increased, in line with the rising rates of obesity (Almiron-Roig, Navas-Carretero, Emery, & Martínez, 2018). Studies show that larger-than-necessary portion sizes can lead to increased energy intake, exceeding daily energy needs, and, if sustained over time, can result in weight gain (Rolls, 2014; Higgins *et al.*, 2019; Robinson, Patel, and Jones, 2023). Reducing portion sizes can be an effective strategy to decrease energy intake and help address the obesity epidemic (Marteau, Hollands, Shemilt, & Jebb, 2015). Therefore, understanding the reasons behind portion sizes will aid in developing effective policies to promote healthy eating behaviors and prevent obesity and overweight (Wongprawmas et al., 2021).

Social contexts are believed to influence portion size (Higgs et al., 2018; Ruddock, Brunstrom, Vartanian, & Higgs, 2019; Suwalska & Bogdański, 2021). Individuals socialize while eating, a phenomenon known as social eating (Ruddock, Brunstrom, & Higgs, 2021). Social eating is thought to trigger large portions of food as attention to how much they eat is distracted, and it triggers arousal, which can increase hunger or dominant responses (Herman, 2017). According to a study conducted by Ruddock (2021) when individuals know they will be socialized at meals, they anticipate taking larger portions than when they are told they will eat alone. In an experiment measuring participants' food consumption, both when eating alone and with friends in a laboratory setting, was found that social eating led people to consume more food than when eating alone (Hetherington, Anderson, Norton, & Newson, 2006). Both studies indicate that individuals tend to eat more when dining together compared to eating alone.

Eating with friends of the same and opposite gender is suspected to influence portion size. When dining with individuals of the opposite gender, individuals tend to adjust their eating behaviors to create certain impressions (Dibb-Smith & Brindal, 2015). This is related to the concept of impression management, which when individuals adjust their behavior as a mean to create a certain impression of themselves (or self-presentation). Impression management involves strategies individuals used to influence how they are seen by others. For example, women tend to eat lightly with men, as eating in small quantities give the impression of femininity (Ruddock et al., 2019). According to Jones and Pittman, impression management consists of 5 factors: self-promotion, ingratiation, exemplification, intimidation, and supplication (Bolino & Turnley, 1999). Self-promotion presents individuals who aim to appear competent, thus showcasing their abilities or accomplishments. Ingratiation presents individuals who give flattery or assistance to gain favor from observers. Exemplification presents individuals who willingly to go above and beyond their duties to gain recognition for their dedication. Intimidation presents individuals who display their potential or power to appear threatening. Supplication presents individuals who display their shortcomings or weaknesses to gain the impression of being in need.

Research by Cavazza (2017) found that when dining with a partner, individuals adjust the type and amount of foods they eat to express their gender identity and impression management needs. In other words, individuals tend to use quantity as a form of conveying their gender identity. These findings align with Baker et al. (2019) who found that single (uncoupled) individuals tend to consume fewer calories when eating with an attractive member of the opposite gender (Baker et al., 2019). In contrast to these studies, the results of an imaginary meals scenario study stated that impression management was positively associated with the number of foods ordered (Dibb-Smith & Brindal, 2015). Previous research indicates inconsistency in its findings and a limited number of studies which directly stating the relationship between portion sizes and impression management. Therefore, this study aims to understand how social contexts influence portion sizes through the presence of dining companion of different gender and impression management, which to the best of the researcher's knowledge were less explored in Indonesia.

In previous studies, researchers also identified several weaknesses, where data collection methods involved false scenario (Dibb-Smith & Brindal, 2015). These shortcomings provide the basis for improvement and development of this

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research. In this study, the implementation of social eating is made as realistic as possible by directly involving participants and dining partners. It is hoped that this method will enhance validity, reduce information biases, and contribute more to the understanding of the phenomenon under investigation. Based on the above elaboration, this study hypothesized that the social context, including dining companions and impression management, influences portion sizes.

METHODS

This study employed a quasi-experimental design consisting of control and experimental groups. This design was chosen to allow researchers to compare the outcomes between groups. The experimental group in this study received an intervention involving the presence of a confederate to carry out specific instructions, while the control group did not receive any intervention.

