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IMPACT OF SHARED MEALS FOR UNIVERSITY STUDENTS

Psychosocial and Nutritional Impact of Shared, Family-style Meals for University Students

by

MarLee Harris

A thesis

submitted in partial fulfillment

of the requirements for the degree of

Master of Public Health in the Department of Community and Public Health

Idaho State University

Spring 2018

IMPACT OF SHARED MEALS FOR UNIVERSITY STUDENTS

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Committee Approval

To the Graduate Faculty:

The members of the committee appointed to examine the thesis of MarLee Harris find it satisfactory and recommend that it be accepted.

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IMPACT OF SHARED MEALS FOR UNIVERSITY STUDENTS

Human Subjects Committee Approval

September 14, 2017

MarLee Harris
Public Health
MS 8109

RE: regarding study number IRB-FY2017-262: Psychosocial And Nutritional Impact Of Shared, Family-Style Meals For First-Year University Students

Dear Ms. Harris:

I have reviewed your request for expedited approval of the new study listed above. This is to confirm that I have approved your application.

Notify the HSC of any adverse events. Serious, unexpected adverse events must be reported in writing within 10 business days.

You may conduct your study as described in your application effective immediately. The study is subject to renewal on or before Sep 14, 2018, unless closed before that date.

Please note that any changes to the study as approved must be promptly reported and approved. Some changes may be approved by expedited review; others require full board review. Contact Tom Bailey (208-282-2179; email humsubj@isu.edu if you have any questions or require further information.

Sincerely,

Ralph Baergen, PhD, MPH, CIP
Human Subjects Chair

IMPACT OF SHARED MEALS FOR UNIVERSITY STUDENTS

Human Subjects Committee Approval

October 25, 2017

MarLee Harris
Public Health

RE: study number IRB-FY2017-262: Psychosocial And Nutritional Impact Of Shared, Family-Style Meals For First-Year University Students

Dear Ms. Harris:

I have reviewed your application for revision of the study listed above. The requested revision involves changing the recruitment form and adding Taylor Ostrander to the study.

You are granted permission to conduct your study as revised effective immediately. The date for renewal remains unchanged at 9-14-2018, unless closed before that date.

Please note that any further changes to the study must be promptly reported and approved. Contact Tom Bailey (208-828-2179; email humsbj@isu.edu) if you have any questions or require further information.

Sincerely,

Ralph Baergen, PhD, MPH, CIP
Human Subjects Chair

IMPACT OF SHARED MEALS FOR UNIVERSITY STUDENTS



BOISE STATE UNIVERSITY
RESEARCH AND ECONOMIC DEVELOPMENT
Office of Research Compliance

Institutional Review Board (IRB) Authorization Agreement

Institution or Organization Providing IRB Review:	
A	Idaho State University Institutional Review Board
IRB Registration #: IRB00004102	
Federal Wide Assurance #: FWA 00014037	

Institution Relying on the Designated IRB:	
B	Boise State University Institutional Review Board
IRB Registration #: IRB00000924	
Federal Wide Assurance #: FWA00000097	

The individuals signing below agree/acknowledge that Boise State University may rely on the designated IRB for review and continuing oversight of its human subjects research for the specific project described below:

Title of research project: Psychosocial And Nutritional Impact Of Shared, Family-Style Meals For First-Year University Students

Expiration Date: 09-14-2018

IRB Approval Number: IRB-FY2017-262

Name of Principal Investigator: MarLee Harris

The review performed by the designated IRB will meet the human subject protection requirements of B's OHRP-approved FWA. The IRB at A will follow written procedures for reporting its findings and actions to appropriate officials at B. B remains responsible for ensuring compliance with the IRB's determinations and with the Terms of its OHRP-approved FWA. This document must be kept on file by both parties and provided to OHRP upon request.

Signature of Signatory Official (A)

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Title: VP for Research and Dean of the Graduate School

Signature: _____ Date: 10/11/17

Signature of Signatory Official (B)

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List of Abbreviations

ACHA-NCHA	American College Health Association-National Collegiate Health Assessment
ASICS	Academic Success Inventory for College Students
BMI	Body Mass Index
GPA	Grade Point Average
LLP	Living Learning Program
PHQ-4	Patient Health Questionnaire 4

IMPACT OF SHARED MEALS FOR UNIVERSITY STUDENTS

Psychosocial and Nutritional Impact of Shared, Family-style Meals for University Students

Thesis Abstract--Idaho State University (2018)

This pilot study establishes data on how introducing shared, family-style meals in a university dining hall impacts mental health, eating competence, and academic performance among students. Variance between intervention and control groups and within subjects pre- and post-assessment was assessed, with statistical significance determined at $\alpha < 0.1$. Decrease in loneliness was marginally significant for the intervention group (38.19 to 36.36, $p = 0.177$). Eating competence scores improved significantly among the intervention group (33.38 to 36.19, $p = 0.074$). Participants' enjoyment of family-style meals was 4.94 (1 (low) to 5 (high) Likert scale, 4-week mean). All dining services staff ($n = 6$) perceived value in offering shared, family-style meals to students. This initial study establishes the feasibility, acceptability, and value of shared, family-style dining for students in university dining halls. Further research with increased statistical power to better approximate effects of shared, family-style dining at universities should be conducted.

Key Words: shared dining, family-style dining, depression, anxiety, eating competence, university students

Chapter I: Introduction

Health habits established in young adulthood often persist over an individual's lifetime (Oswalt, Lederer, & Schrader, 2015). Health interventions implemented during young adulthood present a key opportunity in public health to impact lifelong health practices among 73 million young adults 18-34 years old (Federal Interagency Forum on Child and Family Statistics, 2014; US Census Bureau, 2014). In fall 2016, an estimated 17.5 million young adults enrolled in undergraduate college and university programs (National Center for Educational Statistics [NCES], 2016a). Over two-thirds of young adults enroll in university for the fall following their high school graduation (NCES, 2016a). Identifying and engaging undergraduate students is a key health education access point. Mental health and diet quality are areas of concern for students in which intervention during university can lead to lifelong improvement (Oswalt et al., 2015). During university, mental health and diet quality may influence social and academic engagement. Health issues are a top reason students drop courses (Buechner, 2008), and academic problems are an influencing factor in university attrition (Johnson, 2012).

Investment in mental health interventions can boost student quality of life, which is a key indicator in predicting student retention at universities (Novotney, 2014). Mental and behavioral disorders are the leading cause of years of life lost (YLLs) among 15-34 year olds in the United States (Institute for Health Metrics and Evaluation [IHME], n.d.) Over the last five years, rates of distress tied to depression, anxiety, and social anxiety have risen consistently along with the percentage of students reporting serious suicidal ideation (Penn State University, 2015). With increasing rates of mental health distress and counseling service utilization, universities are looking for innovative ideas to support mental well-being among students (Novotney, 2014).

In addition to mental health, diet quality is a health topic of special concern among university students. Dietary habits established at university persist through adulthood (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011; McPartland, 2013). Although the chronic effects of poor diet quality may not be seen immediately among university students, over one-third of students in a small sample showed elevated blood pressure (Preventative Health, 2016). Nationally, dietary risks are the leading cause of disability-adjusted life years (IHME, 2016). Diet quality and food intake behaviors are connected to chronic disease (Yahia, Wang, Rapley, & Dey, 2015) and weight management (Neumark-Sztainer et al., 2011). Diet also impacts academic performance (Wald, Muennig, O'Connell, & Garber, 2014; Valladares et al, 2016) and is associated with well-being (Jacka, Mykletun, Berk, Bjelland, & Tell, 2011; Mujcic & Oswald, 2016).

Eating dinners as a family, a form of a shared meal, has been linked to improved mental health (Skeer & Ballad, 2013; Eisenberg, Olsen, Neumark-Sztainer, Story, & Bearinger, 2004) and diet quality (Neumark-Sztainer, 2006; Wang et al., 2013). The structure of family meals has not been consistently defined and measured across studies (McCullough, Robson, & Stark, 2016), but often is described as the occasion of consuming food with the majority of family living together in one house (Larson, Fulkerson, Story, & Neumark-Sztainer, 2013).

The effects of family meal frequency, especially on adolescents, leads to considering if family-like, shared meals could impact mental health and diet quality among university students. Limited studies on young adults show improved diet quality, including higher fruit and vegetable intake, as frequency of shared meals increased (Larson et al., 2013a). No studies have clearly established connections between shared meal frequency and mental well-being in young adults.

This research aimed to establish initial data on how introducing shared, family-style meals in a university dining hall impacts mental health, eating competence, diet quality, and academic performance among university students. The specific aims were:

Aim 1: Demonstrate the feasibility and acceptability of offering shared, family-style meals through university dining services.

Aim 2: Among a cohort of university students, determine the impact shared, family-style meals have on:

- depression, anxiety, loneliness, and social connectedness
- fruit and vegetable intake and eating competence
- academic performance

The researcher hypothesized that because sharing meals with others can increase connectedness, conversation, and exposure to a variety of foods and eating behaviors, university students who participated in shared, family-style meals with peers would demonstrate improved mental health, food choices and behaviors, and academic performance compared to students who did not eat shared, family-style meals.

Chapter II: Literature Review

Mental Health

According to the American College Health Association (ACHA) National College Health Assessment (NCHA) 2015, undergraduate students self-reported the following mental health indicators for anytime within the 12 months prior to the survey: 86.7% felt overwhelmed by all they had to do; 65.1% felt very sad; 60.5% felt very lonely; 57.7% felt overwhelming anxiety, and 35.3% felt so depressed it was difficult to function (ACHA, 2015). From 2010 to 2015, demand for university counseling center services grew five times faster than average institutional enrollment (Penn State University, 2015). Rates of distress among students related to depression, anxiety, and social anxiety show consistent growth over the past five years (Penn State University, 2015). Significant increases in students reporting serious suicidal ideation increased from 23.8% to more than 32.9% in five years (Penn State University, 2015). Suicide is the leading cause of death among university students (Unwin et al., 2013).

