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Influence of Gender and Social Setting on College Student Food Choices

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Abstract

Background. Gender and social setting have been shown to influence food choices. As college students often consume food in social settings, this knowledge may contribute toward understanding predictors of healthy eating.

Purpose. To examine the effect of gender and social setting on food choices of college students in on-campus dining facilities. Healthiness of food choices was assessed by total calories, discretionary calories, and balance of food on lunch trays.

Design/Methods. In an observational, cross-sectional study, lunch time meals of 177 college students were randomly photographed by trained research assistants to gain understanding of food choices of students eating alone, within same gender groups, and within mixed gender groups. Pictures were analyzed by computerized diet analysis (DAP,® 2015) to ascertain total calories and discretionary calories. Balance was assessed by analyzing and comparing plates to MyPlate (USDA). Differences based on gender, social setting, and the interaction between gender and social setting were analyzed by three 2 x 3 factorial ANOVAs (SPSS version 23).

Results. Gender differences were statistically significant for total calories and discretionary calories ($p < .05$), but not for balance. The interaction between gender and social setting was statistically significant for balance but not for total calories and discretionary calories.

Conclusion. In this study, males chose overall higher total calories and discretionary calories. Also, males eating in same or mixed gender groups chose less balanced meals, whereas males eating alone chose more balanced meals. Conversely, females eating in same or mixed gender groups chose more balanced meals than females eating alone. Future research should determine whether breakfast and dinner have similar findings.

Introduction

Eating at college often takes place in the presence of fellow students. The presence of these peers may influence food choices both through the gender of the individual, and the social setting (Allen-O'Donnell et al., 2011). Social setting can be categorized as eating alone, eating with friends or strangers in a same gender group, eating with friends or strangers in an opposite gender group, or eating with friends or strangers in a mixed gender group.

Gender may influence food choices through social influences, which refer to the way people act in order to convey a particular impression. This can cause people to conform their food choices to attain a societal standard (Pliner & Mann, 2004). For instance females should eat less food than males, for a smaller meal conveys femininity, while males should eat larger meals to convey masculinity. Further, culturally-defined body-image ideals, where males are to be muscular and females are to be thin, may also influence food choices (Allen-O'Donnell et al., 2011).

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Social setting may influence food choices through social modeling, which is when people eat differently when they are with others than when they eat alone. Experimental studies have investigated this influence. Cruwys, Bevelander, and Hermans (2015) in their review of social modeling demonstrated that people's food intake is strongly influenced by social influence and modeling. Kaisari and Higgs (2015) investigated the effect of social modeling when eating with friends or with strangers. They reported that females modeled their eating companion regardless if they knew them or not. Hermans, Larsen, Herman, and Engels (2009a, 2009b) studied social modeling among females to determine the effect of various amounts of food on dining companions. Research participants were assigned no-, low-, or high-intake of vegetables or M&Ms to consume. In these studies, females who were eating with a peer who ate larger amounts, consumed more food than those eating with a peer who consumed a small amount of food or nothing at all. In their experimental design, Pliner and Mann (2004) found that women's consumption of cookies was influenced by observing what previous women had eaten.

To our knowledge, there was only one observational study (Allen-O'Donnell et al., 2011) that investigated female and male purchases when alone or in mixed or same gender groups. Their results showed that females purchased fewer calories in mixed groups than in same gender groups, whereas males who ate in mixed gender groups purchased more calories than males in same gender groups. Further, to our knowledge the variables of healthiness, discretionary calories, and plate balance have not been included in previous studies.

A limitation of experimental protocols is that the outcomes may not reflect the natural setting in which participants usually make food choices. Hermans, et al. (2009b) observed that their laboratory setting may have been unrepresentative of participants' natural food choices. In an attempt to avoid such limitations, this study was designed to observe the food choices of college students in their natural setting to investigate the influence of gender, social setting, and their interaction on the healthiness of food choices as measured by total calories, discretionary calories, and plate balance.

Methods

Design and Procedures

In this observational study, data were collected during the fall semester of 2015. The study included 177 college-aged students (55% male) eating at a campus cafeteria or student center during lunch time. Approval for the study was received from the university's Committee on the Use of Human Subjects in Research.