Participant

The subjects in this study were undergraduate students from UNNES (Universitas Negeri Semarang). The minimum targeted number of participants was 210, obtained through calculations using G*power, with an expected effect size of d = 0.25, a significance level (α) of 0.05, and a power of 0.95. Purposive sampling was used as the sampling technique with inclusion criteria: undergraduate students, not vegan, not vegetarian, not currently on a diet, never been involved in similar research (eating behavior), and have no allergies. In total, 227 participants were recruited in this study through direct recruitment and distribution of pamphlets via WhatsApp, Twitter, and Instagram. To become participants, prospective participants first registered themselves via the link provided in the pamphlet and were then directed to the WhatsApp group. In this WhatsApp group, participants were given a schedule of attendance times, and they were allowed to choose a suitable attendance schedule according to their availability.

Confederate

Confederate is an individual who appeared to be a participant but was part of the research team. The confederate in this study was a dining companion of the opposite gender; if the participant was male, the confederate was female, and vice versa. Therefore, before this experiment, researchers recruited 2 confederates of different genders through the distribution of pamphlets on WhatsApp, with age criteria of around 20-24 years. One of the confederates was an undergraduate student, so there was a possibility that some participants knew or had met the confederate.

Procedure

The procedure involved inviting students to participate in this study in the laboratory. Initially, participants were randomly allocated to either the experimental group or the control group. Afterward, researchers provided an information sheet to the participants which contained the research's general purpose (the real purpose will only be informed during the debrief), procedures, potential risks, data confidentiality, and overall benefits without disclosing specific aims to avoid bias in participants behaviors. They were assured of their right to withdraw from the study at any time without penalty. Then, participants completed a consent form, demographic data (age, gender, weight, and height), and an impression management scale. Afterward, participants were directed to the fake food buffet. Participants were instructed to serve the food they wanted to eat at that moment from the buffet. Participants were provided with utensils for serving food (such as plates, forks, spoons, large trays, and small trays). For the experimental group, researchers assigned a confederate. Participants in the experimental group would serve their food accompanied by the confederate. Meanwhile, participants in the control group would serve their food alone without the presence of a confederate. Subsequently, researchers photographed the food served by participants. After completing the instructions, participants received a reward and debriefing.

During the debriefing, the researchers explained the actual purpose of the study, provided additional context about the research, and addressed any questions or concerns. The information given during the debriefing was consistent with what was outlined in the information sheet but included more detailed explanations about the study aims and methodology. Additionally, researchers requested that participants refrain from

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sharing information or discussing the study procedures with individuals who had not yet participated to avoid bias in this study.

Material and Measurement

a. Portion size

To measure portion size, the study used the number of food choices chosen by participants from the Fake Food Buffet (FFB). Fake Food Buffet is a replica of food served buffet-style (Bucher, Van der Horst, & Siegrist, 2012). The researchers decided to use the Fake Food Buffet as a research instrument because its measurement is objective, resulting in more accurate data. The use of Fake Food Buffet is also more practical and efficient as it is more durable and can be reused multiple times. Additionally, the accuracy and consistency of the Fake Food Buffet have been proven through its validity of 0.76 - 0.87 and reliability of 0.77 – 0.89 (Bucher et al., 2012). In this study, the Fake Food Buffet was arranged based on 24 menu items, including grilled chicken, boiled meatballs, steamed rice, boiled potatoes, boiled carrots, boiled cauliflower, apples, bananas, plain tea, plain coffee, mineral water, juice, fried chicken, fried sausages, fried rice, crackers, fried carrots, fried cauliflower, cakes, chips, sweet tea, sweet coffee, soda, and Sprite. Measurements were made by totaling the number of items chosen by participants.

Figure 1. Fake food buffet.

b. Impression Management

The five factors of impression management were measured using items from Bolino & Turnley, structured according to the Jones and Pittman impression management taxonomy (Bolino & Turnley, 1999). There were 22 items comprising 5 factors as follows: self-promotion, ingratiation, exemplification, intimidation, and supplication. Each item was rated on a Likert scale from 1 to 5, and was favorable in nature. The accuracy and consistency of the impression management scale have been proven, with validity ranging from 0.46 to 0.78 and reliability ranging from 0.75 to 0.88 (Bolino & Turnley, 1999).