In a review of the literature related to the role of family meals on risk outcomes in adolescents, all four studies reviewed regarding mental health found a significant protective effect of family meals (Skeer & Ballard, 2013). As family meal frequency increased, both male and female adolescents had decreased depressive symptoms and suicidal ideation, and females had decreased poor self-esteem and suicide attempts (Eisenberg et al., 2004). Among alternative high school students, family meal frequency was inversely associated with depressive symptoms (Fulkerson, Kubik, Story, Lytle, & Arcan, 2009).

Further research highlighted the possible developmental-enhancing effects family meals have that may impact mental health. One study showed a positive association between family dinner frequency and external developmental assets, including developing a support network, setting boundaries, and managing relationship expectations (Fulkerson et al., 2006). Internal

assets, such as commitment to learning, positive values, social competencies, and positive identity also increased as family dinner frequency increased (Fulkerson et al., 2006). Related to these developmental assets, university students with increased identity formation showed decreases in depression and anxiety symptoms and increased self-esteem and meaning (Hardy et al., 2013).

Family relationships cannot be discounted as a factor in the effect family meals have on the development and mental health of an adolescent. The Ecodevelopmental Theory poses the concept that parental attitudes, beliefs, and limit setting, as well as the synergy of a family unit, can foster prosocial development in children (Skeer & Ballard, 2013). Family meals, beyond just food consumption, allow time for communication among family members. Skeer and Ballard theorize that family meals' positive effects may relate to three ways in which they promote parent-child relationships: first, enhancing ease and comfort around parent-child communication; second, signaling to children that family interaction is a priority for their parents; and third, promoting regular contact through family meals allows parents to identify behavioral or physical changes in their children, thus enabling early intervention as needed (2013).

While shared, family-style meals in a university dining hall do not offer parental support, they do offer peer support. Of 300 first-year university students surveyed, 62% said eating in the dining hall made them feel more connected (Kansas State University [KSU] Communications and Marketing, 2013). Seventy percent said they were rarely lonely when someone sat next to them at the dining hall (KSU Communications and Marketing, 2013). Starting in adolescence, friendships increasingly affect an individual's social and psychological development (van Harmelen et al., 2016). Social support improves emotional well-being and decreases depressive symptoms in university and high school students (Swenson, Nordstrom, & Hiester, 2008; van

Harmelen et al., 2016). Developmental theory describes going to university as a time for developing interpersonal competence beyond parental interaction (Spence, 2012). This includes increasing responsibility, openness, and risk taking with one's self-esteem as well as "work[ing] smoothly with a group, to facilitate others' communication, to add to the overall conversation, and to be sensitive and empathic with others" (Chickering & Reisser, 1993, p. 72) through communication practices, such as asking questions, self-disclosing, and providing feedback during dialogue (Spence, 2012). The social network involved in shared, family-style dining hall meals may further encourage appropriate support and development for university students.

Eating Competence

In addition to supporting mental health, shared, family-style meals may influence eating competence. Eating competence is defined as "being positive, comfortable and flexible with eating as well as matter-of-fact and reliable about getting enough to eat of enjoyable and nourishing food" (Ellyn Satter Institute [ESI], 2016). One study found that lower eating competency among university students is associated with increased body mass index (BMI) (Quick et al., 2014). In a study of 557 university students taking a nutrition course, less than half were eating competent (Brown, Larsen, Nyland, & Eggett, 2013).

Dieting and disordered eating, opposing practices to eating competence, are prevalent among adolescents, and studies show these persist and may increase through young adulthood (Loth, Maclehose, Bucchianeri, Crow, & Neumark-Stainer, 2014). In a study of over 2,200 young adults, 54.4% of females and 29.9% of males used unhealthy weight control behaviors, such as fasting or skipping meals (Neumark-Sztainer et al., 2011). Factors predicting disordered eating in young adults include weight concerns, weight importance, depressive symptoms, and body satisfaction manifesting in adolescence (Loth, Maclehose, Bucchianeri, Crow, & Neumark-

Stainer, 2014). In a study of university females, a majority considered themselves overweight or obese despite having a normal BMI (Fayet, Petocz, & Samman, 2012). Of the 43% actively trying to lose weight, 81% were within the healthy weight range (Fayet, Petocz, & Samman, 2012).

No research was found examining the frequency of family meals and eating competence in adolescents, nor was research found on shared, family-style meals and eating competence in university students. Research has shown family meal frequency protects against disordered weight control practices in both female and male adolescents (Wang, et al., 2013). One study found family meals were protective against disordered eating practices in female adolescents, and the association existed even after adjustment for sociodemographic factors, including family connectedness, parental encouragement to diet, and BMI (Neumark-Sztainer Eisenberg, Fulkerson, Story, 2008). A retrospective study of female university students found childhood family dinner frequency was negatively associated with bulimic practices (Ackard & Neumark-Sztainer, 2001). Franko et al. (2008) determined problem-focused coping, which may protect against long-term stress, as a significant method by which frequency of family meals impacted bulimic symptoms. Based on the role peers play in social support for university students, shared, family-style meals may be able to replicate the protective effects family meals have in preventing disordered eating.

Taking time to focus on and enjoy eating are components of eating competence that may be promoted by shared, family-style meals. For many young adults, eating is almost an afterthought. In one study, young adults ate 46% of meals alone and just under half of their meals involved some other activity, such as watching television or multitasking (Laska, Graham, Moe, Lytle, & Fulkerson, 2011). In a qualitative study of determinants of their eating behaviors,

university students stated they would rather spend time on activities other than cooking, especially if they would be eating alone (Deliens, Clarys, De Bourdeaudhuij, & Deforche, 2014). University students also found that lack of structure influenced their eating, almost longing for the structured meals their parents had provided them while living at home (Deliens et al., 2014). The ritualistic nature of family meals is one proposed mechanism by which family meals promote social connectedness and mediate psychosocial challenges (Malaquias, Crespo, & Francisco, 2014).

In addition to creating consistency around eating, what foods are consumed at meals impacts eating competence. Eating a variety of foods is an important component of eating competence (ESI, 2016). Diet quality includes eating a variety of foods and food groups in alignment with national dietary guidelines (Wirt & Collins, 2009). Poor diet quality is a concern among young adults (Deliens et al., 2014). One study found average daily food intake among young adults did not meet recommended levels of six of the seven nutrients of special concern identified in the 2010 Dietary Guidelines for Americans? (McDaniel & Belury, 2012). Intake of calcium, potassium, magnesium, fiber, vitamin C, and vitamin A were all at inadequate levels (McDaniel & Belury, 2012). Less than five percent of students report eating the recommended five servings of fruits and vegetables each day (ACHA, 2015).

Family and shared meals clearly improve diet quality across a variety of foods and nutrients. Family breakfast frequency is positively associated with adolescent intake of fruit, vegetables, milk products, whole grains, calcium, iron, vitamin D, folate, potassium, and fiber (Larson, et al., 2013b). For family meals in general, as frequency increased, so did adolescent fruit, vegetable, grain, and calcium-rich food intake (Neumark-Sztainer, 2006). Fruit and vegetable intake increased for each increase in the number of family meals in a week, with

adolescents with seven or more family meals in the past week averaging one more serving of fruits and vegetables each day than adolescents reporting no family meals in the past week (Neumark-Sztainer, 2006). Increases in percentage of calories from protein; calcium; iron; vitamins A, C, E, B6, and folate; and fiber were also associated with increases in number of family meals in the past week (Neumark-Sztainer, 2006). Family meal frequency was also negatively associated with sugar-sweetened beverage intake (Larson, et al., 2013b; Neumark-Sztainer, 2006). The only available study on shared meals in young adults found that, as shared meal frequency increased, so did fruit intake in males and females, and vegetable and milk intake in females (Larson et al., 2013a).

Only 4.9% of Boise State University (BSU) students report consuming the recommended five servings of fruit and vegetables per day (ACHA, 2017). The majority, 61.2% report eating one to two servings per day and 26.5% report consuming three to four servings per day (ACHA, 2017). Approximately 7.3% report not eating any servings per day (ACHA, 2017).

Improvements in diet quality associated with family meals can be maintained in shared, family-style meals in a university dining hall. The role of family meals in improving diet quality may be attributed to offering meals that include healthy foods and beverages (Reicks et al., 2015). The other factor often cited for how family meals improve diet quality is through parents encouraging and modeling healthful intake at mealtime (Reicks et al., 2015). Social modeling greatly influences adolescent and adult food choice and intake (Reicks et al., 2015; Robinson, 2015). Although parents are the main model for adolescent food behavior, as adolescents age, parental influence decreases and peer influence increases (Reicks et al., 2015). Research has shown adolescents eat more healthy foods when peers eat more healthy foods (Salvy, de la Haye, Bowker, & Hermans, 2012). Shared, family-style meals build off the research that shows peer

social modeling of food intake is enhanced when the adolescent perceives shared group membership with peers (Cruwys, Bevelander, & Hermans, 2015). Shared, family-style meals have the potential to create a sense of group membership.

Academic Performance

At the core of college and university mission statements is their role as institutions of learning, academics, knowledge, and creativity. Although there is inherent value in supporting students in their mental and dietary well-being alone, examining academic performance is a vital measure in garnering institutional support from colleges and universities. Family meals have been correlated with improved grade point averages (GPA) in males and females (Harrison et al., 2015; Eisenberg et al., 2004). Fulkerson et al. (2006) found that adolescents who ate five to seven family dinners per week were twice as likely to be committed to learning as adolescents who ate zero to one family dinners per week. Commitment to learning was assessed by measuring achievement motivation, school engagement, and spending one or more hours on homework each school day (Fulkerson et al., 2006). First-year university students who ate at the dining hall eleven or more times per week had four-tenths of an increase in GPA, going from 3.0 to 3.4, over students who ate at the dining hall less than seven times per week (KSU Communications and Marketing, 2013).

