# The Possibilities of Reducing Food Choice to Improve the Performance of College Foodservices

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**ABSTRACT**

**Background** College administrative and management leaders, foodservice personnel, and student residents value social, nutritional, financial, and environmental sustainability in their dining expectations. Menu choice reduction looks promising as a strategy to achieve these goals. However, foodservice research about dominant attitudes across these stakeholders is limited.

**Objective** To identify qualitative views from all stakeholders about choice reduction to ensure that any changes to the meal service are not to the detriment of consumer satisfaction.

**Design** A comprehensive list of 74 statements representing the spectrum of attitudes surrounding choice was generated by searching a variety of resources, including academic literature and Internet sites, and by conducting semistructured interviews with stakeholders. A final set of 42 statements resulted from researcher scrutiny for optimum balance, clarity, appropriateness, simplicity, and applicability. A new sample of participants was then asked to sort these 42 statements into a normal distribution grid from "strongly disagree" to "strongly agree."

**Participants/setting** A purposive convenience sample of stakeholders (staff n=5 and residents n=4) was used to identify statements about choice reduction. A second sample of stakeholders (staff n=6 and residents n=29) were recruited to sort the final 42 statements.

**Statistical analyses performed** Q methodology analysis techniques were used. This involved conducting a by-person factor analysis, using the centroid factor extraction method because of the permissiveness it allows for data exploration. A varimax factor rotation to enhance interpretability of the results identified shared viewpoints.

**Results** Three dominant viewpoints toward the possibility of choice reduction in the meal service were identified. Factor 1 was "health driven" (in which healthiness was paramount). Factor 2 was "variety seekers" (in which choice had instrumental value). Factor 3 was "choice lovers" (in which choice had intrinsic value).

**Conclusions** Although participants could see a number of benefits of choice reduction, strong attitudinal barriers existed toward adopting choice reduction initiatives. These barriers need to be overcome to avoid dissatisfaction with the foodservice should choice reduction measures be implemented.

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COLLEGE ADMINISTRATIVE AND MANAGEMENT leaders, foodservice personnel, and student residents value social, nutritional, financial, and environmental sustainability in their dining expectations. Foodservice managers are seeking ways to improve consumer satisfaction and improve their overall operations performance, and menu choice reduction looks promising as a strategy to achieve these goals. Consumer choice is generally viewed as being desirable, and, surprisingly, increasingly restaurant operators are downsizing menus or offering only one choice. Restaurant managers benefit from this practice because chefs can focus on specialized entrées, reduced food costs, standardized food quality, and avoidance of food waste. Ultimately, these measures have the potential to increase profit margins.

## SOCIAL AND NUTRITIONAL SUSTAINABILITY

O'Mahony and Hall[1] provided a comprehensive review of key determinants that influence choice. These include culture, taste, social status, health and nutrition, food trends, globalization, marketing, convenience, religion, and sex. Another factor determining food choice, though much less explored, is the amount of choice that consumers have. Core theories on decision making suggest that people are better off with increased choice.[2] Consumer satisfaction with foodservice

choices is predictive of feeling greater satisfaction compared with that of consumers who have no choice.[3] In contrast, historical evidence indicates that more choice does not automatically result in more satisfaction.[4,5] Experimental studies show that when individuals have to make a choice from an extensive choice set, they tend to be less motivated to choose and less willing to buy, and they feel less satisfied with their choice.[4] Various reasons explain why more choice does not lead to more satisfaction. According to Schwartz,[5] too much choice produces paralysis rather than happiness. Consumers may not look forward to having to decide from a large and varied assortment. As choice increases, consumers are overloaded with available options, which could have a demotivating effect on their purchase intention.[4] Individuals may try to avoid having to make a decision by procrastinating, and when consumers finally make a decision, they more often regret the selected option.[6] Individuals also may experience anxiety at the time that they make decisions. Despite the increasing number of research publications in economics, psychology, and marketing that report the effects of too much choice, specific boundary conditions of the effect are still relatively unknown. For example, how many choices cause the too-much-choice effect?[2] As well as a range of psychological effects, too much choice could potentially also lead to overeating. No studies, however, appear to make a direct link between too many choices and overeating. Studies have shown that increasing the variety of a food can increase the consumption volume of that food and that even simply increasing the perceived variety of an assortment is enough to increase consumption.[7]

