WHAT'S ON YOUR PLATE? THE CHALLENGE OF HEALTHY EATING IN EMERGING ADULTHOOD

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ABSTRACT

22-27 year olds are facing graduation and entering the workforce which often develop their unhealthy eating habits due to time constraints, convenience and decision-making fatigue. Although they could realize the impacts to their health, they still often depend on ultra-processed foods. Through secondary research, observation at grocery stores, surveys and in-depth interviews, this study identified the significant barriers including cognitive skills, time constraints, social influence, value-action gap,etc. This study also points out the complexity of changing entrenched eating behaviors by using behavioral models such as the Transtheoretical Model (TTM) and the COM-B model.

We propose “Gabby”, a pocket dietitian, as a solution as an intuitive and personalized digital product that aims to progressively spread nutritional knowledge and reduce decision-making friction, and integrate healthier eating choices into young people’s daily lives seamlessly.

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INTRODUCTION

Given the large global increase in incidence of non-communicable diseases (NCDs) such as obesity and diabetes, it is clear that improving health and wellbeing is a global issue that transcends borders (Schifferstein, 2019). It is reported by the World Health Organization that the burden of non-communicable diseases (NCDs) in adults starts during adolescence and carries over into young adulthood as substantial life-changes begin to happen (Sogari et. al 2018). Young adults aged (20–39) experience incidence rates of 29% related to obesity, posing a serious health risk for the population of college students and young working adults (Sogari et. al 2018). Developing from poor dietary habits, lifestyle-related NCDs such as obesity can lead to cardiovascular diseases (CVDs) which notably account for nearly two-thirds of global mortality (Acijas 2017).

For our research project, our group is focused on addressing the sustainable development goal of Good Health & Well-being, and specifically focusing on targeting the reduction of mortality from non-communicable diseases and promoting mental health. To address this target goal, we begin by asking our primary research question: Do young adults ages 22-27 struggle with developing healthy eating habits post graduation, and what consequences does that have on their overall well-being?

We narrowed the age range down to 22–27 as we aim to understand how the unhealthy eating behaviors that begin in adolescence and are further exacerbated through college environments continue to burden young adults as they further substantial life changes and achieve more independence post graduation.

BACKGROUND

While most young adults are aware of how to eat healthy and its importance, there are several consistent barriers and enablers in young adult's lives that impact their eating behaviors. The value-action gap is highly relevant to this issue as many individuals understand what constitutes a healthy diet but struggle to apply it in their daily lives. Amongst a myriad of different daily sources of information, an individual might feel they are aware of healthy eating but don't necessarily pay attention to it in themselves (Sogari et. al 2018). The Transtheoretical Model of behavior change (TTM), focuses on the behavioral change processes and is well suited to the treatment of habitual and addictive behavior involving addiction and substance use disorders. The model features 5 stages of change: Precontemplation, contemplation, planning, action, and maintenance. (Karl 2020). When it comes to dieting, many individuals, while hovering in between the stages of precontemplation and contemplation, might struggle to acquire enough strategies in the planning stage to proceed to action. Individuals may be clear about the goal to change their behavior, but they are not clear about how to get there (Schifferstein 2019).

In addition to turmoil within the individual, companies often work against healthy eating by developing products that value consumption over nutrition. In order to convince people to buy their food, companies often try to optimize sensory pleasures by artificially injecting flavor, which is usually high in salt, sugar, and fat (Schifferstein 2019). Some companies have studied how food preferences change with repeated consumption and evolved their production and marketing to make their foods easily accessible (Schifferstein 2019). Grocery stores and social media can play a major role in enforcing unhealthy eating behavior through targeted marketing and nudging practices, as seen in Figure 1, while government voices and healthcare providers actively fight to reverse these negative influences.

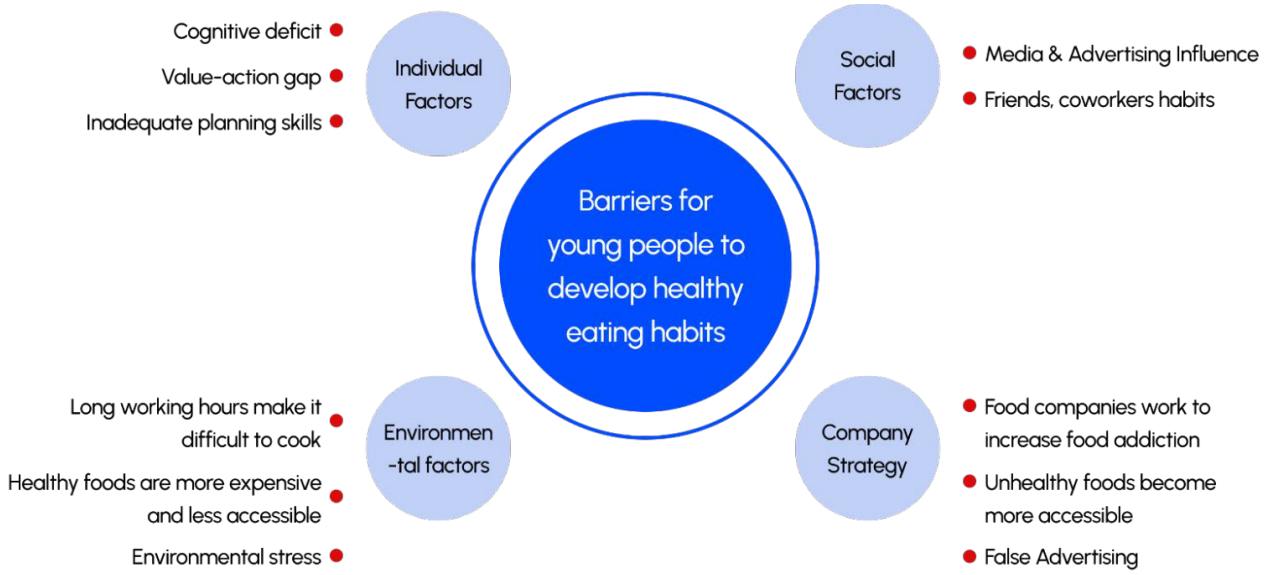

Figure 1. Barriers for young people to develop healthy eating habits. *Created by the authors.*

BEHAVIORAL OBJECTIVE

Given this research, Our Behavioral Objective is to help 22-27 year olds clarify and develop healthy eating goals and assist them in developing strategies to maintain healthy eating habits during their early careers.

Possible strategies include encouraging planned meal planning, reducing reliance on unhealthy foods, raising awareness of the nutritional value of food, and promoting dietary balance. By adopting these strategies and promoting changes to unhealthy behaviors, young adults can begin to develop a better relationship to food, consumerism, and their bodies, with the end goal being a healthy diet that contributes to an overall flourishing life.

We aim to make this goal transparent to our users, with success defined by their ability to maintain long-term health and well-being. As Schifferstein (2019) emphasizes, given the many stakeholders and processes involved, we must approach the food context as a system. By making this complex system transparent and understandable, we can foster trust in the healthiness of food choices, ultimately motivating young adults to purchase and consume healthier options. (Schifferstein, 2019).

SIGNIFICANCE

This project is important because it helps recent graduates develop mindful and healthy eating habits during their transition to the workforce, a period when poor nutrition can impact energy, productivity, and overall well-being. By promoting informed food choices and practical strategies, it empowers young adults to make healthier decisions that fit their lifestyle and budget to improve human value. Success is seeing individuals feel more energized, confident, and in control of their nutrition, leading to better mental and physical health. Professionally, success is creating a meaningful and practical intervention—whether through education, tools, or resources—that genuinely helps young adults make lasting improvements in their eating habits.

We must take into account the circumstances that may be hindering our success. While our goal is to promote attention to healthy eating habits among 22-27 year olds, behavior change does not occur in isolation. "Even though many behavioral interventions target the individual, their success depends on the context in which they operate." (Schifferstein, 2019, p. 33). Structural factors such as food availability, price, workplace culture, and time constraints all influence dietary choices. By recognizing these environmental barriers, we can design more effective strategies that are tailored to realistic conditions.

ETHICAL CONSIDERATIONS

Ethics in behavior design are critical in understanding that when harnessing the powerful tool to shape choices and behavior, with great power comes great responsibility to leverage this tool for good. As we progress into the further stages of our project, we must keep some key ethical considerations in mind. Firstly, collective value; what value does our design intervention provide for the community? Can it potentially have a positive influence on a larger group of people? We understand non-communicable diseases like obesity to be on the rise globally and designing to proactively protect people from becoming obese would have an indispensable positive influence on larger communities of people. Next is protecting people; What measures can be taken to protect people or communities from identified harm? Are we / our client willing to take these protective measures and capable of doing so? By undertaking the 3rd sustainable development goal of Good Health & Well-being, we are identifying mortality from non-communicable diseases as harms to the community and are willing to design protective measures to combat them. Lastly, human value; Does behavioral intervention help people progress in work or life? Does it improve decision-making? By addressing poor dietary habits as the root cause of eventual non-communicable diseases, we strive to improve decision-making when it comes to diet and help people in all facets of life including work and life.

RESEARCH PLAN

To carry out data collection, we developed a thorough research plan outlined in Figure 2 and detailed below. With the behavior objective stated above, we learned more about how this audience makes their eating choices, and how that impacts their daily life in terms of certain health factors such as mood, weight gain, acne, etc. We crafted a hypothesis to look into this inquiry further: Young adults who are transitioning from academic life to a professional, post-graduate lifestyle, are more likely to develop unhealthy eating habits due to lack of time and convenience, which leads to poor health consequences.

Since we were looking to research more about young adults transitioning between academic to professional settings, we gathered data from young adults locally in the Northeastern University and Greater Boston area. These locations offered an adequate mix of demographics to gather data from, and are also close in proximity to our location on Northeastern's campus.

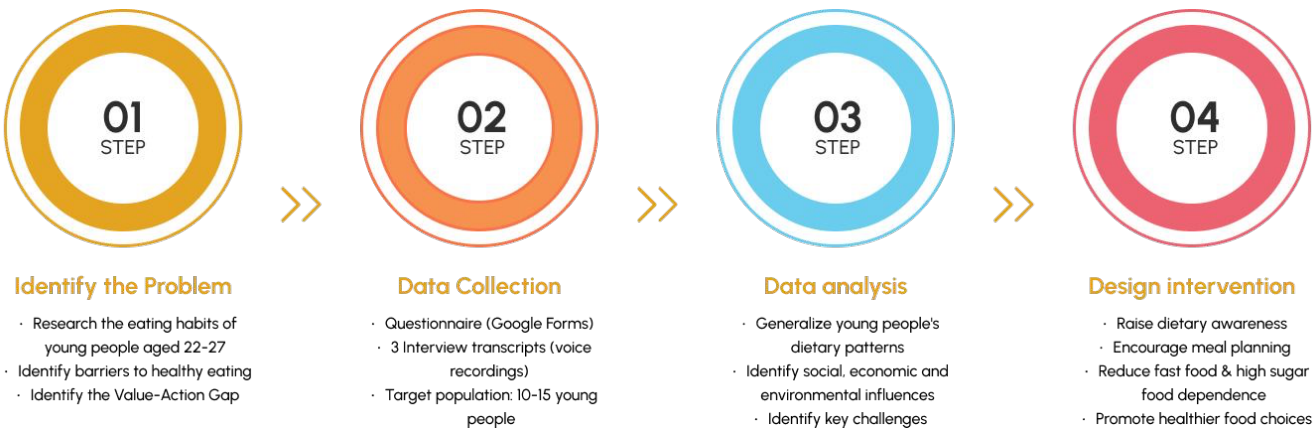

Figure 2. Diagram outlining the research plan. *Created by the authors.*

As said previously, we believe the transitory period from an academic lifestyle to a post-graduate professional lifestyle is reason to develop poor eating habits, as they may be unaware of dietary choices they make, too stressed to think about what they consume, or too overwhelmed in general.

To gather the most relevant information, we surveyed 31 people to get a modest sampling of different lifestyles, opinions, and responses to our questions. Through the questionnaire, we learned what kind of habits young adults have when it comes to healthy eating behavior, how young adults feel about these habits, and whether they want to change them or not. We also learned about the individual, social, and environmental factors that influence healthy eating behaviors in young adults. Lastly, we learned where the value-action gap lies, where negative habits overtake positive habits, and how we could begin to design to help people make healthier eating decisions. We utilized Google Forms to create our questionnaire and analyzed the generated data visualizations to interpret quantitative and qualitative data. The form was distributed through social channels via word of mouth and texting group chats.

In order to gather more in-depth qualitative data, we conducted follow-up interviews with 3 individuals who agreed to be asked additional questions after completing the questionnaire. We asked for consent to record voice memo transcripts so we could go back and hear/read their responses again. Finally, we conducted three observational studies within a couple grocery stores in the city: Trader Joe's and Whole Foods. The data collected from this final method was meant to observe and note behavior of individuals we assumed fit our target demographic, to better understand that data/trends we had been seeing from questionnaire responses and interview answers.

