

Operating Sustainable Meal Plans and Food Places: Factors Influencing College Students' Dining Choices and Preferences

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Abstract

Obstacles to healthy eating environments within universities may include the high cost of fresh food, limited access to nutritional details, fatty fast-food items, and a limited variety of fruits and vegetables. Convenience and time efficiency have been identified as two top factors for college students while selecting their dining places and items, as students struggle to balance their academic career, full-time/part-time working hours, and social lives. Additionally, young adults are not well equipped to make the best judgement. Cognizant research maintains young adults prefrontal cortex is underdeveloped and this area controls impulses, The main purposes of this study were to examine what factors impact college students' dining choices and preferences. We hypothesized that various student populations including freshman, sophomore, juniors, and seniors might select their preferred restaurants and/or cafeterias because of convenience, social behaviors, prices, food items, living selections, words of mouth, and quality of services (on- or off-campus). Students' feedbacks were analyzed by utilizing Fisher's exact test and ANOVA to examine differences among participants across grade classification segments to find out which attributes impact students' dining preferences and experiences. The results concluded that students are more likely to choose fast food and/or microwaved food items over healthier food options when there are time and budget constraints. Students who live at home tend to eat healthier meals than those who live away from home and are thus more likely to develop less healthy eating habits.

1. Introduction

Establishing healthy eating habits may avoid foreseeable public health issues. It has been well documented that students gain weight during the years of transition from secondary school to university. This transition is illustrated by developed routines, habits and preferences (Christoph, Ellison, Meador, 2016). Dr. Frances Jensen a Harvard Neuroscientist and senior neurologist indicated the last area of the brain to be developed is the prefrontal cortex which controls

judgement, empathy, insight and self-awareness; the “executive” functions. The prefrontal cortex is not fully developed for young adults; at age 18 years reportedly only at eighty percent (McMahon, 2015). Eating behavior has been one of the critical factors that impacts students' health and weight. Students who do not consume sufficient servings of vegetables and fruit are more likely to consume more high-fat foods and/or increase their alcohol consumption (Butler et al., 2004). According to Crombie et al. (2009), eating habits formed during the university years might continue throughout adulthood. According to the Social Cognitive Theory of Bandura (1986), eating behaviors might result from the interactions of social support, personal efficacy, and psychosocial determinants/behavioral factors. According to McMahon (2015) as brain development of young adults seems to make them exceedingly sensitive to absorbing new talents and positive behaviors, they are just as able and vulnerable to learn negative habits and erroneous behaviors. Additionally, environmental factors also play a vital role in influencing healthy eating behaviors (Brug et al., 2006). Both macro-environments (public policy, food industries, social pressure, etc.) and micro-environments (e.g., schools, workplaces, homes, etc.) also impact individuals' eating behaviors (Egger et al., 1997).

Obstacles to healthy eating environments within universities may include the high cost of fresh food, limited access to nutritional details, fatty fast-food items, and a limited variety of fruits and vegetables. Convenience and time efficiency have been identified as two top factors for college students while selecting their dining places and items, as students struggle to balance their academic career, full-/part-time working hours, and social lives. As previously noted, young adults often take longer to access their prefrontal cortexes, meaning they have a harder time making accurate judgments and controlling their impulses (Steinberg, 2011). Without family support students have to navigate lifestyle changes that include eating situations that are unforeseen. Students have also reported a lack of healthy choices at school cafeterias plus not having access to transportation to obtain groceries (Feldman, Su, Mahadevan, Brusca, and Hartwell, 2014).

2. Literature Review

2.1. *Overviews of College Students' lives*

College students' lives are seen as a perpetual life-cycle state of balancing education, work, extra-curricular activities, and social events. Many factors impact how college students consume foods and develop their eating habits during their academic years. Because students often live away from their homes, they are less likely to consume vegetables and fruit items as frequently as they did at home (King, 2011). College students enjoy trying new foods, experiencing ethnic and trendy foods, eating out at casual dining restaurants, and longing for high-valued food items. Cooking in a tiny dorm or apartment complex with limited kitchen access has become inconvenient and quite impossible. More part-time and/or full-time students do not use their disposable income on

