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The Art of Nutrition

Kylanna Hardaway

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Abstract

Many colleges and universities offer students access to on-campus food pantries, yet very few students utilize these services despite reporting high rates of food insecurity. Considering the importance of a healthy diet on the developing minds of young adults, it is pertinent that colleges and universities find innovative ways to reach food insecure students. The purpose of this hybrid creative-research project was to creatively address commonly cited barriers of seeking food assistance (i.e., negative stigma, embarrassment, unknown location, awareness of resource, etc.) using public art. A mural was designed to encourage healthy eating behaviors and provide signage for the Jane B. Gearhart Full Circle Food Pantry at the University of Arkansas. A sample of food pantry patrons (n=51) took a survey either before or after the mural's installation to assess their personal beliefs and attitudes towards using the food pantry and eating a healthy diet. Results of this project suggest that public art may influence perceptions of food pantries, human nutrition, and personal dietary habits. While this study lays a fresh foundation for combating the physical and psychological barriers of food pantry usage, further investigations of the relationship between public art and nutrition are needed.

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INTRODUCTION

Background

For many young adults, the transition to college means the transition to finding a way to feed oneself. For some, this entails an unlimited meal plan at the dining hall, while for others, this demands stretching a dollar into seven dinners. No matter the case, all college students are challenged to choose when to eat, what to eat, and how much to eat. Research shows that “newly independent students can have relatively chaotic and comparatively unhealthy eating patterns: they skip meals, eat excessive amounts of high fat foods/fast food, and do not consume the recommended amounts of fruits and vegetables” (Brewis et al., 2016, p. 579). As emerging adults, the values and beliefs these students adopt during their time in college will likely have prolonged consequences—when it comes to dietary habits, the impending consequences could mean life or death. Furthermore, inadequate nutrition is related to poor academic achievement, low levels of physical activity, and impaired mental health (Zein et al., 2018). A well-rounded university must do more than fill students’ brains with knowledge: it must also look for ways to fill students’ stomachs with nutritious food. In 2017, approximately 42% of college students in the United States reported experiencing food insecurity, and yet only 14% of those students sought out assistance from a campus food pantry or food bank (Zein et al., 2018). A similar pattern emerges at the University of Arkansas; data show that 38% of the students at the University of Arkansas experience food insecurity, but only 1% have used the on-campus food pantry (Yaniello, 2018). Given the profound benefits of a healthy diet, one would assume students would be seeking out sources of nutritious food. However, at the University of Arkansas, students report being unaware of the pantry’s existence, unaware of the pantry’s location, and dissuaded by the negative social stigma surrounding food pantries (Yaniello, 2018).

In order to combat both a lack of nutrition education and the overwhelming aversion to utilizing the campus food pantry, the University of Arkansas must explore creative ways of appealing to students. “Public art, such as murals, can function as a means of communicating [nutrition] science to audiences who do not typically engage with such topics, as it can merely be stumbled upon by chance rather than having to be actively sought out.” (McInnes et al., 2019). Moreover, art murals can passively increase public awareness, empower viewers to action, and initiate social change (Marschall, 1999). By installing an art mural at the Jane B. Gearhart Full Circle Food Pantry, patrons and passersby alike would be exposed to nutrition advocacy and an improved aesthetic, as well as gain awareness of the food pantry’s location. This, in turn, would benefit both individuals’ diets and perceptions of the food pantry.

Problem Statement

The Jane B. Gearhart Full Circle Food Pantry is underutilized due to insufficient signage and negative stigmatization. Furthermore, college students who lack the resources to afford nutritious food report embarrassment and social stigma as the number one deterrent to food pantry use (Zein et al., 2018). High rates of food insecurity among college students, coupled with the poor eating habits of emerging adults in general, call for increased nutrition awareness.

Purpose Statement

The purpose of this project was to create a welcoming mural that both encouraged healthy behaviors and provided signage for the Jane B. Gearhart Full Circle Food Pantry. This project examined the perceptual differences, if any, such an artwork evoked in patrons of the food pantry.