METHODOLOGY

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SECONDARY RESEARCH

Before beginning our data collection, we understood that issues of unhealthy eating behavior were overwhelmingly prevalent in young adults. One article noted that young adults aged (20–39) experience incidence rates of 29% related to obesity, posing a serious health risk for the population of college students and young working adults (Sogari et al. 2018). The reason for these alarming rates is partly due to the diet and eating habits young adults typically have where they have high levels of fast food intake compared to other age-groups and consume far below the recommended daily servings of fruits and vegetables (Escoto et al. 2012). Based on a survey, 40% of young adults reported eating an adequate amount of fruits and vegetables and 59% eating regular meals, but 32% reported unhealthy snacking. Yet, there was an 89% rate of intention and positive attitudes towards having a healthy diet, showing a marginal gap between value and action (Poobalan et al. 2014). With these statistics in mind, we begin to ask what is causing this wide gap between the evident knowledge and intent to eat healthy and the actual action of doing so? To put it more succinctly, individuals may be clear about the goal to change their behavior, but they are not clear about how to get there (Schifferstein 2020).

What research found is that "the most frequently reported barrier to healthy eating is lack of time, with young adults citing challenges in balancing work, school, and leisure schedules" (Escoto et al. 2012). Working or schooling more than 40 hours a per week has adverse implications for healthy eating behavior, especially for young adults who are in early stages of career development (Escoto et al. 2012). A perceived lack of time for healthy eating is a common reason to choose fast food or more convenient (processed) options (Escoto et al. 2012), in addition to some companies actively studying how food preferences change with repeated consumption and evolving their production and marketing to make their foods easily accessible (Schifferstein 2020). A recent article from Northeastern found using a tool called TrueFood that 70% of the country's food supply is "ultra-processed" (Jackson 2025). If you're a young adult struggling to manage your time, stressed about a new job or class work, and being tempted to eat processed foods because of their taste, no wonder it's seemingly impossible to resist. Tools like TrueFood can assist in developing messages and services that fit their (young adults) unique lifestyles" (Escoto et al. 2012) and can foster trust in the healthiness of food choices, ultimately motivating young adults to purchase and consume healthier options (Schifferstein 2020). Secondary research has revealed that the barriers of healthy eating in young adults are clear and the factors working against them are equally as clear. However, despite the many year difference between the publication of some of these articles and our data collection, we still see that habits aren't improving much. Time, prioritization of time, and perceived lack of time are the biggest factors in our research and this leads to many other questions regarding how the current day young adults spend their time beyond working or completing school work. Returning to the idea of the value-action gap mentioned above, it may be that the pervasiveness of technology causes a decision overload.

The modern world has shifted to provide a myriad of various options in the form of apps, products, and services that are all trying to capture the attention and wallets of consumers, mostly with good intentions, but oftentimes are drowned out in the sea of what exists. Services like Hello Fresh and Blue Apron are key examples of services that are designed to address the issues of time and nutrition but are just a few among many that aim to make the lives of people better. Choice overload is a huge factor to consider when designing in today's world. Chances are that when you begin to design for a problem, a solution or number of solutions already exist that are addressing the same opportunity you're looking to design for. This isn't to say that there is no value in designing anymore because everything has already been solved because this is never the case in the current of a changing world but building upon prior research and prior products is becoming increasingly important to design impactfully.

OBSERVATION

We went to Trader Joes and Whole Foods to conduct observations using the AEIOU worksheet framework from CMU (Baskinger 2011) in order to analyze the shopping behaviors of graduate students and newcomers to the workplace to gain a deeper understanding of their eating habits. The groceries stores have different layouts and customer groups, but we also found some common behaviors and selections during the observation.

Overall, we found that most consumers already have a clear purchase goal when they enter the grocery store. They usually choose to go directly to their desired product area to finish their shopping process in a fast and efficient way. During our observations, we noted that the majority of consumers spent less time in individual areas, mostly using quick visual scans to identify products, especially in more compact environments like Trader Joe's. However, some consumers also spend more time looking for specific items and even occasionally show some deliberation or hesitation.

From the product selection perspective, consumers at Trader Joe's are more likely to choose microwavable foods or pre-made products that are easy to prepare and consume quickly, demonstrating a stronger efficiency orientation. At Whole Foods, on the other hand, although prepared foods are also widely popular, consumers also show interest in fresh fruits, which may be related to the fact that fruits and vegetables are placed at the entrance.

Older people tend to spend more time in front of the shelves than younger people, reading product descriptions and comparing the differences between different items, which also reflects this demographic's consideration of factors such as food quality and healthy eating.

The shopping environment had some impact on the experience. Trader Joe's was compact and bright, with clear lines of movement and intuitive displays of products that allowed consumers to find what they were looking for quickly. Whole Foods, on the other hand, had a spacious environment with clearly defined areas, but there is still room for improvement in the design of the flow lines. In particular, the crowdedness of the checkout area also affected the shopping experience, which can be difficult to walk through at times.

We have noticed that most customers' shopping behavior is dominated by interactions between people and products. People usually have hands-on or visual interactions with products and rarely have in-depth interactions with staff. Interactions between shoppers and staff usually only occur with clear objectives such as inquiring about product information or looking for the location of a specific product. At Whole Foods, most customers preferred self-checkout machines to manual checkout. This reflects an increasingly clear consumer preference for an autonomous, fast, and non-socialized shopping experience.

We noticed that the customer base in the grocery store covers a wide range of age groups, but is dominated by people over the age of 20. Customers choosing Trader Joe's can be assumed to generally value food quality, nutritional value, and healthy eating, while Whole Foods customers also showed a preference for fresh fruits. Customers are particularly concerned with convenience and speed, and tend to purchase prepared foods that are easy to eat.

In addition, employees are uniformed, clearly identified, and easily recognizable. Their main responsibility is to restock shelves and move goods or carts to ensure that goods are well-stocked and neatly organized.

Through these observations, we noticed that graduate students and new professionals usually have a clear shopping goal, favoring quick and convenient prepared foods. This may suggest that this demographic lives a busy lifestyle and has a high demand for efficient and convenient dietary solutions. Second, they tend to prefer shopping experiences with more autonomy and less social interaction, and prefer efficient interactions and self-checkout methods. In addition, Trader Joe's and Whole Foods users have higher expectations for food quality, nutrition, and freshness, which reflects that despite their pursuit of convenience, they still have a clear preference for healthy food. We also observed that Whole Foods placed fresh fruits and vegetables at the entrance of the grocery, a layout design that may have increased the probability of consumers purchasing these fresh foods because customers were more likely to be attracted to and purchase them because they were immediately visible and accessible upon entering the grocery.

Our survey included a questionnaire which received 31 responses and 4 interviews. Three of the interviewees were young adults who participated in our questionnaire and the fourth was an expert campus dietitian.

QUESTIONNAIRE

For our research process, we wrote a 31 question questionnaire that had potential to provide us with an outline to the problem we want to solve. We had an idea of our general topic and demographic of interest, but we have yet to identify what it is about habits around eating that we want to address and how we can design to change those behaviors. Upon reviewing the quantitative data collected by the survey, followed by the qualitative data and key takeaways from the open ended responses, we gained a lot of valuable insight.

In terms of demographic data, we received 31 total responses to our questionnaire and had the largest response from 22 year olds (38.7%), 61.3% or 19 respondents identifying as women. Around 68% of our respondents are graduate students and 42% are full-time workers (Fig. 3), with living situations ranging from 48.4% currently living with roommates, 32.3% living with family, and 12.9% living alone. These demographics are important to keep in mind, considering the average respondent to be a 22–25 year old, female, graduate student.

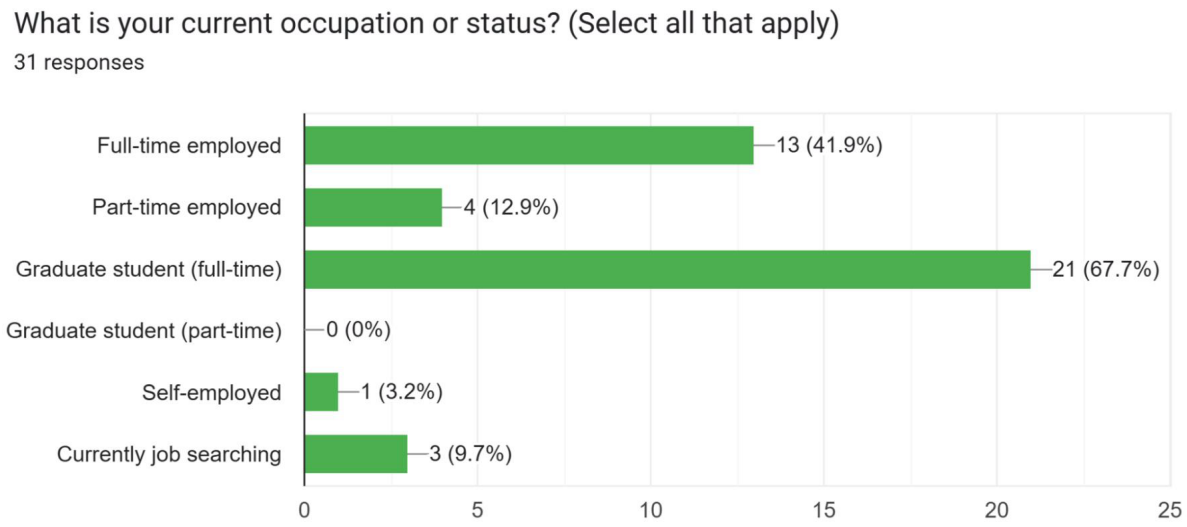


Figure 3. Data visualization for the questionnaire question: "What is your current occupation status?" *Created by Google Forms.*

Regarding eating behaviors and habits, a surprising 58.1% of people responded they only eat 2 meals per day. In terms of processed and/or ultra processed foods, 77.4% of respondents say they eat them at least 1–4 times per day. Microwavable meals saw a breakdown of consumption per week as 0 times (25.8%), 1–2 times (54.8%), 3–4 times (12.9%), and 5+ times (6.5%). Only 2 respondents (6.5%) said they eat fast food or takeout 0 times per week. Most notably, 64.5% of respondents eat fast food or takeout 1–2 times per week. When it comes to cooking, only 6.5% of people said they rarely/never cook, 12.4% cook only a few times per month, 54.8% cook a few times per week, and 25.8% say they cook everyday. The breakdown of numbers reveals a story of some weekly commitment to cooking that is overtaken by the convenience of microwavable and takeout meals, likely occurring towards the end of the week or weekends. When asked if they felt that their eating habits differed between weekday and weekend, 64.5% responded "Yes," 22.6% responded "No," and 9.7% responded "Not sure." The responses to this question further support this theory and bring into question the influence of time and social influence, assuming people have more free time on the weekend, and are spending that time with others.

Of the factors that influence eating choices, the following distribution was observed: Cost (77.4%), convenience/time constraint (96.8%), stress/emotional eating (51.6%), health benefits (54.8%), taste preferences (74.2%), social influence (48.4%), lack of knowledge (9.7%), and environment (41.9%) (Fig 4). Convenience/time constraints are unsurprisingly the most influential factor affecting food choices, with cost and taste preferences not far behind. This data in particular begins to reveal the general area we should aim to design for as it's clearly an issue for a majority of respondents. However, it's also important to consider that this problem area is already addressed by a variety of services and products, most notably ready-made meal services like Hello Fresh and Blue Apron. These companies aim to target the strained for time but interested in healthy eating crowds, however, their services are costly and not always affordable for young adults with immature budgeting behavior and limited disposable income. Further discussion on the potential problem area and identifying opportunities will come up later.

