TAZKIYA Journal of Psychology
DOI: http://dx.doi.org/10.15408/tazkiya.v12i1.37793
http://journal.uinjkt.ac.id/index.php/tazkiya

Building Image Through Food Choice: The Effects of Unfamiliar Companion, Impression Management, and Emotional Eating on Food Portion

Aqilah Az Zahra[1], Anna Undarwati[2]
Department of Psychology, Faculty of Education and Psychology, Universitas Negeri Semarang, Indonesia

aqilah.azzahra@outlook.com

Abstract

The global rise in the obesity epidemic is largely driven by the consumption of foods that contribute to significant health risks. This research study focuses on the social and personal factors that influence food portions, in addition to environmental factors. The study is designed to investigate the effect of unfamiliar companion, impression management, and emotional eating on food portions in Indonesia. The study employed a quasi-experimental research design in a laboratory setting, using a fake food buffet by recruiting 245 undergraduate students. The results indicated that unfamiliar companion, impression management, and emotional eating had a significant main effect and interaction effect on individuals' food portions ($p < .05$). This was demonstrated by the difference in food portion between people eating alone and in the presence of an unfamiliar companion. It might explain that individuals are aware of maintaining a positive image during meals by choosing food portions that are perceived to reflect positive perceptions when dining with a person who lacks familiarity or personal connection. The research findings can be utilised as a reference for fundamental understanding of mitigation strategies for reducing food portions among adults.

Keywords: emotional eating (EmE), impression management, food portion, unfamiliar companion

Abstrak

Peningkatan epidemi obesitas secara global sebagian besar didorong oleh konsumsi makan yang berisiko secara signifikan pada kesehatan. Tidak hanya dipengaruhi faktor lingkungan, porsi makan juga dipengaruhi oleh faktor sosial dan personal yang menjadi fokus kajian penelitian ini. Penelitian ini dirancang untuk menginvestigasi pengaruh teman makan tidak dikenal, manajemen impresi, dan emotional eating *pada porsi makan individu di Indonesia. Desain penelitian yang digunakan adalah kuasi eksperimental dalam laboratorium menggunakan* fake food buffet *(prasmanan makanan artifisial). Partisipan yang direkrut sejumlah 245 mahasiswa. Hasil penelitian ini mendemonstrasikan bahwa teman makan tidak dikenal, manajemen impresi, dan* emotional eating *memiliki pengaruh utama dan pengaruh interaksi yang signifikan terhadap porsi makan individu dengan p <.05. Hasil ini ditunjukkan dengan adanya perbedaan porsi makan pada kondisi sendirian dan saat ditemani teman makan tidak dikenal. Hal ini dapat menjelaskan bahwa individu tampak sadar untuk menjaga citra positif saat makan dengan memilih porsi yang dianggap mencerminkan persepsi positif saat makan bersama orang yang kurang memiliki keakraban atau hubungan pribadi. Temuan penelitian ini dapat dijadikan acuan pengetahuan mendasar mengenai strategi mitigasi pengurangan porsi makan pada orang dewasa.*

***Kata kunci**: emotional eating (EmE), manajemen impresi, porsi makan, teman makan tidak dikenal*

Introduction

The obesity epidemic is potentially increases when people are surrounded by obesogenic environments. An obesogenic environment refers to a situation where individuals are exposed to a range of convenience food options that are high in fat, sugar, and salt (Bodor et al., 2010; Navarro & Vélez, 2019), or fall under the category of ultra-processed foods, which are typically low in nutrients and high in calories (Beslay et al., 2020). Obesogenic environments are characterised by easy access to fast food restaurants both offline and online (Gordon-Larsen, 2014; Horta et al., 2022; Miles et al., 2022; Paulitsch & Dumith, 2021; Pechey & Marteau, 2018), in which most of the foods offered are high calorie. This situation may have an unwitting effect on their health (Dreher et al., 2019; Huang, 2022), the long-term consequences of consuming high-calorie foods can lead to overweight and obesity, as suggested by several studies (Beslay et al., 2020; Elliston et al., 2017; Gordon-Larsen, 2014; Navarro & Vélez, 2019; Paulitsch & Dumith, 2021; Rahman et al., 2022).

Globally, obesity increases the risk of medical issues. The World Health Organization (WHO) has released data indicating that over one billion people worldwide, including 650 million adults, are obese. It is estimated that by 2025, 167 million adults and children will be at risk of poorer health due to obesity (WHO, 2022), which increase their risk of early mortality by 1.3 times (Kivimäki et al., 2022). Individuals who have obesity may also experience obesity-related health issues, such as cardiovascular disease (e.g. heart disease and hypertension), endocrine disorders (e.g. diabetes), gastrointestinal disease (e.g. pancreatitis and liver disease), stroke, and cancer have been reported in various studies (Bardou et al., 2022; Kivimäki et al., 2022; The GBD 2015 Obesity Collaborators, 2017; Zou et al., 2021). Meanwhile, the prevalence of obesity in Indonesia continue to rise, with 35.4% of adults affected in 2018, whereas the three areas with the highest obesity rates are DKI Jakarta, followed by Aceh and East Java (P2PTM Kemenkes RI, 2018a). According to the Riskesdas' report, there is a direct correlation between the increase in the number of obese individuals and the prevalence of various diseases in Indonesia, such as diabetes mellitus, heart disease and hypertension (P2PTM Kemenkes RI, 2018a; Rokom, 2021). In order to minimise the health risks, it is recommended to consume healthy food (Fadnes et al., 2022; Schulze et al., 2018).

Healthy food is the most essential for supporting human survival. Healthy food contains macronutrients and micronutrients that the body needs as a source of energy (FAO, 2021; Morris & Mohiuddin, 2022), such as carbohydrates, proteins, vitamins and minerals (Y. Chen et al., 2018; Harvard, 2012; Morris & Mohiuddin, 2022). Appropriate portions to meet the body's daily needs could assist individuals achieve healthy eating habits (Carruba et al., 2023), as well as limiting the intake of sugar, salt, and fat (Morris & Mohiuddin, 2022; WHO, 2020). Therefore, selecting healthy food choices and controlling food portion can increase life expectancy and reduce the risk of health problems among adults (Fadnes et al., 2022; Schulze et al., 2018; Yip et al., 2019). However, choosing and determining food portion can be complex due to various personal and social factors (Carruba et al., 2023; Widjaja & Prihaningtyas, 2020).

Social factors, such as the presence of others during meal times, are believed to impact food choices, particularly in the choice of portion sizes. Previous research has shown that when eating with others, individuals tend to prefer high to medium calorie foods, such as pizza, hamburgers, pasta, and potatoes (Young et al., 2009); as well as flavour-rich options like meatballs, *cilok*, and *sambal* (Habibie et al., 2019); and a larger portion of pasta (Ruddock, Long, et al., 2021). In addition, other literature mentions that individuals tend to choose healthy foods with balanced portions when in the company of others, including overweight and obese peer communities (Leahey et al., 2011, 2012), and unfamiliar companion (Baker et al., 2019; Otterbring, 2018). The term "unfamiliar companion" refers to an individual who is not previously known and has not engaged in any form of interaction in a variety of circumstances. However, studies indicate that adult individuals may consume low-nutrient foods even when eating alone (Chae et al., 2018), and individuals who experience social isolation have been found to overeat (Mason et al., 2016). The inconsistent results of studies related to differences in food choices

and portions when in the company of others may also be influenced by other factors, such as personal factors.