Trained research assistants approached tables consisting of no more than five individuals, looking for potential participants who appeared to be eating alone, in same gender groups, or mixed gender groups. Each individual table was informed that a study was being conducted to examine the effect of gender and social setting on food choices of college students in on-campus dining facilities, and permission sought to take a picture of their meal and to note their gender. If consent was given, a picture of each person's meal was taken, gender recorded, and number of people at the table noted.

Measures

Total calories and discretionary calories were obtained by analyzing the food items on each plate from the pictures, and analyzing it by a computerized diet analysis program (DAP,® 2015). Balance was measured by estimating servings of food and proportion on the plate using MyPlate (USDA) recommendations. A scale of ten points was created as follows: One point was assigned for food items present for each category of the MyPlate recommendations, namely, protein, grains, vegetables, fruits, and dairy; and one point was assigned if the plate conformed to the MyPlate proportions. Two trained research assistants evaluated each photographed plate, and cross-checked the results for accuracy.

Statistical Analysis

The dependent variables in the study were the total number of calories, discretionary calories, and assessed plate balance. The independent variables were the gender of the participants, and the type of social setting represented by the group with whom they were eating (Table 1). SPSS (version 23) was used to calculate descriptive statistics and inferential statistics using 2 x 3 factorial ANOVA, to ascertain whether there was a difference in total calories, discretionary calories, or plate balance based on gender and social setting, as well as an interaction between gender and social setting. Alpha level was set as $p < .05$. Kolmogorov-Smirnov normality test indicated that data were not normally distributed, therefore Kruskal Wallis nonparametric tests were run. As these results mirrored the ANOVA test results, we decided to rely on the ANOVA output, as the results of ANOVA are more effortlessly interpreted by undergraduate students.

Results

Demographics are reported in Table 1; means and standard deviations are reported in Table 2.

Table 1

Demographics

	Gender and Social Setting	<i>n</i>
Gender	Male	98
	Female	79
Group	Eating Alone	29
	Eating with Same Gender	97
	Eating with Mixed Gender	51

Table 2

Table 2

Means and standard deviations

Gender	Social Setting	Total Calories		Discretionary Calories		Meal Balance	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Male	Alone	825.79	308.91	124.35	146.75	5.10	1.62
	Same Gender	839.85	387.98	121.58	168.36	3.98	1.49

	Mixed Gender	900.33	440.38	150.98	231.94	4.38	1.50
Female	Alone	608.80	164.79	14.22	29.33	3.56	1.33
	Same Gender	618.13	358.90	66.32	137.06	4.11	1.47
	Mixed Gender	624.71	328.15	74.20	102.03	4.84	1.52

Males and Females

Females chose significantly fewer total calories ($p = .000$) and discretionary calories than males ($p = .004$) (Table 3). Plate balance scaled scores were not statistically different between males and females.

Table 3

ANOVA of gender and social setting interaction

Source	F Value	Sig.	Partial Eta Squared	Observed Power
Gender (TC)	13.105	.000	.071	.949
Social Setting (TC)	.177	.838	.002	.077
Interaction (TC)	.098	.907	.001	.065
Gender (DC)	8.332	.004	.046	.819
Social Setting (DC)	.642	.528	.007	.156
Interaction (DC)	.316	.730	.004	.100
Gender (B)	1.460	.229	.008	.225
Social Setting (B)	2.424	.092	.028	.483
Interaction (B)	3.985	.020	.045	.708

Note: TC = Total Calories Purchased; DC = Discretionary Calories Purchased; B = Plate Balance
Significant at the $p < 0.05$ level

