Influences on Catered Event Ordering in a University Workplace: Development and Validation of the Understanding Food Ordering Survey

Lindsey Menge, MS[1], Yueqin Hu, PhD[2], Sylvia Hurd Crixell, PhD, RD[1],
Lisa Lloyd, PhD[3], Janet Bezner, PT, DPT, PhD, FAPTA[4], and Tricia J. Burke, PhD[5]

Abstract

Purpose: To develop and validate an instrument to identify factors that influence what is ordered for catered events for employees at a large university.

Design: Themes derived from focus groups were used to develop a survey.

Setting: A large public university in central Texas.

Subjects: Twenty-seven administrative assistants who order food participated in focus groups, 138 completed the survey, and 31 completed the survey a second time.

Measures: One hundred fourteen-question, 5-point Likert scale survey.

Analysis: Principal component analyses explored constructs. Confirmatory factor analysis confirmed structure validity. Test-retest analyses assessed reliability.

Results: The final survey, the Understanding Food Ordering Survey (UFO), included 19 items within 3 factors; all factor loadings were above 0.3, with no cross-loadings. Three factors explained 55.5% of the variance. Cronbach α values of .846 for social influences from supervisors/coworkers, .838 for restrictions on ordering due to policies/vendors/attendee feedback, .893 for personal views about nutrition, and .831 for the total affirmed reliability. Test–retest reliability was acceptable ($r = 0.780$), and paired samples t test indicated no differences between assessments, mean difference $= -0.062$, standard deviation $= 0.29$, $t (30) = -1.18$, $P = .247$. Structure equation modeling indicated a good fit between the proposed 3-factor model and observed data, with comparative fit index $= 0.921$ and root means square error of approximation $= 0.074$.

Conclusion: Interventions to improve the nutritional quality of foods selected for catering may benefit from addressing contributory factors while considering a top-down approach to changing the workplace culture.

Keywords

catering, survey, worksite wellness, nutrition, intervention, questionnaire, university, policy

Purpose

Obesity and chronic diseases are linked to poor diet.[1] The worksite food environment may contribute by offering too many unhealthy foods and too few fruits and vegetables.[1] Food at work is provided primarily through cafeterias, vending machines, and catered events.[2] The few studies about food at work have generally implemented interventions without first collecting formative data to inform the approach.[3] To date, no interventions have involved catered events, which are unique because they are potentially mandatory and foods are likely chosen by someone else.[2] A systematic approach to improving the healthfulness of catered foods at work is warranted.[3] The purpose of this exploratory study was to develop a survey investigating what influences food selections made by those who order for catered events.

[1] School of Family and Consumer Sciences, Nutrition and Foods Texas State University, San Marcos, TX, USA
[2] Psychology, Texas State University, San Marcos, TX, USA
[3] Health and Human Performance, Texas State University, San Marcos, TX, USA
[4] Physical Therapy, Texas State University, Round Rock, TX, USA
[5] Communication Studies, Texas State University, San Marcos, TX, USA

Corresponding Author:
Sylvia Hurd Crixell, School of Family and Consumer Sciences, Nutrition and Foods, Texas State University, 601 University Drive, San Marcos, TX 78666, USA.
Email: scrixell@txstate.edu

Methods

Design

Because no previous studies have addressed factors affecting catering, focus groups were held to identify relevant themes to provide a basis for survey question development.[4] Four focus groups with food-ordering administrative assistants were conducted, a number likely to be effective in identifying at least 80% of themes on this topic.[5] Once developed, the survey was reviewed iteratively by select administrative assistants for accuracy, administered, and validated. All aspects of this study were compliant with the university's institutional review board.

Sample

The 31st largest in the United States, Texas State University enrolls 38,000 students and employs 5,000 faculty and staff. Since this university began offering an Employee Wellness program in 2014, researchers have been investigating methods to improve employee health.[6] Catered events, each serving 5 to 500 employees, include research meetings, faculty interviews, celebrations, and official functions. Four focus groups (n = 27), populated via e-mail invitation, were convened with administrative assistants to explore factors that affect food selection. For the survey, all food-ordering administrative assistants (n = 451) were invited via e-mail to participate; 138 completed it. The majority (82%) were female, 55% identified as non-Hispanic white, and 25% as Hispanic. Within 2 weeks, 31 completed the survey again. Incentives included a drawing for a $50 gift card and water bottles or T-shirts.

Measures

For focus groups, following informed consent, the moderator asked about feelings regarding ordering, involvement of others, importance of dietary preferences, and probed for other factors affecting food selection. Audio recordings were transcribed and then processed using the classic analysis strategy.[7] This process involved printing and cutting out transcribed comments, organizing comments by issue, and grouping into emergent themes (n = 15). Emergent themes served as the foundation for survey construction. The final survey included 114, 5-point Likert scale questions.