preparing foods for themselves, but rather choose to eat out to save time (Caron, 2011). Eating out does not seem to affect the choice patterns of college students based on a survey of 350 U.S. Universities conducted by Grub Hub (Li, 2014). Grub Hub is an ordering platform for diners to order from approximately 25,000 restaurants in 500 U.S. cities. The study showed students to be twenty-eight percent less likely than other users to order healthy substitutions or preparation instructions such as hold the mayonnaise. Energy drinks are forty-five percent more popular and cheese sticks were 86 percent more popular with college students. Additionally, students were noted to be eighty-seven percent more likely to order late time meals between the hours of 10 p.m. and 2 a.m. (Watson, 2013). The lack of meal planning is a marker of the convenience-oriented person. Individuals who are single are thought to be more "convenience oriented" than young adults who share living arrangements. They are much more interested in foods which are effortless to fix and coincides with the decision to direct as little thinking as possible toward the planning process and preparation of better foods (Marquis, 2005).

2.2. Convenience and Food Selections

The majority of students might choose foods that are fast and convenient, and sometimes those foods can be high in calories and low in nutritional value (Putnam, 2010). According to Hoffman (2012), it is not the lack of money that pushes people toward less healthy choices, but convenience. Young people dealing with the pressures of time are understood to create tactics to lessen the amount of time and drain committed to undertakings thought as time-consuming, such as planning and cooking or searching out a healthy meal (Marquis, 2005). A study conducted at the University of Washington indicated students who live off campus do not have the time or desire to cook for themselves stating that nutrition is an "unfamiliar concept" for these time-starved students (Wood, 2006). The director of MIT campus dining, Richard Berlin stated students who live on stipends want inexpensive and diverse food choices. Food trucks add that variety and complexity for the university student (as cited in "Truck Stop Dining on Campus," 2010). Convenience seems to be the most significant meal incentive shadowed by health, price, and desire.

2.3. Healthy Food Consumptions

Following the move from secondary school to University life and a new found independence, students are unremittingly challenged to make healthy food choices (Deliens, Clarys, Bordeaudhoji, and Deforche, 2014). Poor nutrition and poor diet affect how a person feels, looks and acts. According to Hellmich (2002), college freshmen are likely to eat more often in the university cafeteria, and the majority of college students pay less attention to the nutritious values of their daily meals. Female students are more likely to have breakfast, pay attention to food labels, and take more vegetables/fruit servings, while male students are more likely to take more calories and pay less attention to what they consume. A poor diet can result in poor problem solving skills, reduced attentiveness and can contribute to chronic diseases such as hypertension,

diabetes, high cholesterol, heart disease and some forms of cancer (Ajmera, 2015; Yeh, Matsumon, Obenchain, Viladrich, Das, and Navder, 2010). Impeding the unhealthy food habits of college students now, could be a way to reduce the risk of chronic disease later in life (Spain, 2014).

Several studies have indicated college students have tendencies to consume less healthy foods. College students lean towards consuming less fruits and vegetables and more calorie dense foods (Lee, Fowler and Yuan (2013). According to Fontenot (2011), college students are less likely to care about what they consume as long as food items are convenient and less expensive. Therefore, fast-food restaurants and items have been identified as top choices for college students. Clean, friendly, inexpensive, fast, and convenient were the main reasons why eighty-four percent of college students consumed fast food (Haines, O'Neil, and Zanovec, 2010).

Because of these changes in lifestyle, many freshmen gain weight during their first college year. It has been proven that college students are likely to feel stressed while trying to achieve their academic goals in a new environment and maintain health in terms of both eating and exercising (Dryden, 2005). Weight gain for freshmen has also been shown to range between 4.6 pounds and 7.4 pounds (as cited by Smith-Jackson, and Reel, 2012, p. 14). According to Deliens et al. (2014), students' food selections are affected by the obtainability of wholesome foods. Lacking sufficient fruits and vegetables and skipping meals (either a breakfast, lunch, or dinner) has been one of the common struggles for college students. Taitano (2015) pointed out that college students face unhealthy eating struggles because of time and budget constraints in addition to peer pressure.

According to a study from Northwestern Medicine and Northwestern University, 95% of college students fail to eat the recommended amount of fruits and vegetables (Spain, 2014). For example, during a social gathering, college students' peers selected fast-food items that could hinder the needs and wants of healthier meal orders. Understanding what college students want and need for their daily food consumption may assist university food service departments as well as off-campus restaurants in providing perceived value that are associated with food products, interior design, dining facility atmosphere, and convenience that all benefit students' lives on a daily basis (Hansen, Jensen, and Gustafsson, 2005).