The effect of shared, family-style meals on academic performance can be multifactorial. Because family meals are negatively associated with high-risk behaviors, such as substance abuse and violence, this may allow students to focus on learning (Fulkerson et al., 2006). The role family meals play in the development of self-esteem and social skills may also support academic performance (Fulkerson et al., 2006). The structure of regular family meals may ease stress and encourage connectedness, which may allow students to perform better in school

(Fulkerson et al., 2006). University students who have increased fruit and vegetable intake have increased GPAs (Wald, Muennig, O'Connell, & Garber, 2014). Multiple studies have shown the role friendship plays in academic performance (Delgado, Ettekal, Simpkins, & Schaefer, 2016).

Chapter III: Methods

Study Design

This was primarily a quantitative pilot study using an experimental design between a control and an intervention group of university students. It assessed the impact shared, family-style meals have on mental health, eating competence, diet quality, and academic success. The experimental design efficiently assesses feasibility and potential effect within financial, labor, and time constraints. Each participant served as their own control during within-subject analysis pre- and post-assessment, reducing covariate imbalance and eliminating the need to randomize or match study participants (Li, 2014; Wellek & Blettner, 2012). This allowed maintenance of statistical integrity while employing fewer study subjects (Li, 2014). This study was designed to assess impact of shared, family-style meals in a manner that could be reproducible in other university dining environments with limited resources in order to grow the field of research in this area.

Duration. The study occurred during January 2018 in the Spring 2018 semester. Because this was initial research on this subject, there was not an established or proposed frequency or duration for shared, family-style meals. A four-week program, with shared, family meals occurring one evening per week, was determined for this pilot study considering the scheduling constraints of student participants, as well as dining services staff.

Study Participants. BSU is considered a four-year, large, primarily nonresidential university and had 23,886 students enrolled in Fall 2016 (BSU, 2018a). About 2,700 students lived on campus (BSU, 2018a) and 1,978 (J. Butler, personal communication, March 9, 2018) had residential meal plans. Approximately 44% of students at BSU are male and 55% are female (BSU, 2018a). Meal plans are mandatory for all traditionally-aged first-year students living on

campus. There is one buffet-style dining hall option, a new à la carte dining hall that opened in a new residence hall, and limited fast food/retail meal options.

BSU students at least 18 years of age were eligible to participate in the study. Students in University Foundations and Nutrition courses were contacted in class or via email about participating. Tabling was done once in each of the two dining halls to recruit participants. Fliers were posted in on-campus housing. The study also recruited among a subpopulation of residents who live in Living Learning Programs (LLPs). LLPs are groups of predominantly first-year students who share similar academic or personal interests, live in the same residence hall, and take a common course related to their shared interest (BSU Housing, 2016). Grocery store gift cards worth \$50 were offered to intervention participants who completed all dinners and all assessments. Control participants were offered \$25 in grocery store gift cards for completing all assessments.

Two study cohorts, a control group and an intervention group, of up to 16 participants each were identified. Due to the requirement to eat dinner on a specific day at a specific time, participants who registered to participate self-selected if they wanted to be part of the intervention or control group. The control received no intervention or direction on dining. To manage labor and food costs associated with providing a shared, family-style meal and to allow interaction between all residents at the shared meal, the number of participants in the intervention group was limited to 20 students.

Intervention. BSU chooses to require meal plans for first-year students to (1) provide revenue for dining services, (2) encourage proper nutrition for students, and (3) support social interaction among students. For Spring 2018, dinner meals for students eating on campus using a pre-purchased meal plan were available in five ways:

1. Eat at the buffet, all-you-care-to-eat dining hall.
2. Eat at the à la carte dining hall.
3. Get a designated meal replacement option at one of the fast food establishments on campus.
4. Choose a pre-made salad or sandwich from convenience stores on campus.
5. After the dining halls are closed, order from a limited menu at a grill located in one of the convenience stores on campus.

Students who do not have a prepaid meal plan may pay a retail price for any of the options listed above. Students with meal plans have guest passes, 16 per semester, that they can use for meals for people without meal plans at no additional cost.

The intervention for this study involves adjusting how students eat in the dining hall in an effort to enhance nutrition and better support social interaction for students. The typical protocol for eating at the university dining hall is for an individual diner to:

1. Go from food station to food station selecting food for the meal.
2. Sit down at a table alone or with others.

If a student chooses to eat fast food, they may or may not sit down to eat it at the tables provided near the eating establishments. Most convenience stores on campus do not provide seating.

Shared, family-style meals involve the following for a group of diners (National Food Service Management Institute, 2006):

1. Sitting at the same table as several diners in their cohort during the meal.
2. Eating from a selected number of foods that have been predetermined.

3. Accessing foods for the meal from communal serving dishes that are placed on or near the table.
4. Individually choosing what and how much of the foods are eaten from the communal dishes.

Shared, family-style meals differ from the typical protocol by (1) ensuring diners sit at the same table, (2) having diners choose food from a preselected number of dishes, and (3) using communal serving dishes that are shared amongst the diners.

The dining hall at BSU in which the shared, family-style meals occurred opened in October 2017 and introduced the dining hall option of à la carte dining options rather than all-you-care-to-eat dining. The intervention group dined at the same time one evening per week. Tables already available at the dining hall were arranged to seat 10 diners per table (see Appendix A for the dining hall layout and image of the setup). To support conversation, “Dinner Chat Placemats” were printed on the back of menus and placed at each place setting (see Appendix H and I for menus and placemats).

The shared, family-style meals were determined from the menu items available on campus that day from the à la carte dining hall Entrée/Sauté and Gluten Sensitive stations. These stations are the two stations in which food is prepared in large quantities at a time versus made-to-order. The menu item options were determined by the contracted food service company, Aramark. A registered dietitian nutritionist reviewed the menus for the day the shared, family-style meal occurred and compiled a meal that consisted of, at minimum, a protein (legumes, meat, poultry, fish, soy, dairy, etc.), a carbohydrate (grains, potatoes, breads, pastas, rice, etc.), and a vegetable. Water was served with all meals. Dessert was offered at the end of each meal. The à la carte dining hall offers limited dessert options, so dessert was similar each week, which

was an assortment of cookies, bars, and whole and cut fruit. These meals incorporated principles from MyPlate, the US Department of Agriculture's (USDA) nutrition guidance (USDA, 2016), the Idaho Plate Method, an approach established prior to MyPlate to assist with diabetes nutrition education and utilized for general nutrition education (Raidl, et al., 2007; Raidl & Safaii, 2013), and the Healthy Eating Plate, a design created by the Harvard T.H. Chan School of Public Health to address deficiencies in MyPlate (2016). (See Appendix B for visuals of these nutrition guidelines).

Considerations were made for participants with food allergies or special diets to receive a balanced, allergen-free meal. Accommodations were made so meals offered peanut-, dairy-, and pork-free options. To maintain the integrity of the shared, family-style nature of the meal, most foods served were available to all diners. Descriptions and ingredients of the foods served were provided to diners so they could choose foods according to their needs.

Mental health, eating competency, diet quality, and academic performance measures were administered at the beginning of the intervention in week one and at the end of the intervention in week five in order to compare the impact of shared, family-style meals versus typical dining protocol.

Table 1

Intervention and Control Format

WEEK	INTERVENTION	CONTROL
	Initial Assessment Survey	
1	shared, family-style meal 1	typical dining protocol
2	shared, family-style meal 2	
3	shared, family-style meal 3	
4	shared, family-style meal 4	
5	Follow-up Survey	

Outcomes and Methods of Measure. Depression, anxiety, loneliness, eating competence, type of food eaten, academic success, and grade point average (Fall 2017 actual at initial assessment and Spring 2018 anticipated at follow-up) were measured at the beginning and end of the study.

Table 2

Conceptual and Operating Definitions

	Conceptual Definition	Operating Definition
Mental health	A state of well-being in which every individual realizes their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community ^a	Scores on The Patient Health Questionnaire 4, which measures depression and anxiety, and the UCLA Loneliness Scale
Eating competence	“Being positive, comfortable and flexible with eating as well as matter-of-fact and reliable about getting enough to eat of enjoyable and nourishing food” ^b	Score on the ecSI 2.0, a measure of eating competency
Family meals	The occasion of consuming food with the majority of family living together in one house ^c	Not applicable; the study will measure shared, family-style meals
Shared, family-style meals	The occasion of consuming communal food with others regardless of their relation to you ^c	The event when 2 or more group members gather around a table to eat, including passing and serving common food from communal serving dishes
Academic Performance	Level of achievement in coursework	Anticipated grade point average of the semester in which the study is conducted; attitudes toward learning and coursework measured by Academic Success Inventory for College Students

^aWorld Health Organization (WHO), 2014 ^bEllyn Satter Institute (ESI), 2016 ^cLarson et al, 2013a

Demographics. Basic demographic information was collected at study registration to compare participants and cohorts. The information included gender, age, and major. To accommodate gender variations, the gender question had the following options to select from: Female, Male, and Prefer to Self-describe with the opportunity to enter a self-described gender.

Age was requested in years and was entered by the participant into a number validated box.

Colleges were listed and participants selected the college in which their major was housed.

A question regarding dietary restrictions was included in the demographic information. This allowed the researcher to assess if the restrictions could be accommodated during the study and, if so, considered during meal planning.

Depression and Anxiety. Depression and anxiety were measured using the Patient Health Questionnaire 4 (PHQ-4). The PHQ-4 includes two questions regarding depression and two questions regarding anxiety. It measures current feelings of depression and anxiety by focusing on emotions in the last two weeks (see Appendix C for questionnaire). This “ultra-brief” self-report screening tool is reliable with a Cronbach alpha of 0.85 (Kroenke, Spitzer, Williams, & Löwe, 2009). Construct validity was shown by comparing PHQ-4 results with Medical Outcomes Study Short-Form General Health Survey (SF-20) (Kroenke et al., 2009; Lowe et al., 2010). Strength of association was 0.80 for mental health and 0.52 for social function (Kroenke et al., 2009). Factorial validity was shown for the depression questions and the anxiety questions (Kroenke et al., 2009). Responses to the four questions were scored by assigning a value to the Likert scale response shown in Table 3. Severity was assessed using the composite score shown in Table 4.