Research Objectives

The following objectives guided this study:

- Design a public art mural that encourages healthy lifestyle choices and reflects the values of the Jane B. Gearhart Full Circle Food Pantry.
- Install a public art mural at the Jane B. Gearhart Full Circle Food Pantry located on the campus of the University of Arkansas.
- Determine what effects the installment of a public art mural has on the psychological and social perceptions reported by patrons of a college food pantry.

LITERATURE REVIEW

The following section first addresses the need for nutrition awareness on college campuses, paying attention to the high prevalence of weight gain and food insecurity among emerging adults. Next, perceived barriers of food pantry utilization, particularly at the University of Arkansas, are reviewed. Finally, the emergence of public art as a means of communication is acknowledged, concentrating on how an art mural may improve nutrition awareness and change perceptions.

A Need for Nutrition Awareness

Around the world, students seeking higher education experience changes in diet and exercise as they transition from high school to college. For the majority of students, these changes often lead to poor eating habits, body dissatisfaction, and weight gain (Brewis et al., 2015). According to Vadebonoeur et al., approximately 60.9% of college students gained an average of 7.5 pounds during their freshman year—a rate five times faster than that of the

general public (2015). “Given adolescence weight gain is highly linked to overweight and obesity in adults...weight gain occurring during that critical period may persist and poor life habits may settle in for the adulthood” (Vadeboncoeur et al., 2015, p. 2). Consequently, emerging adults are prime candidates for nutrition education. During this transitional time, individuals develop new perspectives and change their beliefs as they adjust to increased personal independence. Raising nutrition awareness within a university setting could potentially improve long term health outcomes. Free to choose what to eat, “students can have relatively chaotic and comparatively unhealthy eating patterns” (Brewis et al., 2015, p. 579). Huang et al. (2010) discovered that almost 80% of 18- to 24-year-olds report consuming less than the recommended five servings of fruits and vegetables a day. Moreover, newly independent students often eat excessive amounts of fast-food and convenience food: items that are generally high in fat, sodium, and added sugar (Brewis et al., 2015). Poor nutrition, particularly during adolescence, is related to higher risks of cardiovascular disease, diabetes, hypertension, and some types of cancer (Vadebonoer et al., 2015). Considering that approximately 35% of college students are overweight or obese, nutrition intervention at this level is warranted (Huang et al., 2010).

Food Insecurity Among College Students

Food insecurity can be defined as “limited consistent access to nutritionally adequate and safe food” (El Zein et al., 2018, p. 1). According to recent studies, students enrolled in postsecondary education are disproportionately affected by food insecurity. Many universities have implemented food assistance programs to address the nutritional needs of students, but few studies have revealed these efforts to be successful. In fact, at the University of Arkansas, only 1% of the nearly 11,000 food insecure students have used the on-campus food pantry (Yaniello,

2018). This trend appears across the country: “a 2016 report of 3,765 students from 34 college campuses and 12 states indicated that only 14% of food insecure students and their households had utilized a food pantry or food bank in the past month” (El Zein et al., 2018, p. 2). And yet, while usage of food assistance programs is very low, the subsequential negative health effects of food insecurity are substantial. According to Gundersen and Ziliak, food insecurity is linked to low nutrient intakes, diabetes, mental illness, hypertension, insomnia, and hyperlipidemia in non-senior adults (2015). Additionally, food insecurity correlates to poor academic achievement and increased psychological distress—two issues that threaten the success of college students and may reflect onto the reputation of universities and colleges (Yaniello, 2018). “Human development theory holds that in order to learn higher level skills, individuals’ basic needs must first be met” (Broton & Goldrick-Rab, 2017, p. 121). Thus, without adequate nutrition, cognitive abilities are stifled. Although on-campus food pantries may theoretically support the needs of food insecure students, current research does not support this theory in practice.

Perceived Barriers to Food Pantry Use

Why do most food insecure students not use the food assistance resources made available to them? Though very little research has delved into this topic, the few existing studies agree that perceived social and physical barriers may be averting students from utilizing on-campus food pantries (Yamashiro, 2019). Across the country, common barriers reported by students include shame and embarrassment, lack of awareness of food pantry location and policy, identity dissonance, and negative social stigma (El Zein et al., 2018; Yamashiro, 2019; Yaniello, 2018). At the University of Arkansas, Yaniello found negative stigmatization and lack of awareness of the pantry’s location to be two major deterrents of pantry utilization (2018). In fact, the majority of students interviewed by Yaniello “indicated that they do perceive a negative stigma towards

having to use a food pantry” and 73% of respondents reported that “they do not know where the food pantry is located” (2018, p. 16). These barriers must be addressed in order to increase food pantry usage and ultimately reduce food insecurity rates at the University of Arkansas.