This study aimed to investigate college students' food consumption behaviors during their academic years. This study employed surveys to gather data from undergraduate students at a public university located in the southeastern US. During 2013, five hundred and fifty self-administered questionnaires were delivered to on-site undergraduate students on and off campus. Of these, three hundred and seventy-six completed and usable questionnaires were returned, yielding a response rate of 68 percent.

Study Assumption: There is no difference among grade levels including freshman, sophomore, juniors, and seniors regarding students' food

consumption behaviors during their academic years.

3. Methods

The types of survey questions used consisted of nominal, scale, ordinal, and open-ended. Participating students were asked to identify their grade year, residential classification, and gender through nominal questions. Students were asked to circle their preferences of restaurant locations and rank the importance of listed factors including menu specials, menu price, gathering reasons, distance of dining places, time to dine, and types of social interactions. Students were also asked to rank the quality of services for university dining halls and restaurants (for those that are adjacent to the university and in the downtown region).

The returned surveys were coded and entered into the SPSS 21.0 program. Mean values for a variety of question responses of male and female groups and grade classifications were compared using the SPSS program. A five-point Likert scale (where 1 = not important at all and 5 = most important) and choose-all-that-apply multiple-choice questions were utilized. Fisher's exact test and ANOVA were utilized to test the null hypothesis that no perception differences existed among grade classifications (freshman, sophomore, junior, and senior). The participating college students were asked questions concerning their preferences regarding their dining options (e.g., on-campus cafe, off-campus food places, types of restaurants, grocery shopping, and/or cooking in the complex), various factors that affect their restaurant choices (e.g., food items, prices, atmosphere, peer gathering, etc.).

4. Results

Of the 376 useful responses, fifty-six percent were from males and forty-four percent were from females. Among all respondents, thirty-eight percent were freshmen, eighteen percent were sophomores, twenty-three percent were juniors, and twenty-one seniors. Across four grade classifications, fifty-one percent of total respondents purchased the meal plan, forty-four percent of total respondents had dining dollars, and forty-seven percent of total respondents joined the all-star programs.

Restaurant Selection. A five point Likert scale (1 = not important at all, 5 = extremely important) was used to assess the overall college students' decision-making relative to their restaurant selections. "Social/peer gatherings" (mean = 3.46), "menu special" (mean = 3.32), "menu price" (mean = 3.87), "celebration" (mean = 3.32), and "the distance of the selected restaurants" (mean = 3.6) were rated by all participants. Differences in the "social event" ($p < 0.0001$) (means: freshmen = 3.61, sophomores = 3.16, juniors = 3.11, and seniors = 3.83), "menu special" ($p < 0.057$) (means: freshmen = 3.35, sophomores = 3.15, juniors = 3.16, and seniors = 3.58), "menu price" ($p < 0.029$) (means: freshmen = 4.01, sophomores = 3.61, juniors = 3.97, and seniors = 3.72), and "celebration" ($p < 0.009$) (means: freshmen = 3.39, sophomores = 3.16, juniors = 3.06, and seniors = 3.64) categories for freshmen, sophomores, juniors, and seniors were statistically significant (Table 1).

Table 1. Factors that impact college students’ restaurant selection.

Characteristic	1 st year	2 nd year	3 rd year	4 th year	Signf.
Social event	N = 141 Mean = 3.61	N = 69 3.16	N = 88 3.11	N = 78 3.83	N = 376 3.46 0.000***
Menu special	(140) Mean = 3.35	(68) 3.15	(88) 3.16	(78) 3.58	(374) 3.58 0.057*
Menu price	(141) Mean = 4.01	(69) 3.61	(88) 3.97	(78) 3.72	(376) 3.87 0.029**
Celebration	(141) Mean = 3.39	(69) 3.16	(88) 3.06	(79) 3.64	(376) 3.32 0.009***
Distance	(139) Mean = 3.69	(69) 3.67	(88) 3.47	(77) 3.51	(373) 3.60 0.38

(reported with number of participated students); 1 = not important at all, 5 = extremely important; reported with average mean by grade. *** = Significant at the 0.01 level. ** = Significant at the 0.05 level. * = Significant at the 0.1 level. Signf. = Significant level.