Personal factors such as impression management are thought to also contribute to food choices when eating with others. Many studies have revealed that eating with familiar people tend to be excessive than with unfamiliar people (Habibie et al., 2019; Risti et al., 2021; Ruddock, Long, et al., 2021). However, even with an unfamiliar companion can increase food portions and the food tends to be high-calorie in men (Baker et al., 2019; Otterbring, 2018), women eat more than men (Remick, 2011). This may be due to an awareness of impression management, which aims to create a positive impression by consuming certain foods (Vartanian, 2015). Individuals with a high tendency to impression management are tend to consume less food when dining with an unfamiliar companion (Higgs et al., 2022), which is related to gender, with female (in comparison to the alone condition) and male participants (in comparison to the female alone condition) reducing their food portions (Remick, 2011). Consequently, with an awareness of impression management, individuals tend to modify their food intake (Higgs et al., 2022), this can be achieved by selecting smaller portions of food (Stein & Nemeroff, 1995), opting for low-calorie and low-fat options (Gasiorowska et al., 2023), and choosing environmentally friendly food (Folwarczny et al., 2023). Therefore, impression management tactics could be employed as an intervention tool to encourage healthier eating habits (Folwarczny et al., 2023) through food portions by serving less food (Cobo et al., 2022).

In addition to impression management, another personal factor that may influence portion size is eating style, specifically emotional eating (EmE). EmE is the tendency of individuals to eat in an attempt to counter negative emotions (Van Strien et al., 1986). This type of eating style is associated with overeating (Bruch, 1955) as a coping mechanism for feelings of stress, depression, and boredom (Ljubičić et al., 2023). Individuals with EmE have a tendency to consume excessive amounts of foods high in sugar (Grajek et al., 2022; Zahrah et al., 2023), fat (Alharbi & Alharbi, 2023; Bui et al., 2021), and carbohydrates (Nguyen-Michel et al., 2007) without experiencing hunger (Devonport et al., 2019). Thus, EmE is often linked to overweight and obesity (Annisa & Zahra, 2021; Guiné et al., 2019). Conversely, there are interesting findings discussing the influence of emotions on the small portion of food eaten by individuals (Cobo et al., 2022). Further research is needed to fully understand the influence of EmE on individual food portions and to determine appropriate interventions for improving health through eating habits.

There is a difference between the current methods in Western countries and those used in Indonesia. In line with the different results of previous studies on portion size influenced by social and psychological contexts, we also found that most studies on eating behaviour apply behavioural measurements in experimental settings (such as in the US, UK, and the Netherlands) using behavioural measurement, lab-based experiments, observations, and online experiments (Baker et al., 2019; Hermans et al., 2012; Otterbring, 2018; Robinson et al., 2022; Ruddock, Long, et al., 2021). However, in Indonesia, there has been a heavy reliance on subjective measurements, including self-reporting, surveys and FGD (Dewanti et al., 2022; Habibie et al., 2019; Risti et al., 2021), yet few studies have used behavioural measurements of food choices and portions. Indeed, behavioural measurement studies provide observable data without requiring participants to report their inner states. This is undertaken to minimise participants' subjective perceptions, which may be subject to cognitive biases, such as elements outside of conscious experience that may distort judgements (Jonkisz, 2022; Lyyra, 2019). Therefore, this study will investigate the impact of unfamiliar companion as a social context, as well as personal factors such as impression management and emotional eating, on individuals' portion size by using behavioural measurement.

Literature Review

The decision-making process regarding food choices can be driven by various backgrounds. Food choice is the process by which individuals express their preferences, identity, and culture through the selection and consumption of food or beverage (Karanja et al., 2022; Shepherd et al., 2006). Various

models can be used to review conceptual models of food choice, including inductive and deductive models. These models offer structured and interacting perspectives on the decision-making process. For example, life course, multiple factors (including ideal factors, personal factors, social factors and social context) and personal systems (Shepherd et al., 2006). For some models, food content (chemical and nutritional properties) directly triggers hunger and influences perceptions of food texture and flavour. Additionally, attitudes moderated by social, psychological, and economic contexts contribute to the food choice decision process (Chen & Antonelli, 2020).

The food choice decision entails the establishment of a balanced proportion of food to be consumed. The term "food portions" is defined as the amount of food that is consumed at one time (Miller, 2021). These preferences may be influenced by a number of factors, including cultural attitudes towards food, personal preferences, affordability and availability (Carruba et al., 2023). The concept of a food portion is used as a guideline for the promotion of a healthy, balanced diet, which has a standard reference for portion sizes (Carruba et al., 2023). In Indonesia, there is a public guideline regarding meal portions, entitled *"Isi Piringku*", this guideline includes recommendations for food consumption (Such as the recommended portion of staple foods is 1/3 of the plate; vegetables are 1/3 of the plate; side dishes and fruit are each 1/6 of the plate) to ensure the daily nutritional needs are met and to prevent overeating (P2PTM Kemenkes RI, 2018b; Permenkes, 2014), this approach can be linked to the prevention of obesity, as evidenced by the work of Bruch (1955). A healthy diet intervention could be achieved by reducing portion size (Langfield et al., 2023).

Food choice and portion size can be objectively examined using tools and methods that have been used previously. A few examples include the use of the ecology momentary assessment (EMA) method in predicting the eating behaviour of obese people based on situational cues and momentary eating environments (Elliston et al., 2017), the use of fake food buffets that closely resemble natural environments (Bucher et al., 2012; Schreiber et al., 2020), studies have been conducted to investigate consumer behaviour in food choices using a combination of 128 replica and 51 real foods (Mötteli et al., 2016), as well as 74 different food replicas to investigate the influence of food colour variation in healthy food selection (König & Renner, 2019), Additionally, the study explored the use of web buffets to view nutrition and portions of selected image-based foods online (Bucher & Keller, 2015), and the use of food choice tasks conducted online (Foerde et al., 2018; Steinglass et al., 2015). The use of these methods and tools has been shown to simulate and predict the food choices that participants would normally make on a daily basis in a variety of contexts to determine the influences that interact during eating activities (Elliston et al., 2017; Schreiber et al., 2020).

Social context is considered a better reference in explaining food determinants and is thought to strongly influence a person's food choices (Higgs & Thomas, 2016; Shepherd et al., 2006). Eating is often a social activity that involves dining companions such as family, peers, work friends, or even unfamiliar companion (Habibie et al., 2019; Leahey et al., 2011; Polivy & Pliner, 2015; Ruddock, Long, et al., 2021; Wongprawmas et al., 2021). The influence of unfamiliar companions on the portion size is well documented, with studies demonstrating that individuals tend to consume certain portions when in the company of unfamiliar companion (Higgs et al., 2022), this phenomenon is associated with a greater consumption of staple foods (Otterbring, 2018) and a reduction in the food portion (Remick, 2011). The observed changes are attributed to external motivations that may be influenced by the social context, such as social facilitation, social norms, impression management (e.g. social comparison, positive impressions, appropriateness and social acceptance), modelling and conformity (Hermans et al., 2012; Higgs, 2015; Polivy & Pliner, 2015; Remick, 2011; Ruddock, Brunstrom, et al., 2021).

Impression management strategies through food often occur when eating with others. It is a fundamental concept for understanding how individuals control their behaviour to impress others (Folwarczny et al., 2023; Leary, 2019). In the attributive and repudiative concepts introduced by Mark Leary, impression management is performed as a tactic of showing desirable traits and denying undesirable traits to be perceived by others, including in food choices (Leary, 2019). Food can be used as a tactic for impression management (Grishin et al., 2017), whether consciously or unconsciously

(Remick, 2011). This is a common occurrence when Individual with an tendency to engage in impression management dine with an unfamiliar companion, where the choice and quantity of food eaten is managed to project a desired image (Baker et al., 2019; Otterbring, 2018; Vartanian, 2015). For example, individuals may opt to consume a smaller portion of food in order to be perceived as more positive (Stein & Nemeroff, 1995).