## FINANCIAL SUSTAINABILITY

Colleges focus on the best interests of their residents by planning menus to meet their health and social needs. Food choices are most often based on food availability, cost, food safety, and nutritional value. Cost recovery is one of the key goals of foodservice. A well-known successful strategy to satisfy consumers is to empower them with choice or, most importantly, the perception of choice.[8] However, providing choice has associated costs[8]; choice reduction could potentially lead to financial savings.

## ENVIRONMENTAL SUSTAINABILITY

The current food system is not increasingly acknowledged to be sustainable, and additional efforts are needed to reverse its damaging ecological impacts.[9] Some environmental advocates argue that not only are major changes needed in the food system, but that individuals should modify their food choices and become more ecologically conscious to support a more sustainable food supply.[10] In recent years, sustainability experts, especially those in food policy, have started to promote benefits of choice reduction from an environmental perspective and have espoused the need for more choice editing to rid the market of environmentally damaging products.[11] By reducing choice, the burden of responsibility is shifted from consumers further upstream (eg, to foodservice managers). Social consciousness and environmental stewardship has increased on college campuses. For instance, across the United States, a growing number of colleges and universities purchase fair-trade coffee, use renewably generated electricity, and employ tray-less dining to reduce food waste.[12]

## RESEARCH CONTEXT

Although the reported literature indicates potential benefits of choice reduction, potential exists for attitudinal barriers and unintended effects. For example, choice restriction could produce unintended effects such as noncompliance[13] in a restricted-choice environment, and a ban on soft drink vending machines in schools could result in students bringing soft drinks from home. Boomerang effects are another potential consequence[14] in both restricted and unrestricted environments, where a control could make individuals start to value restricted behaviors more. Therefore, first establishing dominant stakeholder attitudes toward choice is important to ensure successful implementation of choice reduction initiatives. This research explores stakeholders' attitudes and perceptions around menu choice reduction and the possible circumstances under which less food choice is acceptable. More specifically, the question guiding this study was, "What does choice mean to college staff and residents at meal times?"

In the context of this study's college foodservice, "choice" refers to hot and cold options on the main menu, variety of salads on the salad bar, and a range of drinks at beverage stations. In addition, "choice" refers to whether a tray is used. The study focuses on types of food offered at meal times (eg, sandwich fillings, salads, beverages) that could potentially be reduced, as well as use of food trays. To investigate attitudes to menu choice reduction, Q methodology was chosen, because it provides a means to study individuals' viewpoints. Q methodology is a mixed-methods research approach that uses factor analysis to examine individuals' shared viewpoints that reflect their underlying beliefs and values about a specific issue.[15-17] The correlational methodology has its origins in psychometrics and is a quantitative-qualitative hybrid. Q methodology contrasts with R methodology, the more traditional correlational research method used to measure attitudes, in both its data collection methods and analyses. The biggest distinction between the Q and R approaches is that in R research, respondents are subjects and questions are variables. In Q research, subjects and variables are inverted so that the subjects of the study are the statements and the variables are the people who do the sorting. Thus, in this inverted factor analytic study, the persons working in or eating in the foodservice are the variables. These load onto emergent factors that represent shared views on reducing choice in the foodservice. This method allows the researcher to systematically explore a variety of viewpoints and identify key areas that overlap or differ.[18]

## MATERIALS AND METHODS

The University of Otago Ethics Institutional Review Board approved the study protocol, and all participants provided written informed consent. The case study college, which housed 250 first-year university students, provided a buffet-style dining service (tray system) consisting of three daily meals.