Table 3

Patient Health Questionnaire 4 (PHQ-4) Response Scoring

Likert scale Response	Score
Not at all	0
Several days	1
More than half the days	2
Nearly every day	3
Total Score Range	0-12

^aKroenke, Spitzer, Williams, & Löwe, 2009

Table 4

Patient Health Questionnaire 4 (PHQ-4) Composite Score Assessment^a

Depression/Anxiety Severity	Score
Normal	0-2
Mild	3-5
Moderate	6-8
Severe	9-12

^aKroenke, Spitzer, Williams, & Löwe, 2009

Loneliness. The University of California Los Angeles (UCLA) Loneliness Scale 3 is the standard scale for measuring loneliness (Russell, 1996). The scale consists of 20 items, 11 negatively worded (lonely) and nine positively worded (non-lonely) (see Appendix D for questionnaire). This scale shows high levels of reliability with a coefficient alpha of 0.89 to 0.94 across four sample populations. Construct validity was demonstrated by measuring correlation with other scales associated with loneliness (Russell, 1996). Strength of relation was 0.65 for the NYU Loneliness Scale and 0.72 for the Differential Loneliness Scale (Russell, 1996). UCLA

Loneliness Scale 3 scores are also negatively related to measures of social support and satisfaction (Russell, 1996). Responses to the questions were scored by assigning a value to the Likert scale response shown in Table 5. Severity was assessed using the composite score with increasing scores demonstrating increased loneliness (Russell, 1996).

Table 5

UCLA Loneliness Scale 3 Response Scoring & Composite Score Assessment^a

Negatively-worded/Lonely Items: 2, 3, 4, 7, 8, 11, 12, 13, 14, 17, 18		Positively-worded/Non-lonely Items: 1, 5, 6, 9, 10, 15, 16, 19, 20	
Likert scale Response	Score	Likert scale Response	Score
Never/1	1	Never/1	4
Rarely/2	2	Rarely/2	3
Sometimes/3	3	Sometimes/3	2
Always/4	4	Always/4	1
Increasing scores demonstrate increasing levels of loneliness.			

^aRussell, 1996

Eating Competence. The ecSI 2.0 is a 16-item questionnaire measuring eating competence (see Appendix E for questionnaire). It categorizes eating competence into four factors: eating attitude, food acceptance skills, internal food regulation skills, and contextual skills (ESI, 2016). These categories are defined in Table 6.

Construct validity for adults was demonstrated using five validated instruments that measure related items, such as awareness of internal hunger cues, disordered eating, and food preferences (ESI, 2016; Lohse, Satter, Horacek, Gebreselassie, & Oakland, 2007).

The ecSI 2.0 was scored by assigning value to the Likert scale responses shown in Table 7. In addition to a composite eating competence score, the subscales can assign scores to each category as shown in Table 8.

Table 6

ecSI 2.0 Eating Competence Factors^a

Factor	Description
Eating attitude	Positive approach to food and eating
Food acceptance skills	Skillful in learning to like new foods; comfortable eating a variety of foods
Internal regulation skills	Uses hunger, appetite, satiety, and satisfaction to determine how much to eat
Contextual skills	Makes eating a priority; has skills for acquiring and preparing food

^a(ESI, 2016)

Table 7

ecSI 2.0 Response Scoring^a

Likert scale Response	Score
Always	3
Often	2
Sometimes	1
Rarely	0
Never	0
Total Score Range	0-48

^a(ESI, 2016)

Table 8

ecSI 2.0 Factor and Composite Score Assessment^a

Factor	Related Items	Score Range	Competence Cutoff
Eating Competence	1-16	0-48	≥ 32
Eating Attitudes	1, 2, 4, 8, 14	0-15	n/a
Food Acceptance	5, 6, 7	0-9	n/a
Food Regulation	9, 10, 13	0-9	n/a
Contextual Skills	3, 11, 12, 15, 16	0-15	n/a

^a(ESI, 2016)

Permission is required to use this survey and was granted through the Ellyn Satter Institute by Barbara Lohse, PhD, RD, CDN, via email 12 October 2017.

Diet Quality. A question regarding fruit and vegetable intake was used as a marker of diet quality. Although there are several measures of diet quality and several assessment tools available, it was deemed that fruit and vegetable intake would be most reflective of the anticipated changes in diet quality as a result of shared, family-style meals. Most other diet quality assessment tools require lengthy food frequency questionnaires deemed too prohibitive for the population. The question from the ACHA-NCHA survey question for fruit and vegetable consumption was used (see Appendix E for survey question). The ACHA-NCHA survey has been consistently used for university data and is validated through comparison to four national databases (ACHA, 2014). Ranges of intake were used to assess fruit and vegetable intake. There is not an ACHA-NCHA survey scoring for this question. Thus, the scoring shown in Table 9 was implemented for this study. The maximum score for diet quality is a three, eating five or more

servings of fruits and vegetables per day, and the minimum is zero, eating zero fruits and vegetables per day.

Table 9

Daily Fruit and Vegetable Intake Scoring

Daily Fruit and Vegetable Intake	Score
0 servings per day	0
1-2 servings per day	1
3-4 servings per day	2
5 or more servings per day	3
Total Score Range	0-3

Academic Performance. GPA is often used to assess academic performance. For the initial assessment, participants were asked to self-report their GPA from the university for the Fall 2017 semester. To check for consistency in self-reporting, participants were also asked to list each class, its credits, and the letter grade they received during Fall 2017 at initial assessment. For the final assessment, participants were asked to self-report the classes they were taking in Spring 2018, listing the credits and anticipated letter grade they would receive in each class. Their anticipated GPA for Spring 2018 was calculated using the Boise State University quality points per credit (Boise State, 2018b). All GPAs were reported on a four-point scale.

Questions from the Academic Success Inventory for College Students (ASICS) were used to track participants' attitudes towards learning and their classes. Four questions were chosen from the 50-item scale. The questions were adapted to be present-tense and measure all classes versus one class. The ASICS uses ten subscales to measure academic success. The four questions used were from three subscales: Skills, Confidence in Abilities, and Internal

Motivation/Interest, described in Table 10 (Welles, 2010) (see Appendix F for questionnaire).

These subscales were chosen based on the academic areas Fulkerson et al. (2006) found improved when adolescents who ate family dinners. The subscales used demonstrate reliability with Cochran alphas ranging from 0.93 to 0.86 (Prevatt, Li, Welles, & Festa-Dreher, 2011). A comparison between honors students and students on academic probation showed construct validity with 41% of grade variation predictable with the scale (Festa-Dreher, 2012; Prevatt, Li, Welles, & Festa-Dreher, 2011). Scoring for the ASICS is on a seven-point Likert scale shown in Table 11.

Table 10

Academic Success Inventory for College Students (ASICS) Questions & Associated Factors^a

Question	Factor
I get satisfaction from learning new material	Internal Motivation/Interest
I am pretty sure I can make an A or a B in my classes	Confidence in Abilities
I know that if I work hard I can do well	Confidence in Abilities
I study a lot for my classes	Skills

^aWelles, 2010

Table 11

Academic Success Inventory for College Students (ASICS) Response Scoring^a

Likert scale Response	Score
Strongly Disagree	1
Moderately Disagree	2
Slightly Disagree	3
Neutral	4
Slightly Agree	5
Moderately Agree	6
Strongly Agree	7
Total Score Range	4-28

^aFesta-Dreher, 2012

Acceptability. To assess acceptability of the meals, at each shared, family-style dinner, participants completed a weekly meal evaluation. The form evaluates enjoyment of the meal, taste, nutrition, conversation, and desire for additional shared, family-style dining on campus on a Likert scale with 1 being low (not a fan) and 5 being high (love it). The evaluation also asked what the participant liked least and most about the meal. See Appendix G for the evaluation form. This form was piloted during two shared, family-style dining events of over 100 housing staff each at BSU between 2016-2017.

Feasibility. Dining staff were identified as the main evaluators of the feasibility of shared, family-style dining. Field notes of conversations with dining staff were taken during planning meetings and before or after shared, family-style meals and documented electronically.

Data Collection and Procedures. Demographic information, PHQ-4, UCLA Loneliness Scale 3, ecSI 2.0, fruit and vegetable intake, and academic performance assessment questions

were distributed via a link to an online Qualtrics-facilitated survey. Questions to gather demographics were included in the registration form participants completed to join the study. Emails were collected from participants at registration for the study. The initial and follow-up survey links were distributed via email. Control group participants were given approximately five days to take the survey once it was distributed. Intervention group participants were asked to complete the initial survey at the dining hall prior to the first shared, family-style meal. Surveys were completed at the beginning of the study and approximately four weeks later, after the last shared, family-style dinner was completed for the intervention group. The weekly meal evaluation was administered in paper form following each meal and gathered from participants prior to them leaving the meal. Field notes were gathered from dining staff during planning and implementation of the shared, family-style dinners. It is anticipated that shared, family-style meals provide short-term benefits, thus, this study did not focus on long-term follow-up collection.