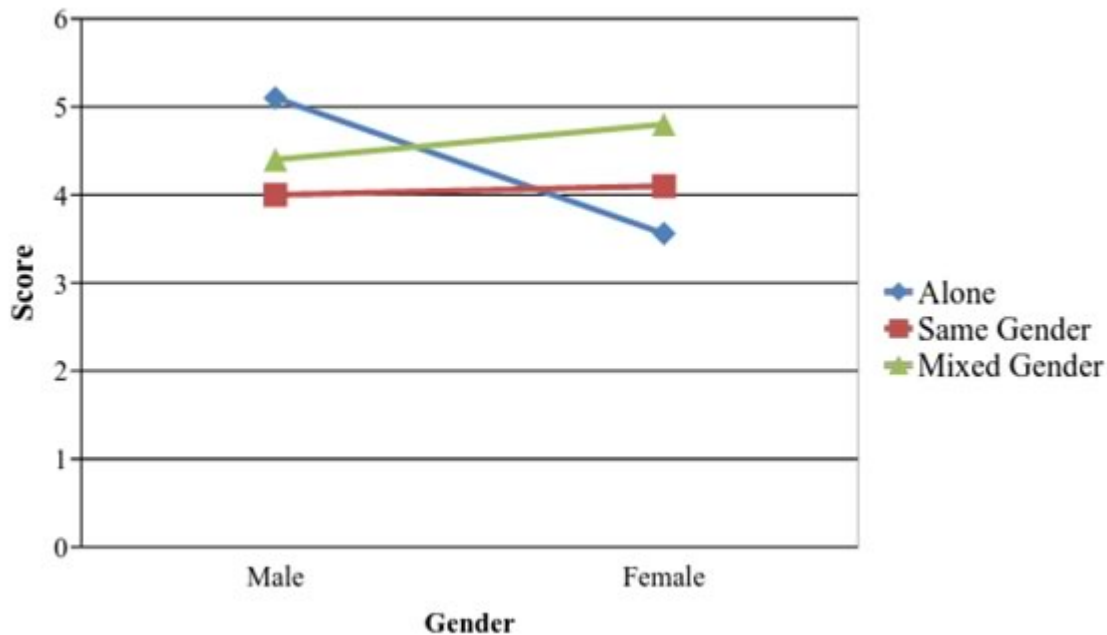
Social Setting

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Total calories, discretionary calories, and plate balance were not statistically different based on social setting.

Interaction between Gender and Social Setting

There was no statistically significant interaction effect for gender and social setting on total calories or discretionary calories. However, the interaction between gender and social setting was significant ($p = .020$) for plate balance. Females eating in mixed gender groups chose more balanced plates than females eating alone or in same gender groups, while males chose more balanced plates eating alone than males eating in a mixed or same gender group (Figure 1).

Figure 1



Discussion and Implications

In this observational study, we investigated the food choices of 177 college-age men and women eating lunch in the university's cafeteria or student center, and found that gender seems to have an effect on total calories and discretionary calories chosen, but social setting may not. These findings are similar to Allen-O'Donnell et al.'s (2011) results indicating that females purchase significantly fewer total calories than males.

Although there was no significant difference in plate balance based on gender or social setting, the interaction between gender and social setting was significant. Males eating alone chose more balanced meals than in mixed or same gender group settings, while females eating alone chose less balanced meals than females eating in mixed gender group settings. This means that males and females may be influenced differently by mixed gender and social settings (Pliner & Mann, 2004) with regard to how balanced their chosen food items are. Interestingly, both males and females prepared similarly balanced plates when eating with individuals of their own gender.

While we cannot infer causation due to the observational nature of the current study, our results have shown that gender and social setting may have an effect on food choices of college students in university dining facilities. Especially for college students who live in dormitories, surrounded by other students for most meals, awareness of the effects of the social environment on eating habits is crucial. If female college students eat more balanced meals when eating in a mixed gender group, it may be beneficial to encourage communal meals, unless such meals encourage increased consumption of other unhealthy products, such as

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alcohol or sweetened beverages. On the other hand, if male college students eat more balanced meals when eating alone, informing them of such potential habits may help combat the tendency to eat less healthy meals when in the company of others, especially other males, due to stigma attached to males eating healthy meals. College students, business colleagues, and families eat under the influence of their social environment; investigating how gender and social setting influence food choices may help researchers to shed light on predictors of obesity or eating disorders (Allen-O'Donnell et al., 2011). Overall, understanding these effects may be helpful in determining ways to positively influence healthy eating.

While the results of this research showed significant findings with regards to the effect of gender and social setting on food choices, some limitations were present. Photographs were taken only during lunch time; thus it is unknown whether college students choose differently for breakfast or dinner meals. Further, as our population included only college students, these results may differ for other age groups. Future research should look into other meal times and with participants of a wider age range, as well as varying social settings such as workplace lunches and family meals.

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