


NutriQuest: A Serious Game for Improving Eating Habits in Young Adults

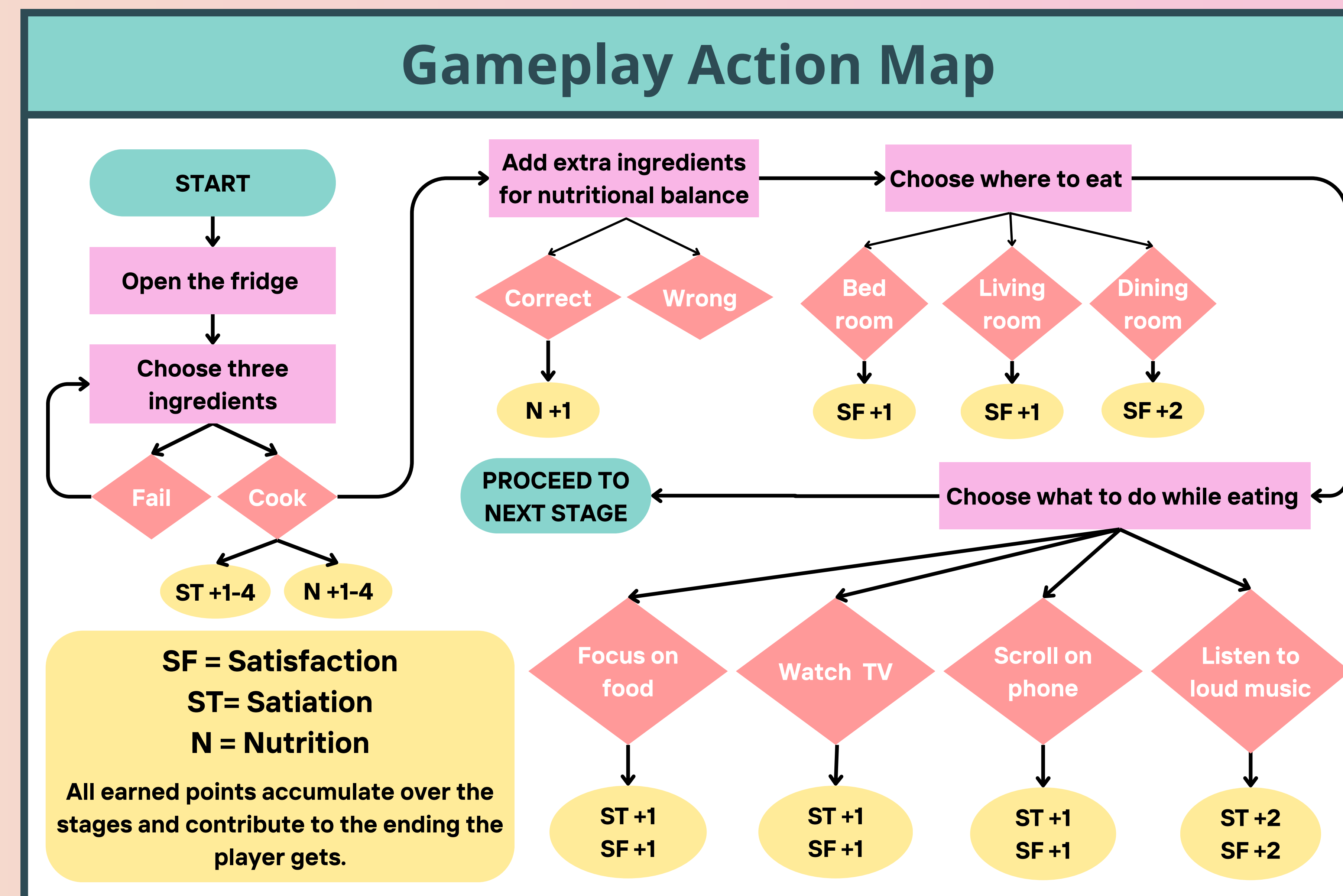
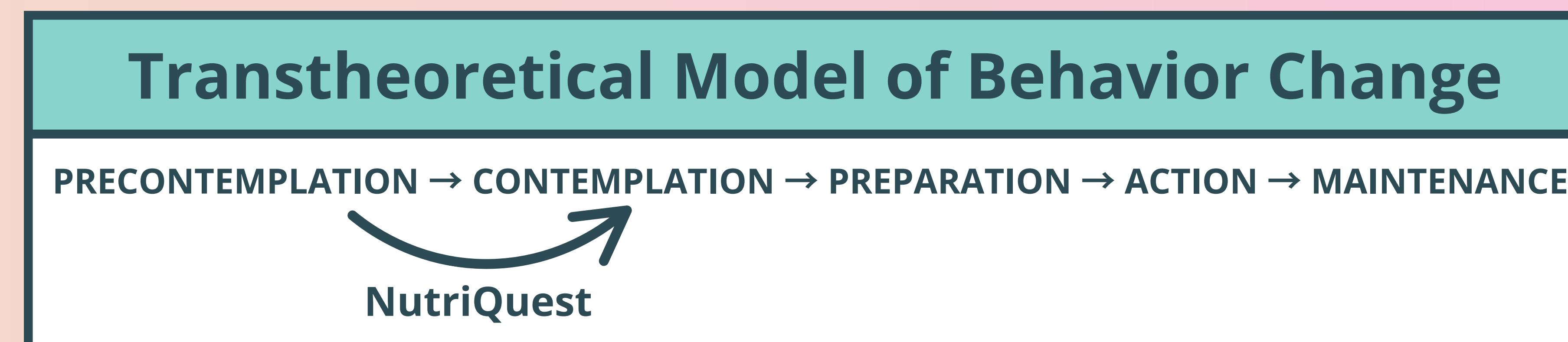
Nicky Ven¹, Laila McCullers¹, Chaewon Kim²