In brief, a Q methodology study involves defining the research question and generating a comprehensive collection of statements about the topic. This is followed by participants

sorting a selected sample of these statements into a normal distribution grid, then analyzing and interpreting the evidence to produce a number of shared perspectives about the issue. Successful implementation of choice reduction initiatives will require buy-in from all college stakeholders (college administrative and managerial leaders, foodservice personnel, and residents), understanding all viewpoints was deemed important. Group memberships are rarely a key determinant in Q methodology, and proposing that this might be the case in advance of analysis, given the exploratory nature of the method, is not good practice.[19] As such, the Q study was designed to allow individuals to self-categorize with a shared viewpoint about choice reduction rather than to test stakeholder group differences. The second author (J. L.) was responsible for the data collection activities. She was trained in qualitative interviewing techniques and in conducting Q sort activities before the commencement of the study. Practice sessions were conducted.

## DEVELOPMENT OF POTENTIAL DISCOURSE STATEMENTS

The first step in a Q methodology study is the collection of relevant ideas and opinions that relate to the research question. A variety of resources, which included academic literature, interviews, editorials and commentaries, Internet sites, and personal web logs, were accessed. In addition to the usual requirements of Q methodology, collecting primary data about choice reduction in foodservices was deemed necessary at this early Q set development phase, given the newness of this topic and lack of published literature. A wide range of opinions on the possibility of menu choice reduction was gathered in nine one-on-one semistructured in-depth interviews (ranging from 30 to 60 minutes) with college staff (n=5) and residents (n=4). Maximum diversity was achieved by use of a purposive convenience sampling technique to identify participants. A list of statements about choice and ideas about choice reduction initiatives were derived from participant transcripts, and these were combined with other statements gathered from the literature search. A total of 74 statements resulted.

### Identifying the Final Statement Set

Five individuals (the three authors, a Q methodology academic expert outside the project, and a student unfamiliar with topic and method) read through the 74 statements to ensure optimum balance, clarity, appropriateness, simplicity, and applicability. A reduced set of 42 statements resulted. The statements that were not included in the final Q set to be sorted by participants (n=32) are listed in Figure 1. The final Q set statements (n=42) are listed in the Table.

An 11-point (−5 to +5) normal distribution grid was used for sorting to generate a Q-set of 42 statements in accordance with the best practice guidelines from the literature.[19] This configuration (Figure 2) was provided to participants to help them sort their statements from most agree (5) to most disagree (−5). The middle column on the grid (0) represented neutral opinions (neither disagrees nor agrees).

### Participant Statement Sorts

The same nine participants who were interviewed in step 1 also completed step 2. A purposive convenience sampling

**General choice**

1. Choice stops me from getting bored
2. I don't care about whether there's much choice
3. I need a lot of choice
4. There are too many choices on the menu
5. I prefer choice over no choice
6. I'm not used to having choices
7. I'm used to having choices when I live at home
8. I'm never satisfied with the choices given
9. I'm satisfied with the choices given
10. I'd be happier in another college, as I've heard that they have a wide selection to choose from at meal times
11. I feel helpless if I'm not given a choice
12. Offering a wide selection is important
13. Choice is rewarding
14. Choice is desirable
15. I choose what everyone else is eating

**Choice and habit/culture**

16. My choices are based on my habits

**Too much choice**

17. Too many choices takes me a long time to decide what to have
18. Too much choice leads me to make simple, snap judgments just to avoid the hassle of wading through other options
19. There are too many choices
20. There is too much choice to make an easy decision

**Increase in choice**

21. More choice may contribute to an increase in food waste
22. More choices would satisfy my own particular wants
23. More choice results in quality improvement
24. More choice results in cost increases
25. More choice means more time is required to decide what to have
26. More choice means I have to make difficult decisions
27. I expect to have many choices all the time
28. I have more choice than what I need
29. I believe more choice would increase satisfaction

