


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

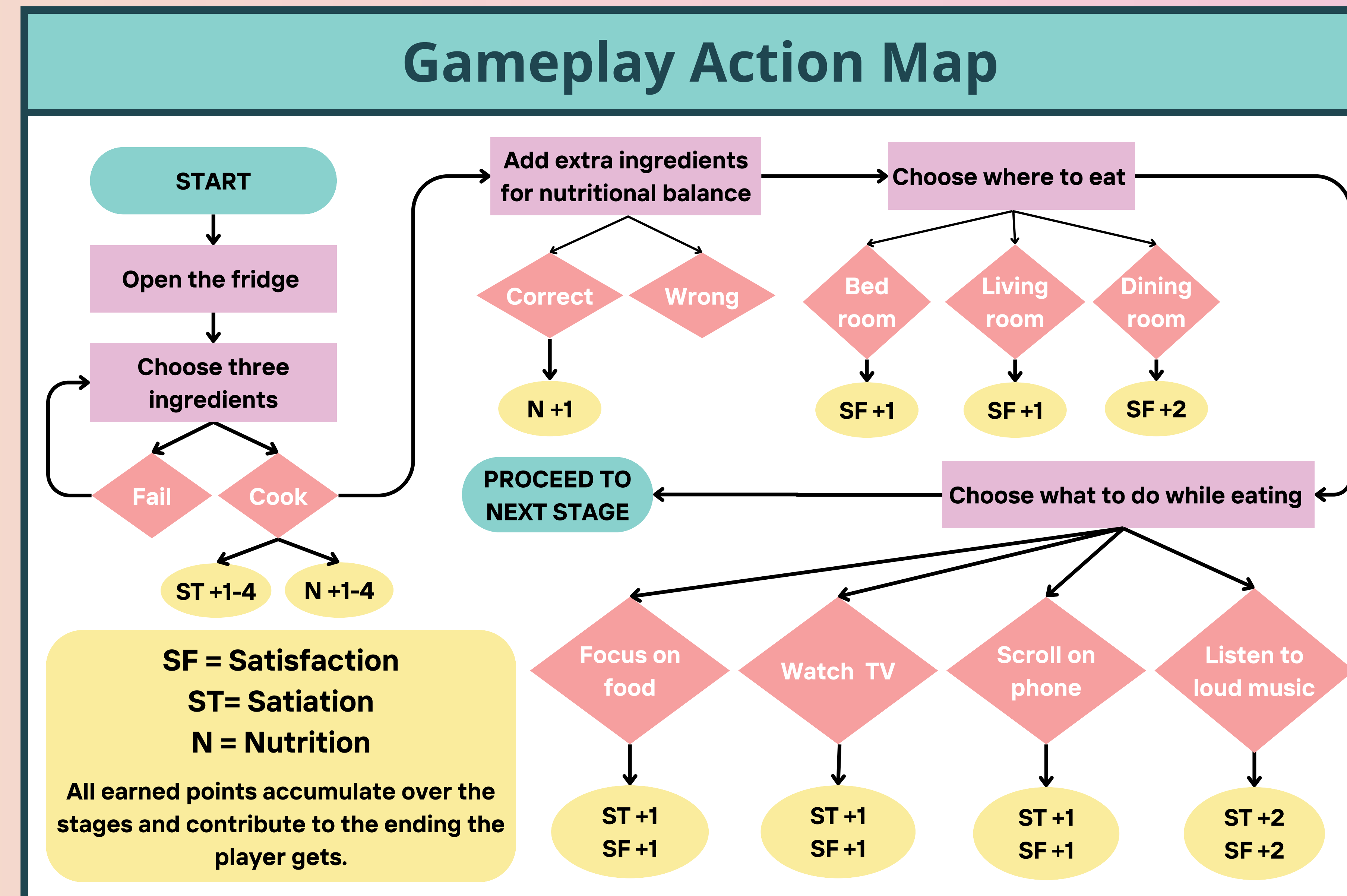
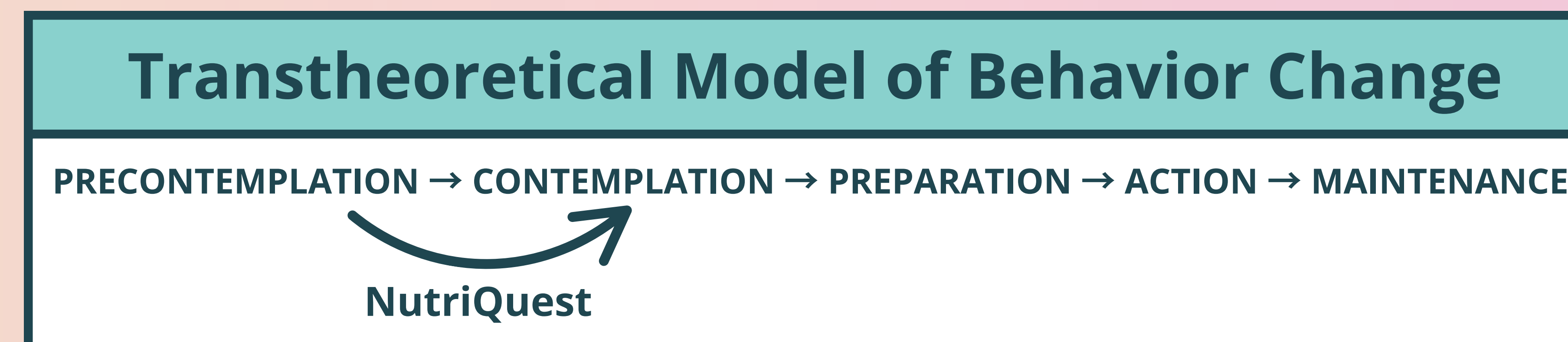
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Introduction

- 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	Post Stage	Count	Percentage
Open to Improve	Open to Improve	14	58.3%
Open to Improve	Willing	14	58.3%
Want to Improve, Need Help	Open to Improve	4	16.7%
Want to Improve, Need Help	Willing	4	16.7%
Want to Improve, Willing	Willing	9	37.5%
No Change	No Change	2	8.3%
No Change	Willing	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