Table 12

Measures: Tools and Timing

Measure	Survey Tool	Description	Timing
Demographics	Various	Gender, age, and major,	Study registration
Depression Anxiety	PHQ-4	2 depression questions & 2 anxiety questions focusing on emotions in the last 2 weeks	Study beginning, Follow-up
Loneliness	UCLA Loneliness Scale 3	20-item survey with negatively- and positively-worded items about feelings towards one's social practices and attitudes	Study beginning, Follow-up
Eating Competence	ecSI 2.0	16-item survey of eating practices and attitudes	Study beginning, Follow-up
Diet Quality	ACHA-NCHA fruit & vegetable intake	1 question measuring daily fruit & vegetable intake	Study beginning, Follow-up
Academic Performance	Partial ASICS	4-item survey measuring academic skills, confidence, and internal motivation	Study beginning, Follow-up
	Self-report GPA	Self-report letter grades for classes will be converted to a 4.0-scale GPA	Study beginning, Follow-up
Acceptability	Weekly meal evaluations	Likert scale evaluating taste, nutrition, conversation, and interest in shared, family-style meals on campus; least and most favorite part of meal	Weekly at shared, family-style meal
Feasibility	Field notes	Observation of comments and actions	Weekly at shared, family-style meal

Statistical Analysis. Intervention and control groups were compared in terms of basic demographics to describe any differences using Pearson chi-square tests and Independent t-tests. Independent t-tests were used to compare control and intervention groups for the mean composite scores from the PHQ-4, UCLA Loneliness Scale 3, ecSI 2.0, fruit and vegetable intake, ASICS, and GPA scales. Paired t-tests were used to assess variance within subjects from initial to final survey for each of the control and intervention groups. Statistical significance was determined at $\alpha < 0.1$. SPSS 25 statistical software was used to complete statistical tests of inference calculations (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY). Due to the exploratory nature of this pilot study, p-values of 0.100 or smaller were considered significant. A post-hoc subgroup analysis to determine the variance between pre- and post-assessment for participants with PHQ-4 scores above the normal range was conducted. Weekly meal evaluations were used to calculate mean scores for each of the categories (enjoyment, taste, nutrition, conversation, and desire for future meals). Least and favorite parts of meals and field notes from dining staff were coded using the inductive approach to identify categories and themes.

Ethical Considerations. This study required expedited approval by an institutional review board. The assessment tools potentially identified sensitive health information. Privacy and confidentiality were maintained through a number identification system for each student and appropriate technological safeguards. If assessment tools showed a participant to have health concerns that should be addressed, such as depression or an eating disorder, appropriate health referrals were made.

Table 13

Study Timeline

WEEK	TASK
September 2017	Seek IRB approval
October 2017	Recruit participants
1-8 January 2018	Finalize menus with Aramark
	Intervention
	Control
	Receive consent forms
9 January 2018	Initial Assessment Survey
	shared, family-style meal 1
16 January 2018	shared, family-style meal 2
	typical dining protocol
23 January 2018	shared, family-style meal 3
30 January 2018	shared, family-style meal 4
30 January–6 February 2018	Follow-up Assessment Survey
February 2018	Statistical Analysis

Chapter IV: Results

Demographic characteristics, PHQ-4, loneliness, eating competence, diet quality, and academic performance are presented below for both intervention and control groups.

Comparisons between intervention and control groups, and when appropriate within-subject pre- and post-assessment variance, was reported. Data regarding acceptability and feasibility of shared, family-style meals was also reported.

Demographics

Table 14

Demographics at Study Enrollment

	Intervention	Control	P-value
	% or Mean (SD)	% or Mean (SD)	Pearson Chi-Square or Independent t-test
Gender			0.371
Female	56.3%	75.0%	
Male	43.7%	25.0%	
Mean Age	20.06 (1.98)	20.25 (1.67)	0.917
Major			0.752
Arts & Sciences	26.7%	37.5%	
Business & Economics	13.3%	0.0%	
Engineering	6.7%	12.5%	
Health Sciences	40.0%	50.0%	
Public Service	6.7%	0.0%	
Undecided	6.7%	0.0%	

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

There were not significant differences in gender, age, and major between intervention and control groups at baseline enrollment in the study (see Table 14). The intervention group was 56.3% female and the control group was 75.0% female (p=0.371). The mean age was 20.06 years for the intervention group and 20.25 for the control group (p=0.917). Major was assessed based

on the five colleges at BSU with the most common major in both groups identifying as Health Sciences majors followed by Arts and Sciences majors. The p-value of 0.752 shows that variance in major between the intervention and control group was slight and not statistically significant.

PHQ-4

Table 15

Baseline PHQ-4 Intervention and Control Variance

	Intervention	Control	P-value
	Mean (SD)	Mean (SD)	Independent t-test
PHQ-4	1.94 (1.77)	2.1 (1.25)	0.563
Anxiety	1.44 (1.36)	1.63 (1.19)	0.774
Depression	0.50 (0.73)	0.50 (0.53)	0.317

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Baseline intervention/control variance. At baseline, the mean score on the PHQ-4 for intervention was 1.94, just within range of normal (0-2). At baseline, the mean score on the PHQ-4 for control was 2.1, just outside the range of normal (0-2). The p-value of 0.563 shows that although the control group had a higher mean PHQ-4, the variation between the intervention and the control groups was not statistically significant.

The mean score for anxiety questions on the PHQ-4 was 1.44 for the intervention group and 1.63 for the control group. While the control group mean anxiety score was higher than the intervention group, the p-value of 0.774 shows no statistically significant variation between the two groups. For the depression questions, the intervention group had a mean score of 0.50 while the control group also had a mean score of 0.50; the p-value of 0.317 shows no statistically significant variation between the two groups.

Table 16

PHQ-4 Intervention Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
PHQ-4	1.94 (1.77)	1.56 (1.26)	0.252
Anxiety	1.44 (1.36)	1.06 (.85)	0.211
Depression	0.50 (0.73)	0.50 (0.73)	1.00

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Intervention within subject pre and post variance. The mean score for PHQ-4 and the anxiety-specific questions decreased with depression remaining the same from pre- to post-assessment for the intervention group. No changes were statistically significant. The overall PHQ-4 score went from 1.94, the higher end of the normal range, to 1.56, the mid to high normal range (p=0.252). Anxiety scores decreased from 1.44 to 1.06 (p=0.211). Depression remained exactly the same between pre- (0.50) and post-assessment (0.50) (p=1.000). When variance between pre- and post-assessment for participants with PHQ-4 scores above the normal range (N = 4) at initial intake is analyzed, there was a significant two-point decrease in mean PHQ-4 score (p=0.016).

Table 17

PHQ-4 Control Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
PHQ-4	2.13 (1.25)	1.75 (1.83)	0.549
Anxiety	1.63 (1.19)	1.13 (1.73)	0.316
Depression	0.50 (0.53)	0.63 (0.52)	0.598

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Control within subject pre and post variance. The control group also had a decrease in mean score for PHQ-4 and the anxiety-specific questions with depression increasing from pre- to post-assessment, though no changes were statistically significant. The overall PHQ-4 score was

2.13, the higher end of the normal range pre-assessment, going to 1.75, the mid to high normal range, post-assessment ($p=0.549$). Anxiety decreased from 1.63 to 1.13 ($p=0.316$). Depression increased from 0.50 pre-assessment to 0.63 post-assessment ($p=0.598$). There was no significant variance between pre- (3.33) and post-assessment (3.00) for participants with PHQ-4 scores above the normal range ($N = 3$) at initial intake ($p=0.868$).

Loneliness

Table 18

Baseline Loneliness Intervention and Control Variance

	Intervention	Control	P-value
	Mean (SD)	Mean (SD)	Independent t-test
Loneliness	38.19 (8.98)	37.38 (8.07)	0.428

* $p < 0.2$ (marginally significant). ** $p < 0.1$ (significant)

Baseline intervention/control variance. At baseline, the mean score for loneliness did not vary significantly between intervention and control groups ($p=0.428$). The intervention group had a slightly higher loneliness score 38.19 compared to the control group 37.38.

Table 19

Loneliness Intervention Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
Loneliness	38.19 (8.98)	36.36 (6.77)	0.177*

* $p < 0.2$ (marginally significant). ** $p < 0.1$ (significant)

Intervention within subject pre and post variance. Loneliness mean scores decreased from 38.19 to 36.36 from pre- to post-assessment in the intervention group. This variance was marginally significant with a p-value of 0.177.

Table 20

Loneliness Control Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
Loneliness	37.38 (8.07)	35.88 (7.02)	0.570

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Control within subject pre and post variance. The control group also saw a decrease in loneliness, going from 37.38 pre-assessment to 35.88 post-assessment. This change was not significant as evidenced by a p-value of 0.570.

Eating Competence

Table 21

Baseline Eating Competence Intervention and Control Variance

	Intervention	Control	P-value
	Mean (SD)	Mean (SD)	Independent t-test
Eating Competence	33.38 (7.42)	32.13 (8.00)	0.893
Eating Attitudes	11.44 (3.24)	11.63 (2.67)	0.524
Food Acceptance	5.75 (1.95)	4.75 (2.25)	0.947
Food Regulation	6.18 (2.04)	6.63 (2.26)	0.686
Contextual Skills	10.00 (2.97)	9.13 (3.44)	0.529

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Baseline intervention/control variance. For composite eating competence and the four subscales, there was no significant variance at baseline between the intervention and control groups. The intervention group had higher composite eating competence, food acceptance, and contextual skills compared to the control group at baseline. The control group had higher eating attitudes and food regulation compared to the intervention group at baseline. For eating attitudes, the intervention group had a mean score of 11.44 and the control group had a mean score of 11.63 (p=0.524). For food acceptance, the mean score was 5.75 for the intervention group and 4.75 for the control group (p=0.947). Food regulation mean scores were 6.18 for the intervention

group and 6.63 for the control group ($p=0.686$). The mean contextual skills score variation between intervention and control groups was 10.00 versus 9.13, respectively ($p=0.529$).

The intervention group composite eating competence mean score was 1 point above the eating competence cutoff point of 32 at 33.38. The composite eating competence mean score for the control group was slightly above the eating competence cutoff point at 32.13. The p -value (0.893) for baseline composite eating competence showed no significant variation.