Emotional eating style can also be used to identify personal influences that affect portion size. Emotional eating (EmE) is a term that categorises an individual's eating habits based on their tendency to eat when experiencing negative emotions such as stress, anger, disappointment or boredom (Ljubičić et al., 2023; Van Strien et al., 1986). For instance, individuals with EmE are prone to consuming large quantities of high-sugar products, such as ice cream, which are characterised by feelings of arousal, relaxation, and happiness. On the other hand, high-calorie foods, such as pizza, are perceived as more satiating with larger portions (Cobo et al., 2022; Zahrah et al., 2023). Consequently, it has been demonstrated that EmE is frequently linked to overeating and a high body mass index (Guiné et al., 2019). However, are there other factors that make individuals with EmE restrict their eating? a recent study has shown that individuals with EmE may also engage in routine and compensatory restriction behaviours in the context of dietary restriction. (Wang et al., 2023). Restrictive behaviour in general often occurs when people are in the company of others, leading them to eat less (Higgs et al., 2022). This means that individuals who make emotion-based food choices may restrict their food intake in the presence of others. However, it remains unclear whether EmE interacts with impression management in the presence of others, as no research has yet examined this. Therefore, additional research is required to identify other factors that may influence previous findings.

Due to inconsistencies and limitations in existing Western research, it is unclear how the unfamiliar dining companions, emotional eating, and impression management interact. This research is important because existing literature is culturally different and underrepresents Indonesian subjects, who tend to be collectivistic. Hence, this study sought to explore the influence of social and personal context on portion size in Indonesia, specifically examining the effect of unfamiliar companion with elements of the psychological variables of impression management and emotional eating. This study uses the fake food buffet, a measure that has not been widely used in Indonesia. Thus, the study proposes two hypotheses, (H_1) There are several main effects of the presence of unfamiliar companion, emotional eating, and impression management contributing on food portion and (H_2) There is an interaction effect of unfamiliar companion, emotional eating, and impression management on food portion.

Methods

This study employs a quasi-experimental design where there is a manipulation in the experimental condition, in which participants are accompanied by confederate when choosing food. A control condition is also included, where participants choose their food alone. The aim is to determine the effect of unfamiliar companion on portion size.

The participants of this study were undergraduate students. The sample size was determined using G*Power software (Faul et al., 2009) with a medium effect size (Cohen's d= .5, α= .5, power= .90), resulting in a minimum sample size of N= 205 estimated to provide main and interaction effects. In this study, 245 students were recruited through social media and conventional flyers around one of The State University in Indonesia, we recruited a slightly higher number of participants to anticipate incomplete data. Participants in the study had to meet certain criteria. These included not being vegan or vegetarian, not having any food allergies, not undergoing a diet, and not being involved in any previous eating behaviour research. After registering online and completing the study, participants were informed of the research's purpose and received a souvenir as a token of appreciation. This study received approval from *Komisi Etik Penelitian Kesehatan (KEPK) Universitas Negeri Semarang* with permission number 385/ KEPK/ EC/ 2023.

Confederate

As part of the intervention in this research, a confederate is employed as an unfamiliar companion. This is similar to the approach taken by Remick (2011), who employed a confederate when exploring the influence of an unfamiliar companion. Confederate is an individual outside the researcher involved in the research manipulation were recruited through an online flyer advertising the search for research project assistants. After a brief interview, one person was selected based on the criteria of having a normal BMI, aged 18-22 years, and not a student at Universitas Negeri Semarang to ensure that the confederate was not familiar to the participants.

Once the agreement regarding the terms and conditions had been signed, the confederate was instructed to follow the food collection procedure and act as a participant alongside the participants in the laboratory. The confederate was only present in the experimental group with the objective of analysing the difference between the experience of collecting food alone and with an unfamiliar companion. To ascertain whether participants had any prior familiarity with the confederate, before the research debrief, they were asked to rate their familiarity with the confederate.

Procedure

The experiment was conducted in a laboratory setting over two research periods. The setting was equipped with a fake food buffet (FFB) that included plates, bowls, spoons, forks, and trays. Participants were non-randomly allocated into control and experimental groups, during the first period, participants were recruited for the control group, in which they would choose their food selection without accompaniment. The second period is designated for the experimental group, in which they would choose their food items in the presence of confederates or people who they are unfamiliar with. Following the selection process, participants arrived at the laboratory and began the research session.

The experimental procedure consisted of several stages. Firstly, participants were invited to the laboratory after receiving the research session schedule and were asked to fill out the attendance sheet. Following this, their body mass and height were measured to calculate their body mass index (BMI). Participants were first provided with a device connected to an online form to complete the informed consent for research participants, including their name, age, and gender, they also completed the impression management and eating style scales. Secondly, participants were asked to choose food items with FFB in the separate room. In the control group, participants were left alone to select food from the provided buffet table. In contrast, the experimental group completed the task accompanied by a confederate. In the final session of the experiment, participants in the experimental group were asked to rate their familiarity with the confederate. At the end of both groups' sessions, the researchers explained the purpose of the study and provided a souvenir as a gift and a token of appreciation.

Tools and Measurements

Food Portion

To investigate food portions, Bucher et al. (2012) developed the fake food buffet (FFB) to measure eating behaviour. The FFB is a laboratory-based buffet with 24 menus that resembles a real food buffet. It can be used to assess the influence of an individual's food choices, as its validity was tested at .76 and its reliability using test-retest reliability was high at .80 (Bucher et al., 2012). Food choices, particularly portion sizes, are determined by the percentage of total selected food items.

The use of FFB to investigate the influence of unfamiliar companion on food choices was chosen for convenience and ease of use (e.g., no special space needed for cooking, tools to heat food, and long-term storage). Additionally, it is more hygienic and cost-effective. The appearance of the food replica was also rated as realistic by participants in previous studies, so participants behaved naturally when given the artificial food (Bucher et al., 2012).

Emotional Eating (EmE)

Emotional Eating (EmE) is a sub-scale of the Dutch Eating Behaviour Questionnaire (DEBQ), comprising 13 items that measure an individual's tendency towards EmE. The questionnaire enquires about the frequency of decisions to eat as a result of negative emotions (e.g., Do you have the desire to eat when you are irritated? Do you have a desire to eat when you are feeling lonely?). Responses are provided on a scale ranging from 1 (never) to 5 (always). The DEBQ scales have been tested for high internal consistency and high levels of convergent validity for the measurement of eating style. In particular, the emotional eating subscales demonstrated test-retest reliability of 0.90, indicating that Cronbach's alpha was higher than the threshold for sufficient consistency. This indicates that the emotional eating style items contributed to the scale's function. (Bozan et al., 2011; Van Strien et al., 1986).

Impression Management

The Impression Management Scale, developed by Bolino & Turnley (1999), measures impression management using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Participants were asked to rate the 22 available items based on their suitability. Each impression management tactic has a Cronbach's alpha coefficient ranging from .70 to .88 This indicates that Cronbach's alpha exceeded the cut-off values for adequate consistency, thereby providing a clear indication of the presence of a five-factor model (Karam et al., 2016).

Statistical Analysis

The study's statistical analysis presents means and standard deviations for continuous variables and percentages for categorical variables. The mean difference between the experimental and control conditions was tested using the General Linear Model Univariate statistical test with a significance level of 0.5, using IBM SPSS 27 for Windows 11 (SPSS Inc.).

Results and Discussion

All participants completed the experiment and all data obtained were included in the analyses. Of 245 participants, 153 (62%) were female, and 92 (38%) were male. They were aged between 17 and 28 years (M = 20.12, SD = 1.83). **Table 1.** shows that the mean portion size of the control group (N=120, M=11.33, SD=4.13), which selected food alone, had a higher average food portion than the mean of experimental group (N=125, M=9.94, SD=3.66), which was accompanied by an unfamiliar. This indicates that individuals tend to consume more food when alone and less food in the presence of unfamiliar companion.