Analysis

After survey administration, questions were grouped into factors using principal component analysis (PCA), and internal consistency and test–retest reliability of the final scale were evaluated. Reliability coefficients above 0.70 were considered acceptable.[8] Paired samples *t* tests compared differences in test–retest survey responses. These analyses were conducted using SPSS (version 22). Confirmatory factor analysis using SEM software Onyx (Version 1.0-972) confirmed the model derived from PCA. Model fit was considered good with comparative fit index (CFI) values above 0.90 and root mean square error of approximation (RMSEA) values below 0.08.

Results

Per PCA, 6 components had Eigen values larger than 1: food policies, vendor offerings, personal views about nutrition, attendee feedback, coworker influence, and supervisor influence. Three components collectively explained 55% of the
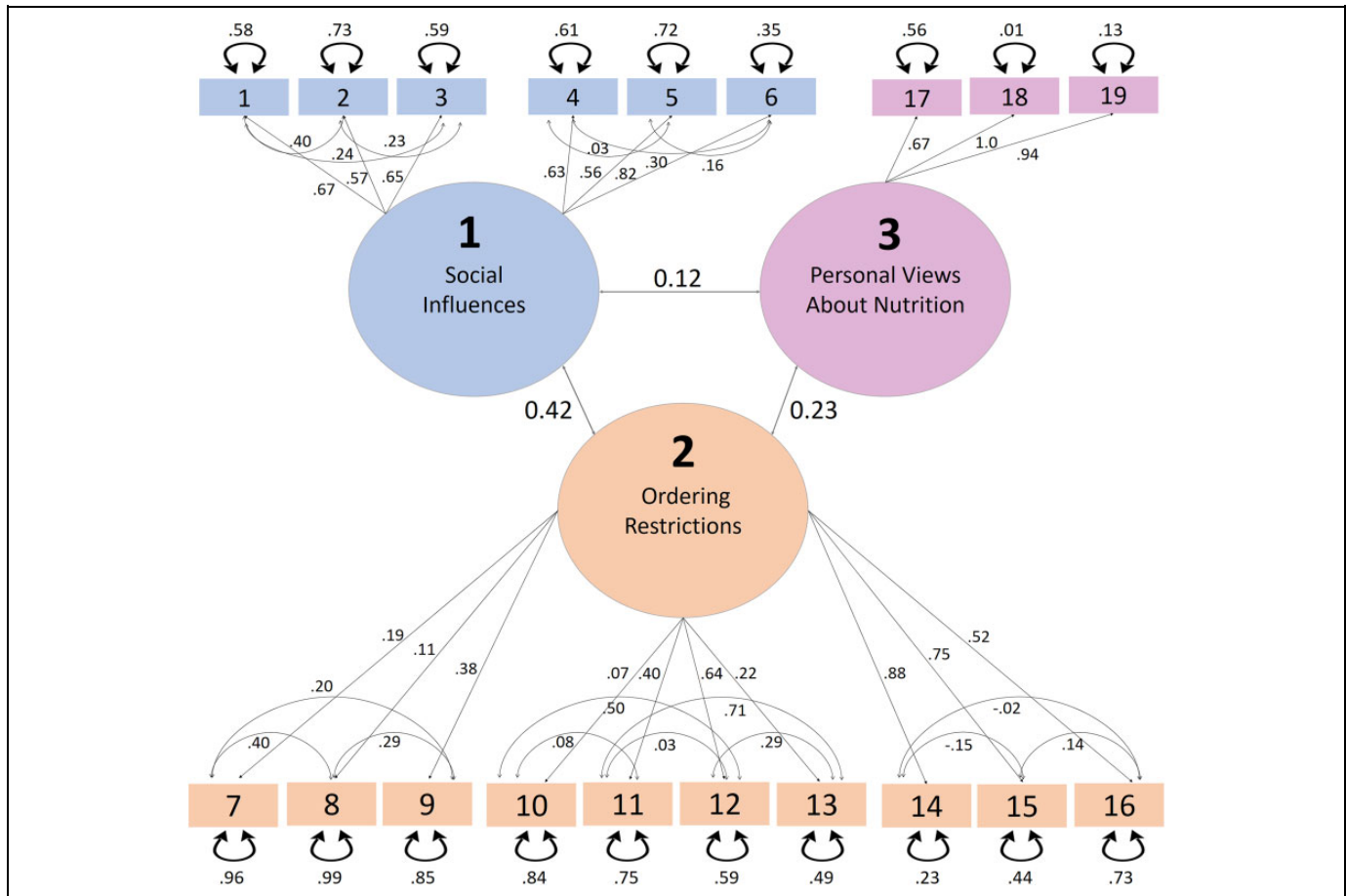
Table 1. Factor Loadings for a 3-Factor Solution With Oblimin Rotation.[a]