Mean Plan, Dining Dollars, and/or All Star. When asked if college students purchased a meal plan, 93.6% of freshman, 60.9% of sophomore, 12.5% of junior, and 9% of senior respondents said “yes”, respectively ($p < 0.00001$). When asked if college students utilized dining dollars, 75.9% of freshman, 53.6% of sophomore, 15.9% of junior, and 11.5% of senior respondents said “yes”, respectively ($p < 0.00001$). When asked if college students joined the all-star program, 57.4% of freshman, 53.6% of sophomore, 45.5% of junior, and 24.4% of senior respondents said “yes”, respectively ($p < 0.00001$) (Table 2).

Consuming Fast Food. When asked if college students have consumed fast food items from a fast-food restaurant or food-stand at the foot court weekly, 9.9% of freshman, 20.3% of sophomore, 10.3% of junior, and 22.1% of senior respondents said “never”; 67.4% of freshman, 56.5% of sophomore, 57.5% of

Table 2. College students’ meal plans.

Characteristic	1 st year	2 nd year	3 rd year	4 th year	Signf.
Meal plan	N = 141	N = 69	N = 88	N = 78	N = 376
Yes (%)	93.6%	60.9%	12.5%	9%	51.1% 0.000***
Dining dollars	(141)	(69)	(88)	(78)	(376)
Yes (%)	75.9%	53.6%	15.9%	11.5%	44.4% 0.000***
All star	(141)	(69)	(88)	(78)	(376)
Yes (%)	57.4%	53.6%	45.5%	24.4%	47.1% 0.000***

*** = Significant at the 0.01 level. ** = Significant at the 0.05 level. * = Significant at the 0.1 level. Signf. = Significant level. FE = Fisher’s exact test

junior, and 68.8% of senior respondents said "one to two times weekly"; 17.7% of freshman, 20.3% of sophomore, 28.7% of junior, and 9.1% of senior respondents said "three to four times weekly"; and 5% of freshman, 2.9% of sophomore, and 3.4% of junior respondents said "five to six times weekly", respectively ($p < 0.009$). Based on the Fisher's exact test, there was a significant difference in freshmen, sophomores, juniors, and seniors consuming fastfood on a weekly basis.

Grocery Shopping. When asked if college students have purchased food items from a grocery store weekly, 24.8% of freshmen, 4.3% of sophomores, and 2.3% of juniors respondents said "never"; 19.1% of freshman, 15.9% of sophomore, 33% of junior, and 43.6% of senior respondents said "one to two times weekly"; 24.1% of freshman, 46.4% of sophomore, 51.1% of junior, and 43.6% of senior respondents said "three to four times weekly," and 31.9% of freshman, 33.3% of sophomore, 13.6% of junior, and 12.8% of senior respondents said "five to six times weekly", respectively ($p < 0.0001$). Based on the Fisher's exact test, there was a significant difference in freshmen, sophomores, juniors, and seniors purchase of items from groceries on a weekly basis.

Cooking. When asked if college students have cooked for themselves weekly, 75.9% of freshman, 62.3% of sophomore, 5.7% of junior, and 2.6% of senior respondents said "never"; 17% of freshman, 15.9% of sophomore, 17% of junior, and 23.1% of senior respondents said "one to two times weekly"; 6.4% of freshman, 17.4% of sophomore, 51.1% of junior, and 41% of senior respondents said "three to four times weekly"; 0.7% of freshman, 2.9% of sophomore, 21.6% of junior, and 15.4% of senior respondents said "five to six times weekly," and 0% of freshman, 1.4% of sophomore, 4.5% of junior, and 17.9% of senior respondents said "everyday", respectively ($p < 0.0001$). Based on the Fisher's exact test, there was a significant difference in freshmen, sophomores, juniors, and seniors cooking for themselves on a weekly basis.