Statistical Analysis

The collected data were analyzed using a General Linear Model (GLM) Univariate to examine the effects of confederate presence and impression management on the dependent variable, which is portion size. All analyses were conducted at a significance level of 0.05, with a confidence interval of 95%. The analysis was conducted with the assistance of IBM SPSS 20 software.

Research ethic

The implementation of this research has obtained approval from the Research Ethics Committee of Universitas Negeri Semarang with research ethics number 407/KEPK/EC/2023.

RESULTS AND DISCUSSION

In total, 227 participants were registered for the study. All of them followed through the procedure from start to finish. There were no prospective participants who dropped out before or during the intervention.

Table 1. Participant Characteristics.

Characteristics	Control		Experiment		Total	(%)
	N	%	N	%		
Gender						
Female	70	61.4	73	64.6	143	63
Male	44	38.6	40	35.4	84	37
Age						
17-20 years	86	75.4	49	43.4	135	59.5
21-25 years	28	24.6	64	56.6	92	40.5
BMI						
Underweight	27	23.7	30	26.5	57	25.1
Ideal	73	64	61	54	134	59
Overweight	12	10.5	15	13.3	27	11.9
Obesity	2	1.8	7	6.2	9	4
Hunger Level						
Not hungry to slightly hungry	58	50.9	56	49.6	114	50.2
Moderate	38	33.3	29	25.7	67	39.5

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Hungry to very hungry	18	15.8	28	24.8	46	19.3

Note: Control= Taking meals alone; Experiment= Taking meals with individuals of a different gender.

The study exhibited specific characteristics of participants, as shown in Table 1. Based on gender, females constituted the majority of participants contributing to this study, accounting for 63% of the total sample, while the remaining 37% were males. Regarding age, 59.5% of participants were aged between 17 and 20 years, while 40.5% were aged between 21 and 25 years. Based on BMI, the majority of participants fell into the ideal category, comprising 59%, followed by the underweight category (25.1%) and the overweight category (11.9%). Cases of obesity among participants were the least prevalent, representing only 4% of the sample. Another characteristic examined was the level of hunger among participants at the time of data collection. Hunger levels were divided into three categories: not hungry to slightly hungry, which was the condition for the majority of participants, moderate hunger (39.5%), and hungry to very hungry (19.3%).

Table 2. Percentage (SD) of Portion Sizes Based on The Presence of Dining Companions of a Different Gender.

Group	N	M(SD)%
Taking meals alone	114	11.33 (4.06)
Taking meals with individuals of a different gender	113	9.34 (3.80)

The results of the descriptive analysis revealed that the average portion size in the control group (M=11.33, SD=4.06) was larger than that in the experimental group (M=9.34, SD=3.80), as shown in Table 2. This indicates that participants who served themselves had larger portions compared to participants who were accompanied by individuals of a different gender.

Table 3. Univariate General Linear Model Analysis.

Variable	Sig	Partial Eta Square	B
The presence of individuals of different gender	.007	.032	-7.378
Impression Management	.001	.067	.117
The presence of individuals of different genders* Impression Management	.041	.019	.090

Note: (*) = interaction between two independent variables

Table 3 presents the results of the analysis using an univariate general linear model, demonstrating a significant difference in portion size between participants in the control and experimental groups ($F(1.223)= 7.48$, $p<0.05$, $\eta_p^2= 0.32$). This implies that the presence of individuals of a different gender leads individuals to consume less compared to when they are alone. As a moderator, impression management shows a significant main effect on portion sizes ($F(1.223)= 10.95$, $p<0.05$, $\eta_p^2= 0.067$), indicating that the higher the impression management in participants, the larger their portion sizes, regardless of whether they eat alone or with a companion of a different gender. The interaction effect of the social eating group and impression management significantly influence portion sizes ($F (1.223) = 4.245$, $p<0.05$, $\eta_p^2= 0.019$). In the control group, lower impression management is associated with larger portion sizes, while conversely, in the experimental group, higher impression management leads to larger portion sizes.