	Factor Loading
Factor 1. Social influence	
1. My coworkers like having healthy food in the office/at events.	−0.803
2. My coworkers model a healthy lifestyle.	−0.799
3. My coworkers support me and others being healthy at work (eg, eating healthy foods and exercising).	−0.765
4. My supervisor supports having healthy food in the office/at events.	−0.642
5. My supervisor models a healthy lifestyle.	−0.617
6. My supervisor supports wellness of employees.	−0.771
Factor 2. Ordering restrictions	
7. To what extent do university policies affect or restrict the allotted budget?	0.330
8. How much do university policies affect or restrict what food can be ordered?	0.544
9. How difficult does the following make ordering from vendors: not on the approved vendor list?	0.504
10. How important is it for attendees that foods accommodate their dietary restrictions (eg, vegan, gluten-free, vegetarian)?	0.677
11. How important is it for attendees that foods accommodate their food preferences (eg, desserts)?	0.592
12. How important is it for attendees that the foods be healthy?	0.663
13. When choosing a vendor, how important is it that the vendor has options for those with dietary restrictions (eg, vegetarian, vegan, gluten-free options)?	0.829
14. When choosing a vendor, how important is it that the vendor has healthy options?	0.870
15. When choosing a vendor, how important is it that the vendor offers a variety of foods?	0.811
16. When choosing a vendor, how important is it that the vendor can deliver on campus?	0.481
Factor 3. Personal views about nutrition	
17. If you were viewing a menu with the purpose of ordering nutritious foods, how important would you consider calories to be?	0.805
18. If you were viewing a menu with the purpose of ordering nutritious foods, how important would you consider sodium to be?	0.950
19. If you were viewing a menu with the purpose of ordering nutritious foods, how important would you consider sugar to be?	0.933

[a]n = 138. The final 19-item scale included social influence, ordering restrictions, and personal views about nutrition, explaining 16%, 27.5%, and 12% of the variance, respectively.

Figure 1. Confirmatory factor model for a 3-factor solution. Structure equation modeling software Onyx (version 1.0-972) was used to perform a confirmatory factor analysis. Three latent factors are constructed as suggested by exploratory factor analysis, and items originally designed as belonging to the same factor are also connected to explain their proposed association.

variance; the remainder each explained less than 6%, favoring a 3-factor solution (Table 1). Factors included *social influence* from supervisors/coworkers (mean, M [standard deviation, SD] = 3.93 [.68]), *ordering restrictions* due to policies/vendors/attendee feedback (M [SD] = 3.72 [.7]), and *personal views about nutrition* (M [SD] = 2.98 [1.17]). Cronbach alphas were .846 for *social influence,* .838 for *ordering restrictions*, .893 for *personal views about nutrition*, and .831 for the total scale, indicating high internal consistency. Correlation between first and second assessments was 0.78, indicating acceptable test–retest reliability. No significant differences occurred between the 2 assessments (median [SD] = −0.062 [0.29], t[30] = −1.18, $P = .247$). Confirmatory factor analysis results with 3 latent factors is shown in the Figure 1. Fit indices (CFI = .921, RMSEA = .074) indicated a good fit between the proposed factor model and observed data.

Discussion

Summary

Research has suggested that elements of worksite culture, including supervisors and coworkers, policies, and social norms, are important within the context of worksite wellness.[1,9] This study suggests that similar elements, including social influence, ordering restrictions, and personal views about nutrition, are instrumental in determining foods selected for catering. To address social influence, interventions to improve the food environment may benefit from a top-down approach.[6] For example, upper administration could model healthy behaviors and instigate professional development to improve knowledge and attitudes regarding health. With respect to organizational restrictions, existing prohibitory policies, which constituted a barrier,[10] could be modified, making it easier to use vendors who offer healthy options. Further, pro-health policies could mandate that foods provided at work be healthy. Finally, personal views of administrative assistants regarding nutrition could be addressed through professional development. In summary, proactively fostering a positive workplace culture that considers the interplay of these identified factors will likely be necessary to improve the food environment.[1]

Strengths and Limitations

This exploratory study is the first to develop and validate an instrument that identifies factors influencing food selection at

SO WHAT?

What is already known on this topic?

No research has investigated factors that influence what foods are ordered for catered events at work.

What does this article add?

This study reports the development and validation of an instrument that identified social influences, ordering restrictions, and personal views about nutrition held by those who order food as primary factors that influence food selection.

What are the implications for health promotion practice or research?

Interventions to improve the nutrition quality of catered foods should consider what drives food selection and employ a top-down approach to improve the worksite culture with respect to health.

worksite catered events. As 3 survey components explain 55% of the variance, other factors are likely involved. Furthermore, data for this study were collected via focus groups and self-administered surveys, risking social desirability bias.[4] While social desirability may result in findings that are more reflective of group consensus than of the individual, it may also more accurately depict social and environmental influences that comprise every day norms.[4] Finally, the survey was completed by almost a third of administrative assistants and thus may not be fully representative. As such, results are specific to this university and cannot be generalized beyond this institution.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ORCID iD

Sylvia Hurd Crixell, PhD, RD 🔟 https://orcid.org/0000-0002-1176-9101

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