Using Public Art to Raise Nutrition Awareness

Public art has long been a form of community outreach, described by some “as a catalyst, capable of initiating social or even political change by creating public awareness, providing a social critique, asserting a community’s identity, fostering team spirit, and sometimes encouraging change” (Marschall, 1999, p. 60). By definition, ‘public art’ is any piece of artwork displayed in an untraditional public space—such as a hospital, business, city square, or even food pantry—that often has content relevant to the chosen location. Because of its public nature, this type of art can reach diverse audiences, including individuals who may have never previously sought out the content at hand (McInnes et al., 2019). Although research regarding public art and nutrition awareness is largely limited, the concept of using art as a means of communication is not new. In 2006, the Kentucky Psychological Association sponsored a successful public art campaign to raise awareness of psychological science using eye-catching art sculptures. According to those involved in the project, the campaign generated greater involvement and enthusiasm for psychology in the community and gained national recognition for the organization (Meeks et al., 2006). Public art, specifically murals, have also become increasingly incorporated into schools to promote deeper learning; hard sciences like chemistry and biology are using art to communicate and teach difficult concepts to students (McInnes et al., 2019). These examples provide evidence that public art can raise awareness and understanding of information. Consequently, in theory, public art could be used to raise nutrition awareness as well.

Using Public Art to Change Perceptions

As mentioned previously, public art has the potential to bring about social and political change in a community (Marschall, 1999). When individuals are exposed to visual stimuli, they develop an opinion of what they see. Numerous studies indicate that repeated exposure to a stimulus increases preference for that stimulus; psychology refers to this phenomenon as the mere exposure effect (Montoya et al., 2017; Monahan et al., 2000). Accordingly, it stands to reason that repeated exposure to an art mural would have a similar effect, increasing a viewer's preference for its content. In the case of this study, that would mean a greater preference for good nutrition and the Jane B. Gearhart Full Circle Food Pantry. As Montoya et al. found, exposure to complex stimuli, such as a painting, yielded a positive increase in recognition, familiarity, and likability (2017). Furthermore, the mere exposure effect has been observed in both conscious and subconscious states of awareness. Indeed, "the subliminal repeated exposure of innocuous stimuli is in itself sufficient to enhance an individual's affective state" (Monahan et al., 2000, p. 463). This could mean that passersby may unconsciously develop an affinity for a public art mural and its content, even without intentionally looking at it. Moreover, Motoyama and Hanyu discovered that public art "placed in the right place...actually attracted passersby and enlivened the space" (2014, p. 14). Similarly, it appears that art murals and sculptures enrich the landscapes they inhabit, as long as they are compatible to the surroundings (Motoyama & Hanyu, 2014). This research suggests that public art can alter perceptions via the mere exposure effect and environment enhancement.

In summary, college students across the country struggle with nutrition-related issues such as weight gain and food insecurity. The negative long-term effects of these issues cannot be ignored—it is clear that nutrition intervention is needed in this population. Increasing nutrition

awareness, potentially in the form of public art, could be the first step towards a healthier future. Furthermore, simply the presence of a mural promoting good nutrition and the Jane B. Gearhart Full Circle Food Pantry could improve viewers' perceptions of these subjects.

DEVELOPMENT PLAN AND METHODS

Research Design

This project utilized survey methodology to quantitatively assess the psychological effects of a mural installed at the Jane B. Gearhart Full Circle Food Pantry. This type of approach “enables researchers to seek a more panoramic view of their research landscape, viewing phenomena from different viewpoints and through diverse research lenses” (Shorten & Smith, 2017, p. 74). Social and psychological research studies frequently use surveys to better understand otherwise complex human behaviors and perspectives (Ponto, 2015). This project aimed to compare cognitive perceptions before and after a mural was installed; therefore, a single survey was continuously administered for 18 operating business days leading up to the art's installation and 18 operating business days following the art's installation.