College of Arts and Sciences¹, College of Education, Health, and Human Sciences², Florida State University




Introduction

- Video games are increasingly being used for improving health, such as eating behaviors.
- Most video games target young children, leaving young adults unaddressed.
- The occurrence of eating disorders has increased since 2000 and 2018, doubling from 3.4% to 7.8% of the population (Galmiche, 2019).
- The Transtheoretical (TTM) model of behavioral change displayed in a 5 step process is mirrored in NutriQuest, a game for improving eating behaviors, focusing on precontemplation to contemplation.
- During gameplay, one is able to recognize the value of more mindful and intuitive eating habits.
- Mindfulness emphasizes being fully present during meals, minimizing distractions (Tapper, 2022).
- Intuitive eating emphasizes listening to internal body cues, such as hunger and fullness.
- With 28 participants in their 30s, and 26 participants in their 20s; a clear positive shift is observed in their readiness to improve eating habits after playing NutriQuest, compared to the original feelings of no intention to change.



Methods




Game Overview

- NutriQuest was first developed in Pygame, and then migrated to Unity in its second iteration to allow more functionality and flexibility.
- The game had 12 stages, and the player is asked to choose three ingredients to make a balanced meal each stage.
- Then the player is asked to choose the location where they'd like to eat and activity they intend to engage in while eating.
- During each selection process, a scoring system and educational notes are added to better guide the user to practice intuitive and mindful eating skills.

Participants

- There were 24 adults (6 males, 18 females) with an average age of 20 and an average BMI of 23.95.
- There was diversity among the participants ethnicity and cooking frequency.
- There was an hour-long intervention that included a 10 minute pre-test, 40 minutes of gameplay, and a 10 minute post-test.




Results

- The t-test for both mindful and intuitive eating was insignificant.
- Post game play showed the increase of the participants' readiness to change eating habits.
- This is shown by the transition of precontemplation (Want to Improve, Need Help) to contemplation (Open to Improve, Willing).
- These pre- and post-test results show how this game intervention is following the steps of the TTM's model by participants' behavioral changes.

Pre Stage	Pre Count (%)	Post Stage	Post Count (%)
Open to Improve	14 (58.3%)	Open to Improve	14 (58.3%)
Want to Improve, Need Help	4 (16.7%)	Open to Improve	14 (58.3%)
Want to Improve, Willing	4 (16.7%)	Open to Improve, Willing	9 (37.5%)
No Change	2 (8.3%)	No Change	1 (4.2%)

Future Research



Third Iteration

- NutriQuest now takes place from the view of a hungry college student, and the player cooks over the course of a week.
- All game text was changed to be in the first person.
- The quiz on balancing a dish now has nutritional notes.
- Cookbook now has pie charts of nutritional content.
- There are sound effects for opening the fridge and cooking.
- Bread was added, and some recipes have changed.
- All recipes are stored in a JSON file, allowing new recipes to be added very easily.
- Bugs such as ingredients getting stuck have been fixed.
- Soon to do a third round of data collection with this iteration.

Future Development

- Add more ingredients, dishes, locations and activities.
- Portray academic demands and financial means affecting eating behaviors and how to manage those issues.
- Add ability to pick whether student, employee, etc. for different narration.
- Move to more steps of TTM: preparation, action, maintenance.
- Develop mobile version with user profiles, note-taking, and food tracking for specific health and dietary concerns.
- Collaborate with the FSU Health and Wellness Center to help students with eating disorders.

ALSO SCAN TO PLAY OUR GAME!

References