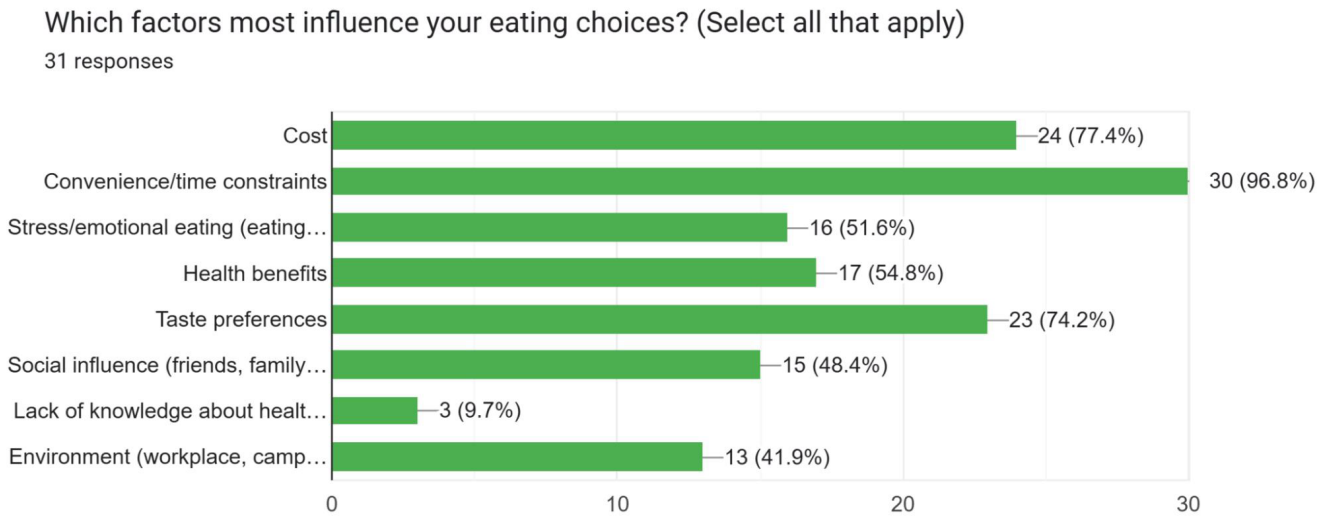


Figure 4. Data visualization for the questionnaire question: "Which factors most influence your eating choices?" *Created by Google Forms.*

When asked if they felt that their eating habits had changed since graduating from undergrad, 48.4% responded "Yes, I eat healthier now," 9.7% responded "Yes, I eat less healthy now," and 38.7% reported no significant change. These responses reveal that while unhealthy eating behavior is still prevalent, and very much impacted by social influence as typically seen on weekends, habits are overall improvements to what they were in college.

When it comes to barriers of healthy eating, the following distribution of challenges was recorded: Lack of time to cook (64.5%), lack of knowledge about cooking (19.4%), high cost of healthy food (45.2%), lack of knowledge about nutrition (19.4%), stress/emotional eating (41.9%), workplace/campus food environment (48.4%), living environment (22.6%), social influence (48.4%), medical conditions (3.2%), social media (9.7%), no challenge at all (9.7%). The distribution of barriers is interesting because there isn't a clear outlier, rather time constraints (lack of time to cook) is the highest percentage, but cost, stress, environment, and social influence yielded similar percentages.

Around 61% of respondents said that they felt maintaining a healthy diet was moderately difficult. When asked if they believed unhealthy eating has affected their physical health, 64.5% responded "Yes," 9.7% responded "No," 16.1% responded "Not sure," 6.5% responded that they eat healthy, and 1 person responded that they "don't eat unhealthy but don't think they eat the right things to be athletic." When asked if they believed unhealthy eating has affected their mental health, 51.6% responded "Yes," 12.9% responded "No," 25.8% responded "Not sure," 9.7% responded that they eat healthy (this particular response increased by 1 between the physical and mental health questions).

These questions were meant to bolster the prediction that knowledge, or value, attached to the behavior of healthy eating isn't lacking. Over half of people reported having been affected by poor diet either physically or mentally, which is significant when considering the consequences.

When asked about side effects of poor eating habits, the following distribution was observed: Weight gain (58.1%), weight loss (38.7%), acne/skin issues (45.2%), fatigue (48.4%), digestive problems 45.2%), mood swings (32.3%), increased stress or anxiety related (16.1%), feelings of guilt around eating (48.4%), disruptions to sleep quality (19.4%), and none of the above (9.7%). Similar to the physical and mental health questions discussed earlier, the side effects outline a consensus of awareness when it comes to the consequences of the behavior. This finding is further enforced by the answers to the question, "Would you like to improve your eating habits," where 77.4% of people responded "Yes," 0% responded "No," 12.9% responded "I am happy with my current eating habits," 9.7% of people responded with different variations of "Yes, but there's always room for improvement" (Fig. 5). A vast majority of people express acknowledgement that they are interested in changing their eating either because they are unsatisfied with it or believe it could benefit them.

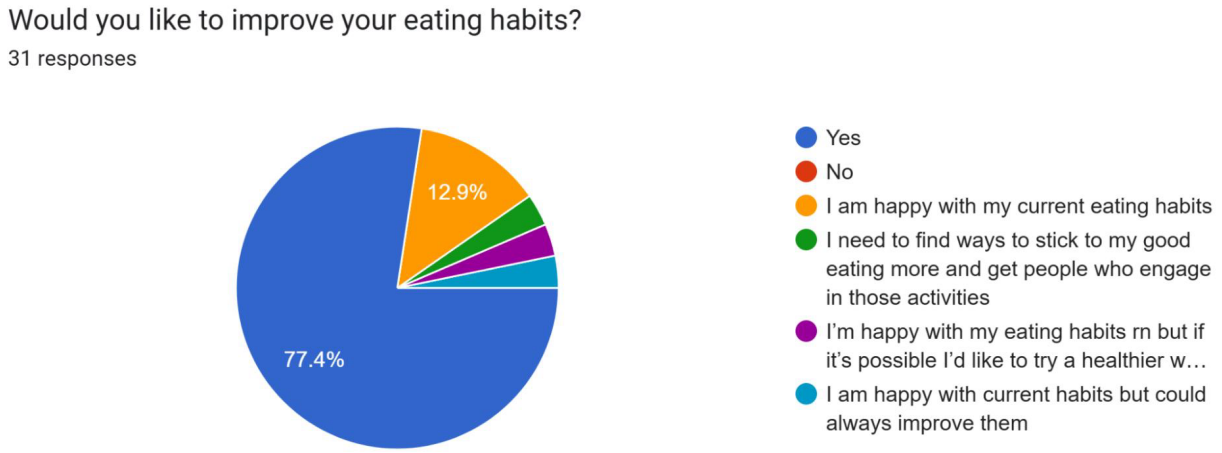


Figure 5. Data visualization for the questionnaire question: "Would you like to improve your eating habits?" *Created by Google Forms.*

Regarding strategies to change unhealthy eating behaviors, "Learning more about nutrition" received the lowest average rating, meaning that people felt that it would be the easiest to implement. Most other strategies hovered around the middle, namely "Meal planning/prepping, Finding affordable healthy food options, Budgeting better to allow flexibility, and support from social circles." The strategies voted most difficult to implement were "Reducing reliance on processed foods," and "Building strong self control." Keeping these responses in mind and considering some of the insights we gathered from our interviews, it's understood that young adults, in response to time constraints, will turn to ultra-processed foods to alleviate hunger quickly, despite knowing that they are unhealthy and lead to further consequences.

Open ended answers were offered to expand upon questions that allowed for more variance in response. The question asking about factors that influence healthy eating further enforced that time and convenience are the biggest drivers of unhealthy eating behavior. Busyness, feeling overwhelmed, and lack of time to cook resulted in people seeking easy options for meals and even skipping out on meals from lack of time. Beyond time and convenience, emotional regulation and social setting strongly influence behavior, while financial and environmental barriers can limit access to healthy food. The question asking about weekday versus weekend eating habits revealed a few trends. Regarding time, weekdays almost always lead to limited time, meaning proclivities to snack, skip meals, and eat out, while weekends offered more free time, but it was less structured and dictated by laziness rather than lack of time. Weekdays tend to see reduced social engagement, meaning less negative influence to eat unhealthy, while the weekends offer higher levels of socialization accompanied by more eating and drinking.

Food quality during the week tends to be less healthy due to stress and time while the weekends result in more indulgent but more mindful eating. Lastly, routine on the weekdays is reported to be structured but not rushed, while on the weekends it gets disrupted and irregular due to changes in sleep schedule. When asked about the biggest barrier when it comes to eating healthy, the overwhelming answers were time, and fatigue due to stress caused by lack of time. Cost and temptation were also common answers with respondents reporting that it's often harder to eliminate unhealthy foods than to introduce healthy ones. The final open response question asked about which strategies people chose as the most difficult to implement. Out of the nine responses, the most common strategy mentioned was meal prepping due to lack of time to cook, along with reliance on processed foods and struggles with self-discipline in the face of convenience.

Results from our questionnaire revealed a number of key insights that outlined the common issues faced by young adults as they enter busier lives and gain more independence with their meal preparation. Most notably, convenience/time constraints was the leading factor that influenced eating choices, with cost and taste preferences trailing not too far behind. Both quantitative and qualitative data collection points frequently alluded to lack of time, busy schedules, and the convenience of fast and processed foods as the most significant challenges when trying to maintain a healthy diet. Most respondents expressed that they are aware of the impacts unhealthy eating has on both physical and mental health, yet actual behavioral change remains difficult due to competing priorities and environmental barriers. When it came to strategies, meal planning, prepping, and reducing processed food reliance were consistently ranked as difficult strategies to implement, especially by individuals juggling full-time work or studies.

Respondents often eat less healthy on weekends due to increased socializing, disrupted routines, and indulgent behaviors. On weekdays, respondents skipped meals, endured more stress, and relied on convenient (processed) foods due to lack of time. Though secondary to time and convenience, financial limitations and stress/emotional regulation still contribute significantly to dietary decisions and barriers. In conclusion and in consideration of the data collected, we can begin to ask questions of how we might design for young adults who suffer from time scarcity due to busy schedules during the week and underdeveloped senses of self control during the weekends.

INTERVIEWS

We conducted three peer interviews amongst people that we know and have connected with: Jyothsna, Owen, and Jiawei. The interviews consisted of 21 questions structured to explore their eating habits, decision-making processes, and behavioral barriers to healthy eating, which is something we also studied excessively with the surveys. The flow of each interview followed a similar path—starting with general questions about daily eating patterns, moving into deeper discussions about motivations and barriers, and ending with reflections on potential solutions or changes. There were times when the flow felt disrupted with pauses, typing of notes, or trouble connecting one answer to the next question, but overall , the insights gained were beneficial, regarding convenience, social influence, and behavioral habits in making food-related decisions.

Jyothsna (22), a full time graduate student and full time employee, began her interview with questions about her personal awareness of healthy eating and her past experiences with trying to improve her diet. She acknowledged that while she knows of countless apps and tools designed to support healthier choices, the overwhelming number of options leads to her ignoring them and not exploring them further, similar to choice overload and decision fatigue—making it difficult to commit to any single solution. When asked what prompted her to take healthy eating seriously, she revealed that it wasn't until she experienced visible physical consequences, such as worsening skin and hair loss, that she felt compelled to change.

However, even after recognizing the importance of diet, she admitted that caring about it is not constant—her commitment fluctuates based on other life priorities, raising questions about the value-action gap in long-term behavior change. The interview wrapped up with reflections on what would make healthier eating easier for her, where she expressed an interest for solutions that easily integrate into her routine without requiring constant decision-making effort and convenience.

Owen (25), a full-time employee, followed a similar structure with his interview, but he emphasized the role of autonomy and social influence in shaping his eating habits. Questions early on in the interview about his childhood and past eating behaviors revealed that moving out and gaining independence led him to take more control over his food choices. However, when asked about barriers to eating healthily, he told us that social settings, fast food accessibility, and convenience were major challenges. Owen expressed that when eating with friends, he often follows the group's preferences, even if he knows that they don't align with his own health goals. When discussing structured meal planning or formal tools, he noted that he prefers to discover new meals organically rather than through rigid plans, which suggests that maybe top-down approaches to behavior change may be ineffective for him.

Jiawei (27), a full time graduate student's interview took a more detailed look into the roles of time, convenience, and intentionality in his eating decisions. He was asked about his typical eating schedule, how he decides what to eat, and whether he has ever tried meal planning. His responses highlighted that time and energy are the primary factors of his eating choices, often opting for quick delivery meals or instant food like ramen. While cost is a consideration, he admitted that it rarely outweighs convenience.

Unlike Owen, Jiawei does not report social pressure as a major factor—when eating alone, convenience dominates, and when with friends, enjoyment matters more. When asked about previous attempts to structure his eating, he mentioned trying scheduled meal reminders and Sunday meal prep, but both felt uncertain to him due to the effort required to maintain them. This led to a discussion about potential interventions, where he expressed interest in passive, low-effort solutions such as pre-prepared meal subscriptions or automated meal recommendations.

The last interview we conducted was with Gabby, the Senior Campus Registered Dietitian, where she discussed the impact of independence and lifestyle shifts on the eating habits of emerging adults. She talked about how when individuals move from structured meal plans or home cooked meals to managing their own food choices - convenience, time, and budget constraints become major factors influencing dietary decisions. Social and environmental factors like peer influence and the pressures of busy schedules also makes it difficult to maintain healthy eating habits. Gabby emphasizes the importance of connecting healthy eating to individual values, such as energy and well-being, and suggests small, manageable changes to bridge the gap between knowledge and action. Ultimately, Gabby said that supporting a personalized approach to nutrition is key to encouraging long-term healthy habits.