Approval Process

Approval was obtained from the University of Arkansas and the Jane B. Gearhart Full Circle Food Pantry to paint a mural on campus. The Public Arts Advisory Committee was then consulted prior to creation of the mural for further guidance regarding university public art policies. Next, University Housing was contacted about the preferred installation method for campus wall art. A removable vinyl print option was selected because it offered the look and feel of an actual mural without the permanence and/or damaging properties of paint. Finally, a meeting with food pantry board members was held to review the project plan and any mural

expectations; a variety of parameters (e.g. size limitations, design style, content, etc.) were discussed and agreed upon.

Mural Development, Design, and Installation

When creating a piece of public art, it is important to combine evidence-based strategies with a target community's needs and desires (Motoyama & Hanyu, 2014). Therefore, research literature was combined with the food pantry board members' expectations to develop preliminary mural designs. Studies suggest that aesthetically pleasing artworks, or art that increases feelings of pleasantness, may enhance the environment to which it is added (Motoyama & Hanyu, 2014). Bright colors, vivid imagery, and positive messages are all examples of pleasant stimuli and were thus included in the initial designs. These design elements are depicted in the murals shown in Figure 1; such murals acted as design inspiration for the mural created in the current study.



Figure 1. Design Inspiration

The mobile application Procreate was utilized to assist in the design process. Combining the expressed wishes of the food pantry board members with research regarding large-scale design, the nutritional needs of college students, and basic nutrition literacy resulted in two initial mural concepts (Figure 2).



Figure 2. Initial Mural Concepts

Feedback about the preliminary designs was obtained, and the design process was repeated until a final design was reached. The final design iteration included budget-friendly healthy food choices, bright colors, and the Jane B. Gearhart Full Circle Food Pantry's motto (Figure 3).



Figure 3. Final Mural Design

The physical mural was installed October 29, 2021, adhering to university protocol. ROARK, a local printing firm, was commissioned to print and install a 16-foot-by-8-foot vinyl mural print on an exterior wall at the food pantry (Figure 4). Using heated rollers, professionals from ROARK installed a removable 3M Envision LX480mc Printable Wrap Film with 3M Envision 8549L Luster Wrap Overlamine. This product was selected because it offered the look and feel of a hand-painted mural without compromising the integrity of the brick wall.



Figure 4. Before and After

Survey Development and Administration

A survey was developed using Qualtrics. Questions on the survey were related to perceptions of the food pantry and its use, as well as perceptions/motivations/self-efficacy towards healthy eating. A quantitative 5-point Likert scale was utilized for most questions, asking participants the extent to which they agreed with a given statement. Emphasis was placed on the psychological and social viewpoints of the food pantry patrons. Later, numerical values were assigned to each answer choice for use in statistical data interpretation. General demographic information was collected to better inform the researchers of the background characteristics of the target population. A senior researcher with extensive survey-based research

experience evaluated and assisted in development of the survey. Before officially conducting the survey, the research team assessed its construct validity and face validity. The final version of the survey (see Appendix) was approved by the Institutional Review Board (IRB) on campus in mid-September 2021 (Protocol #2109355251).

Patrons of the food pantry were invited to fill out the survey after placing their food order at the food pantry during the fall semester of 2021. To ensure equal access to the survey and reduce coverage error, the survey was administered anonymously via the internet on smart tablets provided by the Volunteer Action Center. In order to address internal validity of the study, a standard protocol was followed during the entire survey administration period. First, those who visited the pantry during the 18 operating business days prior to the art installation were invited to complete the survey while they waited for their food order to be filled. Then, the survey was administered again using the same protocol for the 18 operating business days after the art installation. The entire survey administration period occurred between October 4, 2021, and November 29, 2021. Administering the survey during a single semester reduced the likelihood of a dramatic shift in target population demographics, further increasing the validity of this study. Additionally, the food pantry was instructed to postpone any major changes to the appearance, operation, or inventory of the food pantry until after the survey administration was completed.