**Choice and health**

30. I tend to eat more at the college than I would at home

**Possible targets for interventions**

31. I expect seconds
32. I choose whatever I like at meal times

**Figure 1.** Remaining unused original statements (those not included in the final Q set selection).

**Table.** Factor arrays for reducing food choice Q sample statements, showing statements by factor (n=3) using centroid analysis and varimax rotation with grid position

| Statement | Statement Grid Position | | |
|---|---|---|---|
| | Factor 1 health driven | Factor 2 variety seekers | Factor 3 choice lovers |
| 1. Too much choice makes it hard to decide what to have | 0[a] | −1 | −4 |
| 2. Having a wide variety of choice builds expectations that there will always be a wide variety of choice | 2 | 3 | 3 |
| 3. I feel overwhelmed when there's more than one choice | −3 | −4 | −4 |
| 4. I don't need everything that's offered | 3 | 4 | 4 |
| 5. The more choices I have, the more satisfied I am | −2[a] | 1 | 1 |
| 6. I sometimes regret the meal choice I made | −1 | 0 | −2 |
| 7. There are too many choices on the menu | −3[a] | −4 | −4 |
| 8. I don't have a choice when I am living at home, so I really enjoy the wide choice here | −2[a] | 4 | 2 |
| 9. Choice gives me freedom to choose what I want | 2 | 3 | 5[a] |
| 10. I considered the quality of the meals before choosing this college | 2 | 1 | 3 |
| 11. I choose seconds every day, because I've paid college fees and want my money's worth | −5 | −2 | −3 |
| 12. I'm making the most of the wide variety in menu choice before going flatting[b] | 0 | 4[a] | 1 |
| 13. I choose seconds so I don't get hungry | −4 | −2 | −1 |
| 14. Each choice reinforces my perception of control | 0 | −1 | 1 |
| 15. I prefer to make my own choices rather than having someone else make them for me | 2 | 3 | 4 |
| 16. My choices are based on how I'm feeling at the time | 1 | 2 | 1 |
| 17. Being able to choose what I want at meals influences my subsequent mood | −1 | −2 | 3[a] |
| 18. Knowing I'll be able to choose my meal gives me something to look forward to | −1 | 0 | 5[a] |
| 19. Having a wide choice doesn't make any difference to my enjoyment of a meal | −2 | −2 | −1 |
| 20. At the start of the year I thought there were too many choices, but now I'm bored with them | −3 | −5 | −1 |
| 21. Choices I make are based on my background/cultural beliefs | 3 | −3 | 0 |
| 22. Reducing choice could reduce food waste | 4[a] | 2[a] | −2 |
| 23. Reducing choice reduces my food consumption | 1[a] | 0 | −1 |
| 24. Because of the huge variety of choice available, I tend to take more than I need | 5 | 5 | 0 |
| 25. Reducing choice would make my meal decisions easier | 1 | 0[a] | −3 |
| 26. Reducing choice could create negative perceptions about the college | 1[a] | 2 | 3 |
| 27. Reducing choice would be disappointing | −1[a] | 3 | 4 |
| 28. Reducing choices contributes to environmental sustainability | 0 | 0 | 0 |
| 29. Making choices is hard, so I choose what my friends have | −5 | −3 | −5 |
| 30. My friends influence me to have seconds | −4 | −3 | −3 |
| 31. The best way to choose is to ask friends/staff what they'd recommend | −2 | 0 | 0 |
| 32. I feel confident in making the healthier choice with the food provided | 3 | −1 | 2 |
| 33. I feel the need for the foodservice to offer low-energy choices | 0 | 1 | −1 |

(*continued on next page*)