Through these interviews, a clear pattern emerged: Healthy eating is not necessarily a matter of knowledge but of priority, convenience, and decision fatigue. Across all three conversations, participants acknowledged that they understand what a healthy diet looks like, but they struggle with maintaining it due to influences, faltering motivation, and the high effort required for sustained commitment.

The flow of the interviews—starting with general habits, diving into decision-making factors, and concluding with potential solutions—allowed for an exploration of the psychological and logistical barriers to healthy eating. These insights suggest that behavior change interventions should prioritize reducing friction rather than relying on motivation.

HOW DIFFICULT IS IT TO CHANGE THE BEHAVIOR

Changing eating behaviors is a complex challenge that requires continuous effort rather than a one-time decision, which is something that we uncovered through our surveys and interviews. People don't necessarily find it difficult to change the behaviors they want to, they find it difficult to maintain it.

Using the "Size Up Your Challenge" model, the difficulty of behavior change depends on multiple factors such as frequency, visibility, and the extent of lifestyle disruption. Insights from the interviews with Jyothsna, Jiawei, and Owen reveal that eating habits are deeply ingrained and influenced by convenience, motivation, and social factors, which makes sustainable change particularly challenging.

Unlike one-off actions, eating healthier is a recurring behavior that requires multiple decisions each day and a consistent pattern. From Jiawei's interview, it is clear that convenience drives food choices, often resulting in frequent reliance on quick meals or takeout. This constant nature makes behavioral change more difficult since it requires constant reinforcement rather than a single shift. Similarly, Jyothsna highlighted that motivation fluctuates—caring about health is not a static feeling but one that shifts based on what is happening in your environment, such as physical well-being and priorities at a given moment.

Changing eating behaviors requires both stopping unhealthy habits and adopting new, sustainable ones. Jiawei's honest feelings about his failed attempts at structured meal planning highlight how difficult it is to integrate new routines into a busy lifestyle. Owen's experience, however, suggests that exposure to healthier habits, such as watching others cook, can positively influence behavior. However, motivation alone may be insufficient; lasting change needs systems that reduce effort and make healthier choices more accessible.

Given these challenges, behavior change strategies must focus on reducing friction rather than relying on motivation alone, which is an extensive change depending on where the individual is at that moment. Changing eating habits is difficult due to its repetitive nature, and the necessity of both stopping and adopting behaviors, and its impact on multiple life domains. A successful design intervention may focus on making healthy choices the easiest option, reducing the cognitive and logistical burden, and using environmental and social cues to emphasize consistency over time.

RESEARCH & FINDINGS

03

AFFINITY DIAGRAM

Our affinity map exercise helped us to visualize the key findings from our data collection and begin to draw connections between the most common themes. We started out by recalling as many concepts and ideas that we discovered from our questionnaire, observations, and time surveying individuals. Once we began grouping ideas, commonalities between the most popular responses appeared and patterns began to emerge.

The affinity groups (Figure.6) we created were motivation, knowledge, time factors, grocery shopping, convenience, lack of meals, cost, taste preference, ultra-processed, health factors, and social influence. Idea cards featuring the "value-action gap," and the "difficulty of mealing planning" were left floating in between convenience and cost. Following the creation of these groups, we began to draw connections between them, indicating what relationships were present. By identifying these groups and connections, we were able to extract a number of emerging themes from our research:

Figure 6. The group discusses findings while affinity mapping. *Created by the authors.*

EMERGING THEMES

- Time factors → stress → lack of meals/skipping meals → ultra processed foods because of easy access → health factors → stress
- Negative feedback loops
- Designing to fit convenience in effortlessly
- Motivation for healthy eating
- The role of cognitive biases
- Motivation as the bridge for the value-action gap

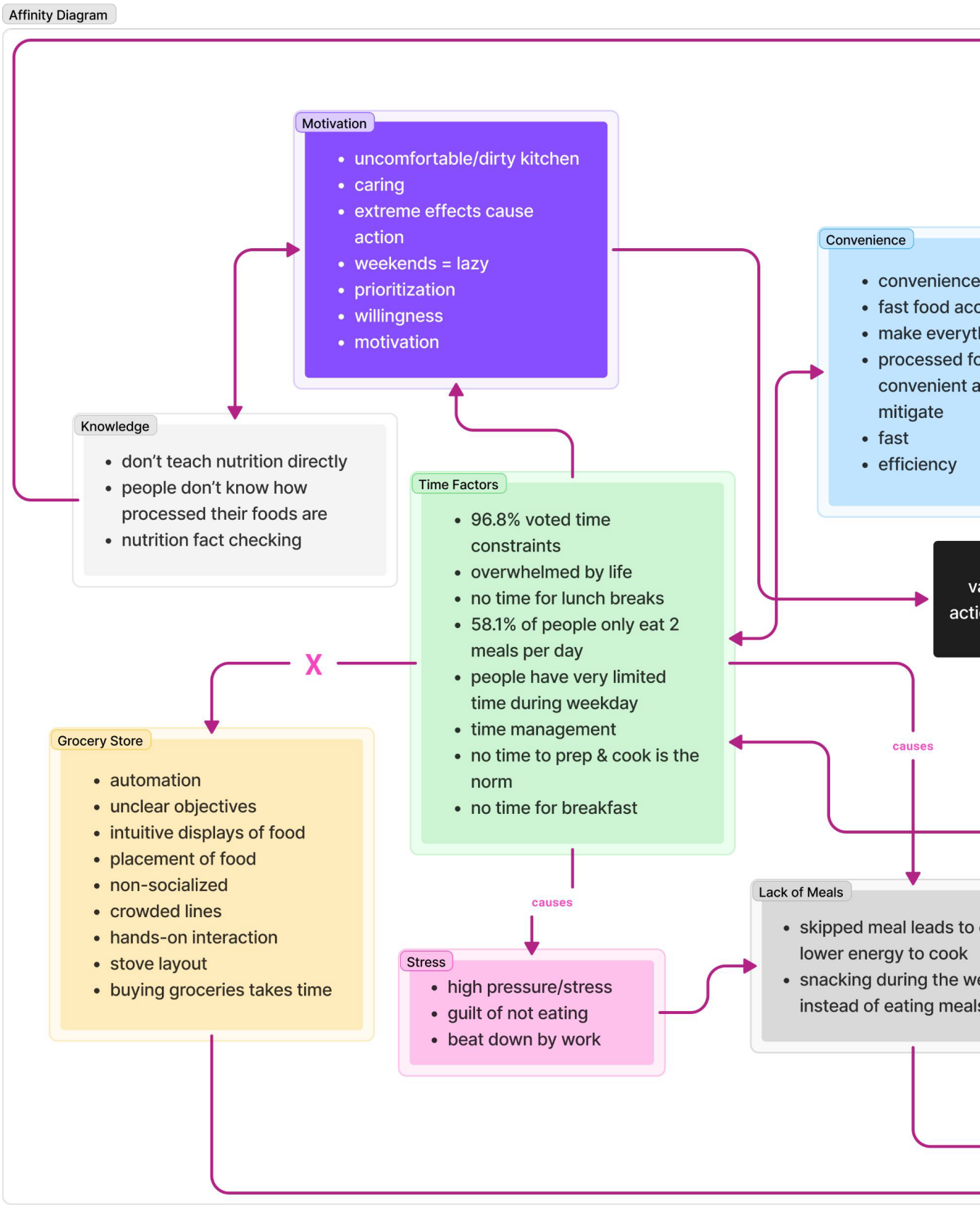
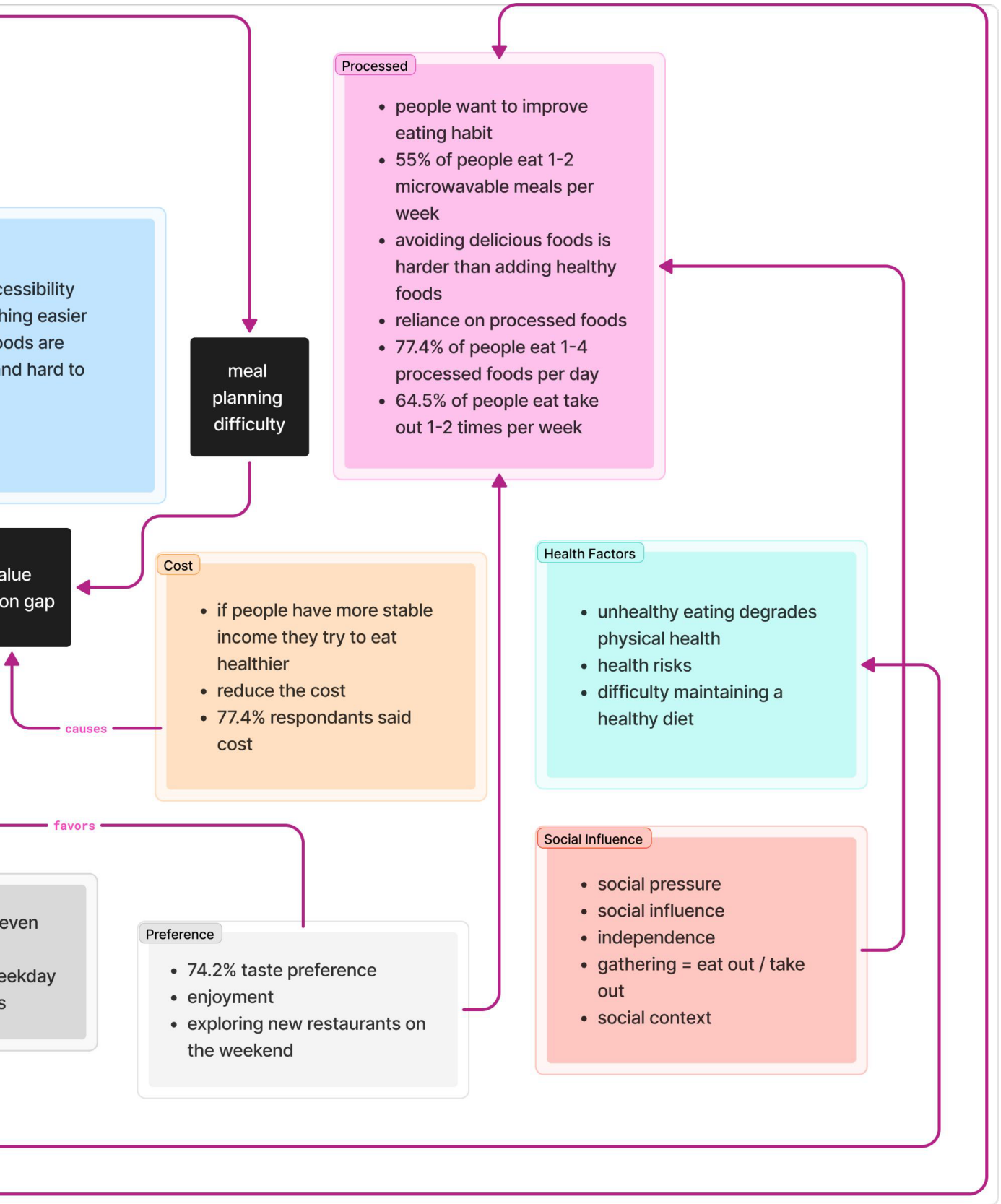


Figure 7. Affinity diagram exercise based on data collected. *Created by the authors.*


cessibility
hing easier
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meal planning difficulty
Processed
people want to improve eating habit
55% of people eat 1-2 microwavable meals per week
avoiding delicious foods is harder than adding healthy foods
reliance on processed foods
77.4% of people eat 1-4 processed foods per day
64.5% of people eat take out 1-2 times per week
alue
on gap
Cost
if people have more stable income they try to eat healthier
reduce the cost
77.4% respondants said cost
causes
Health Factors
unhealthy eating degrades physical health
health risks
difficulty maintaining a healthy diet
favors
Social Influence
social pressure
social influence
independence
gathering = eat out / take out
social context
even
eekday
s
Preference
74.2% taste preference
enjoyment
exploring new restaurants on the weekend

IDENTIFY ACTIONS TO CHANGE

By identifying emerging themes, we are able to then work to clarify the actions we were hoping to target. While healthy eating is often regarded as a complicated topic with a myriad of "right" and "wrong" answers, our data collection revealed that while this sentiment is true, people think the same, especially within the demographics we are investigating. Here are some of the primary actions we identified that could be changed.

- Choosing to order takeout instead of cooking a meal
- Relying on microwaveable meals because they are quick, easy, and uncomplicated, but overconsuming them because they are nutrient deficient and have poor satiation
- Skipping meals because of a lack of time
- Allowing social influences to pressure eating habits
- Feeling as though eating healthy is a gatekept and difficult to achieve
- Leaving healthy eating lower on the priority list than it should be

BEHAVIORAL THEORIES

Following the identification of actions, we sought to understand them through two behavioral theories, the Transtheoretical Model and COM-B.