Table 22

Eating Competence Intervention Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
Eating Competence	33.38 (7.42)	36.19 (5.38)	0.074**
Eating Attitudes	11.44 (3.24)	12.19 (2.95)	0.138*
Food Acceptance	5.75 (1.95)	6.44 (1.41)	0.102**
Food Regulation	6.19 (2.04)	6.44 (1.90)	0.510
Contextual Skills	10.00 (2.97)	11.13 (2.85)	0.175*

* $p < 0.2$ (marginally significant). ** $p < 0.1$ (significant)

Intervention within subject pre and post variance. Three of the four subscales, as well as composite eating competence, improved significantly or marginally significantly among the intervention group between pre- and post-assessment. Eating attitudes mean score increased from 11.44 pre-assessment to 12.19 post-assessment ($p=0.138$) showing marginally significant variance. Food acceptance increased the most among the subscales going from 5.75 to 6.44, a marginally significant increase ($p=0.102$). Food regulation increased from 6.19 pre-assessment to 6.44 post-assessment. This increase did not demonstrate any significant variance ($p=0.510$). Contextual skills increased from pre- to post-assessment going from 10.00 to 11.13; this increase was marginally significant ($p=0.175$). Composite eating competence increased approximately 3 points, significantly improving from 33.38 to 36.19 ($p=0.074$).

Table 23

Eating Competence Control Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
Eating Competence	32.13 (8.00)	32.75 (6.09)	0.724
Eating Attitudes	11.63 (2.67)	12.00 (1.77)	0.528
Food Acceptance	4.75 (2.25)	5.13 (1.64)	0.763
Food Regulation	6.63 (2.26)	6.75 (1.49)	0.756
Contextual Skills	9.13 (3.44)	8.88 (3.27)	0.724

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Control within subject pre and post variance. Mean scores for composite eating competence and all subscales, except for contextual skills, increased slightly but not significantly over the study. Eating attitudes went from 11.63 at baseline to 12.00 post-assessment (p-value 0.528). Food acceptance improved from 4.75 to 5.13 with a p-value of 0.763. Food regulation went from 6.63 pre-assessment to 6.75 post-assessment (p-value 0.756). Contextual skills decreased from pre-assessment (9.13) to post-assessment (8.88) with a p-value of 0.724. Composite eating competence increased from 32.13 to 32.75, showing no significant variance from pre- to post-assessment with a p-value of 0.724.

Diet Quality

Table 24

Baseline Fruit and Vegetable Intake Intervention and Control Variance

	Intervention	Control	P-value
	Mean (SD)	Mean (SD)	Independent t-test
Daily Fruit & Vegetable Intake	1.81 (0.91)	1.00 (0.00)	0.003**

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Baseline intervention/control variance. At baseline, daily fruit and vegetable intake score was significantly higher (p-value 0.003) in the intervention group. All of the controls

(N=8) stated eating one to two servings of fruits and vegetables each day. Fifty percent (N=8) of the intervention group reported eating one to two servings each day, 18.75% (N=3) reported consuming three to four servings each day, and 31.25% (N=5) reported consuming five or more servings each day.

Table 25

Fruit and Vegetable Intake Intervention Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	paired t-test
Daily Fruit & Vegetable Intake	1.81 (0.91)	1.56 (0.89)	0.104*

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Intervention within subject pre and post variance. Intervention group participants decreased their mean fruit and vegetable intake from pre- (1.81) to post-assessment (1.56). This marginally significant (p=0.104) change still did not transfer the intervention participants across categories, but kept them in between the one to two servings per day (score = 1) and three to four servings per day (score = 2).

Table 26

Fruit and Vegetable Intake Control Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
Daily Fruit & Vegetable Intake	1.00 (0.00)	0.88 (0.35)	0.351

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Control within subject pre and post variance. The control group saw a nonsignificant (p = 0.351) drop in fruit and vegetable intake. The change from pre- (1.00) to post-assessment (0.88) dropped the control group mean slightly below the one to two servings per day (score = 1) category.

Academic Performance: Partial ASICS & GPA

Table 27

Baseline ASICS & GPA Intervention and Control Variance

	Intervention	Control	P-value
	Mean (SD)	Mean (SD)	Independent t-test
ASICS	25.50 (3.60)	26.00 (2.14)	0.240
Internal Motivation/Interest	6.19 (1.42)	6.50 (0.76)	0.283
Confidence in Abilities	13.31 (1.54)	13.38 (0.92)	0.709
Skills	6.00 (1.37)	6.13 (0.84)	0.321
GPA (by credit)	3.51 (.53)	3.46 (.48)	0.361

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Baseline intervention/control variance. There were no significant variances in the academic measures reported at baseline by the intervention and control groups. Academic success as measured by ASICS was slightly higher in the control group for composite score (26.00) compared to the intervention group (25.50), but not significant (p-value 0.240). Each subscale score was higher for the control group compared to the intervention group, but not significantly. Self-reported GPA for the Fall 2017 semester was slightly higher in the intervention group (3.50) compared to the control group (3.46), but not significantly (p=0.361).

Table 28

ASICS & GPA Intervention Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
ASICS	25.5 (3.60)	24.25 (5.72)	0.468
Internal Motivation/Interest	6.19 (1.42)	6.25 (1.29)	0.896
Confidence in Abilities	13.31 (1.54)	12.50 (3.01)	0.353
Skills	6.00 (1.37)	5.50 (1.71)	0.281
GPA	3.51 (.53)	3.72 (.33)	0.094**

*p < 0.2 (marginally significant). ** p < 0.1 (significant)

Intervention within subject pre and post variance. The ASICS composite score dropped 1.25 points from pre- to post-assessment, but was not significant ($p = 0.468$). A nonsignificant increase occurred from pre- to post-assessment in the subscale Internal Motivation/Interest. Nonsignificant decreases occurred in Confidence in Abilities and Skills from pre- to post-assessment. A significant increase occurred in self-reported, received Fall 2017 GPA (3.51) to self-reported, anticipated Spring 2018 GPA (3.72) ($p = 0.094$).

Table 29

ASICS and GPA Control Pre and Post Variance

	Pre	Post	P-value
	Mean (SD)	Mean (SD)	Paired t-test
ASICS	26.00 (2.14)	25.75 (2.76)	0.598
Internal Motivation/Interest	6.50 (0.76)	6.50 (0.54)	1.000
Confidence in Abilities	13.38 (0.92)	12.88 (1.81)	0.351
Skills	6.13 (0.84)	6.38 (0.74)	0.170*
GPA	3.46 (.48)	3.77 (.20)	0.067**

* $p < 0.2$ (marginally significant). ** $p < 0.1$ (significant)

Control within subject pre and post variance. ASICS decreased only slightly (0.25 points) from pre- to post-assessment for the control group and was not significant. Internal Motivation/Interest remained the same pre- to post-assessment, while Confidence in Abilities decreased slightly but not significantly, and Skills increased a marginally significantly 0.31 points ($p = 0.170$). Like the intervention group, the control group mean self-reported, anticipated Spring 2018 GPA (3.77) was significantly higher ($p = 0.067$) than the mean self-reported, received Fall 2017 GPA (3.46).

Acceptability

Table 30

Weekly Meal Evaluations

	Enjoyment	Taste	Nutrition	Conversation	Want on Campus
	Mean	Mean	Mean	Mean	Mean
Week 1	4.94	4.81	4.81	4.94	4.88
Week 2	4.94	4.71	4.88	5.00	4.82
Week 3	4.88	4.47	4.88	4.88	4.82
Week 4	5.00	4.94	4.94	4.94	4.81
All Weeks	4.94	4.73	4.88	4.94	4.83

When evaluating each weekly meal, the intervention group participants ranked their enjoyment of the meal, the taste, the nutrition, and the conversation as 4 or above. The lowest ranking was for taste (4.73 4-week mean) with week 3's menu receiving the lowest marks (see Appendix H for weekly menus). Enjoyment and conversation received the highest ratings, both with a 4.94 four-week mean. Interest in having family-style eating on campus was also ranked 4 or above each week for a four-week mean of 4.83. The majority of students did not list a least favorite part of the meal. Food (its flavor or variety) was the main item participants listed as their least favorite component of shared, family-style meals. Dining style (table positioning and food consumption timing compared to others) was the second most mentioned least favorite component. Food (specific items offered, flavor, amount, and nutrition) was mentioned most often as the favorite part of shared, family-style meals. Social (including conversation, meeting new people, and friendliness) was the second most frequently mentioned topic for favorite component of shared, family-style meals. See Appendix J for comments from weekly meal evaluations.

There was a 100% retention rate for the first three meals of the 16 intervention participants and a 93.75% retention rate across all four weeks. One participant missed the last meal, showing up about 45 minutes late and saying he “forgot about the meal and had already eaten.” Many participants said the grocery card incentive did not motivate them to join and stick with the study, but that the meals themselves were incentive enough. Many stated their least favorite part of meal four was that “it was over.” Students exchanged numbers after the fourth meal and some continued to meet up for dinner at the same time in following weeks. Students with meal plans offered to share their guest meals with students who did not have meal plans.

Feasibility

In conversation with dining services personnel managers, food production managers, front-of-the-house managers, front-of-the-house staff, and food production staff, 66.67% of dining services staff (n=6) described both the setup and food preparation as good and easy. The lead food production manager stated, “This is what we are trained to do.” Front-of-the-house staff enjoyed setting up for the meals. One front-of-the-house manager mentioned how this setup was what he is seeing trending in high-end restaurants, and he was “excited” to offer it to Boise State students. The lead personnel and food production managers expressed that “drawing attention to the new dining hall” was valuable to their dining program. The food production staff mentioned that “the meals play to my skills as a cook.” Quality control and time management were mentioned as concerns for the food production staff.

All staff perceived value in offering family-style meals to students. They cited social interaction as the most important benefit for students. Staff also mentioned nutrition, with an emphasis on fueling students’ brains and energy level, as an important benefit of the meals. One staff stated, “[These meals] bring life and depth to...the community.”

Chapter V: Discussion

With no research on shared, family-style dining for university students, this research established the vital components of acceptability and feasibility among a sample population with similar demographics as the broader university population. In addition to acceptability and feasibility, this research builds understanding of the impact shared, family-style meals may have on university students.