Population and Sampling

Participants chosen for the sample included users of the Jane B. Gearhart Full Circle Food Pantry; food pantry volunteers and passersby were excluded from this study. A purposive sampling of patrons who use the on-campus food pantry were asked to complete a brief online questionnaire during their visit to the food pantry. “The primary purpose of this type of survey

research [is] to obtain information describing characteristics of a large sample of individuals of interest relatively quickly” (Ponto, 2015). The sample of food pantry patrons were chosen based on convenience factors, e.g., if they happened to visit the food pantry during the specified period of time the survey was administered. The sample consisted mostly of college-age students attending the University of Arkansas during the 2021-2022 academic school year. Students who completed the survey before the mural was installed may or may not have completed the survey after the mural was installed.

Data Analysis

Descriptive statistics were used to describe the demographic characteristics of the sample. Comparisons were then made between respondents who took the survey before the mural installation (n=36) and respondents who took the survey after the mural installation (n=15). In particular, responses to survey items concerning perceptions of the food pantry and human nutrition were analyzed. For these items, a 5-point Likert scale was utilized to allow participants to specify their level of agreement with a proposed statement. The response options *Strongly Disagree*, *Disagree*, *Neither Agree nor Disagree*, *Agree*, and *Strongly Agree* were coded 1-5 respectively to determine the mean response (*M*) and standard deviation (*SD*) for each survey item. In order to test the statistical significance of these findings, response items were then recoded to meet computational variation requirements. The response options *Strongly Disagree*, *Disagree*, *Neither Agree nor Disagree* were recoded as 1, and the response options *Agree* and *Strongly Agree* were recoded as 2. After recoding, statistical significance was determined using crosstabs and the Chi square statistic. All analysis were conducted using the IBM SPSS Statistics for macOS, version 27; *p*-values <0.05 were considered statistically significant.

RESULTS

Study Sample Characteristics

The survey was completed by 51 patrons of the Jane B. Gearhart Full Circle Food Pantry during the fall 2021 semester. Two participants had to be excluded from this study because they did not meet the minimum adult age requirement. An additional two respondents were removed from the dataset because they answered “yes” to the question “Have you already taken this survey?” prior to the mural’s installation. Over half of the respondents (57%) reported using the food pantry more than ten times, and a majority (58%) reported using the pantry within the past seven days. Of the population sample, 53% were female and 39% were male. Nearly a third of participants identified themselves as Hispanic/Latino/Spanish (29%), followed by non-Hispanic White/Caucasian (27%), Asian/Pacific Islander (16%), Black/African American (12%), other (8%), Native American/Alaskan Native (4%), and multiracial/biracial (4%). The majority of respondents were University of Arkansas students (84%) and staff members (10%). Most of the students were in graduate school or professional programs (71%). The greatest number of student participants came from the College of Engineering (27%); Dale Bumpers College of Agricultural, Food and Life Sciences (27%); and Fulbright College of Arts and Sciences (27%).

Survey Observations

Five survey items met the variation criteria to be tested using crosstabs and the Chi square statistic after recoding. These items were: “It is easy to find the food pantry,” “I feel embarrassed to use the food pantry,” “I think my daily food intake includes too many high fat foods,” “I think my daily food intake includes too much sugar,” and “I think my daily food intake includes too few fruits.” Of the five survey items tested, only the statement “It is easy to

find the food pantry” reached statistical significance between the before group and the after group $X^2(1, N=43)=4.08, p=.043$. Unexpectedly, people found it easier to find the food pantry before the mural was installed than after the mural was installed. These results can be seen in Table 1.

Table 1

Results of the Chi-square Test of Independence.

Statement	X^2	df	Asymptotic Significance (2-sided)
It is easy to find the food pantry.	4.081	1	.043
I feel embarrassed to use the food pantry.	.039	1	.843
I think my daily food intake includes:			
Too many high fat foods.	.020	1	.887
Too much sugar.	.365	1	.546
Too few fruits.	.120	1	.729

Note. Five statements met the minimum variation criteria to be tested for statistical significance using the Chi-Square statistic.

Although differences were not statistically significant, complete results based on the full 5-point Likert scale before recoding are displayed in Table 2. Noteworthy observations are summarized as follows.