TRANSTHEORETICAL MODEL (TTM)

Change is one of the most difficult behavioral processes and it should be viewed as just that: a process (Karl 2020). Our research revealed that while sentiments are similar amongst people in this age range, everyone is at a different stage in their relationship with food and eating. In the context of the Transtheoretical Model (Figure. 8), our data reveals that most respondents likely reside in the precontemplation, contemplation and preparation stages, with most people residing in the contemplation stage. Many young adults after graduating from undergrad and entering the next stage of their life are balancing a lot of new environments and responsibilities, leading to a restructuring of priorities and values.

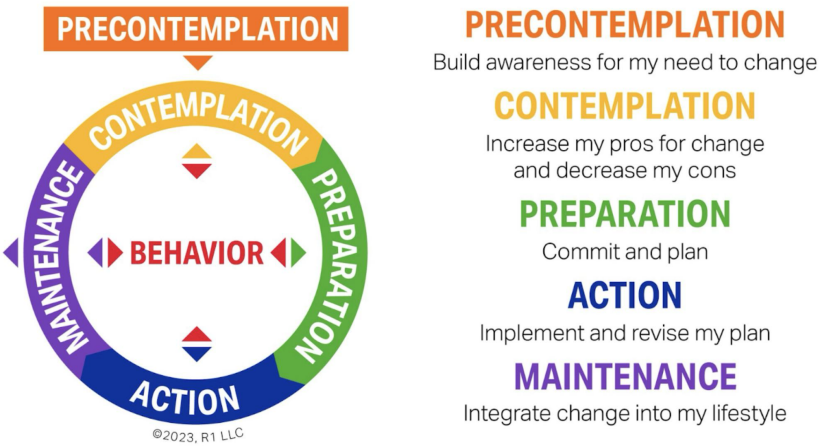

Figure 8. Transtheoretical Behavior Model. *Created by R1 LLC.*

COM-B

Taking insights from our surveys, interviews, observations, and other models created and researched, we proceeded to take a look at the different barriers that impact the behavioral categories identified in our affinity diagram. We used the BIT Barrier Tool powered by the Behavioral Insights Team to identify and categorize the barriers to a behaviour that we're trying to change in reference to the COM-B behavioral model, which uses a barrier framework of capabilities, opportunities, and motivations (Behavioural Insights Ltd.).

CAPABILITIES

For capabilities, we identified some barriers to capabilities as cognitive skills, attention span, and evaluating options. Looking at the role of cognitive skills as a barrier within our project, we see that most people understand the value of healthy eating and cooking, and the role it can play on their overall well-being, playing into the do I understand it question. However, based on the interviews, surveys, and other methods of observation, we see that there is a lack of action that takes place when users go towards healthy eating. We now ask ourselves, what motivators can we use to bridge this gap between value and action, since

users do understand the value of healthy eating. In terms of knowing how to do it, or knowing how to take action, we see that people don't really understand nutrition facts or actively check nutrition facts when purchasing their groceries, which also comes from our surveys and interviews. When it comes to preparing their own foods, some recipes may be too complex for beginners who still want to eat a healthy and delicious meal, which steers them away from cooking because they don't possess the capability to do that. Is there a way we can make the action of healthy eating easier to jump into?

When thinking about attention span as a barrier, one insight we gained from an interview is that there are times when a user actively wants to try to start eating healthy and they start the process, but maintaining this process is difficult for them. Many factors can contribute to this, but attention span can be one of them, since cooking and prepping meals requires attention to detail in different aspects: such as ingredients, directions, and time. Sometimes, attention span can be faltering and people will give up on what they are working on because it doesn't capture their attention for long enough and well enough.

Our last barrier came in with evaluating options and making decisions. This capability is pretty synonymous to the knowledge section of our affinity diagram, where we detailed that it is difficult for people in this age range to properly evaluate their options and make a decision when they are choosing the option to eat healthy, and this happens for multiple reasons. First is when they are grocery shopping, people don't really check the nutritional facts on the packaging they buy, and this insight came from our surveys, interviews and observations. They may have a preconceived notion that what they are purchasing is healthy based on common knowledge of the item, so they don't

check the nutritional value. Or they may just not be interested in spending time reading all of the labels and want to be done with shopping as quickly as possible. Second is when it comes to preparing the food, are they able to evaluate the different options when it comes to preparing a meal, and what constitutes a right decision for them for this preparation? Some people may just want to make what's easiest and most convenient, so they don't even bother checking the nutritional value of the ingredients they prepare. Others may prepare a complex meal, but still not check the nutritional value, they just wanted to cook.

OPPORTUNITIES

When it came to identifying barriers for opportunities, the ones that stood out to us the most were resources and time, prompts in the environment, and social and cultural norms. Resources and Time is amongst the most pertinent for young adults experiencing difficulty maintaining healthy eating behavior. An individual might say to themselves, "I would like to cook after classes on the weekdays, but my evenings are too busy with schoolwork, therefore I do not have the time." The scarcity of time causes the individual to not have the opportunity to cook and instead increase their chances of eating unhealthily.

When it comes to resources, an individual might think "I have cereal for breakfast or usually skip it all together because I don't know quick, healthy breakfast alternatives, plus I didn't have time to go to the grocery store yesterday, so I do not have other options." The lack of resources, as a result of lack of time, leads the individual to make unhealthy eating choices.

The influence of the environment cannot be understated when considering behavioral barriers. It's important to ask: "Does the environment encourage or discourage the desired behavior?" An individual seeking to change their eating behavior might want to buy whole foods at the grocery store, but ultra-processed options are advertised more. Alternatively, someone might plan to meal prep over the weekend but their roommate has friends over and therefore they chose to hangout instead.

Social influence is one of the biggest barriers when it comes to positive behavior change. If someone is worried about being perceived negatively by their new behavior, they are much less likely to work towards adopting it. For example, an individual might be hanging out with friends in the evening when the idea of order out is proposed. The individual has groceries in the refrigerator that they know they should use, but worried about being perceived as rude, they choose to order out.

MOTIVATIONS

Lastly was barriers to motivations, where we identified habits, goals and accountability. Habits dictate our lives by controlling our subconscious decision making and making our brain do less work. This makes them incredibly hard to overcome in behavioral change as they are ingrained in us. When it comes to unhealthy eating barriers, someone might say "I get fast food whenever I'm commuting home from work because it's on my route." Or, "Even though I know it's bad for me, I eat a bowl of ice-cream every night and I always buy it at the store."

Goals can be tricky when it comes to healthy eating because oftentimes people have a concept of a goal in mind but no true defining metric. An individual might say, "I've thought about introducing more fiber into my diet but I'm not sure which meal I'd like to add to so I haven't added it to my grocery list."

Additionally, what people want doesn't relate to what they prioritize. Someone might have a goal to eat healthier, but it's not a high priority because they're able to wake up every morning and attend class or work, so they feel as though they're healthy enough. Yet, if you were to reframe it to be a question of how distracted they are during class or how fatigued they feel after lunchtime at work, reframing it as a matter of performance rather than task completion may begin to reassess their prioritization.

When it comes to adopting a new behavior, it's important to have someone who will hold you accountable. It's difficult to rely on yourself to do it because you're the one trying to change behaviors, so people will rely on those closest to them. An individual might struggle to engage in healthy eating because they want to buy more whole foods at the grocery store, but the roommate they go shopping with is constantly buying frozen foods and ultra processed snacks. Or someone might successfully cook for themselves three nights in a row but no one understands how difficult that was to do, so they receive no encouragement and regress.

PERSONA

We developed three persona archetypes based on our interviews: Jack (Figure 9), a troubled young adult who faces challenges but has no intention of changing; Helen (Figure 10), who is concerned about her well-being but struggles to make changes; and Debbie (Figure 11), a registered campus dietitian who works closely with students. By analyzing these personas, we identified key patterns, motivations, and opportunities for improvement:

CAPABILITIES

- Time Constraints – Whether juggling school, work, or social commitments, all personas struggle to allocate time for meal preparation.
- Financial Limitations – Healthy food is perceived as expensive, leading to fast food and bulk purchases.
- Convenience Overnutrition – Speed and ease are prioritized over health, resulting in frequent consumption of fast food or pre-packaged meals.
- Stress-Driven Eating Patterns – Emotional eating, skipping meals, or indulging in comfort foods due to stress is common.

MOTIVATIONS & GOALS:

- Establish sustainable, realistic eating habits that align with busy lifestyles.
- Find affordable, healthy meal options that don't require excessive time or effort.
- Reduce reliance on unhealthy, processed food while balancing taste and satisfaction.

OPPORTUNITIES FOR IMPROVEMENT:

- Pre-prepared, grab-and-go nutritious meals to reduce cooking barriers.
- Easy to implement dietary improvement that fits into students' current diet.
- Stress management strategies to combat emotional eating.
- Campus & workplace support for accessible, healthy food choices.

This synthesis highlights a critical need for practical, time-efficient, and budget-friendly nutrition solutions that fit into fast-paced student and professional lifestyles in Boston.