This research provided insight on how to assess fruit and vegetable intake. This study did not show the expected increase in fruit and vegetable consumption among the intervention group that other studies have found when reviewing family meal participation among adolescents (Larson et al., 2013b; Neumark-Sztainer, 2006; Larson et al., 2013a). The only data on young adults, not adolescents, showed differences in increase of fruit versus vegetables and differences in gender. This study did not distinguish fruit intake from vegetable intake and did not analyze data by gender.

Although the results regarding academics did not show improvement in the intervention group, this study increased understanding on methodology for researching academic impact of shared, family-style dining in university students. Both intervention and control groups anticipated a better GPA in the current semester than they received in the previous semester, though self-predictions of GPA early in a semester are less correlated with actual GPA (Gadzella, Cochran, Parham, & Fournet, 2014). All available research of family dining and academics is on adolescents eating with their families (Harrison et al., 2015; Eisenberg et al., 2004; Fulkerson et al., 2006).

There is also no research on the impact of shared, family-style meals on depression and anxiety in university students. With increasing rates of depression and anxiety (ACHA, 2010;

Penn State University, 2015) and growing demands to address mental health on university campuses, this study shows promising results for an efficient and effective intervention. Not only did the participants in the intervention group who were at normal depression and anxiety levels remain in the healthy range, but there was a significant decrease in the scores of participants with mild or moderate depression and anxiety that resulted in them scoring within normal ranges. Thus shared, family-style meals at a university may provide a protective mental health effect similar to that seen among adolescents participating in family meals (Eisenberg et al., 2004; Fulkerson et al., 2009; Fulkerson et al., 2006). In addition to showing a protective effect, a therapeutic effect was also reported with improvements in depression and anxiety levels.

Improvements in mental health can be attributed to prosocial and communication skill development learned in shared, family-style meals (Skeer & Ballard, 2013). This development can allow students to access social support (Chickering & Reisser, 1993; Spence, 2012), as demonstrated by the marginally significant decrease in loneliness seen among the intervention group. This level of significance was not seen among the control group, showing the additional benefits of shared, family-style dining beyond the feelings of decreased loneliness reported for eating in a dining hall only (KSU Communications and Marketing, 2013).

Eating competence is low among university students, with 52.6% of students in one study showing eating competence (Brown, Larsen, Nyland, & Eggett, 2013). Seeing a significant increase from pre- to post-assessment in eating competence in the intervention group demonstrated potential effect of shared, family-style meals on eating attitudes, acceptance, regulation, and contextual skills. Although Larsen (2010) found enrollment in basic nutrition courses increased mean scores for university students, shared, family-style dining offers a potentially more acceptable and less time-consuming option for improving eating competence.

Also, without a control group for Larsen's (2010) study, it cannot be concluded if the class was the reason for the improvement. The potential of shared, family-style meals was underscored because there was no significant variance at baseline for eating competence composite or subscale scores for intervention and control groups and there was no significant change from pre- to post-assessment in the control group.

This study pioneers the concept and feasibility of shared, family-style meals in a university setting. Shared, family-style meals may help address the unique health concerns young adults face as they establish their own lifelong health habits. This study may have implications for universities struggling to draw and retain students (National Center for Education Statistics [NCES], 2016b) and support student mental health and physical well-being (ACHA, 2015; Baker, 2014). Shared, family-style meals among university students tackle public health concerns of finding minimal cost, scalable interventions that build a culture of health (American Journal of Preventative Medicine, 2014) by reaching the 17.5 million undergraduate students through meals they eat every day (NCES, 2016a). In summarizing the related research on shared family meals, the author Miriam Weinstein stated, "What if I told you that there was...something that would improve the quality of your daily life, your children's chances of success in the world, [and] your family's health...? Something that is inexpensive, simple to produce, and within the reach of pretty much everyone?" (Forthun, 2015; Weinstein, 2005). Surely this is an intervention worth implementing and evaluating. Exploring the impact of shared, family-style dining builds on our knowledge of the positive effects family meals have for adolescents. Shared, family-style meals may offer a novel approach to addressing population health with the potential to impact both short-term health and quality of life markers, as well as influence lifelong health and success with a cost-effective intervention among university students.

Limitations

Efforts have been made within time and financial constraints to minimize limitations. Major limitations of this study relate to the recruitment of population, sample size, measurement tools, and the use of a multifaceted intervention.

Recruitment. Effort was made to make recruitment as open as possible. Selection bias was a limitation. Students who are more interested or comfortable interacting with others may have chosen to participate in the intervention group. Also, students responded better if they knew someone related to the study. Some members were recruited to the intervention who knew each other. At the first dinner, participants who knew each other sat by each other, partially because they arrived at the same time. After the second dinner, participants who knew each other split themselves up to meet new people.

Additional recruitment efforts had to be made to find a sufficient control group. Those who registered were more likely to choose to participate in the intervention rather than the control. The open recruitment demonstrates the desirability of shared, family-style dinners among BSU students.

Sample Size. The number of participants in the study limited the statistical significance level and confidence. The sample size was kept small to better assess feasibility and enhance the dining experience. Despite the limited sample, the study still utilized a control group with limited variance from the intervention group at baseline. Our intervention group was similar to the university population in gender and major.

Measurement Tools. The academic measures were limited in yielding information on academic changes pre- and post-assessment. The ASICS tool was shortened and may impact the ability to fully understand academic attitudes of participants. Also, the timing of the study did

not allow for follow-up on actual Spring 2018 GPA. While not yielding ideal data, the use of the academic measures provided insight on how to enhance academic measures for future studies.

Multifaceted Intervention. Shared, family-style meals involve multiple components including social interaction and passive nutrition education. This study is not able to identify the role any one component of the intervention may or may not play in the outcomes. Separate studies would be required to measure the impact of each component.

Further research is warranted to corroborate or refute these findings. Other studies may consider using the complete ASICS scale and tracking actual GPA over a semester. Larger sample sizes with statistical power to detect modest effects may enhance understanding of impacts of shared, family-style dining at universities. Longer follow-up would allow for measurement of endurance of impact on these and other potential effects, such as retention in university. Effective dose can also be evaluated using different assessment intervals and intervention frequency and duration.

The pioneering nature of this study allowed this research to evaluate effectiveness of the current study design, identify limitations, and suggest improvements for further research. The establishment of acceptability and feasibility create opportunities for ongoing research.

Conclusion

This initial study established the feasibility, acceptability, and value of shared, family-style dining for students in university dining halls. While improvement in eating competence and decrease in loneliness were noted for those participating in shared, family-style dining, further research should be conducted with increased statistical power to better approximate effect size and explore other potential impacts of shared, family-style dining at universities. This

acceptable, feasible, and effective intervention showed promise for addressing multiple dimensions of wellness that impact student success while at university.

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Dining Hall Arrangement

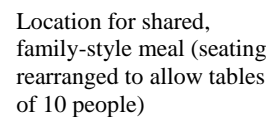


Figure A1 Dining Hall Configuration (N. Nimmons, personal communication, August 9, 2016)



Figure A2 Dining Hall Reconfiguration for Shared, Family-style Dining (MarLee Harris, personal communication, January 9, 2018)

APPENDIX B

Meal Planning Guides

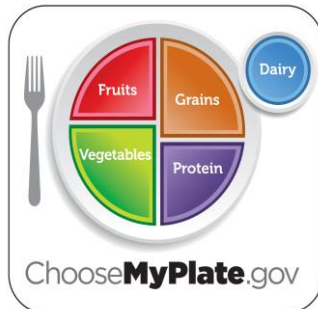


Figure B1 MyPlate (USDA, 2016)



Figure B2 Idaho Plate Method (Raidl, et al., 2007)

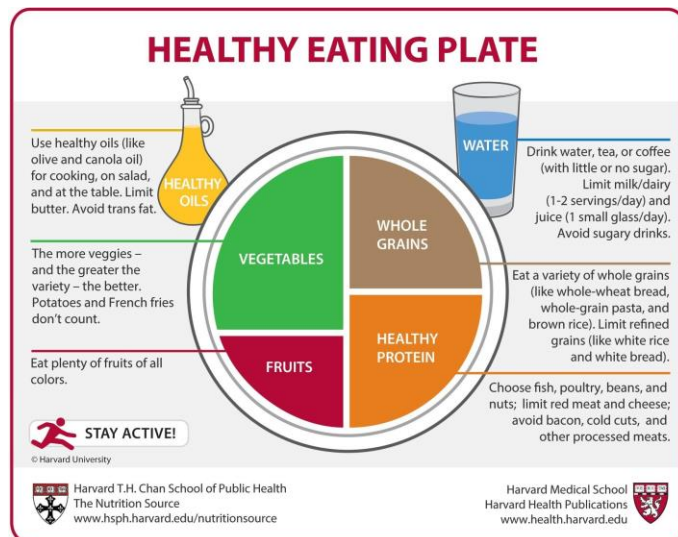


Figure B3 Healthy Eating Plate (Harvard T.H. Chan School of Public Health, 2016)

APPENDIX C

Depression and Anxiety Survey Tool

Table C

Patient Health Questionnaire 4 (PHQ-4)^a

Over the past 2 weeks have you been bothered by these problems?	Not at all	Several days	More days than not	Nearly every day
Feeling nervous, anxious, or on edge	0	1	2	3
Not being able to stop or control worrying	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3