Perceptions of the Food Pantry

In general, post-mural perceptions of the food pantry were better than pre-mural perceptions of the food pantry. For example, patrons agreed more with the statement “I like the location of the food pantry” after the mural was installed ($M=4.33, SD=1.29$) than they did before the mural was installed ($M=4.17, SD=1.08$). Respondents also found the food pantry more inviting following the installation ($M=4.47, SD=0.83$) than prior to the installation ($M=4.22,$

$SD=0.96$). Almost all respondents felt welcome at the food pantry, regardless of when they took the survey.

Perceptions of Human Nutrition

Attitudes towards human nutrition also modestly improved following the mural's installation. In particular, agreement with the statement "I think about the nutritional benefits of the food that I eat" notably increased from the before group ($M=4.44$, $SD=0.81$) to the after group ($M=4.86$, $SD=0.36$). More respondents also agreed with statements concerning self-efficacy towards healthy eating after the mural was installed. For instance, more patrons agreed that they could prepare healthy meals with ingredients from the food pantry post-mural ($M=4.5$, $SD=0.76$) than pre-mural ($M=4.33$, $SD=0.76$). Additionally, food pantry patrons reported stronger agreement to statements about their frequency of fruit and vegetable requests following the installation of the mural.

Perceptions of Personal Dietary Habits

Curiously, survey respondents had worsened perceptions of personal dietary habits after the mural's installation than they did before the mural's installation. Agreement to the statement "I think my daily food intake contains too few vegetables" increased from the before group ($M=3.31$, $SD=1.33$) to the after group ($M=3.86$, $SD=1.10$), as did agreement to the statement "I think my daily food intake includes too many high fat foods." (Before: $M=2.92$, $SD=1.23$; After: $M=3.36$, $SD=1.34$).

Table 2*Response means and standard deviations for survey questions 6-8.*

Statement	Visited Before OR After				Visited Before AND After			
	Before		After		Before		After	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
It is easy to find the food pantry.	4.22	1.045	3.53	1.685	3.75	1.258	3.75	1.893
I like the location of the food pantry.	4.17	1.082	4.33	1.291	4.25	0.5	5	0
The food pantry looks inviting.	4.22	0.959	4.47	0.834	4.25	0.957	5	0
I feel welcome at the food pantry.	4.83	0.561	4.87	0.352	4.75	0.5	5	0
I get nervous visiting the food pantry.	2.11	1.348	2.27	1.71	2	2	3.75	1.893
I feel embarrassed to use the food pantry.	2.17	1.363	2.93	1.58	3	1.826	4	2
Nutrition is important.	4.81	0.401	4.71	1.069	5	0	5	0
I am familiar with the nutritional value of food.	4.5	0.845	4.64	0.633	4.75	0.5	4.5	0.577
I think about the health benefits of the food that I eat.	4.44	0.809	4.86	0.363	4.75	0.5	4.75	0.5
The food pantry offers healthy food choices.	4.19	1.117	4.43	0.938	3.75	1.258	4.75	0.5
I can prepare healthy meals with the ingredients available at the food pantry.	4.33	0.756	4.5	0.76	4.5	0.577	4.75	0.5
I often request fruit at the food pantry.	4.06	1.094	4.36	0.745	3.25	2.062	4.5	0.577
I often request vegetables at the food pantry.	4.31	0.98	4.57	1.089	4.75	0.5	4.75	0.5
I think my daily food intake includes:								
Too many high fat foods.	2.92	1.228	3.36	1.336	2	1.414	4	0.816
Too few vegetables.	3.31	1.327	3.86	1.099	3	2.309	4.5	0.577
Too much sugar.	2.97	1.253	3	1.468	2	1.414	3.75	1.5
Too few fruits.	3.33	1.352	3.5	1.225	2.5	1.291	3.75	1.258

Note. Table 2 displays the response mean values and standard deviation (SD) for survey items related to perceptions of the food pantry, human nutrition, and personal dietary habits. A 5-point Likert scale measuring agreement was utilized for these questions. Response options *Strongly Disagree*, *Disagree*, *Neither Agree nor Disagree*, *Agree*, and *Strongly Agree* were coded as 1-5, respectively.