Table 1. Sample Distribution and Descriptive Analysis

		N	BMI (Mean±SD)	Age (Mean±SD)	Food Portion (Mean±SD)	IM (Mean±SD)	EmE (Mean±SD)
Male	Alone	48	20.85±3.39	19.54±1.54	10.96±3.40	57±13	31.21±10.13
	UC	44	22.87±4.39	21.07±2	10.66±3.32	63.64±11.95	32.16±11.97
	Total	92	23.74±4.01	20.27±2	10.82±3.35	60.18±12.88	31.66±11
Women	Alone	72	20.97±3.24	19.36±1.39	11.58±4.57	61.90±10.72	33.97±11.02
	UC	81	21.14±5.03	20.63±1.79	9.56±3.80	57.27±12.26	37.02±11.67
	Total	153	21.96±4.27	20.78±1.87	10.62±4.30	59.45±11.76	35.59±11.43
Total	Alone	120	20.92±3.28	19.43±1.52	11.33±4.13	59.95±11.88	32.87±10.72
	UC	125	21.74±4.86	20.78±1.87	9.94±3.66	59.51±12.48	35.31±11.96
	Total	245	21.34±4.18	20.12±1.83	10.62±3.95	59.73±12.17	34.11±11.41

Notes: BMI= Body Mass Index; IM= Impression Management; EmE= Emotional Eating; UC= Unfamiliar Companion

Table 2. GLM Details for Individual's Food Portion

Effect	Variable	Df	F	*p*	ES
Main	Alone (N=120)	1	7.181	.008	.029
Effect	UC (N=125)	1	7.181	.008	.029
	EmE	1	9.130	.003	.037
	IM	1	12.381	.001	.050
Interaction	UC*EmE	1	11.471	.001	.046
Effect	UC*IM	1	7.261	.008	.030
	IM*EmE	1	8.230	.004	.034
	UC*EmE*IM	1	10.385	.001	.042

Notes: EmE= Emotional Eating; IM= Impression Management; UC= unfamiliar companion.

GLM statistical analyses were conducted to determine the main effect and interaction effects of factors on individuals' total food intake. The analysis revealed that the main effect of the presence of an unfamiliar dining companion had a partially significantly influence on amount of food taken by individuals in the dining activity F(1, 237) = 7.181, p = .008, partial η^2 = .29. Significant effects were observed on the main effect of other covariates, including EmE F(1, 237) = 9.130, p = .003, partial η^2 = .37, and impression management F(1, 237) = 12.381, p = .001, partial η^2 = .50. This demonstrates that all variables, including unfamiliar companion, emotional eating, and impression management, independently influenced the amount of food taken.

The study analysed the interaction effect of unfamiliar companion and EmE significantly influenced food intake F(1, 237) = 11.471, p = .001, partial η^2 = .046. by comparing the food quantity consumed by the participants alone and in the presence of an unfamiliar companion. Significant interaction effects were found for unfamiliar companion with impression management F(1, 237) = 7.261, p = .008, partial η^2 = .030; and for EmE and impression management F(1, 237) = 8.230, p = .004, partial η^2 = .034; and the interaction between unfamiliar companion, EmE, and impression management The statistical analysis showed a significant effect with F(1, 237) = 10.385, p = .001, partial η^2 = .042. The data provides evidence that the interaction effect between variables has a significant effect on the amount of food eaten by individuals, with small to medium effect sizes. Specifically, individuals who are characterised by EmE, impression management, and being followed by unfamiliar companion during the food selection process are more likely to choose a smaller portion than they normally would.

Discussion

The study findings indicate the role of social and personal contexts in influencing individual portion sizes. The results are reflected by the difference in the amount of food taken, which is smaller when with an unfamiliar dining companion and or a high tendency to impression management. Furthermore, in relation to emotional eating, individuals tend to eat more when alone and reduce their portion size when with an unfamiliar companion. Hence, the hypotheses that there are several main effects of the presence of unfamiliar companion, emotional eating, and impression management contributing on food portion (H_1) and there is an interaction effect of unfamiliar companion, emotional eating, and impression management on food portion (H_2), are confirmed.

This study found that individuals' food portions were influenced by the Interaction between unfamiliar companion, impression management, and EmE. The fact that individuals consume less food in the presence of unfamiliar companion can be explained by the Theory of Planned Behaviour (TPB) (Ajzen, 1991). In a previous study on eating behaviour, the strongest predictor of the TPB was found to be subjective norms as social expectations, followed by behavioural control (Rouhani-Tonekaboni et al., 2018). Individuals' belief in subjective norms (e.g. when eating less is considered more moral and attractive to others) (Stein & Nemeroff, 1995) may lead individuals to control their behaviour in anticipation of negative feelings such as regret, shame, or guilt for engaging in certain behaviours

(Baumeister et al., 2007). Food portion decisions also involve behavioural control to emphasise traits that shape positive perceptions of interactions with others, an expression of impression management according to Mark Leary (Grishin et al., 2017; Leary, 2019). Therefore, in this study, participants who chose smaller food portions when dining with an unfamiliar dining companions could be due to subjective norm factors and awareness of impression management to achieve a goal, naturally using the easiest way to achieve (Ajzen, 1991), in this case by choosing food portions.

The decision to choose a small portion of food is also thought to be driven by an interest in building a positive image in front of unfamiliar companion. This is likely to be the case as individuals have a basic intention to engage in impression management and self-regulation (Vohs et al., 2005). Especially in this eating context, although individuals with EmE are known for their overeating traits and their desire to eat without being hungry (Devonport et al., 2019; Zahrah et al., 2023), when they eat with unfamiliar companion, they will try to represent themselves by controlling their portions size, which is considered to create a positive impression. It is proven through two types of measures, subjective and objective, to determine impression management and EmE, tendencies, combined with laboratory techniques to observe differences in the choice of the portion size when alone or in the company of an unfamiliar companions, could show that there is an interaction effect between the unfamiliar companion, impression management, and EmE together on meal portion selection. That is, when individuals are in the same company as unfamiliar companion and have dominant impression management and EmE tendencies, they will tend to choose less food than usual.

Unfamiliar companion and impression management have a significant interaction effect in influencing an individual's food intake. These results reflect the similarity of previous studies (Higgs et al., 2022; Hunter et al., 2018; Remick, 2011). Most people want to be perceived positively when they are with unfamiliar companion, which can be shown by their meal (Vartanian et al., 2007). Impression management strategies can involve modifying food preferences based on the context and situation experienced using consumption stereotypes (e.g. intentionally selecting food products associated with femininity: Salads and seafood, or choosing small portions as perceived favourable) (Gasiorowska et al., 2023). Food stereotypes are based on an individual's judgement of the choice and quantity of food consumed by others (Vartanian, 2015). Therefore, eating with unfamiliar companion presents an opportunity for individuals to showcase their positive characteristics objectively. Our results demonstrate that when an individual has impression management tendencies and encounters unfamiliar people, it influences the portion size of their meal.

Unexpectedly, portion sizes were significantly affected by EmE interactions with impression management. According to the report by Wang (2023) that EmE moderates food restriction (Wang et al., 2023), this study provides additional evidence on EmE in relation to restrictive eating behaviour, which is often associated with overeating and tends to be less healthy (Rachmawati et al., 2019; Zahrah et al., 2023). Based on the data we obtained, it is clear that individuals with EmE tend to choose smaller portions in the presence of unfamiliar companion.