^a Kroenke, Spitzer, Williams, & Löwe, 2009

APPENDIX D

Loneliness Survey Tool

Table D

UCLA Loneliness Scale 3^a

	Never	Rarely	Some- times	Always
1. How often do you feel that you are “in tune” with the people around you?	1	2	3	4
2. How often do you feel that you lack companionship?	1	2	3	4
3. How often do you feel that there is no one you can turn to?	1	2	3	4
4. How often do you feel alone?	1	2	3	4
5. How often do you feel part of a group of friends?	1	2	3	4
6. How often do you feel that you have a lot in common with the people around you?	1	2	3	4
7. How often do you feel that you are no longer close with anyone?	1	2	3	4
8. How often do you feel that your interests and ideas are not shared by those around you?	1	2	3	4
9. How often do you feel outgoing and friendly?	1	2	3	4
10. How often do you feel close to people?	1	2	3	4
11. How often do you feel left out?	1	2	3	4
12. How often do you feel your relationships with others are not meaningful?	1	2	3	4
13. How often do you feel that no one really knows you well?	1	2	3	4
14. How often do you feel isolated from others?	1	2	3	4
15. How often do you feel you can find companionship when you want it?	1	2	3	4
16. How often do you feel that there are people who really understand you?	1	2	3	4
17. How often do you feel shy?	1	2	3	4
18. How often do you feel that people are around you but not with you?	1	2	3	4
19. How often do you feel that there are people you can talk to?	1	2	3	4
20. How often do you feel that there are people you can turn to?	1	2	3	4

^aRussell, 1996

APPENDIX E

Eating Competence and Diet Quality Survey Tools

Table E

ecSI 2.0^a

Below are statements about your eating. Think about each one, then choose the best response for you.					
	Always	Often	Sometimes	Rarely	Never
1. I am relaxed about eating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I am comfortable eating enough.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I have regular meals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I feel it is okay to eat food that I like.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I experiment with new food and learn to like it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. If the situation demands, I can “make do” by eating food I don’t much care for.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I eat a wide variety of foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I am comfortable with my enjoyment of food and eating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I trust myself to eat enough for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I eat as much as I am hungry for.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I tune in to food and pay attention to eating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I make time to eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I eat until I feel satisfied.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I enjoy food and eating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I consider what is good for me when I eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I plan for feeding myself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

^aESI, 2016

ACHA-NCHA Fruit and Vegetable Intake Question (ACHA, 2014)

How many servings of fruits and vegetables do you usually have per day?

0 servings per day

1-2 servings per day

3-4 servings per day

5 or more servings per day

Academic Performance Survey Tools

Partial Academic Success Inventory for College Students^a

Consider the classes you are taking this semester.							
	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neutral	Slightly Agree	Moderately Agree	Strongly Agree
I get satisfaction from learning new material	1	2	3	4	5	6	7
I am pretty sure I can make an A or a B in my classes	1	2	3	4	5	6	7
I know that if I work hard I can do well	1	2	3	4	5	6	7
I study a lot for my classes	1	2	3	4	5	6	7

Table F2

Please list the classes you are taking this semester and the letter grade (A, A-, B+, etc.) you anticipate getting in each class.

APPENDIX G

Weekly Meal Evaluation Survey Tool

Bronco Family Table

Thank you for dining with us. Please share your input!

	1 Not a fan	2	3	4	5 Love it
How did you enjoy the family-style meal?					
Please rate the meal:					
Taste					
Nutrition					
Conversation					
Would you like to see a family-style eating option on campus?					
What did you like <i>least</i> about the meal?	What did you like <i>most</i> about the meal?				

APPENDIX H

Weekly Menus

Table H1

*Week 1 and Week 2 Menus^a***9 January****Roasted Turkey Breast**

Oven-roasted turkey breast

Portobello Sprout Sauté with Barley

Sautéed Brussels sprouts and Portobello mushrooms over harissa barley with a jalapeno green pea mash

Week 1**Italian Roasted Vegetables**

Oven-roasted fresh zucchini, onions and carrots seasoned with garlic and Italian seasoning

Maple-Roasted Squash

Butternut squash roasted with a touch of maple syrup

DessertFruit and chocolate chip (*contains dairy*) or oatmeal cookie or fudge brownie**16 January****Peking-Style Rotisserie Chicken**

Rotisserie chicken glazed with a tangy-sweet honey-plum sauce

Tofu & Vegetable Teriyaki

Tofu stir-fried with cabbage, broccoli, carrot, celery and onion in teriyaki sauce

Sesame Green Beans

Stir-fried green beans tossed with toasted sesame seed and spicy Szechuan sauce

Week 2**Seasoned Peas & Carrots**

Steamed peas and carrots seasoned with garlic and herbs

Seasoned Sticky Rice

Short grain sticky rice simmered with rice vinegar and a touch of sugar

DessertFruit and chocolate chip (*contains dairy*) or oatmeal cookie or fudge brownie^aAramark, 2018

Table H2

Week 3 and Week 4 Menus^a

23 January	
	Grilled Herbed Orange Chicken
	Tender boneless chicken marinated in orange juice, garlic, basil and thyme
	Savory Brown Rice Pilaf
	Brown rice with onion and red and green bell peppers
Week 3	Grilled Asparagus
	Grilled asparagus tossed with salt and pepper
	Minted Peas
	Tender steamed green peas with a hint of mint <i>contains dairy</i>
	Dessert
	Fruit and chocolate chip (<i>contains dairy</i>) or oatmeal cookie or fudge brownie
30 January	
	Yankee Pot Roast
	Slow braised beef roast with onion, carrot, tomato, garlic and bay leaves in savory beef gravy <i>contains dairy</i>
	Honey Wheat Dinner Roll
	Soft honey wheat dinner roll
Week 4	Sautéed Kale & Brussels Sprouts
	Sautéed kale, Brussels sprouts and garlic with balsamic vinegar, crushed red pepper and chili powder
	Spaghetti Squash
	Piping hot spaghetti squash tossed with lemon zest
	Dessert
	Fruit and chocolate chip (<i>contains dairy</i>) or oatmeal cookie or fudge brownie

^aAramark, 2018

APPENDIX I

Conversation Placemats

Table I1

Week 1 and Week 2 Conversation Placemats^a

Week 1

dinner chat placemat

What was the best year of your life so far? Explain.

Tell a story about someone who showed compassion to you when you were younger. What did they do? How did it affect you?

What does it mean to be successful?

What is your favorite childhood memory?

What's something you love to do and haven't done in a while because you were too busy?

What was your favorite news story from this year?

What is the greatest song ever written?

If you started your own charity, who or what would it help?

Week 2

dinner chat placemat

The poet Maya Angelou once said, "If you don't like something, change it. If you can't change it, change your attitude." What do you think she meant by this? Have you ever had to do this?

If you could live during another time in history, when would you want to live? Why?

If you were ever involved in a protest, what would it be for?

What would YOU say were the 7 wonders of the world?

What chore did you especially dislike when you were young?

How do you want to impact the world in the next year?

Who is/was your favorite teacher? Why?


What determines the quality of someone's work?

^aThe Family Dinner Project, 2018

Table I2

Week 3 and Week 4 Conversation Placemats^a

Week 3



dinner chat placemat

What do you want to be when you grow up?

Is it possible to be too compassionate? Why or why not?

How would your day change if you didn't have a cell phone?

What is the strangest word you've ever heard? What does it mean?

If you could change one thing about the world, what would you change?

If you had to teach one of your classes for a day, which class would you want to teach?

What is your favorite childhood book? What is special about it? Who used to read it with you?

Steven Spielberg is quoted as saying, "All of us every single year, we're a different person. I don't think we're the same person all our lives." Do you agree?

Week 4



dinner chat placemat

Which class you have taken do you think will be most helpful to you in the future?

In the year 2050, what do you hope we will have discovered that will change the world for the better?

What is your proudest moment so far?

What makes you laugh?

What have you learned today?

In a movie about your life, who would play you? Who would play your best friends? Your family?

If you could make money doing whatever you love to do, what would you want to do for a living?

What one word would you use to describe yourself?

^aThe Family Dinner Project, 2018

APPENDIX J

Weekly Meal Evaluation Comments

Table J1

Weekly Meal Evaluation Comments

	Liked Least	Liked Most
Week 1	Food (1) · “No chocolate milk” Social (1) · “Only talking to nearby people” Style (2) · “Tables too close” · “Felt bad eating faster than others” Not Applicable (11)	Social (7) · “Meet new people” · “The conversation” Food (9) · “Brownie” · “Turkey” · “Cookie” · Variety · Nutrition/health · Flavor/taste Style (2) · “Served to you” · “Homestyle” · “Serving yourself from dish” N/A (1) Everything (1)
	Food (7) · Spicy · “Wasn't as good as last week” · Tofu Style (2) · “Having to ask to pass things” N/A (9)	Food (9) · Protein options (Korean BBQ tofu & chicken) · Healthy · Rice · “Vegetable teriyaki” Social (9) · Talking with people · “Conversation was great” · Hospitality · “Fun to look forward to each week” Style (1) · Table spacing Everything (1)

Table J2

Week 3 and Week 4 Meal Evaluation Comments

	Liked Least	Liked Most
Week 3	Food (7) <ul style="list-style-type: none"> · “Chicken too often” · “Peas” · “No choc milk” · “Food was OK” · “Chocolate in berries” · “Rice was overcooked” · “Need more flavor” 	Food (11) <ul style="list-style-type: none"> · “Healthy food” · “Chicken” · “Asparagus” · “Oranges” · “Leftovers” · “Fruit at the end” · “Amount of food” · “Chicken well cooked”
	Style (2) <ul style="list-style-type: none"> · “Maybe more space” · “Eating too quickly and finishing before others” 	Social (5) <ul style="list-style-type: none"> · “New people” · “Getting to know people” · “Talking to new and old people” · “Great fun”
	N/A (8)	Style (1) <ul style="list-style-type: none"> · “Amount of food”
		N/A (1) Everything (1)
Week 4	Food (2) <ul style="list-style-type: none"> · “Couldn't try pot roast b/c contained dairy” · “Veggie dish” 	Food (12) <ul style="list-style-type: none"> · Leftovers · Dessert (Cookies, Vegan cookie) · Pot roast · Taste
	N/A (10)	Social (7) <ul style="list-style-type: none"> · People · Fun · Friendly
	That it's over (4) <ul style="list-style-type: none"> · “That it's over *sobs* (haha)” 	Style (3) <ul style="list-style-type: none"> · Setting · “Options” · “Homestyle” · “Friendly servers”
		Everything (1) <ul style="list-style-type: none"> · “Last one, best one”