**Table.** Factor arrays for reducing food choice Q sample statements, showing statements by factor (n=3) using centroid analysis and varimax rotation with grid position (*continued*)

| Statement | Statement Grid Position | | |
|---|---|---|---|
| | Factor 1 health driven | Factor 2 variety seekers | Factor 3 choice lovers |
| 34. The choices I make depend on the healthiness of the meal | 5[a] | −1 | −2 |
| 35. I expect to have a huge selection of salad ingredients even if it is not seasonal | −1 | −3 | 0 |
| 36. I would not mind having the vegetarian option once a week | 4[a] | −1 | 1[a] |
| 37. I prefer not to have a choice; I'd rather there was just one dish on the menu | −3[a] | −5 | −5 |
| 38. I like a meal tray because I can take more food | −4 | 1[a] | −2 |
| 39. I am willing to try different dishes based on vegetable protein | 4[a] | −2[a] | 2[a] |
| 40. I'll try new dishes when my friends recommend them | 1 | 1 | 0 |
| 41. I enjoy having the choice of toast and fruit throughout the day | 3 | 5[a] | 2 |
| 42. I believe that the wide variety of choices available contribute to weight gain | 0 | 2 | −3 |

[a]Indicates a distinguishing statement for a particular factor (statements the factor ranked differently from other factors at a significance level of $P<0.01$). Statements with extreme scores are those ranked −4 or 5 "Strongly disagree" and +4 or 5 "strongly agree." 0 represents the midpoint and so represents a neutral reaction to the statement ("neither disagree nor agree"). Shaded boxes are shared viewpoints (statements that had consensus across two or all three factors at a significance level of $P<0.01$). A centroid factor analysis was used to run the factor analysis, and this was followed by a varimax rotation of the factors to ensure that individuals tended to associate with just one factor.
[b]"Flatting" refers to independent living, generally in the context of young people who share a household with friends.

strategy, combined with a snowballing technique, was used to recruit additional participants. Q methodology studies are designed to sample from a universe of perspectives rather than from a population of people, which means that representativeness does not depend on a large number of participants. Rather, it is about finding participants who have a defined viewpoint to express, and more importantly, those whose viewpoint matters in relation to the subject being studied.[20] A range of stakeholders (position within the college, sociodemographic diversity) was recruited to complete the Q sort activity (n=6 staff; n=29 residents). The Q sort activities were done individually, and the post-sort interviews were transcribed and analyzed on a continuous basis, with the researchers continuously building on knowledge collected from each post-sort interview. In the Q session, participants were asked to read the 42 statements and place the cards onto the appropriate place on the sorting grid (Figure 2). The Q sort process and post-sort interviews ranged from 7 to 15 minutes. Questions such as "[with reference to the statements ranked at the extremes] What do these statements mean to you?" and "Why do you feel so strongly about these statements?" were asked. Interviews were audio-recorded to allow the researcher to accurately transcribe what was said. Purposive sampling typically relies on the concept of "saturation," or the point at which no new information or themes are observed in the data.[21] At this stage, the researcher observed that participants were not sorting the Q set in significantly different ways, nor was new information emerging in the post-sort interviews about why participants had sorted the cards in the way that they did. Data saturation was reached after 35 respondents (n=6 staff, n=29 residents) had completed the Q sort activity.

### Factor Analysis Interpretation with Qualitative and Quantitative Results

A free program (PQMethod Software, version 2.35, 2002) was used for the factor analysis. This showed similarities between participants' sorting of the statements. Participants with similar rankings of statements loaded significantly on the same factor, revealing a pattern of statements that defined their subjective views.[20,22] Centroid analysis, based on the commonality among Q sorts, was chosen as the method of factor extraction. Experienced Q methodologists favor this method because of the permissiveness that it allows for data exploration.[16] After the factor extraction, a varimax factor rotation was carried out. This rotation attempts to rotate the factors so that individuals tend to be associated with just one factor, and it simplifies findings and enhances interpretability of results.[16] Qualitative information from post-sort interviews was transcribed then thematically analyzed within each factor so it could be used to help explain the viewpoint of each factor. The three factors found in this study (health driven, variety seekers, and choice lovers) cannot be generalized to the wider population with any statistical certainty. The focus of the research is on the content of the factor (the range of views about choice reduction) and not the characteristics of the participants.