In the presence of an unfamiliar companion, individuals with high EmE and impression management tend to modify their portion size. Similarly, impression management can be shown in social activities such as eating together with a dining companion (Leary, 2019). Being alone facilitates individuals with EmE taking more food than being with an unfamiliar dining companion, possibly because being alone is perceived as not requiring impression management tactics while eating. The findings support previous research that being alone encourages individuals with EmE to eat more (Guiné et al., 2019). Additionally, this study complements the research of Godor (2020), which called for research investigating EmE with unfamiliar peers using objective measurement (Godor et al., 2020).

Smaller portions were preferred in the presence of unfamiliar companion. The fact that individuals prefer smaller portions when eating with an unfamiliar companion is consistent with Remick's (2011) findings suggesting that individuals choose less foods in the presence of unfamiliar people compared to when they eat alone (Remick, 2011, pp. 59–60). Cognitive regulation is crucial in establishing

intentions and goals when determining an action based on the TPB (Ajzen, 1991), this includes maintaining a positive image through impression management (Remick, 2011), believing in subjective norms related to food portions (Ajzen, 1991; Stein & Nemeroff, 1995), and avoiding regret (Baumeister et al., 2007). Consequently, the presence of unfamiliar companion may be a reason for individuals to control their portion size in order to build a positive image.

This study confirms the influence of impression management on individuals' portion size when dining with an unfamiliar dining companion. This finding supports the fact regarding the influence of impression management on small portion size (Higgs et al., 2022; Hunter et al., 2018). The data suggests that individuals may try to present favourable impression on new people through food portions by consuming certain products, individuals may conform to a particular consumption stereotype, such as being perceived as more feminine or masculine (Vartanian, 2015), and also avoiding negative perceptions for taking large portions (Stein & Nemeroff, 1995). However, these results cannot be separated from the influence of the gender of the participants recruited. More than half of the participants were female, which may be one of the reasons impression management significantly influences food quantity. Similar research found that women tend to control food when followed by unfamiliar companion (Hunter et al., 2018) and tend to feel regret when they fail to control the amount of food taken (Graziani et al., 2020). The obtained data also contradicts the findings of Baker et al. (2019), who suggest that men tend to consume more food when eating with unfamiliar companion (Baker et al., 2019). It is possible due to the absence of stimuli such as food price information could explain this discrepancy. Therefore, this study requires further investigation to determine the influence of gender on individual meal portions, as it specifically addresses the impact of unfamiliar companion.

EmE independently affects food choices. The same findings also occur in previous research where emotional conditions affect the accumulation of the amount of individual food consumption (Rachmawati et al., 2019; Zahrah et al., 2023). When alone, individuals with EmE tend to eat more which is thought to be the role of emotional motivation and conditioned eating habits, so they will find it difficult to control food when under negative emotional conditions such as stress, depression, loneliness, and boredom even though there is no feeling of hunger (Devonport et al., 2019; Ljubičić et al., 2023). However, this study did not delve further into the emotional states felt by participants during the study. Nevertheless, this study contributes to identifying the influence of EmE on food choices through objective measurement methods when alone or in the company of others, such as using artificial food buffets in laboratory conditions that make it easier for researchers to conduct experiments and observe the data obtained (Otterbring, 2018).

The results of this study enhance our understanding of social and personal contexts on eating behaviour, particularly in Indonesia. This can contribute to the fields of health psychology, nutrition and related fields that deal with eating behaviour. Although previous studies have provide evidence of the influence of the unfamiliar companion factor, impression management, and EmE on food portions (Cobo et al., 2022; Higgs et al., 2022; Hunter et al., 2018; Rachmawati et al., 2019; Remick, 2011), to the best of our understanding, this study is the first to examine eating behaviour with the interaction effect of the unfamiliar dining companion factor with each of the EmE and impression management factors on food portions.

The study's practical contribution can be applied in professional settings and daily activities. Practitioners in related fields and individuals can use the findings to realise and mitigate factors that contribute to overconsumption. For instance, individuals with a habit of overeating may find portion control is challenging, especially those with an eating style that tends to overeat. Moreover, the obesogenic environment in society makes it easier to access high-calorie foods that have the potential to increase body weight. As a result, calorie intake and the risk of obesity increase. With an awareness of the potential for overeating due to social and personal characteristics factors, it may be helpful to eat in public places where there are unfamiliar people present to reduce the potential for overeating.

Limitations in this study include participant characteristics and research methods. We realised that the participants recruited were predominantly female and limited to college students. Further investigation is needed to balance the number of male and female participants and not limit participants to a particular community, so that the results of the study can be generalised more widely. Regarding methodological limitations, this study did not explore the emotional states of participants, and therefore, the types of positive or negative emotions that may have influenced the results were not shown. Future research should consider the emotional state of participants to clarify the emotions that individuals experience when determining their food portions.

Conclusion

The study suggests that individuals are aware of maintaining a positive image during the meal through portioning, and therefore prefer portions that are perceived to reflect positive perceptions when eating with an unfamiliar companion. Despite the fact that emotional eating can lead to overeating (Bruch, 1955; Zahrah et al., 2023), individuals with EmE and impression management tendencies try to modify their food portions to be smaller. Therefore, this study indicates that social and personal factors have both main and interaction effect on individuals' portions size. The research findings can be utilised as a reference for fundamental understanding of mitigation strategies in reducing food portions among adults with the potential to eat more when alone or under various emotional conditions. However, to deepen the understanding of eating behaviour in Indonesia, future research could examine the influence of demographic roles on food choice or portion. This is particularly relevant to Indonesia's cultural diversity, which can demonstrate the character of Indonesian participants from different regions.

Acknowledgements

The authors would like to thank the eating behaviour project team for their help with data collection.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Alharbi, R. M., & Alharbi, H. F. (2023). The indicator of emotional eating and its effects on dietary patterns among female students at Qassim University. *Nutrients*, *15*(16), Article 16. https://doi.org/10.3390/nu15163553

Annisa, S. R., & Zahra, A. S. A. (2021). Hubungan antara emotional eating dengan penambahan body mass index di masa pandemi covid-19. *Hubungan antara Emotional Eating dengan Penambahan Body Mass Index di Masa Pandemi Covid-19*, *2(1)*, 1-8. https://conference.upnvj.ac.id/index.php/semnashmkm2020/article/view/1977

Baker, M., Strickland, A., & Fox, N. D. (2019). Choosing a meal to increase your appeal: How relationship status, sexual orientation, dining partner sex, and attractiveness impact nutritional choices in social dining scenarios. *Appetite*, *133*, 262–269. https://doi.org/10.1016/j.appet.2018.11.023

Bardou, M., Rouland, A., Martel, M., Loffroy, R., Barkun, A. N., & Chapelle, N. (2022). Review article: Obesity and colorectal cancer. *Alimentary Pharmacology & Therapeutics*, *56*(3), 407–418. https://doi.org/10.1111/apt.17045

Baumeister, R. F., Vohs, K. D., Nathan DeWall, C., & Liqing Zhang. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality and Social Psychology Review*, *11*(2), 167–203. https://doi.org/10.1177/1088868307301033

Beslay, M., Srour, B., Méjean, C., Allès, B., Fiolet, T., Debras, C., Chazelas, E., Deschasaux, M., Wendeu-Foyet, M. G., Hercberg, S., Galan, P., Monteiro, C. A., Deschamps, V., Calixto Andrade, G., Kesse-Guyot, E., Julia, C., & Touvier, M. (2020). Ultra-processed food intake in association with BMI change and risk of overweight and obesity: A prospective analysis of the French NutriNet-Santé cohort. *PLOS Medicine*, *17*(8), e1003256. https://doi.org/10.1371/journal.pmed.1003256

Bodor, J. N., Rice, J. C., Farley, T. A., Swalm, C. M., & Rose, D. (2010). The association between obesity and urban food environments. *Journal of Urban Health*, *87*(5), 771–781. https://doi.org/10.1007/s11524-010-9460-6