DISCUSSION

The use of public art to promote human nutrition and address perceived barriers to the utilization of college food pantries is largely unknown. Present findings from this study yield

valuable insights into the potential benefits of visual art on viewers' perceptions, especially as they may pertain to food pantries, human nutrition, and personal diet. Moreover, this study contributes to the growing body of literature concerning food insecurity on college campuses by evaluating the efficacy of a creative solution to the problem.

This study compared the survey responses of food pantry patrons before and after the installation of a public art mural at the Jane B. Gearhart Full Circle Food Pantry. Previous research suggests that the addition of public art to a landscape can improve the overall aesthetic and generate positive sentiments towards the space (Motoyama & Hanyu, 2014). As so, the findings of the present study show trends to support this claim, though not statistically significant. Favorable perceptions of the food pantry's location and hospitality increased from the before group to the after group, with the exception of how easy it was to find the food pantry. Although one would assume that the addition of a mural would increase the visibility of the food pantry, survey results did not support this assumption. It is possible that the inherent location of the food pantry is responsible for the difference in responses; therefore, the addition of an onsite mural would have no effect on accessibility.

Prior studies have also identified a reluctance to utilize on-campus food pantry services due to shame, embarrassment, or perceived negative stigma associated with food assistance (El Zein et al., 2018; Yamashiro, 2019; Yaniello, 2018). However, results from this study contradict those findings. In fact, an overwhelming majority of survey respondents disagreed with statements about feeling embarrassed or nervous to use the food pantry, regardless of when they took the survey. One possible explanation for this difference could stem from the respective population demographics of the studies. While past research looked at the opinions of all college students, the present study focused solely on the opinions of food pantry patrons. Thus, if

someone was already utilizing the food pantry, then they must have already overcome those psychological barriers, as was reflected in the results of this study.

Not unsimilar to the findings of Brewis et al. (2015) and Huang et al. (2010), a majority of survey respondents reported that their daily food intake included too many high fat, high sugar foods and too few fruits and vegetables. Interestingly, the mean response to these questions increased from the before group to the after group, meaning that survey respondents may have had a more negative opinion of their personal dietary habits after the mural was installed. While this difference was not expected, it stands to reason that the addition of colorful imagery depicting fresh fruits and vegetables may have called attention to the lack of such foods in one's own diet. Conversely, general perceptions of human nutrition were high both before and after the mural's installation. There was a slight increase in response means from the before group to the after group, but nothing of statistical significance. These findings challenge the typical young adult diet observed in the literature and reported by this study's population. In the present study, survey respondents not only strongly agreed that nutrition was important, but that they often request fruits and vegetables from the food pantry, despite saying their diet is low in these food groups. There could be two possible explanations for these mixed results. First, food pantry patrons may place greater value on nutrition than the average college student, given their limited access to food. Second, the survey may have produced a social desirability bias, generating responses that were believed to be "right", but not necessarily true. Further research comparing values and beliefs about nutrition to actual dietary behaviors could increase understanding of the psychological underpinnings of this discrepancy.

This study was not without limitations. A small sample size hindered the possibility of running a more complete statistical analysis on the data collected. Consequently, most of the

findings of this study could not be fully assessed for statistical significance. For testable survey items, respondent anonymity made it impossible to assess individual changes in perception. Hence, any differences in responses from the before group to the after group could not be directly linked to the installation of the mural; therefore, causality could not be established. Furthermore, this study was also constrained by time. A short survey administration period coupled with the food pantry's narrow hours of operation led to less than sufficient data collection. Lastly, there were uncontrollable differences between the pre- and post-survey administration periods. Although the survey was conducted an equal number of business operating days before and after the mural's installation, the post-survey administration period included Thanksgiving break, which meant the food pantry was closed for an entire week. Moreover, Thanksgiving is often a time of communal generosity, whereas individuals may not have to rely as much on a food pantry for their needs. Comparing food pantry usage between the pre- and post-survey administration periods could help explain the results of this study.

Despite these limitations, this study also had many strengths. For example, this study enabled food pantry patrons to share their beliefs, opinions, and perceptions of the food pantry and human nutrition without fear of repercussions. The public art mural itself provided the Jane B. Gearhart Full Circle Food Pantry with improved signage and curb appeal, enhancing the overall aesthetic of the building. Lastly, the project's unexpected publicity via news headlines brought attention to the food pantry's existence and location, which further addressed the objectives of this project.