## RESULTS

Three factors emerged from the factor analysis, representing three dominant viewpoints (Figure 3). They explained 42% of the total variance between all 35 sorts. This is considered a sound solution, because Q methodology recommendations state that factors should capture a combined variance of over 40% across factors.[16]

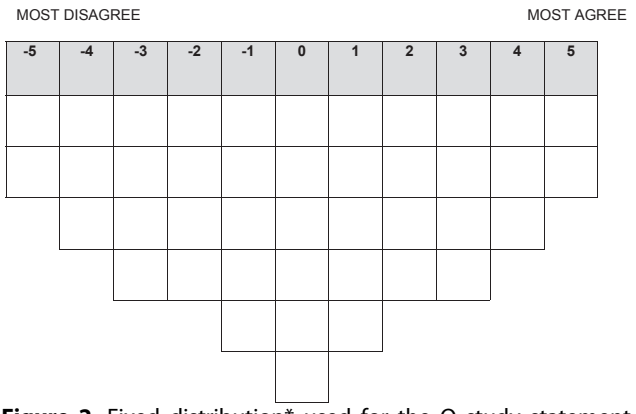


**Figure 2.** Fixed distribution* used for the Q study statement sorting score sheet. *Sorting pattern=2, 3, 4, 4, 5, 6, 5, 4, 4, 3, 2. The distribution of the grid was used to guide selection of the final 42 Q set statements ensuring an optimal balance of both positive and negative statement about choice reduction. Each participant sorted the set of statements from most agree (5) to most disagree (−5) according to the column number given at the top of the figure in gray scale. The middle column on this grid (0) represents neutral opinions (neither disagree nor agree). The Q sorts of participants sharing a viewpoint were merged, using *Z*-scores (how a viewpoint placed statements compared with other viewpoints) to produce a single Q sort grid representing the best fit of how a viewpoint collectively sorted statements.

Each factor was named based on a thematic summary of the distinguishing statements and extreme scores (Table).

In the factor descriptions that follow, participants' comments from the Q activity post-sort interviews are intertwined with Q sort results.

### Factor 1—The "Health Driven" (Healthiness Is Paramount and Some Choice Could Be Sacrificed If It Leads to Better Health)

Participants with this perspective mildly supported the suggestion of decreasing choice. The explanation given for this was that resources could be put toward making better-quality meals. They also recognized that decisions at mealtimes would be made easier and that there would be less food waste. The health-driven group agreed that the healthiness of the meal strongly determined the choices that they make. Of all of the three factors, they were the most willing to try different dishes based on vegetable protein, have a vegetarian option once a week, and forgo dining trays. This group's post-sort interviews showed that a perceived benefit of choice reduction would be less food consumed, and therefore it would be healthier for them. They were undecided regarding whether too much choice makes it hard to decide what to have, and they held neutral views toward the statement that they are enjoying choice now before leaving college living. They disagreed slightly that choice at mealtimes gave them something to look forward to. Although a few expressed concerns that reducing choice could create negative perceptions about the college, most of the health driven group believed that foodservice staff would have the expertise to maintain meal quality if choice were reduced. Despite the somewhat pro-choice-reduction tendencies, they also disagreed that too many choices were currently available on the menu.

### Factor 2—The "Variety Seekers" (Choice Has Instrumental Value because It Allows Variety in the Diet)

Participants in this factor enjoyed having choice because it allowed them access to a variety of foods throughout the day and a variety of options at mealtime. In this sense, choice appeared to have instrumental value to this group. Participants very strongly disagreed that there should just be one dish on the menu and that currently too much choice was available. Not surprisingly, reducing choice would be disappointing despite it not being something that they necessarily looked forward to. The variety seekers wanted to make the most of the wide variety available in the menu before leaving college living. In particular, they enjoyed having the choice of toast and fruit throughout the day, because they thought that these options would probably not be available in the years following leaving the college. The variety seekers reported that they felt the need to try one of everything, which resulted in them taking more than needed. A number of participants holding this viewpoint had gained weight. Despite agreeing that the more choice available the more they would experiment and try new foods, the variety seekers were the least willing of any factor group to try meat alternatives or meat-free days. The variety seekers did agree that reducing choices could reduce food waste.