Bozan, N., Bas, M., & Asci, F. H. (2011). Psychometric properties of Turkish version of Dutch Eating Behaviour Questionnaire (DEBQ). A preliminary results. *Appetite*, *56*(3), 564–566. https://doi.org/10.1016/j.appet.2011.01.025

Bruch, H. (1955). Role of The emotion in hunger and appetite. *Annals of the New York Academy of Sciences*, *63*(1), 68–75. https://doi.org/10.1111/j.1749-6632.1955.tb36546.x

Bucher, T., & Keller, C. (2015). The web-buffet – development and validation of an online tool to measure food choice. *Public Health Nutrition*, *18*(11), 1950–1959. https://doi.org/10.1017/S1368980014002456

Bucher, T., van der Horst, K., & Siegrist, M. (2012). The fake food buffet – a new method in nutrition behaviour research. *British Journal of Nutrition*, *107*(10), 1553–1560. https://doi.org/10.1017/S000711451100465X

Bui, C., Lin, L.-Y., Wu, C.-Y., Chiu, Y.-W., & Chiou, H.-Y. (2021). Association between emotional eating and frequency of unhealthy food consumption among Taiwanese adolescents. *Nutrients*, *13*(8), 2739. https://doi.org/10.3390/nu13082739

Carruba, M. O., Ragni, M., Ruocco, C., Aliverti, S., Silano, M., Amico, A., Vaccaro, C. M., Marangoni, F., Valerio, A., Poli, A., & Nisoli, E. (2023). Role of portion size in the context of a healthy, balanced diet: A case study of european countries. *International Journal of Environmental Research and Public Health*, *20*(6), 5230. https://doi.org/10.3390/ijerph20065230

Chae, W., Ju, Y. J., Shin, J., Jang, S.-I., & Park, E.-C. (2018). Association between eating behaviour and diet quality: Eating alone vs. eating with others. *Nutrition Journal*, *17*(1), 117. https://doi.org/10.1186/s12937-018-0424-0

Chen, P.-J., & Antonelli, M. (2020). Conceptual models of food choice: Influential factors related to foods, individual differences, and society. *Foods*, *9*(12), 1898. https://doi.org/10.3390/foods9121898

Chen, Y., Michalak, M., & Agellon, L. B. (2018). Importance of Nutrients and nutrient metabolism on human health. *The Yale Journal of Biology and Medicine*, *91*(2), 95–103.

Cobo, M. I. S., Jager, G., de Wijk, R., de Graaf, C., & Zandstra, E. H. (2022). Does portion size matter? Dynamic changes in hedonic and emotional responses to foods varying in portion size. *Food Quality and Preference*, *98*, 104538. https://doi.org/10.1016/j.foodqual.2022.104538

Devonport, T. J., Nicholls, W., & Fullerton, C. (2019). A systematic review of the association between emotions and eating behaviour in normal and overweight adult populations. *Journal of Health Psychology*, *24*(1), 3–24. https://doi.org/10.1177/1359105317697813

Dewanti, R., Probandari, A., & Mulyani, S. (2022). Factors affecting the choice of healthy diet among adolescents in rural areas. *Jurnal Media Gizi Indonesia (National Nutrition Journal),17*(1), 204–212. https://doi.org/10.204736/mgi.v17i1.204–212

Dreher, M., Hoffmann, S. W., Brendel, C., Heser, D., & Simon, P. (2019). Convenience behavior and being overweight in adults: development and validation of the convenience behavior questionnaire. *Frontiers in Public Health*, *7*, 20. https://doi.org/10.3389/fpubh.2019.00020

Elliston, K. G., Ferguson, S. G., Schüz, N., & Schüz, B. (2017). Situational cues and momentary food environment predict everyday eating behavior in adults with overweight and obesity. *Health Psychology*, *36*(4), 337–345. https://doi.org/10.1037/hea0000439

Fadnes, L. T., Økland, J.-M., Haaland, Ø. A., & Johansson, K. A. (2022). Estimating impact of food choices on life expectancy: A modeling study. *PLOS Medicine*, *19*(2), e1003889. https://doi.org/10.1371/journal.pmed.1003889

FAO, I. (2021). *The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*. FAO. https://doi.org/10.4060/cb4474en

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Foerde, K., Gianini, L., Wang, Y., Wu, P., Shohamy, D., Walsh, B. T., & Steinglass, J. E. (2018). Assessment of test-retest reliability of a food choice task among healthy individuals. *Appetite*, *123*, 352–356. https://doi.org/10.1016/j.appet.2018.01.010

Folwarczny, M., Otterbring, T., & Ares, G. (2023). Sustainable food choices as an impression management strategy. *Current Opinion in Food Science*, *49*, 100969. https://doi.org/10.1016/j.cofs.2022.100969

Gasiorowska, A., Folwarczny, M., Tan, L. K. L., & Otterbring, T. (2023). Delicate dining with a date and burger binging with buddies: Impression management across social settings and consumers' preferences for masculine or feminine foods. *Frontiers in Nutrition*, *10*, 1127409. https://doi.org/10.3389/fnut.2023.1127409

Godor, B. P., Uysal, R., Van Der Poel, A., & Jansen, P. (2020). Exploring potential differential relationships between social anxiety and emotional eating amongst normative vs. academically gifted students. *Gifted and Talented International*, *35*(2), 100–109. https://doi.org/10.1080/15332276.2021.1880302

Gordon-Larsen, P. (2014). Food availability/convenience and obesity. *Advances in Nutrition*, *5*(6), 809–817. https://doi.org/10.3945/an.114.007070

Grajek, M., Krupa-Kotara, K., Białek-Dratwa, A., Staśkiewicz, W., Rozmiarek, M., Misterska, E., & Sas-Nowosielski, K. (2022). Prevalence of emotional eating in groups of students with varied diets and physical activity in Poland. *Nutrients*, *14*(16), 3289. https://doi.org/10.3390/nu14163289

Graziani, A. R., Guidetti, M., & Cavazza, N. (2020). Overindulging in food: How overeating may increase women's preference for stereotyped activities and objects. *Cogent Psychology*, *7*(1), 1727682. https://doi.org/10.1080/23311908.2020.1727682

Grishin, M., Li, J. Y., Olson, J. G., & Singh, S. N. (2017). Choosing unhealthy to appear warm: How consumers signal personality traits via food choice. *ACR North American Advances*, *NA-45*. https://www.acrwebsite.org/volumes/1024943/volumes/v45/NA-45

Guiné, R. P. F., Ferrão, A. C., Correia, P., Cardoso, A. P., Ferreira, M., & Duarte, J. (2019). Influence of emotional determinants on the food choices of The Portuguese. *EUREKA: Social and Humanities*, *5*, 31–44. https://doi.org/10.21303/2504-5571.2019.00995

Habibie, I. Y., Brouwer, I., & Februhartanty, J. (2019). Eating behaviour of young female workers with low socioeconomic status in Malang City, East Java: A qualitative stud*y*. *Malaysian Journal Nutrition*, 25,75-85.