Figure 9. User persona graphic for "Jack." *Created by the authors.*

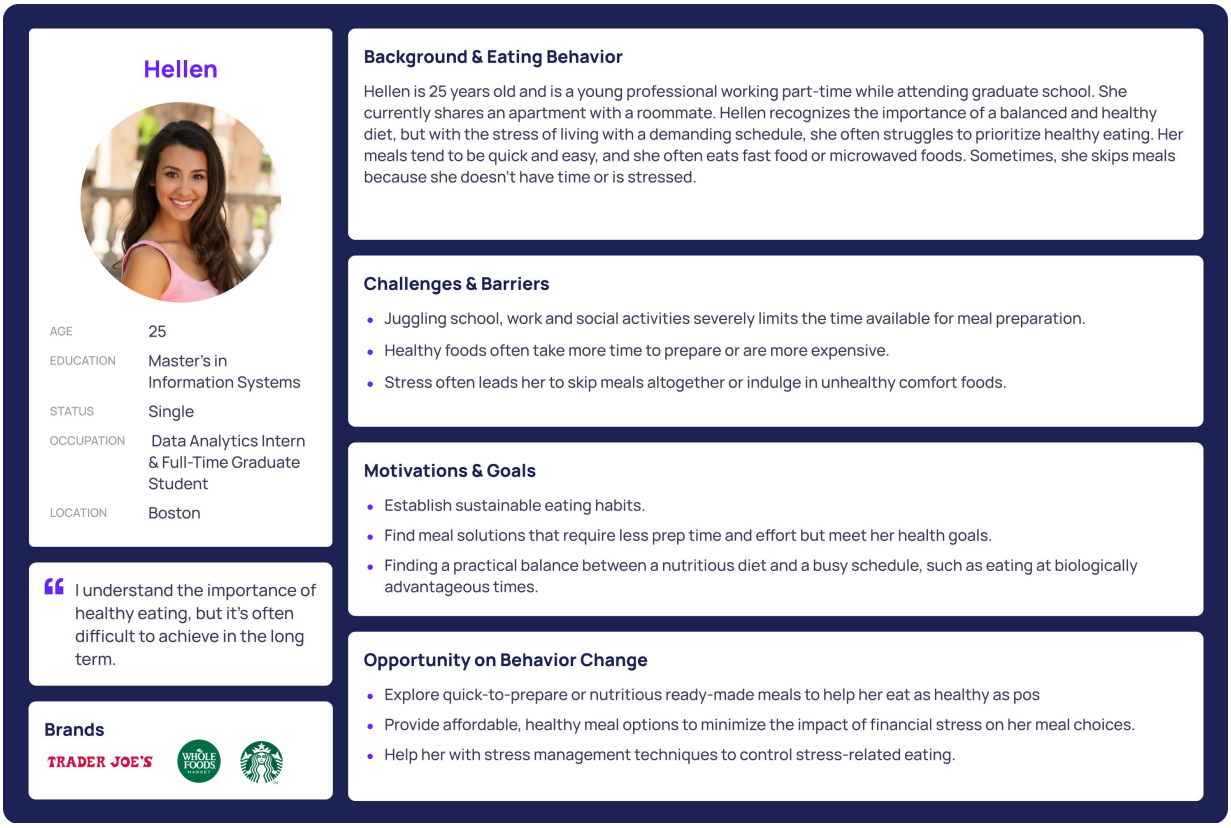

Figure 10. User persona graphic for "Hellen." *Created by the authors.*

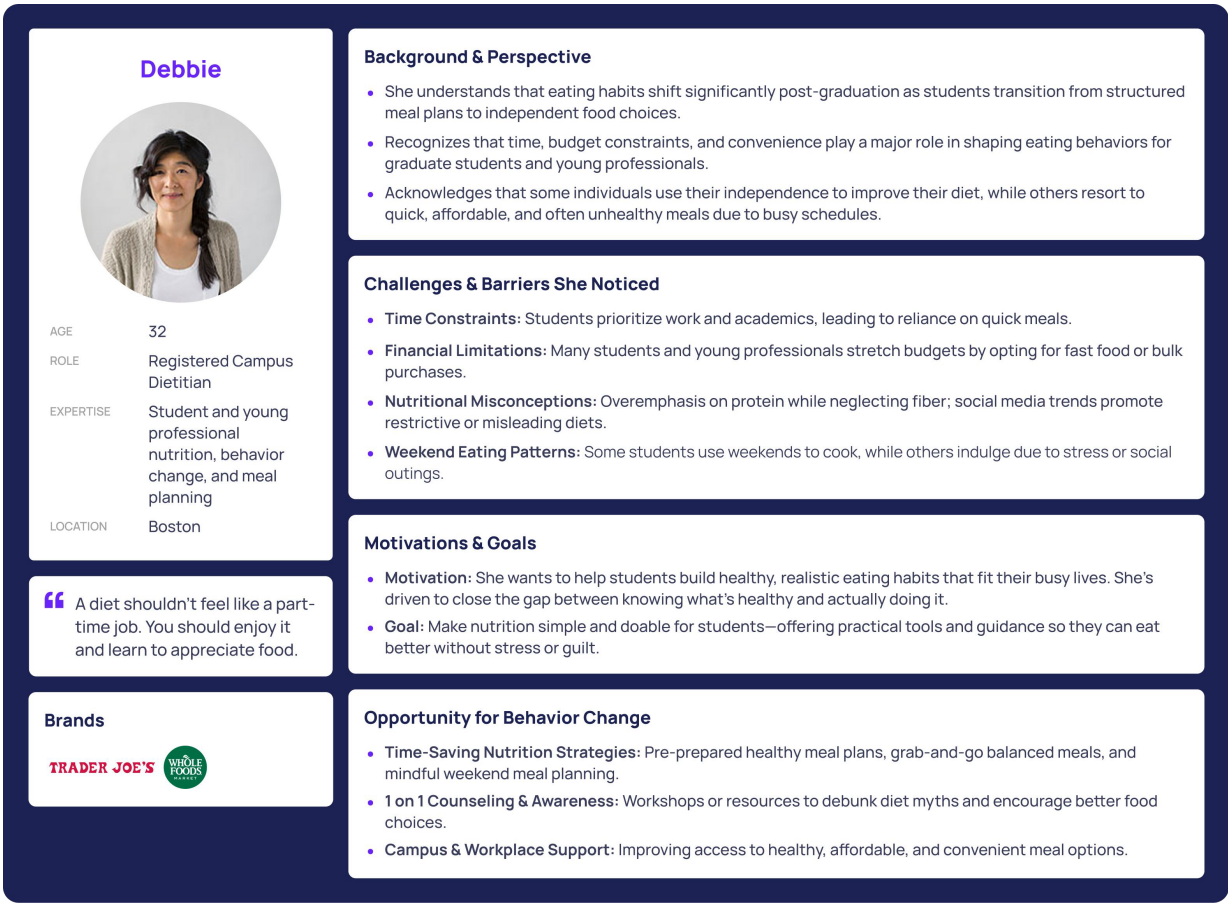

Figure 11. User persona graphic for "Dabbie." *Created by the authors.*

USER JOURNEY MAP

We choose Helen as the protagonist of the journey map because she embodies common challenges faced by many graduate students and new professionals. They aspire to healthy eating habits but the high stress life brings barriers to them. Exploring Helen's journey could help us to understand young people's pain points and opportunities to find solutions for them.

Every morning, Helen (Figure 12) feels tired and stressed from working or studying late the night before. She often skips breakfast and purchases a cup of coffee from Starbarks. This habit led to a lack of energy and decreased productivity throughout her workday.

At lunchtime, Helen's tight schedule forced her to make a quick meal choice from a nearby cafe or fast food restaurant. Despite her desire to eat healthy, she found that the vegetarian options available were both limited and expensive, which made her sometimes feel guilty and dissatisfied with her choices.

In the afternoon, Hellen would take some snacks from the vending machine . These snacks help her and relieve her hunger and stress for a while. But many snacks contain high levels of sugar and fat, which could have potentially negative effects on her health.

Bowls are challenging for Helen. She usually gets home late, when she is exhausted. So sometimes she orders take-out or eats microwaved meals and avoids cooking. Also, stress sometimes makes her eat less at dinner. After simply eating something, she would move on to unfinished work or homework.

Sometimes Helen is invited by her friends to socialize in the evening because she enjoys bonding with her friends and roommates, and it's also her way of relieving stress. In the process she will eat snacks or fried foods and sometimes drink a little alcohol. However, these late night eating habits can negatively impact her sleep and overall health.

Right now Hellen is facing many challenges. Due to her busy life, spending long hours cooking or preparing healthy meals is difficult for her because she does not have enough time or energy. Also financial constraints make it difficult to access affordable and healthy meals for long periods of time. Also lack of time often made it impossible to eat at a physically beneficial time, for example she often skipped eating breakfast. Finally, stress also led to unhealthy eating behaviors such as eating very little or eating late at night. These factors often resulted in her never being able to achieve a healthy meal pattern over the long term during the workday despite wanting to, and feeling guilty or dissatisfied with her diet as a result.

From the top we could have some opportunities to improve or solve those issues.The first is to reduce the time cost of preparing healthy meals to help young people eat healthy food conveniently and efficiently even when they lack time. The second is to control the budget for healthy food by developing programs that look for nutritious but relatively inexpensive and accessible meals to provide young people with affordable

healthy meals, thereby reducing the impact of financial stress on healthy eating. The last is about unhealthy eating due to high stress. We can find healthier snack alternatives to avoid consuming too many unhealthy snacks that can have a negative impact on the body. Also helping them to relieve and manage stress-induced negative emotions is a good direction to take to reduce emotional eating.

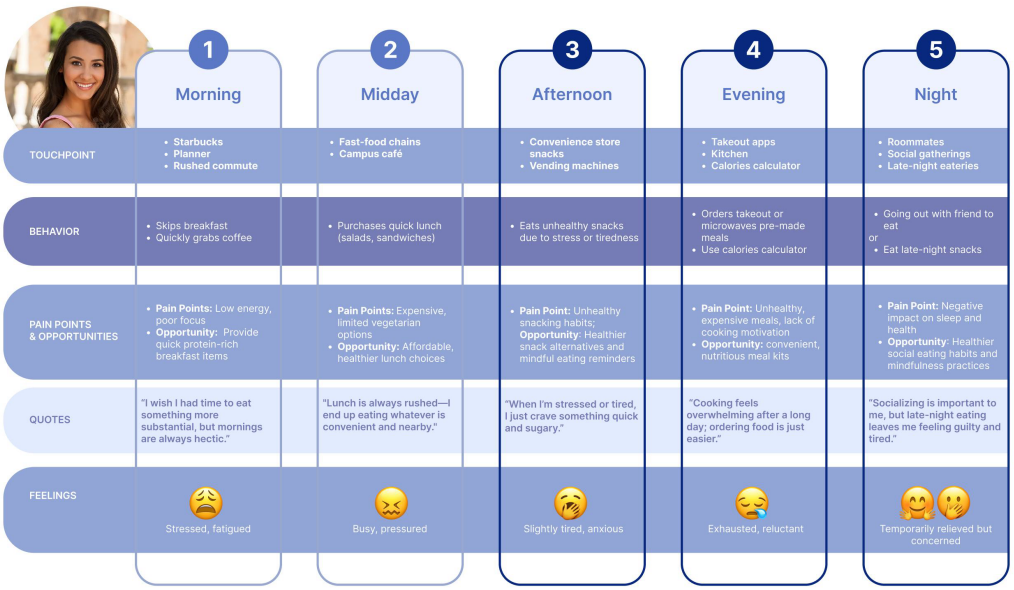

Figure 12. User journey visual for "Hellen" persona. *Created by the authors.*

DESIGN INTERVENTION

04

INSIGHTS

BEHAVIOR TO CHANGE

Young adults (22-27 y/o) develop unhealthy eating habits after graduation by relying on ultra-processed foods and not understanding how to effectively balance their nutrition intake.

BARRIERS

Capabilities: Cognitive Skills, Attention Span, Evaluating Decisions
Opportunities: Resources and Time, Prompts in the Environment, Social and Cultural Norms
Motivation: Habits, Goals, Accountability

See Figure 13.

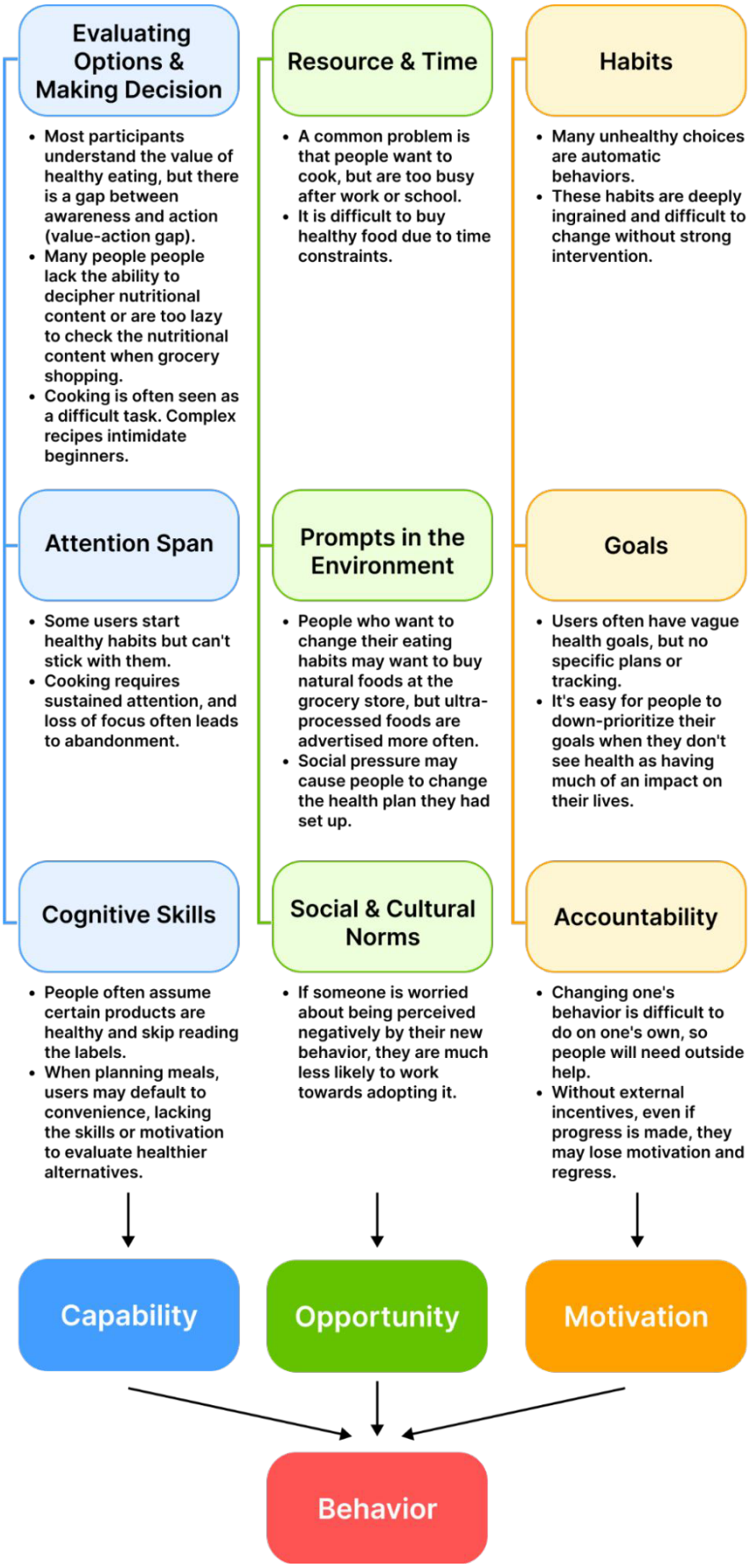

Figure 13. COM-B model outlined according to project criteria. *Created by the authors.*

BEHAVIORAL TARGETS AND OUTCOME

Many young people mistakenly rely on the convenience of ultra-processed foods, believing that these options fulfill their nutritional needs. But in reality, they often lack a clear understanding of what their bodies really need and misinterpret cues to change their diet. To correct this cognitive bias and help them establish sustainable healthy eating habits, we consider the following aspects of our intervention.

- Helping users identify and set goals to improve their nutrition
- Helping users understand nutritional value
- Gradual exposure leads to gradual change rather than instant
- Reassurance that change can happen slow but it is happening

DESIGN CRITERIA

When developing our design criteria, we initially went into 3 different directions to cover all of the desired behavior changes we had identified so far in our research.

Our healthy eating product should give young adults simple recipes that make healthy eating easier and more accessible. The availability of ultra-processed food is omnipotent and inevitable. Our product should provide a way for young adults to continue eating the foods that taste good to them while encouraging them to add healthy ingredients to create a more holistic nutritional balance.