Eating on the strip. When asked if college students have eaten on the strip weekly, 12.1% of freshman, 2.9% of sophomore, 8% of junior, and 20.5% of senior respondents said "never"; 52.9% of freshman, 53.6% of sophomore, 37.9% of junior, and 43.6% of senior respondents said "one to two times weekly"; 24.3% of freshman, 29% of sophomore, 36.8% of junior, and 30.8% of senior respondents said "three to four times weekly"; 6.4% of freshman, 8.7% of sophomore, 13.8% of junior, and 5.1% of senior respondents said "five to six times weekly"; and 4.3% of freshman, 5.8% of sophomore, 3.4% of junior, and 0% of senior respondents said "everyday", respectively ($p < 0.01$). Based on the Fisher's exact test, there was a significant difference in freshmen, sophomores, juniors, and seniors eating on the strip on a weekly basis (Table 3).

5. Discussion and Conclusion

This study surveyed students who were 18 years of age and older at a land-grant university in the southeastern region of the US. The questionnaire was distributed to 550 undergraduate students through various dwelling university locations including on-campus dorms, off-campus complexes, university dining halls, and libraries. The self-administrated questionnaires were distributed from January to April 2013. After removing unusable responses, a total of three

Table 3. Food consumption patterns.

Characteristic	1 st year	2 nd year	3 rd year	4 th year	Signf. (FE)
Fast food	N = 141	N = 69	N = 87	N = 77	N = 374
Zero (%)	9.9%	20.3%	10.3%	22.1%	14.4%
1 – 2 times (%)	67.4%	56.5%	57.5%	68.8%	63.4%
3 – 4 times (%)	17.7%	20.3%	28.7%	9.1%	19%
5 – 6 times (%)	5%	2.9%	3.4%	0%	3.2%
Everyday (%)	0%	0%	0%	0%	0%
					0.009**
Grocery	(141)	(69)	(88)	(78)	(376)
Zero (%)	24.8%	4.3%	2.3%	0%	10.6%
1 – 2 times (%)	19.1%	15.9%	33%	43.6%	26.9%
3 – 4 times (%)	24.1%	46.4%	51.1%	43.6%	38.6%
5 – 6 times (%)	31.9%	33.3%	13.6%	12.8%	23.9%
Everyday (%)	0%	0%	0%	0%	0%
					0.000***
Cook	(141)	(69)	(88)	(78)	(376)
Zero (%)	75.9%	62.3%	5.7%	2.6%	41.8%
1 – 2 times (%)	17%	15.9%	17%	23.1%	18.1%
3 – 4 times (%)	6.4%	17.4%	51.1%	41%	26.1%
5 – 6 times (%)	0.7%	2.9%	21.6%	15.4%	9%
Everyday (%)	0%	1.4%	4.5%	17.9%	5.1%
					0.000***
Eat on the strip	(140)	(69)	(87)	(78)	(374)
Zero (%)	12.1%	2.9%	8%	20.5%	11.2%
1 – 2 times (%)	52.9%	53.6%	37.9%	43.6%	47.6%
3 – 4 times (%)	24.3%	29%	36.8%	30.8%	29.4%
5 – 6 times (%)	6.4%	8.7%	13.8%	5.1%	8.3%
Everyday (%)	4.3%	5.8%	3.4%	0%	3.5%
					0.01**

*** = Significant at the 0.01 level. ** = Significant at the 0.05 level. * = Significant at the 0.1 level. Signf. = Significant level. FE = Fisher's exact test.

hundred and seventy-six usable surveys were kept, resulting in a usable response rate of 68.3%. In the usable sample of 376, approximately 52% respondents were female students and 48% were male students. Younger students who live on campus were likely to utilize on-campus dining facilities, while the older students who live off campus are more likely to shop at grocery stores, cook for themselves, and dine at some local restaurants for specials, deals, and happy-hour discounts. Shopping at grocery stores could indicate a desire for healthier food options. As mentioned previously, the older student may be more cognizant of poor food choices. Whereas younger classmen are more impulsive and lack those yet developed "executive" functions.