This research examines the effect of cross-gender presence and impression management on portion sizes. The results of statistical analysis show evidence that gender differences within dining groups and high impression management stimulate larger portion sizes. This aligns with previous research indicating that individuals tend to consume larger portions when dining in social situations compared to when dining alone (Björnwall, Mattsson Sydner, Koochek, & Neuman, 2021). However, previous studies did not consider the gender composition of dining groups, whereas the presence of individuals of the

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opposite gender may trigger adaptive eating behaviors (Higgs et al., 2018). Therefore, in this study, we structured the gender composition of dining groups consisted of two individuals with different genders, providing evidence that the gender of dining companion plays a role in food selection. Additionally, the results of this study also highlight an increase in portion sizes among participants with high impression management. Thus far, research directly asserting a positive relationship between impression management and portion sizes remains limited, thus these findings offer new insights into the relationship between impression management and portion sizes. Another interesting finding emerged when the factor of the presence of individuals of the opposite gender without the influence of impression management was analyzed; the results showed smaller portion sizes compared to participants dining alone.

The interaction between cross-gender presence and impression management plays a significant role in influencing portion sizes. When dining with individuals of the opposite gender, impression management strategies may be employed by participants to appear attractive (Gasiorowska, Folwarczny, Tan, & Otterbring, 2023). Considering that appearing attractive to individuals of the opposite gender is deemed more crucial by most individuals than when among individuals of the same gender, as it relates to survival and reproduction. Previous studies indicate that, for men, the appearance of their potential partners is highly important in selecting mates, while women tend to prioritize the financial capabilities of their partners (Chen, Wang, & Ordabayeva, 2023; Hou, Shu, & Fang, 2020; Islam, 2021). Consequently, when dining with individuals of the opposite gender, women tend to opt for smaller portions to attract their partners, as it reflects their beauty and femininity (Duszka et al., 2022). Conversely, men demonstrate their status and masculinity with larger portion sizes. However, in this study, high impression management not only led men to choose larger portion sizes in the presence of individuals of the opposite gender but women as well. These findings are quite intriguing considering the social pressures, especially on women, typically resulting in decreased consumption (Dibb-Smith & Brindal, 2015). This situation might occurred because femininity does not always yield a positive image as femininity often reflects low status. Therefore, to appear attractive to their dining partners, participants manage their impressions by selecting larger portions. Participants may believe that larger portion sizes are more attractive to individuals of the opposite gender as they are perceived to have high wealth or social status (Folwarczny, Otterbring, & Ares, 2023; Haslam, Taylor, Herbert, & Bucher, 2020). Individuals with good financial resources are considered able to purchase more food than they need (Mathieu-Bolh & Wendner, 2020; Were et al., 2023).

This research demonstrates that impression management significantly influences eating contexts, both when dining alone and with individuals of the opposite gender. The higher the impression management in individuals, the larger their portion sizes (Edeh et al., 2023). This may be because of the health management but rather an effort to appear pleasant and jovial. Without the influence of impression management, participants consume less in the presence of individuals of the opposite gender. This suggests that smaller portion sizes in the presence of individuals of the opposite gender are not always caused by impression management but may be due to a sense of alienation, given that the level of alienation between men and women is higher. Additionally, a study found that men and women tend to eat less in front of opposite-sex strangers compared to same-sex individuals (Rostovtseva, Butovskaya, Mezentseva, & Weissing, 2023).

CONCLUSION

The results of this study indicate that social context significantly influences portion size through the presence of individuals of the opposite gender and impression management. Through the presence of individuals of the opposite gender, individuals consume smaller portions compared to when dining alone. Furthermore, the influence of high impression management leads to larger portion sizes for individuals. This holds both when they dine alone and in social eating group situations. When these two factors interact, individuals with higher impression management consume larger

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portions when dining with individuals of the opposite gender.

To address the increase in portion sizes, effective interventions can be implemented through various practical solutions. An initial approach that may be effective in addressing this issue is through education and awareness of the impact of high impression management and the presence of individuals of the opposite gender on portion sizes. By providing information related to the findings of this research (increased portion sizes in social eating group situations), individuals become more conscious and control the extent to which impression management influences their portion sizes. Additionally, creating environments that support healthy eating choices should also be considered. For example, by considering spatial arrangements or dining tables that provide privacy for individuals intend to reduce their portion sizes.

Overall, this study provides evidence that the presence of individuals of the opposite gender and impression management influence how much individuals consume certain foods, which can offer valuable insights for further understanding eating behavior in social contexts. This research may be limited in encompassing cultural or social background variations that could affect responses to the presence of individuals of the opposite gender and impression management. Investigating the impact of these variables can provide a more comprehensive understanding of the complexity of factors influencing eating behaviors.

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