### Factor 3—The "Choice Lovers" (Choice Has Intrinsic Value and Is Welfare Enhancing)

Choice had intrinsic value for participants in this factor. They enjoyed the freedom of being able to choose what they wanted and disagreed that too much choice made it difficult to decide. Knowing that they would be able to choose their meal gave them something to look forward too. They did not think that too many choices were available on the current menu. They were very strongly against the idea of having just one dish on the menu and stated that any reduction in choice would be disappointing.

### Shared Viewpoints (Consensus Statements)

Consensus statements are relatively free of opposition and, therefore, are a good place to start to consider where progress might be made. All three factors expressed neutrality toward the statement "Reducing choice contributes to environmental sustainability." Both factor 2 (variety seekers) and factor 3 (choice lovers) strongly agreed with the statements "I don't need everything that's offered" and "Having a wide variety of choice builds expectations that there will always be a wide variety of choice." Both factors 1 (health driven) and 2 (choice lovers) disagreed that, "Having a wide choice doesn't make any difference to my enjoyment of a meal." However, these factors strongly agreed with the statement, "Because of the huge variety of choice available, I tend to take more than I need." These consensus statements provide insights for decision makers (such as the foodservice managers and college heads) to discover policy recommendations that are consistently valued by individuals in the three groups.

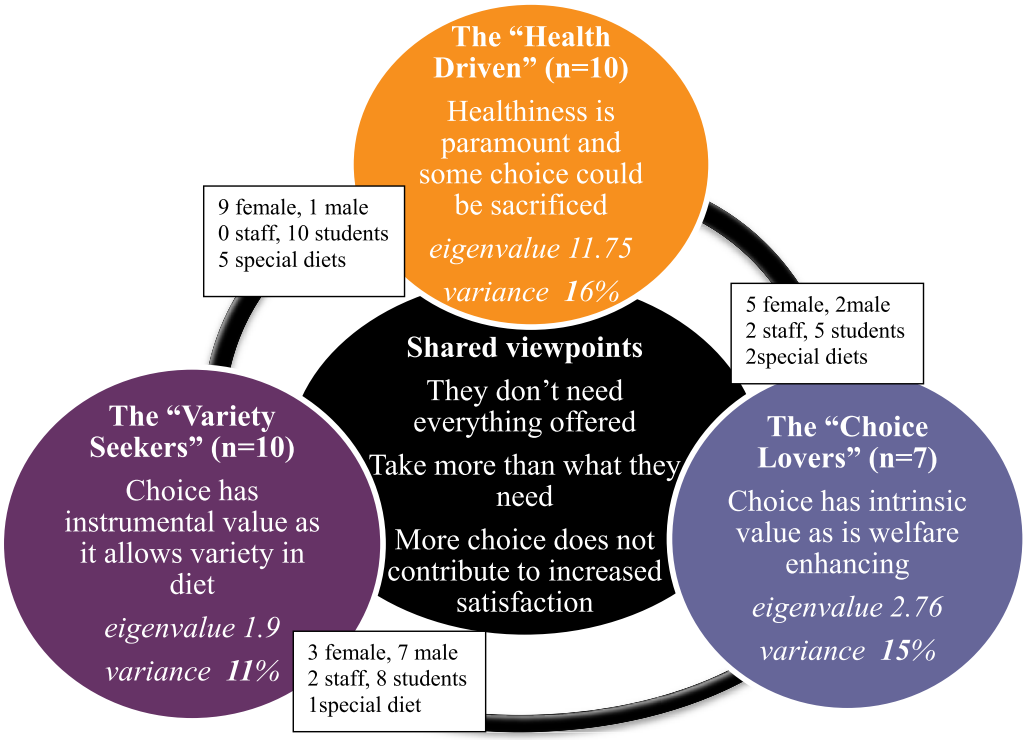


**Figure 3.** Typifying the description for the three factors. These three factors explained 42% of the total variance between all 35 sorts.