Harvard. (2012, September 18). *Protein*. The Nutrition Source. https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/protein/

Hermans, R. C. J., Lichtwarck-Aschoff, A., Bevelander, K. E., Herman, C. P., Larsen, J. K., & Engels, R. C. M. E. (2012). Mimicry of food intake: The dynamic interplay between eating companions. *PLoS ONE*, *7*(2), e31027. https://doi.org/10.1371/journal.pone.0031027

Higgs, S. (2015). Social norms and their influence on eating behaviours. *Appetite*, *86*, 38–44. https://doi.org/10.1016/j.appet.2014.10.021

Higgs, S., Bouguettaya, A., & Ruddock, H. (2022). Awareness of social influences on eating is dependent on familiarity with imagined dining partners and type of eating occasion. *Frontiers in Psychology*, *13*, 841422. https://doi.org/10.3389/fpsyg.2022.841422

Higgs, S., & Thomas, J. (2016). Social influences on eating. *Current Opinion in Behavioral Sciences*, *9*, 1–6. https://doi.org/10.1016/j.cobeha.2015.10.005

Horta, P. M., Matos, J. D. P., & Mendes, L. L. (2022). Food promoted on an online food delivery platform in a Brazilian metropolis during the coronavirus disease (COVID-19) pandemic: A longitudinal analysis. *Public Health Nutrition*, *25*(5), 1336–1345. https://doi.org/10.1017/S1368980022000489

Huang, H. (2022). Food environment inequalities and moderating effects of obesity on their relationships with COVID-19 in Chicago. *Sustainability*, *14*(11), 6498. https://doi.org/10.3390/su14116498

Hunter, H., Fisher, M. L., & Backer, C. D. (2018). You are what you eat: Women's evaluation of other women based on their food selection. EvoS Journal, 9(2). https://doi.org/10.59077/LPNA1790

Jonkisz, J. (2022). What Makes Behavioral Measures of Consciousness Subjective and Direct? *Philosophy of Science*, *89*(4), 683–700. https://doi.org/10.1017/psa.2021.49

Karam, C. N.-A., Sekaja, L., & Geldenhuys, M. (2016). Validation of the bolino and turnley impression management scale. *South African Journal of Psychology*, *46*(4), 530–541. https://doi.org/10.1177/0081246316640205

Karanja, A., Ickowitz, A., Stadlmayr, B., & McMullin, S. (2022). Understanding drivers of food choice in low- and middle-income countries: A systematic mapping study. *Global Food Security*, *32*, 100615. https://doi.org/10.1016/j.gfs.2022.100615

Kivimäki, M., Strandberg, T., Pentti, J., Nyberg, S. T., Frank, P., Jokela, M., Ervasti, J., Suominen, S. B., Vahtera, J., Sipilä, P. N., Lindbohm, J. V., & Ferrie, J. E. (2022). Body-mass index and risk of obesity-related complex multimorbidity: An observational multicohort study. *The Lancet Diabetes & Endocrinology*, *10*(4), 253–263. https://doi.org/10.1016/S2213-8587(22)00033-X

König, L. M., & Renner, B. (2019). Boosting healthy food choices by meal colour variety: Results from two experiments and a just-in-time ecological momentary intervention. *BMC Public Health*, *19*(1), 975. https://doi.org/10.1186/s12889-019-7306-z

Langfield, T., Clarke, K., Marty, L., Jones, A., & Robinson, E. (2023). Socioeconomic position and the influence of food portion size on daily energy intake in adult females: Two randomized controlled trials. *International Journal of Behavioral Nutrition and Physical Activity*, *20*(1), 53. https://doi.org/10.1186/s12966-023-01453-x

Leahey, T. M., Kumar, R., Weinberg, B. M., & Wing, R. R. (2012). Teammates and Social influence affect weight loss outcomes in a team-based weight loss competition. *Obesity*, *20*(7), 1413–1418. https://doi.org/10.1038/oby.2012.18

Leahey, T. M., LaRose, J. G., Fava, J. L., & Wing, R. R. (2011). Social influences are associated with BMI and weight loss intentions in young adults. *Obesity*, *19*(6), 1157–1162. https://doi.org/10.1038/oby.2010.301

Leary, M. R. (2019). *Self-presentation: Impression Management And Interpersonal Behavior*. Routledge.

Ljubičić, M., Matek Sarić, M., Klarin, I., Rumbak, I., Colić Barić, I., Ranilović, J., Dželalija, B., Sarić, A., Nakić, D., Djekic, I., Korzeniowska, M., Bartkiene, E., Papageorgiou, M., Tarcea, M., Černelič-Bizjak, M., Klava, D., Szűcs, V., Vittadini, E., Bolhuis, D., & Guiné, R. P. F. (2023). Emotions and food consumption: Emotional eating behavior in a European population. *Foods*, *12*(4), 872. https://doi.org/10.3390/foods12040872

Lyyra, P. (2019). Semantics for subjective measures of perceptual experience. *Frontiers in Psychology*, *10*, 1980. https://doi.org/10.3389/fpsyg.2019.01980

Mason, T. B., Heron, K. E., Braitman, A. L., & Lewis, R. J. (2016). A daily diary study of perceived social isolation, dietary restraint, and negative affect in binge eating. *Appetite*, *97*, 94–100. https://doi.org/10.1016/j.appet.2015.11.027

Miles, H., Apeldoorn, B., McKerchar, C., Curl, A., & Crossin, R. (2022). Describing and characterising on-demand delivery of unhealthy commodities in New Zealand. *Australian and New Zealand Journal of Public Health*, *46*(4), 429–437. https://doi.org/10.1111/1753-6405.13230

Miller, C. (2021). *Food Portions: Choosing Just Enough for You - NIDDK*. National Institute of Diabetes and Digestive and Kidney Diseases. https://www.niddk.nih.gov/health-information/weight-management/just-enough-food-portions

Morris, A. L., & Mohiuddin, S. S. (2022). *Biochemistry, Nutrients—StatPearls—NCBI Bookshelf*. https://www.ncbi.nlm.nih.gov/books/NBK554545/

Mötteli, S., Keller, C., Siegrist, M., Barbey, J., & Bucher, T. (2016). Consumers' practical understanding of healthy food choices: A fake food experiment. *British Journal of Nutrition*, *116*(3), 559–566. https://doi.org/10.1017/S0007114516002130

Navarro, A. C., & Vélez, M.-I. O. (2019). Obesogenic environment case study from a food and nutrition security perspective: Hermosillo city. *International Journal of Environmental Research and Public Health*, *16*(3), 407. https://doi.org/10.3390/ijerph16030407

Nguyen-Michel, S. T., Unger, J. B., & Spruijt-Metz, D. (2007). Dietary correlates of emotional eating in adolescence. *Appetite*, *49*(2), 494–499. https://doi.org/10.1016/j.appet.2007.03.005

Otterbring, T. (2018). Healthy or wealthy? Attractive individuals induce sex-specific food preferences. *Food Quality and Preference*, *70*, 11–20. https://doi.org/10.1016/j.foodqual.2017.02.014

P2PTM Kemenkes RI. (2018a). *1 dari 4 Penduduk Dewasa Mengalami Obesitas*. Direktorat P2PTM Kementerian Kesehatan RI. http://p2ptm.kemkes.go.id/artikel-sehat/1-dari-4-penduduk-dewasa-mengalami-obesitas

P2PTM Kemenkes RI. (2018b). *'Isi Piringku' perlu diperkenalkan dan diterapkan dalam kehidupan sehari-hari—Penyakit Tidak Menular Indonesia*. Direktorat P2PTM Kementerian Kesehatan RI. https://p2ptm.kemkes.go.id/infographic-p2ptm/obesitas/isi-piringku-perlu-diperkenalkan-dan-diterapkan-dalam-kehidupan-sehari-hari

Paulitsch, R. G., & Dumith, S. C. (2021). Is food environment associated with body mass index, overweight and obesity? A study with adults and elderly subjects from southern Brazil. *Preventive Medicine Reports*, *21*, 101313. https://doi.org/10.1016/j.pmedr.2021.101313

Pechey, R., & Marteau, T. M. (2018). Availability of healthier vs. less healthy food and food choice: An online experiment. *BMC Public Health*, *18*(1), 1296. https://doi.org/10.1186/s12889-018-6112-3

Permenkes. (2014). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 41 Tahun 2014 tentang Pedoman Gizi Seimbang*. http://hukor.kemkes.go.id/uploads/produk_hukum/PMK%20No.%2041%20ttg%20Pedoman%20Gizi%20Seimbang.pdf