Our healthy eating product should give young adults simple recipes that cater to their busy schedules. Young adults lead busy lives that leave minimal time for cooking healthy meals. Our product should provide a way for young adults to concoct simple meals using whole ingredients in a time scarce schedule without relying on ultra-processed foods.

We eventually landed on the third option as we felt it offered the most impactful change for our users and aligned with the values we sought to design for.

Our healthy eating intervention should help young adults restructure their values to prioritize healthy eating. Healthy eating often falls low on young adults priority list due to overwhelming life factors. Our product should provide a way to visualize how healthy eating impacts all factors of a young adult's life, not just easily recognizable relations like weight and acne.

IDEA GENERATION

FRAMEWORK: MAKEIT CARDS

The MakeIT framework by Massimo Ingegno provides a psychology map to guide designers through the design process, to help anticipate problems, identify opportunity points, and design a solution based on what people are actually likely to do (Ingegno).

MAKE IT EASY

To make healthy eating behaviors easier to adopt, our intervention focused on removing unnecessary steps and clarifying each action directly. This helps prevent users from getting stuck and stopping at the thinking stage. We also worked to simplify the meal preparation process and reduce mental barriers by adapting behavioral changes to individual preferences. For example, instead of users thinking about what to eat at each meal and calculating nutrient ratios. In addition, we seamlessly integrated the default options into the user's daily life, so that the system becomes the natural choice for the user whenever they think about meals. Finally, we included reflection points to encourage users to review their progress. By comparing current habits to past behaviors, helping users will gain a sense of accomplishment and be more likely to stay motivated.

MAKE IT YOURS

To help users feel that behavior change is personal and feasible, our intervention uses the principle of "make it yours." We begin with a strategy of starting with a small dietary change, such as adding broccoli to mac and cheese. Gradually, we introduce larger changes, where quantitative changes lead to qualitative changes. We also applied a behavioral contract approach to provide easy-to-achieve rewards for choosing healthier groceries. As users engage with these changes, we reward their progress with visual feedback showing how their eating habits have improved. Finally, we also used a form of reflective dialog with campus dietitians to get users to make commitments.

MAKE IT EMPOWERING

To make healthy eating behaviors empowering, our invention helps users achieve feelings of accomplishment and support through various features. One feature is to self-set goals in order to encourage purchasing and consuming healthy foods for health-related benefits aligned with an individual's goals. Another feature is the idea of open-ended tasks, with suggesting changes in eating behaviors without predetermined outcomes, allowing users freedom to explore, interact, and shape their own journey. This can lead to the idea of a "placebo button" where you give the user the illusion of being in control, not as a means of deception but rather leverage their need to feel in control and in turn provide empowerment. Another aspect of empowerment discussed by Mouchrek and Benson (2023) is the concept of purpose, mentorship, and community. With self-set goals, our design helps users to understand why eating healthy is important to them and to rethink the purpose of having a good diet. Integration with a registered dietitian provides a human component of mentorship and guidance. With this feature, users feel empowered by the accountability they hold with someone else, encouraging them to continue making progress and not quit.

FINAL DESIGN IDEA AND PLAN

HOW MIGHT WE

How might we design a digital product for young adults in order to help them understand how to achieve a more holistic diet that fits their busy schedule rather than relying on less healthy options?

AUDIENCE

Young adults (22-27 y/o) develop unhealthy eating habits after graduation by relying on ultra-processed foods and not understanding how to effectively balance their nutrition intake.

BARRIERS

Capabilities: Cognitive Skills, Attention Span, Evaluating Decisions
Opportunities: Resources & Time, Prompts in the Environment, Social & Cultural Norms
Motivation: Habits, Goals, Accountability

- Relying on the convenience on ultra processed food fit their nutritional needs bc they don't understand what the nutritional needs
- Gradual change and exposure rather than instant
- Having our users understand nutritional value
- And then reassuring them that change can happen slow with the correct inputs

DESIGN CRITERIA

Our healthy eating product should help young adults restructure their values to prioritize healthy eating. Healthy eating often falls low on young adults priority list due to overwhelming life factors. Our product should provide a way to visualize how healthy eating impacts all factors of a young adult's life, not just easily recognizable relations like weight and acne (see Figure 14).

Figure 14. A character doodle showcasing the fundamental feature of Gabby. *Created by the authors.*

DESIGN IDEA

During this design ideation process (see Figure 15), we first thought about what we wanted our idea to achieve. We revised all of the research and insights we gained, from our surveys to the interviews, and the behaviors we targeted. An incredibly influential asset to our research was our interview with the Campus Dietitian, Gabby, and the behaviors she has observed and helped with. We really resonated with her approach of small, manageable changes to bridge the gap between knowledge and action and a personalized approach to nutrition to encourage long-term healthy habits. So we started to think to ourselves, how could we bring this knowledge and insights that Gabby gave to us accessible to others?

The idea of a pocket dietitian is designed to be an intuitive service designed to assist young adults battling overreliance on ultra-processed foods as a result of time scarcity through highly personalized, easy to implement recommendations based on their own individual dietary preferences, as well as guided insights on the benefits making healthier choices could compliment their unique lifestyle.

We began developing the brand identity for our service by finalizing key visual elements—such as mascots, UI layout, and color palette (see Figure 16). We then synthesized our research findings and identified three core features, which guided the creation of a storyboard to envision how users would interact with them (see Figure 17).

Figure 15. The group plans out the poster prototype content and layout. Created by the authors.

Figure 16. The team sketches out drawings for the final deliverable. *Created by the authors.*

What sets the pocket dietitian apart from existing services is its human-centered, holistic approach. Rather than just offering generic advice, it focuses on personalized, comfortable strategies that align with each user's preferences, making healthier eating feel attainable and sustainable. This service (Figure 17) doesn't emphasize rigid meal plans or restrictive diets like other services. It features such as a "diet buddy" system, where users receive continuous support and motivation, as well as dynamic meal suggestions based on what's in their pantry or local stores. The service also integrates behavioral principles to help users feel in control of their health journey and nudge them to make gradual changes that fit into their real lives.

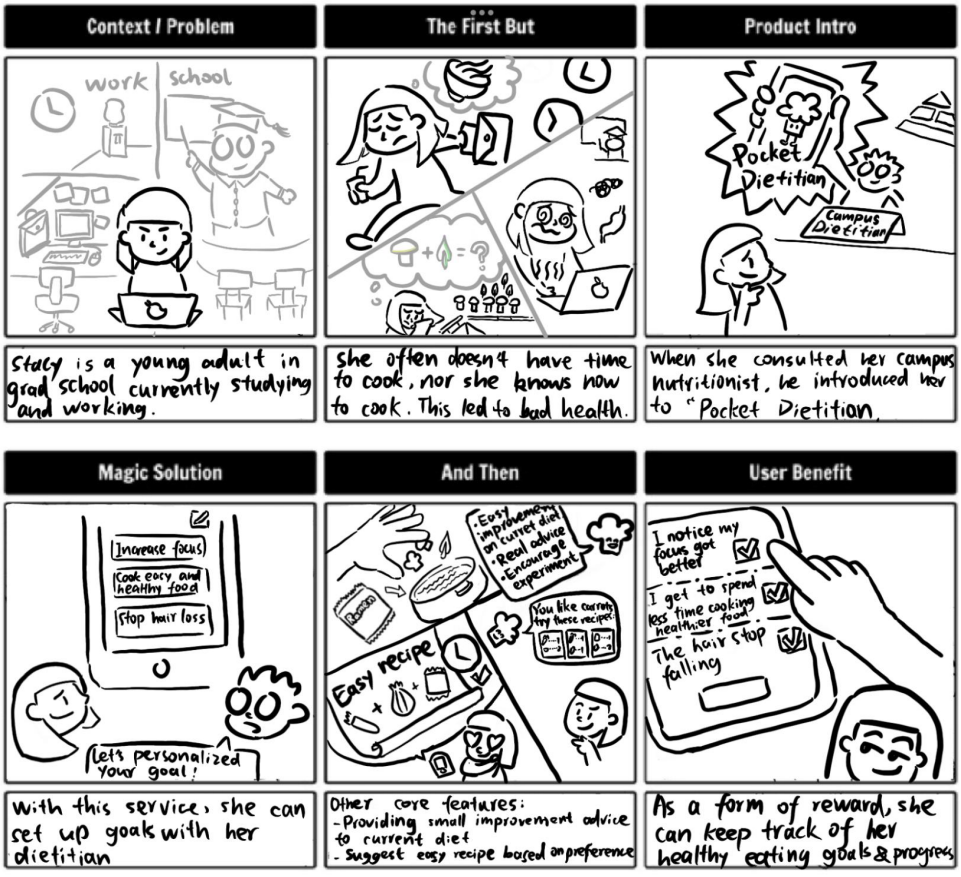

Figure 17. Storyboard sketches of how the design intervention works. *Created by the authors.*

ETHICAL CONSIDERATIONS

Ethics in behavior design are critical in understanding that when harnessing the powerful tool to shape choices and behavior, with great power comes great responsibility to leverage this tool for good. As we progress into the further stages of our project, we must keep some key ethical considerations in mind and see if our goals align with them. Firstly, collective value; what value does our design intervention provide for the community? Can it potentially have a positive influence on a larger group of people? We understand non-communicable diseases like obesity to be on the rise globally and designing to proactively protect people from health risks caused by poor diet would have an indispensable positive influence on larger communities of people. Next is protecting people; What measures can be taken to protect people or communities from our identified harm of poor diet? Are we/our client willing to take these protective measures and capable of doing so? By undertaking the 3rd sustainable development goal of Good Health & Well-being, we are identifying mortality from non-communicable diseases as harms to the community and are willing to design protective measures to combat them. Lastly, human value; Does behavioral intervention help people progress in work or life? Does it improve decision-making? By addressing poor dietary habits as the root cause of eventual non-communicable diseases, our intervention strives to improve decision-making when it comes to diet and help people in all facets of life including work and life.

FEEDBACK & ITERATION

Initial feedback on our prototype revealed that our concept poster needs major improvements in visual clarity and communication of our service's intent to help users. While our project research data and behavioral change plan are clear, we struggled to translate our work into a visually clear conceptual design. All of our feedback participants were initially confused by our design, not knowing what it was exactly beyond the title and that it was doing something to improve eating habits. We attempted to include a wide variety of diagrams and models to support our concept which may have had the opposite effect by muddling the poster with too much text.

Beyond graphic design concerns, the presentation of our service itself could use significant improvement. While we intend to provide our users with an app that helps them improve their eating habits through simple, gradual dietary recommendations, we need to be more explicit in how we present this solution. Participants were excited about the idea and immediately saw how it could apply to their lives but they were unable to understand that through glancing at our poster.

INVENTION

05

WHAT

Meet Gabby! Our Pocket Dietitian solution (see Figure 18) is designed to support young adults (ages 22–26) in reducing their reliance on ultra-processed foods through gradual and slow changes in their diet. The concept of our solution pairs our users with a registered dietitian who helps them set personalized goals, identify their personal dietary setbacks, and receive manageable recommendations. The service aims to gradually improve eating habits with easy-to-implement changes based on individual preferences and lifestyle, making healthier eating more relevant to their background.

Our service is delivered through a mobile app interface (see Figure 20) in combination with personalized support from each student's assigned campus dietitian. Upon opening the app, students are first prompted to input a nutrition-lacking staple they commonly eat—such as instant ramen or microwavable meals. The app's AI then analyzes the staple and recommends simple, actionable "quests" that introduce small improvements with long-term health benefits.

The second key feature is the recipe finder, where students can select ingredients they already have in their fridge. With just a few taps, Gabby—the app's smart assistant—fetches easy-to-follow recipes from online sources based on those ingredients.

To support ongoing growth and maintain commitment, the app also includes a goal-tracking feature. After speaking with their dietitian, students can set personalized goals and monitor their progress. This includes tracking completed quests and reflecting on qualitative outcomes discussed during their sessions.