The results of the surveys concluded that across the grade classes, all study participants ranked Cookout, Panera, and Zaxby's as their top three of the strip restaurant choices. In terms of restaurant specials, college students enjoy Copper Cellar's \$5 burger night, Moe's Monday, and Cookout. Freshman and

sophomore underclassmen utilize meal plans and dining dollars, since most of them live on campus and have easier access to university dining locations, while junior and senior upperclassmen use All-Star more. The majority of freshmen use on-campus meal plans and dining dollars to eat on campus on a daily basis, while upperclassmen cook more than the underclassmen. Many upperclassmen tend to live off campus, utilize fewer meal plans, buy more groceries, and cook out in their complex more often. In general, upperclassmen cook more than underclassmen, and the average amount they cook weekly is three to four times. It seems that juniors prefer cooking more than other grades because of their kitchen access in their complex and exploring the freedom of their own meal choices prior to becoming seniors, who may be feeling more anxiety due to graduation. The results seem plausible from this sample population, as they were surveyed from one single university located in the southeastern region of the U.S. The overall results show variations across grade levels and living situations in terms of college students' food consumption habits.

Per sustainable business development aspects, in appealing to students of all classes, on- and off- campus food places may consider implementing strategic promotions. Several recommendations are compiled based on the outcomes of this study for local restaurants and campus dining facilities. Students who live on campus housing/dorms are more likely to dine at university-owned facilities and purchase fewer groceries. While students purchase groceries, it is usually in a university-owned market place. A majority of these students are underclassmen and have a meal plan, Dining Dollars, or All-Star account, which works like a cash-for-meal reimbursement at university facilities. The university's dining facilities may consider promoting frequent specials or menus on campus where underclassmen reside. Those university-owned food facilities may consider providing more deals integrated with a discount card that would offer students various options to purchase a plate of items at better prices.

Upperclassmen tend to eat out or buy groceries more often, rarely eat at campus dining halls, and utilize meal reimbursement less. This supports the literature referencing cognitive decision making. Those students who have gained Junior/Senior level may have a different idea of what is a healthier option as opposed to Freshmen. To appeal to these upperclassmen who primarily live off campus, local restaurants adjacent to the university may consider promoting more specials that target those college students. The outcomes of this study concluded that the most popular restaurant specials are designated nightly specials at restaurants close to campus. Regardless of whether the Undergraduate is a freshman, sophomore, Junior or senior the majority are on a budget and the nightly specials would be attractive. Additionally, those local restaurants may benefit further if they are willing to cater to college students during specific academic events, including midterms, finals, birthday discounts, and spring/fall break celebrations. Though burgers could be seen as unhealthy food, an easy choice during students' stressful exam period, students do enjoy dining at a casual restaurant for its Wednesday and Sunday \$5 burger deals,

individually or with their friends, because of the cheap price and tasty food. Other restaurants may consider implementing a similar idea so they might enjoy flocks of students who enjoy the offers during designated special nights, such as Mondays and Tuesdays. Additionally, happy hours should be advertised across the campus, and all students enjoy buy-one-get-one-free specials. All of the abovementioned deals may appeal to a group of college students with their friends eating out, a date night, or when family comes to town for visits as well.

The outcomes of this study reported that at grocery stores, as mentioned earlier, stores may consider offering students discount cards. Furthermore, grocery stores may entice college students to shop for more items while supporting the adjacent university by displaying products that are in university colors, especially those hosting tailgates during the college's sports tournaments and other events. In conclusion, the findings of this study are useful for both on-campus dining facilities and off-campus restaurants to serve college students more effectively, based on students' experiences with preferred food items, locations, varieties, affordable prices, and quality of service. Grocery stores with a selection of products that appeal to college students would be at an advantage. The grocery shopping experience is a combination of college students' consumption behaviors, expectations, and attitudes towards their food decisions. More implications may include (1) organic food items with nutritional value need to be well sustained, (2) fun grocery shopping activities may be presented as a part of college student culture, and (3) meals and food items need to be enriched based on the needs and wants of college students. In general, healthier foods could be more expensive; because the majority of college students are on a tight budget, for a win-win situation, campus food facilities may consider collaborating with local farmers and fresh markets to establish a sustainable partnership that aims to offer a greater variety of healthier, fresher, and more affordable food for students. Understanding the factors that impact students' food consumption is vital in attempting to gain knowledge of students' food/meal selection behaviors. Future studies may consider including more universities across the nation with more diverse groups, including graduate students and visiting scholar samples.

Limitations

The focus of this study were to examine the food selections of undergraduates at one southern US university. A limitation of the study would be the sample size. The addition of other universities to increase the population size, another limitation, may be more representative of the population. Additionally, the freshmen at the University used in this study are required to live on campus. This may be a consideration in the future.

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