## DISCUSSION

Choice reduction is not a new phenomenon, and many college foodservices will have already introduced a range of choice reduction initiatives (although until now they have not been referred to using this specific terminology). An example of a choice reduction initiative that had already been made at the case study college before this research project commenced was reducing the number of days dessert is served each week. This change has reportedly both contributed to financial savings for the college and had nutritional benefits for the residents. This change was implemented between academic years, so the foodservice consumers were unaware that the change had been made at all. Given the overwhelmingly negative reaction to choice reduction initiatives expressed by all three of the factors identified in this study, this suggests a useful way to implement some of the more controversial changes.

Choice reduction may be a cost reduction strategy for the foodservice. Although the current choices allow people to experiment and try out new foods, factor 1 (health-driven) and 2 (variety seekers) participants agreed that fewer options could result in less waste. The healthiness of food choices and the role of foodservice in influencing these are issues at the forefront of the obesity debate. See, for example, Huneke and colleagues'[23] article on service employees' appearances' effect on the healthiness of food choice. As demonstrated by the results of the current study, one way to potentially influence healthy eating is to reduce options available, to reduce overconsumption.

These research results showed reluctance among stakeholders, both staff and residents, to reduce choice. Participants who loaded onto all three factors disagreed that too many choices were currently on the menu and that just one dish on the menu was preferable. These are the types of attitudinal barriers to adopting choice reduction initiatives that will need to be overcome to avoid dissatisfaction with the foodservice if choice reduction initiatives are implemented. However, because of the many potential benefits that choice reduction brings, it makes sense for college managers to not be deterred because of these attitudinal barriers. Because choice reduction is a controversial topic, one must think strategically on how choice reduction initiatives can be framed to ensure their successful adoption in the future. Choice reduction could be more positively promoted as "specialization," or refocusing on quality (rather than quantity). Although all of the factors shared a neutral view that reducing choice could contribute to environmental sustainability, participants believed that they did not have enough knowledge about how choice reduction may contribute to benefiting the environment. Whitehair and colleagues[24] investigated consumer attitudes toward food waste in a university college dining hall and found that increasing awareness of food waste promoted behavior change and the sustainability of the foodservice. An educational campaign that informed both foodservice personnel and residents about the benefits of a choice reduction program would be a useful place for colleges to start understanding the potential advantages of less choice. Informing staff first is important, because reducing choice ultimately puts more responsibility onto foodservice personnel to make good decisions on consumers' behalf. This power of foodservice workers to influence what is served means that they

must have adequate skills and knowledge to ensure the health impact of the institutional food is adequate as well as to ensure that the environmental impacts are sustainable.[25]

## CONCLUSION

Choice reduction is a controversial topic because individuals enjoy having the freedom to choose. This exploratory research into choice reduction in foodservice is new in the academic nutrition and dietetic literature. In conclusion, the introduction of choice reduction initiatives could contribute to improving college foodservice dining in terms of quality, nutritional status, and environmental performance. A limitation of the study is a lack of focus on how reduced choice might affect expectations for cost recovery. Although increasing interdisciplinary literature is available on the consequences of choice reduction in terms of social, nutritional, and environmental sustainability benefits, the effect of reduced choice on an operation's profit has been largely neglected. Reduced choice could contribute to decreased labor cost (eg, preparation time) and food cost (eg, enhancing the benefits of bulk purchasing). However, to date, no research has been reported to support this, and further research in this area is required. A number of tools are available to foodservice managers that would allow them to assess the success of choice reduction interventions. For example, menu analysis techniques could help quantify how any reductions in the menu affect the foodservice's cost recovery.[26] This research has provided a foundation on which to build further research on choice reduction within the wider foodservice sector. To generalize the study data, further research could be done, such as conducting a representative survey to quantify the prevalence of the individuals who recognize the benefits of choice reduction. Another avenue worthy of pursuit is using a Q methodology pre-intervention, post-intervention study design[27] to determine whether perceptions are transformed after the implementation of a choice reduction initiative.

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