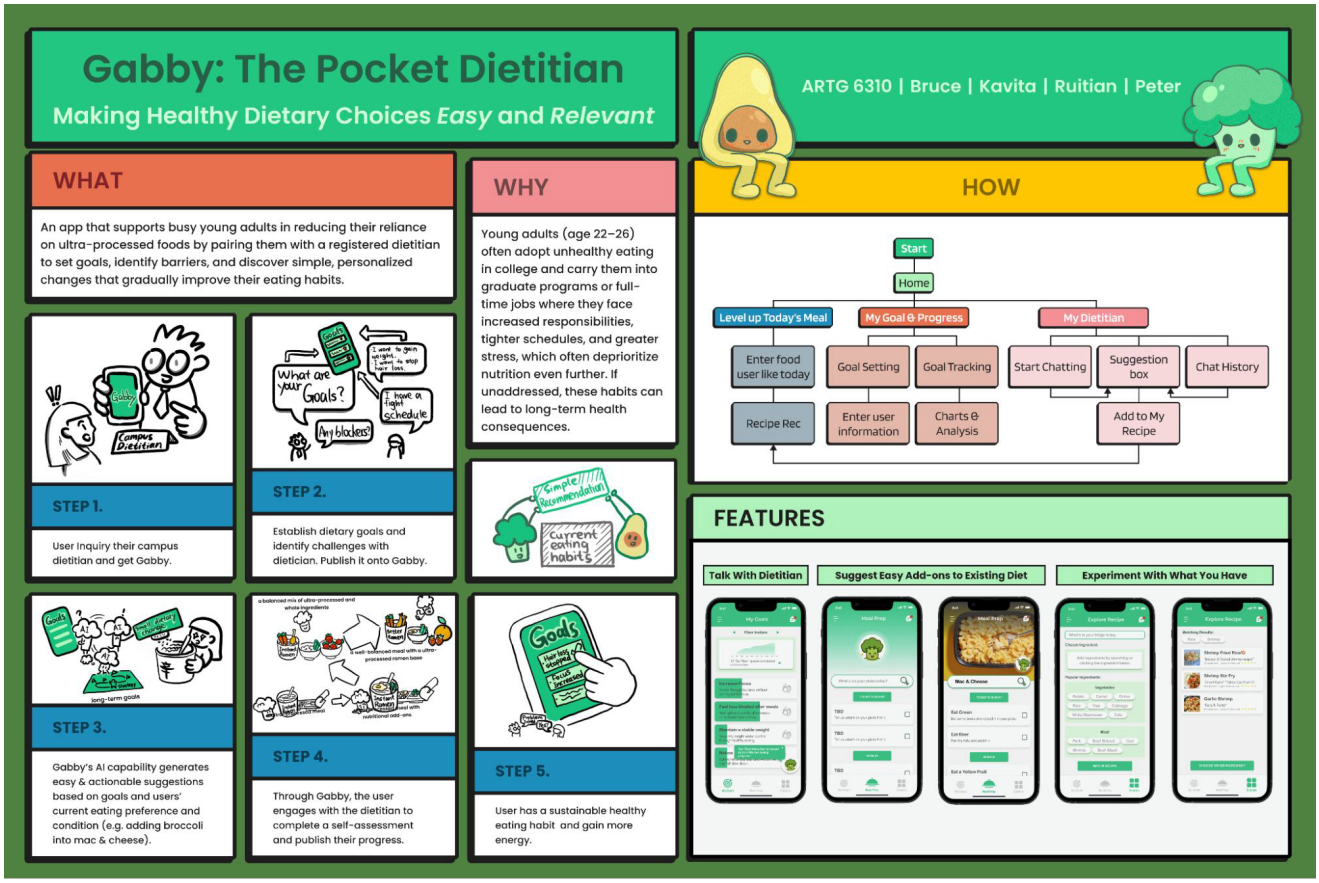

Figure 18. Final poster layout for design intervention. *Created by the authors.*

WHY

Young adults, particularly those transitioning from college to full-time jobs or graduate school, often face increased stress, tight schedules, and limited budgets. Throughout our research, we found that these factors can lead to poor dietary habits that could continue into adulthood. Without structured meal plans, they may rely on fast or ultra-processed foods, neglecting proper nutrition, and such a drastic change can be overwhelming to start with. If left unaddressed, these habits can contribute to long-term health consequences. The Pocket Dietitian aims to target these challenges by providing simple dietary recommendations that mold to the individual's lifestyle and needs with low effort.

HOW

The Operation of the Pocket Dietitian app (see Figure 19) is a light-weight, structured flow designed to guide users step-by-step toward their healthier eating goals. It begins with the Start page, where users can access their Home screen for an overview of their progress. From here, they can choose to Level up Today's Meal and enter a meal they've had to receive tailored suggestions on how to improve it, such as adding more nutritious ingredients.

Users also have the option to focus on the My Goal & Progress tab, where they can set their dietary goals, track their progress over time, and visualize their achievements through Goal Tracking and Charts & Analysis. The Goal Setting feature allows users to customize their goals, and the Charts & Analysis section provides insights into their progress (see Figure 20).

For personalized, real-time support, users can engage with their Registered Dietitian. They can start chatting with their dietitian, view their Chat History, and access a Suggestion Box for more tailored recommendations. Additionally, users can Add to My Recipe to save the advice and suggestions they find helpful, allowing them to build a personalized recipe library. This continuous communication ensures that users feel motivated and empowered as they make sustainable changes to their eating habits.

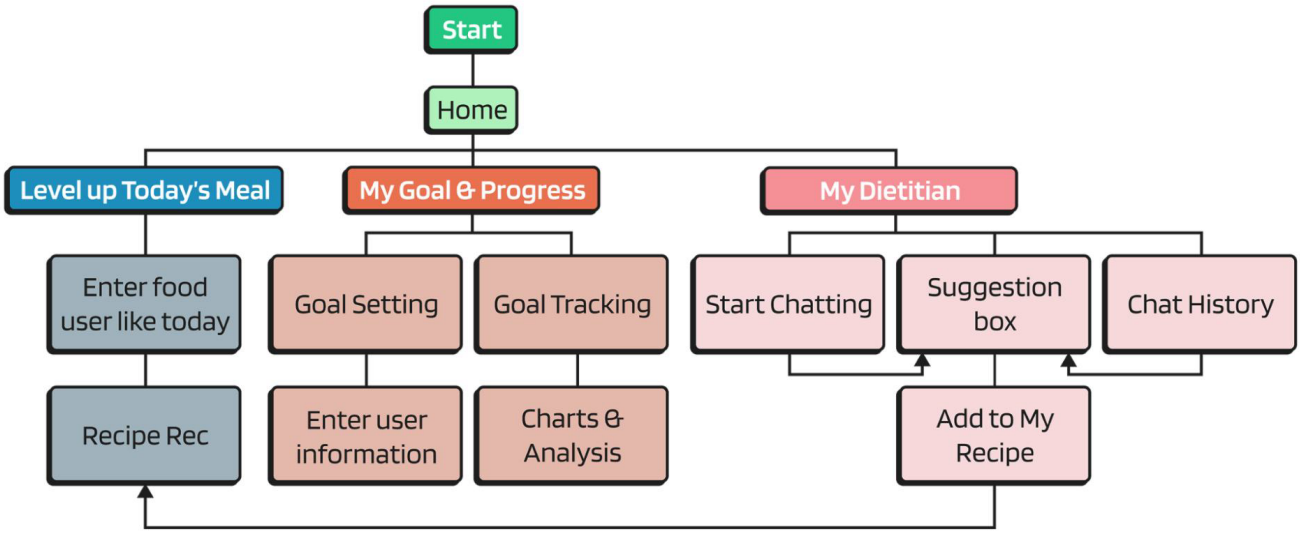

Figure 19. Flow chart showing the different features of Gabby. *Created by the authors.*

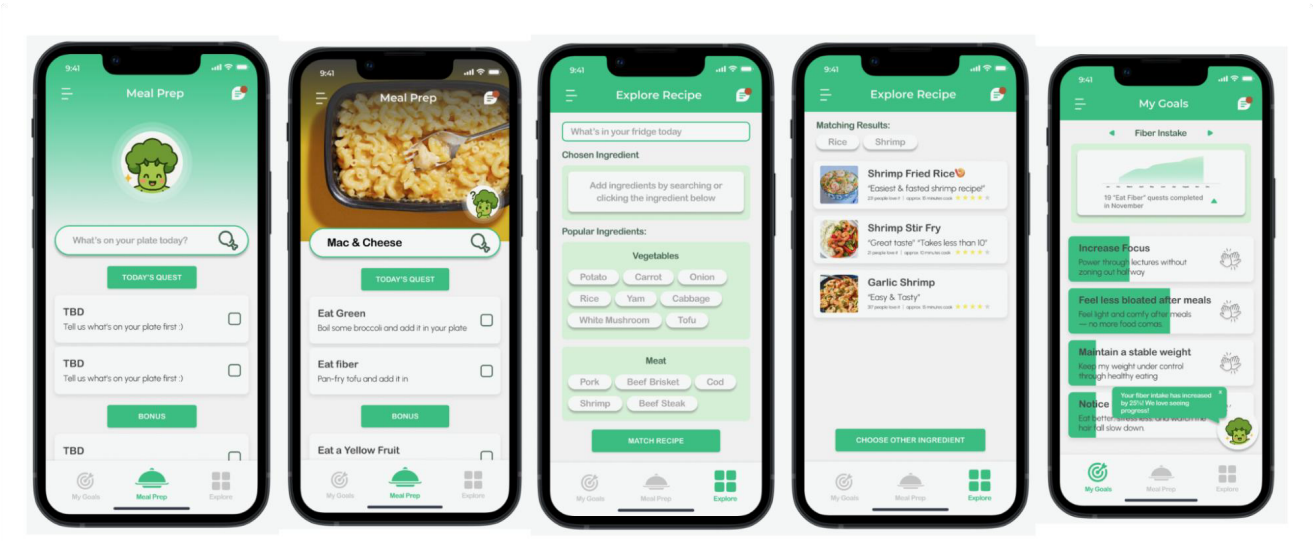

Figure 20. Mobile screen mockups of the app in action. *Created by the authors.*

COURSE INSIGHTS

06

DESIGNING FOR BEHAVIOR

It's important for us to connect our research insights and ideas back to the lessons we have learned during class. Throughout our time in Design for Behavior and Experience, an important concept we talked about were cognitive biases and dragons of inaction. We want to relate 3 dragons back to our research findings, and how they influenced our design process.

PRESENT BIAS

This bias focuses mainly on how people prioritize short-term rewards (e.g., convenience) over long-term health benefits (e.g. balanced nutrition). In our project, this bias is seen when we observe the preference for ultra-processed foods because of the immediate gratification they provide, despite the long-term health consequences. The false perception of the effort or inconvenience of healthy eating makes the immediate payoff of unhealthy foods more appealing.

COGNITIVE LOAD

There is significant cognitive strain involved in meal planning and cooking, which was talked about a lot during our interviews we conducted, and this contributes to decisions that favor convenience over nutrition. This is also related to the Dragon of Inaction called "The Dragon of Overwhelm". The different moving factors when it comes to meal planning, combined with stress and a lack of time, makes it easier to fall back on unhealthy choices. Our design's focus on simplicity and step-by-step guidance tackles this barrier by making healthy eating decisions easier and less mentally taxing.

STATUS QUO BIAS

Even if young adults' current eating habits aren't healthy, these adults are resistant to change. The Dragon of Inaction in this context is "The Dragon of Stability", where habits are these young adults' driving force to even eat in the first step, and this makes it difficult to take the first step toward healthier eating, even when they acknowledge the need to change. Our solution incorporates gradual and small dietary changes to directly target this bias and to make healthier eating a more attainable habit over time.

COLLECTIVE REFLECTION

DEFINE YOUR MOST CHALLENGING MOMENTS. WHAT MADE THEM SO?

Some of the most challenging moments for our group during this entire process were centered around synthesizing and presenting our research and ideas. Consolidating all the work into a clear and concise final poster that could be presented in an easily understandable way, while still encompassing all the necessary details was difficult. It created a moment of self-doubt where we questioned whether the work truly reflected the depth of our efforts, but after compiling the final poster, it was evident that the work was presented well. Another significant challenge came during the solution development phase, when we saw more problems than viable answers. The turning point came when we spoke with Gabby, the Campus Dietitian, and her personalized approach to nutrition helped us identify a promising direction: translating Gabby's strategies into a digital format. This conversation really showed our group the importance of consulting experts to show actionable insights and refine their solution to address key barriers in a more scalable and impactful way.

DEFINE YOUR MOST POWERFUL LEARNING MOMENTS. WHAT MADE THEM SO?

Some of our most powerful learning moments throughout their process came a lot from data collection, particularly when the survey results were validated by Gabby in the final interview. This validation made us feel that we were solving a real, pervasive issue, providing motivation and clarity as they moved forward with their design.

Another powerful moment occurred during the creation of the user journey map, when we realized that many young adults get caught in a harmful negative feedback loop with their eating habits. We started to understand that in order to disrupt this cycle, interventions needed to take place during the "no energy to cook" phase. Now, our solution feels highly relevant to real-world problems, and we recognize that societal and systemic factors might limit its overall effectiveness.

WHAT WOULD YOU SAY IS THE MOST IMPORTANT THING YOU LEARNED?

The most important takeaway for our group was realizing the power of the design process—trusting it, continuing to iterate, and creating solutions slowly. We also learned that many decision-making behaviors, such as avoiding healthy eating, can be traced back to cognitive biases, and paying attention to these biases is key to developing human-centered and impactful solutions.

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07

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