Polivy, J., & Pliner, P. (2015). "She got more than me". Social comparison and the social context of eating. *Appetite*, *86*, 88–95. https://doi.org/10.1016/j.appet.2014.08.007

Rachmawati, Y., Anantanyu, S., & Kusnandar, K. (2019). Emotional eating, snacking behavior and nutritional status among adolescents. *International Journal of Public Health Science (IJPHS)*, *8*(4), 413. https://doi.org/10.11591/ijphs.v8i4.20398

Rahman, N., Ishitsuka, K., Piedvache, A., Tanaka, H., Murayama, N., & Morisaki, N. (2022). convenience food options and adequacy of nutrient intake among school children during the COVID-19 pandemic. *Nutrients*, *14*(3), 630. https://doi.org/10.3390/nu14030630

Remick, A. K. (2011, February 17). *The Effects of Impression-management Motivation on Eating Behavior in Women*. https://www.semanticscholar.org/paper/The-Effects-of-Impression-management-Motivation-on-Remick/e6c7448ac9d69f3f4397687d5917fc5ea28db1a5

Risti, K. N., Pamungkasari, E. P., & Suminah, S. (2021). Relationship of peer influence and family eating habits on healthy food choices in overweight adolescents in Surakarta. *Media Gizi Indonesia*, *16*(2), 124. https://doi.org/10.20473/mgi.v16i2.124-129

Robinson, E., Jones, A., & Marty, L. (2022). The role of health-based food choice motives in explaining the relationship between lower socioeconomic position and higher BMI in UK and US adults. *International Journal of Obesity*, *46*(10), 1818–1824. https://doi.org/10.1038/s41366-022-01190-4

Rokom. (2021, September 27). Penyakit jantung koroner didominasi masyarakat kota. *Sehat Negeriku - Kementerian Kesehatan RI*. https://sehatnegeriku.kemkes.go.id/baca/umum/20210927/5638626/penyakit-jantung-koroner-didominasi-masyarakat-kota/

Rouhani-Tonekaboni, N., Department of Health Education and Promotion, School of Health, Guilan University of Medical Sciences, Rasht, Iran, Seyedi-Andi, S. J., Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran, Haghi, M., & Social Determinants of Health Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran. (2018). Factors Affecting Fast Food Consumption Behaviors of Female Students in North of Iran: Application of Theory of Planned Behavior. *Caspian Journal of Health Research*, *3*(3), 75–79. https://doi.org/10.29252/cjhr.3.3.75

Ruddock, H. K., Brunstrom, J. M., & Higgs, S. (2021). The social facilitation of eating: Why does the mere presence of others cause an increase in energy intake? *Physiology & Behavior*, *240*, 113539. https://doi.org/10.1016/j.physbeh.2021.113539

Ruddock, H. K., Long, E. V., Brunstrom, J. M., Vartanian, L. R., & Higgs, S. (2021). People serve themselves larger portions before a social meal. *Scientific Reports*, *11*(1), 11072. https://doi.org/10.1038/s41598-021-90559-y

Schreiber, M., Bucher, T., Collins, C. E., & Dohle, S. (2020). The multiple food test: Development and validation of a new tool to measure food choice and applied nutrition knowledge. *Appetite*, *150*, 104647. https://doi.org/10.1016/j.appet.2020.104647

Schulze, M. B., Martínez-González, M. A., Fung, T. T., Lichtenstein, A. H., & Forouhi, N. G. (2018). Food based dietary patterns and chronic disease prevention. *BMJ*, k2396. https://doi.org/10.1136/bmj.k2396

Shepherd, R., Raats, M., & Nutrition Society (Great Britain) (Eds.). (2006). *The psychology of food choice*. CABI in association with the Nutrition Society.

Stein, R. I., & Nemeroff, C. J. (1995). Moral overtones of food: Judgments of others based on what they eat. *Personality and Social Psychology Bulletin*, *21*(5), 480–490. https://doi.org/10.1177/0146167295215006

Steinglass, J., Foerde, K., Kostro, K., Shohamy, D., & Walsh, B. T. (2015). Restrictive food intake as a choice-A paradigm for study: Restrictive food intake as a choice. *International Journal of Eating Disorders*, *48*(1), 59–66. https://doi.org/10.1002/eat.22345

The GBD 2015 Obesity Collaborators. (2017). Health effects of overweight and obesity in 195 countries over 25 years. *New England Journal of Medicine*, *377*(1), 13–27. https://doi.org/10.1056/NEJMoa1614362

Van Strien, T., Frijters, J. E., Bergers, G. P., & Defares, P. B. (1986). The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International Journal of Eating Disorders*, *5*(2), 295–315. https://doi.org/10.1002/1098-108X(198602)5:2<295::AID-EAT2260050209>3.0.CO;2-T

Vartanian, L. R. (2015). Impression management and food intake. Current directions in research. *Appetite*, *86*, 74–80. https://doi.org/10.1016/j.appet.2014.08.021

Vartanian, L. R., Herman, C. P., & Polivy, J. (2007). Consumption stereotypes and impression management: How you are what you eat. *Appetite*, *48*(3), 265–277. https://doi.org/10.1016/j.appet.2006.10.008

Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-regulation and self-presentation: regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *Journal of Personality and Social Psychology*, *88*(4), 632–657. https://doi.org/10.1037/0022-3514.88.4.632

Wang, Y., Ho, M., Chau, P.-H., Schembre, S. M., & Fong, D. Y. T. (2023). Emotional eating as a mediator in the relationship between dietary restraint and body weight. *Nutrients*, *15*(8), 1983. https://doi.org/10.3390/nu15081983

WHO. (2020). *Healthy diet*. https://www.who.int/news-room/fact-sheets/detail/healthy-diet

WHO. (2022). World Obesity Day 2022 – Accelerating action to stop obesity. *World Health Organization*. https://www.who.int/news/item/04-03-2022-world-obesity-day-2022-accelerating-action-to-stop-obesity

Widjaja, N. A., & Prihaningtyas, R. A. (2020). Determinants of food choice in obesity. *The Indonesian Journal of Public Health*, *15*(1), 122. https://doi.org/10.20473/ijph.v15i1.2020.122-132

Wongprawmas, R., Mora, C., Pellegrini, N., Guiné, R. P. F., Carini, E., Sogari, G., & Vittadini, E. (2021). Food choice determinants and perceptions of a healthy diet among Italian consumers. *Foods*, *10*(2), 318. https://doi.org/10.3390/foods10020318

Yip, C. S. C., Chan, W., & Fielding, R. (2019). The associations of fruit and vegetable intakes with burden of diseases: A systematic review of meta-analyses. *Journal of the Academy of Nutrition and Dietetics*, *119*(3), 464–481. https://doi.org/10.1016/j.jand.2018.11.007

Young, M., Mizzau, M., Mai, N., Sirisegaram, A., & Wilson, M. (2009). Food for thought. What you eat depends on your sex and eating companions. *Appetite*, *53*, 268–271. https://doi.org/10.1016/j.appet.2009.07.021

Zahrah, N. I., Fanani, M., & Ardyanto, T. D. (2023). The relationship between emotional eating, Meal skipping and unhealthy food consumption pattern in adolescent girls. *The Indonesian Journal of Public Health*, *18*(1), 47–58. https://doi.org/10.20473/ijph.v18i1.2023.47-58

Zou, X., Wang, L., Xiao, L., Xu, Z., Yao, T., Shen, M., Zeng, Y., & Zhang, L. (2021). Deciphering the irregular risk of stroke increased by obesity classes: A stratified mendelian randomization study. *Frontiers in Endocrinology*, *12*, 750999. https://doi.org/10.3389/fendo.2021.750999