Given this hybrid creative-research project was unique in its design and approach to mitigating food insecurity on a college campus, it provides a valuable foundation for future studies. Although most of the results of this study were not testable for statistical significance,

the effects of public art on viewers' perceptions of food pantries, human nutrition, and personal dietary habits appear promising. Future studies should focus on conducting research over longer periods of time to allow for ample data collection. Additionally, ensuring that the amount of data collected before the public art installation is roughly equivalent to the amount of data collected after the public art installation may yield more intuitive results. By requiring some form of identification on the pre- and post-surveys, future researchers would be able to assess actual changes in perception for individual patrons of the food pantry. Furthermore, it may be valuable to ask questions on the post-survey that specifically address the presence of the mural. Given that most participants did not report noticing the mural, finding a way to extend the existing mural or add new artwork to the side of the building with the entrance might draw more attention to the food pantry's existence and location. A future study asking the same questions but using before and after photos of the food pantry might better demonstrate the effects of public art on viewer perceptions.

CONCLUSION

College students are disproportionately affected by food insecurity, yet very few utilize the resources made available to them. The purpose of this project was to create a welcoming mural that both encouraged healthy behaviors and provided signage for the Jane B. Gearhart Full Circle Food Pantry. Using survey methodology, it examined the perceptual differences, if any, such an artwork evoked in patrons of the food pantry. Results of this study suggest that public art may influence perceptions of food pantries, human nutrition, and personal dietary habits. While this research offers hope for combating the physical and psychological barriers of food pantry usage, further investigations of the relationship between public art and nutrition are needed.

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Appendix

The Art of Nutrition Survey

1.) Are you 18 years of age or older?

Yes

No

2.) Before today, how many times have you used the Jane B. Gearhart Full Circle Food Pantry?

Never

Less than 5 times

5-10 times

More than 10 times

3.) Before today, when was the last time you used the Jane B. Gearhart Full Circle Food Pantry?

Within the past 7 days

Within the past month

Within the past year

Over one year ago

4.) Have you already taken this survey?

Yes

No

5.) When did you take this survey?

Within the past 7 days

Within the past month

Within the past year

Over one year ago

For questions 6-8, a 5-point Likert scale with the response options *Strongly Disagree*, *Disagree*, *Neither Agree nor Disagree*, *Agree*, and *Strongly Agree* was utilized.

6.) Please rate the extent to which you agree with the following statements about the food pantry.

It is easy to find the food pantry.

I like the location of the food pantry.

The food pantry looks inviting.

I feel welcome at the food pantry.

I get nervous visiting the food pantry.

I feel embarrassed to use the food pantry.

7.) Please rate the extent to which you agree with the following statements about human nutrition.

Nutrition is important.

I am familiar with the nutritional value of food.

I think about the health benefits of the food that I eat.

The food pantry offers healthy food choices.

I can prepare healthy meals with the ingredients available at the food pantry.

I often request fruit at the food pantry.

I often request vegetables at the food pantry.

8.) I think my daily food intake includes:

Too many high fat foods.

Too few vegetables.

Too much sugar.

Too few fruits.

9.) What food item(s) do you wish the food pantry offered?

10.) When you approached the food pantry today, did you notice anything different?

Yes

No

11.) What did you notice?

12.) What is your gender?

Male

Female

Non-binary

Other (please specify)

Prefer not to say

13.) Which of the following best describes you?

Hispanic, Spanish, or Latino

Non-Hispanic White or Caucasian

Black or African American

- Native American or Alaskan Native
- Asia or Pacific Islander
- Multiracial or Biracial
- A race or ethnicity not listed here (please specify)

14.) What is your primary role at the University of Arkansas?

- Student
- Staff member
- Faculty member
- Other (please specify)

15.) Are you an undergraduate student or graduate/professional student?

- Undergraduate student
- Graduate/professional student

16.) Which college are you getting your degree from?

- Dale Bumpers College of Agricultural, Food and Life Sciences
- Fay Jones School of Architecture and Design
- Fulbright College of Arts and Sciences
- Sam M. Walton College of Business
- College of Education and Health Professions
- College of Engineering
- School of Law

17.) What is your major?
